File Ref.No.4180/GA - IV - J1/2012/CU

**UNIVERSITY OF CALICUT**

**Abstract**

General & Academic - CBCSS UG 2019 - Scheme and Syllabus of Bachelor of Science in Information Technology Programme (B.Sc I.T) (LRP) w.e.f 2019 Admission onwards - To include a new course with title BIT4C08- Computer Organization and Architecture, in the running syllabus - Implemented, subject to ratification of Academic Council -Orders Issued

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**G & A - IV - J**

U.O.No. 2757/2021/Admn Dated, Calicut University.P.O, 03.03.2021

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*Read:*-1. U.O.No.12166/2019/Admn dated 05.09.2019.

2. U.O.No. 4848/2020/Admn Dated, 26.05.2020.
3. U.O No.12019/2020/Admn Dated, 04.12.2020.
4. Letter from Principal, Thunchathezhuthachan college, Nenmara, Palakkad.
5. Item No.6 in the minutes of the online meeting of Board of Studies in Computer Science and Application (UG) held on 25.01.2021
6. Remarks from Dean, Faculty of Science dated 15.02.2021
7. Remarks from Convenor, Steering committee on CBCSS UG Regulations 2019 dated 23.02.2021
8. Orders of the Vice Chancellor in the file evan No. dated 26.02.2021.

ORDER

1. The scheme and Syllabus of Bachelor of Science in Information Technology Programme (B.Sc I.T.) (LRP) under CBCSS UG Regulations 2019 with effect from 2019 Admission onwards, were implemented, vide paper read (1) and modified vide paper read (2) and (3) above.

2. Vide paper read (4) above, it was pointed out that, in the syllabus of IV$^{th}$ semester BSc IT (2019 Admission), the students are offered XXXXXA14 Microprocessors- Architecture and Programming as Common Course and BIT4C08 Microprocessor and Applications as Complimentary course, which have many of its contents in common and accordingly, the meeting of Board of Studies in Computer Science and Application (UG) held on 25.01.2021 resolved, vide read (5) above, to include a new course with title BIT4C08- Computer Organization and Architecture in place of the duplicate complementary course in the fourth semester - BIT4C08 Microprocessor and Applications, in the syllabus of BSc IT w.e.f 2019 admissions subject to the concurrence from the Registrar and the Steering Committee

3. The Dean, Faculty of Science vide read (6) above, approved the minutes of the meeting of the Board of Studies in Computer Science and Application (UG).

4. While seeking remarks in the matter, Convenor, Steering Committee on CBCSS UG 2019 vide read (7) above, ratified to include the new course with title BIT4C08- Computer Organization and Architecture (IV Semester) in the running syllabus of B.Sc IT Programme (CBCSS UG) w.e.f 2019 admissions.

5. Considering the urgency, the Vice Chancellor has accorded sanction to implement the resolution of the Board of Studies as approved by the Dean Faculty of Science, subject to ratification by the Academic Council.

6. Sanction is therefore accorded for implementing the Scheme and Syllabus of B.Sc IT Programme (CBCSS UG) w.e.f 2019 admissions, including a new course with title BIT4C08-Computer Organization and Architecture in place of the duplicate complementary course in the fourth semester- BIT4C08 Microprocessor and Applications, subject to ratification by the Academic Council.
7. Orders are issued accordingly.
8. U.O No.12019/2020/Admn Dated, 04.12.2020 stands modified to this extent. (Corrected Syllabus appended)

Arsad M

Assistant Registrar

To

Principals of all Affiliated Colleges

Copy to: PS to VC/PA to PVC/ PA to Registrar/PA to CE/JCE I/JCE IV/SF/DF/FC

Forwarded / By Order

Section Officer

# UNIVERSITY OF CALICUT

THENHIPALAM, CALICUT UNIVERSITY P.O

## DEGREE OF
## BACHELOR OF SCIENCE
IN
## INFORMATION TECHNOLOGY (B.SC IT)
## (CHOICE BASED CREDIT AND SEMESTER SYSTEM)

UNDER THE

## FACULTY OF SCIENCE

# SYLLABUS

## FOR THE STUDENTS ADMITTED FROM THE ACADEMIC YEAR 2019-20 ONWARDS

**BOARD OF STUDIES IN COMPUTER SCIENCE/APPLICATION (UG)**
THENHIPALAM, CALICUT UNIVERSITY P.O KERALA, 673 635, INDIA

**AUGUST, 2020**

# REGULATIONS
## DEGREE OF
## BACHELOR OF SCIENCE
IN
## INFORMATION TECHNOLOGY (B.SC IT)

**(**Choice Based Credit and Semester System for Under Graduate Curriculum 2019**)**

**EFFECTIVE FROM THE ACADEMIC YEAR 2019-20**

## B.SC IT PROGRAMME OBJECTIVE

The basic objective of the Programme is to open a channel of admission for computing courses for students, who have done the 10+2 and are interested in taking computing/IT as a career. After acquiring the Bachelor"s Degree (B.SC IT) at University of Calicut, there is further educational opportunity to go for an MCA or other Master"s Programme like MSc (Computer Science), MSc (IT), MBA, etc., at this university or at any other University/Institute. Also after completing the B.SC IT Programme, a student should be able to get entry level job in the field of Information Technology or ITES or they can take up self-employment in Indian & global software market. The specific objectives of the Programme include

1. To attract young minds to the potentially rich and employable field of computer applications.
2. To be a foundation graduate Programme this will act as a feeder course for higherstudies in the area of Computer Science/Applications.
3. To develop skills in software development so as to enable the B.SC IT graduates to take up self-employment in Indian and global software market.
4. To train and equip the students to meet the requirements of the Software industry in the country and outside.

# PROGRAMME STRUCTURE

**Duration**: The duration of the B.SC IT Programme shall be six semesters distributed over a period of three academic years. The odd semesters (1, 3, 5) shall be from June to October and the even Semesters (2, 4, 6) shall be from November to March. Each semester shall have 90 working days inclusive of all examinations.

**Courses**: The UG programme shall include five types of courses, viz; Common Courses (Code A), Core courses (Code B), Complementary courses (Code C), Open Course (Code D) and Audit courses (Code E).

**Course code :** Each course shall have a unique alphanumeric code number, which includes abbreviation of the subject in three letters, the semester number (1 to 6) in which the course is offered, the code of the course (A to E) and the serial number of the course (01,02 ……). The course code will be centrally generated by the university. For example: ENG2A03 represents a common course of serial number 03 offered in the second semester and PHY2B02 representing second semester Core course 2 in Physics programme.

**Credits(C)**: Each course shall have certain credits. A student is required to acquire a minimum of 140 credits for the completion of the UG programme, of which 120 credits are to be acquired from class room study and shall only be counted for SGPA and CGPA. Out of the 120 credits, 14 credits for common courses (English), 8 credits for additional language courses and 16 credits for General courses. The maximum credits for a course shall not exceed 5. Audit courses shall have 4 credits per course and a total of 16 credits in the entire programme. The maximum credit acquired under extra credit shall be 4. If more Extra credit activities are done by a student, it may be mentioned in the Grade card. The credits of audited courses or extra credits are not counted for SGPA or CGPA.

**'Letter Grade"** or simply „Grade" (G): in a course is a letter symbol (O, A+, A, B+, B, C, P, F, I and Ab). Grade shall mean the prescribed alphabetical grade awarded to a student based on his/her performance in various examinations.

**„Credit Point"(P)** of a course is the value obtained by multiplying the grade point (G) by the credit (C) of the course: P=G x C.

**'Extra Credit"** is the additional credit awarded to a student over and above the minimum credits required in a programme, for achievements in co-curricular activities and social activities conducted outside the regular class hours, as decided by the University. For calculating CGPA, extra credits will not be considered.

**Attendance**: A student shall be permitted to appear for the semester examination, only if he/she secures not less than 75% attendance in each semester. Attendance shall be maintained by the Department concerned. Condonation of shortage of attendance to a maximum of 10% in the case of single condonation and 20% in the case of double condonation in a semester shall be granted by University remitting the required fee. Benefits of attendance may be granted to students whoattend the approved activities of the

college/university with the prior concurrence of the Head of the institution. Participation in such activities may be treated as presence in lieu of their absence on production of participation/attendance certificate (within two weeks) in curricular/extracurricular activities (maximum 9 days in a semester). Students can avail of condonation of shortage of attendance in a maximum of four semesters during the entire programme (Either four single condonations or one double condonation and two single condonations during the entire programme). If a student fails to get 65% attendance, he/she can move to the next semester only if he/she acquires 50% attendance. In that case, a **provisional registration** is needed. Such students can appear for supplementary examination for such semesters after the completion of the programme. Less than 50% attendance requires Readmission. Readmission is permitted only once during the entire programme.

**Strike off the roll:** A student who is continuously absent for 14 days without sufficient reason and proper intimation to the Principal of the college shall be removed from the roll.

**Ability Enhancement courses/Audit courses:** These are courses which are mandatory for a programme but not counted for the calculation of SGPA or CGPA. There shall be one Audit course each in the first four semesters. These courses are not meant for class room study. The students can attain only pass (Grade P) for these courses. At the end of each semester there shall be examination conducted by the college from a pool of questions (Question Bank) set by the University. The students can also attain these credits through online courses like SWAYAM, MOOC etc (optional). The list of passed students must be sent to the University from the colleges at least before the fifth semester examination. The list of courses in each semester with credits is given below.

| **Course with credit** | **Semester** |
|---|---|
| Environment Studies – 4 | 1 |
| Disaster Management – 4 | 2 |
| *Human Rights/Intellectual Property Rights/ Consumer Protection - 4 | 3 |
| *Gender Studies/Gerontology- 4 | 4 |

* Colleges can opt any one of the courses.

**Admission to repeat** courses should be within the sanctioned strength. However if more candidates are there, the candidates who have suffered serious health problems, on productionof

a medical certificate issued by a physician not below the rank of a Civil Surgeon in Government service, may be permitted to repeat the course, with a written order issued by the Registrar, Calicut University (by considering his/her SGPA/CGPA and percentage of attendance). The number of such candidates should not exceed two.

**Grace Marks:** Grace Marks may be awarded to a student for meritorious achievements in co-curricular activities (in Sports/Arts/ NSS/NCC/ Student Entrepreneurship) carried out besides the regular class hours. Such a benefit is applicable and limited to a maximum of 8 courses in an academic year spreading over two semesters. No credit shall be assigned for such activities. In addition, maximum of 6 marks per semester can be awarded to the students of UG Programmes, for participating in the College Fitness Education Programme (COFE).

**Project**: Every student of a UG degree programme shall have to work on a project of 2 credits under the supervision of a faculty member or shall write a theory course based on Research Methodology as per the curriculum. College shall have the liberty to choose either of the above.

**Extension Activities:** Compulsory social service (CSS) for a period of 15 days is essential for the successful completion of the B.Sc IT Programme.

## ADMISSION

The admission to all programmes will be as per Rules and Regulations of the University. The eligibility criteria for admission shall be as announced by the University from time to time. Separate rank lists shall be drawn up for reserved seats as per the existing rules.

The admitted candidates shall subsequently undergo the prescribed courses of study in a college affiliated to the University for six semesters within a period of not less than three years; clear all the examinations prescribed and fulfil all such conditions as prescribed by the University from time to time.

The college shall make available to all students admitted a **prospectus** listing all the courses offered in various departments during a particular semester. The information so provided shall contain title of the courses, the semester in which it is offered and credits for the courses. Detailed syllabi shall be made available in the University/college websites.

There shall be a uniform **calendar** prepared by the University for the registration, conduct/schedule of the courses, examinations and publication of results. The University shall ensure that the calendar is strictly followed.

There shall be provision for **Inter Collegiate and Inter University Transfer** in third

and fifth semester within a period of two weeks from the date of commencement of the semester. College transfer may be permitted in Second and Fourth semester also without change in complementary course within a period of two weeks from the date of commencement of the semester concerned.

**Complementary change** at the time of college transfer is permitted in the third semester if all conditions are fulfilled.

CBCSS regular students can join distance education stream/Private Registration in any semester in the same programme or different one. If core and complementary courses are different, they have to undergo them in the new stream. The marks/grace obtained for common courses will be retained.

A student registered under distance education stream/Private Registration in the CBCSS pattern may be permitted to join the regular college (if there is a vacancy within the sanctioned strength) in the third and fifth semester with the same programme only. If there is a change in complementary courses, it can be done with following conditions: i) the external and internal marks/grade obtained in the previous semesters for the earlier complementary courses will be cancelled. ii) the students have to write the external examinations for the previous semester for the new complementary courses along with the subsequent batch. iii) An undertaking to the effect that "the internal evaluation for the previous semesters of the new complementary courses will be conducted", is to be obtained from the Principal of the college in which the student intends to join.

Provision for **credit transfer** is subject to common guidelines prepared by the faculty concerned.

There shall be provision for **Readmission** of students in CBCSS UG 2019.

The Principal can grant readmission to the student, subject to the conditions detailed below and inform the matter of readmission to the Controller of Examinations within one month of such readmission.

This readmission is not to be treated as college transfer. There should be a gap of at least one semester for readmission.

The candidate seeking readmission to a particular semester should have registered for the previous semester examination. Readmission shall be taken within two weeks from

the date of commencement of the semester concerned. For readmission, the vacancy should be within the sanctioned strength in the parent college. If there is no vacancy in the junior batch of the parent college, readmission can be taken in another college with the junior batch if there is vacancy within the sanctioned strength in the concerned college. If there is a change in complementary courses, it can be done with following conditions: i) the external and internal marks/grade obtained in the previous semesters for the earlier complementary courses will be cancelled. ii) the students have to write the external examinations for the previous semester for the new complementary courses along with the subsequent batch iii) An undertaking to the effect that "the internal evaluation for the previous semesters of the new complementary courses will be conducted", is to be obtained from the Principal of the college in which the student intends to take readmission.

If change in scheme occurs while readmission, provision for credit transfer is subject to common guidelines prepared by Board of Studies/ Faculty concerned. For readmission to CBCSS UG 2019 involving scheme change, the Principal concerned shall report the matter of readmission to Controller of Examinations with the details of previous semesters and course undergone with credits within two weeks in order to fix the deficiency/excess papers.

## REGISTRATION

Each student shall make an online registration for the courses he/she proposes to take, in consultation with the Faculty Adviser within two weeks from the commencement of each semester. The college shall send a list of students registered for each programme in each semester giving the details of courses registered, including repeat courses, to the University in the prescribed form within 45 days from the commencement of the semester.

It is mandatory that the students who got admission under CBCSS UG 2019 in SDE/Private shall register for the examinations of the concerned semesters in the same year itself.

A student shall be normally permitted to register for the examination if he/she has required minimum attendance. If the student has a shortage of attendance below 65% in

a semester, the student shall be permitted to move to the next semester (if the attendance is more than 50% - Provisional registration) and can write the examination for the entire courses of the semester in which shortage of attendance occurs as supplementary examination only after the completion of the entire programme**.** In such cases, a request from the student may be forwarded through the Principal of the college to the Controller of Examinations within two weeks of the commencement of the semester. If the attendance is less than 50%, the student is ineligible to continue the programme and has to seek readmission. **There will not be any Repeat semester in CBCSSUG 2019**.

A student who registered for the course shall successfully complete the programme within 6 years from the year of first registration. If not, such candidate has to cancel the existing registration and join afresh as a new candidate.

For open courses there shall be a minimum of 10 and maximum of 75 students per batch. For other courses existing pattern will be followed.

Those students who have followed the UG Programmes in annual pattern or Choice based Credit & Semester System pattern can cancel their earlier registration and register afresh for CBCSSUG 2019 scheme in the same discipline or a differentone.

The students who have attendance within the limit prescribed, but could not register for the examination have to apply for **Token registration,** within two weeks of the commencement of the next semester.

## COURSE EVALUATION

Total marks for each core, elective course is 75 and lab courses shall be **100** marks and Industrial Visit & Project Evaluation cum Programme viva- voce shall be **100** marks and open course shall be **75** marks. The evaluation scheme for each course shall contain two parts (1) Internal evaluation (2) external evaluation. 20% weight shall be given to the internal evaluation. The remaining 80% weight shall be for the external evaluation.

# INTERNAL EVALUATION

The internal assessment shall be based on a predetermined transparent system involving written test, assignments, seminars and attendance in respect of theory courses and on test/record/viva/attendance in respect of lab courses. 20% of the total marks in each course (15 marks for theory, 20 marks for lab/project) are for internal examinations. The marks secured for internal assessment only need to be sent to University by the colleges concerned. Internal assessment of the project will be based on its content, method of presentation, final conclusion and orientation to research aptitude.

*Components with percentage of marks of Internal Evaluation of Theory Courses are*

| | | |
|---|---|---|
| Test paper (40%) | – | 6 Marks |
| Attendance (20%) | – | 3 Marks |
| Assignment (20%) | – | 3 Marks |
| Seminar (20%) | – | 3 Marks |

*Components with percentage of marks of Internal Evaluation of Lab Courses are*

| | | |
|---|---|---|
| Test paper (50%) | – | 10 Marks |
| Attendance (20%) | – | 4 Marks |
| Assignment/Lab involvement (30%) | – | 6 Marks |

*(if a fraction appears in internal marks, nearest whole number is to be taken)*

For the test paper marks, at least one test paper should be conducted. If more test papers are conducted, the mark of the best one should be taken. To ensure transparency of the evaluation process, the internal assessment marks awarded to the students in each course in a semester shall be notified on the notice board at least one week before the commencement of external examination. There shall not be any chance for improvement for internal marks. The course teacher(s) shall maintain the academic record of each student registered for the course, which shall be forwarded to the University by the college Principal after obtaining the signature of both course teacher and Head of the Department.

The Split up of marks for Test paper and Class Room Participation (CRP) for internal evaluation are as follows.

*Split up of marks for Test paper:*

| | **Theory** | **Practical** |
|---|---|---|
| 85% -100% | 6 | 10 |
| 65% -85% | 5 | 8 |
| 55% - 65% | 4 | 6 |
| 45% - 55% | 3 | 5 |
| 35%- 45% | 2 | 4 |
| Less than 35% | 1 | 2 |

*Attendance of each course will be evaluated as below*

| | **Theory** | **Practical** |
|---|---|---|
| 85 % and above | 3 | 4 |
| 75% ≤CRP <85% | 2 | 2 |
| 50% ≤CRP <75% | 1 | 1 |

Internal evaluation for the project shall be generally based on content, method of presentation, final conclusion, and orientation to research aptitude. The split up shall be

| | | |
|---|---|---|
| Originality | – | 4 Marks |
| Methodology | – | 4 Marks |
| Scheme/Organization of Report | – | 6 Marks |
| Viva-voce | – | 6 Marks |

**EXTERNAL EVALUATION**

There shall be University examinations for each course at the end of each semester. Practical examinations shall be conducted by the University at the end of second, fourth and sixth semesters. External evaluation of Project, Industrial Visit Report and Programme viva-voce shall

be conducted along with the project evaluation at the end of the sixth semester. External evaluation carries 80% of marks, i.e., 60 marks, for each theory course.

The model of the question paper for external examination for theory courses of 2 Hours duration: The students can answer all the questions in Sections A and B. But there shall be Ceiling in each section.

1. **Section A**: Short answer type carries 2 marks each - 12 questions **(Ceiling - 20)**
2. **Section B:** Paragraph/ Problem type carries 5 marks each - 7 questions **(Ceiling - 30)**
3. **Section C:** Essay type carries 10 marks (1 out of 2)- **(Ceiling -10)**

The external examination in theory courses is to be conducted with question papers set by external experts. The evaluation of the answer scripts shall be done by examiners based on a well-defined scheme of valuation and answer keys shall be provided by the University. The external examination in practical courses shall be conducted by two examiners, one internal and an external,appointed by the University. The project evaluation with Programme viva voce will be conducted by two examiners, one internal and an external (appointed by the University), at the end of the sixth semester. No practical examination will be conducted in odd semester. Practical examinationsfor B.Sc IT Programme shall be conducted in the even semesters 2, 4 and 6.

The model of the question paper for external examination (lab courses) of 3 Hours duration shall be:

1. **Section A**: One marked question of 30 Marks from Programming Lab Part A is to be attempted (Design Algorithm/Flowchart/Interface: 10 Marks, Code: 10 Marks Result: 10 Marks. **Total 30 Marks**)

2. **Section B:** One marked question of 30 Marks from Programming Lab Part B is to be attempted (Design Algorithm/Flowchart/Interface: 10 Marks, Code: 10 Marks Result: 10 Marks. **Total 30 Marks**)

3. **Section C:**Lab viva voce **(Total 10 Marks)**

4. **Section D:**Lab Record **(Total 10 Marks)**

***Number of students in one batch for practical examination must be limited to 14.***

**Project guidelines –** Students must be encouraged to do projects in the latest tools or tools appropriate for their topic. Department should conduct monthly evaluation of the project and

give necessary instructions to the students as and when required. Number of students in a project group must be limited to 4.

The scheme of evaluation for project cum Programme viva voce shall be

1. Relevance of the Topic, Statement of Objectives (**Total 10 Marks** )
2. Methodology(Reference/ Bibliography, Presentation, quality of Analysis/Use of Statistical Tools) (**Total 10 Marks**)
3. Findings and recommendations (**Total 15 Marks**)
4. Project cum Programme Viva Voce (**Total 15 Marks)**
5. Report of Industrial visit **(Total 10 Marks)**

**Audit course**: The students can attain only pass (Grade P) for these courses. At the end of each semester (up to fourth semester) there shall be examination conducted by the college from a pool of questions set by the University. The students can also attain the credits through online courses like SWAYAM, MOOC etc. The College shall send the list of passed students to the University at least before the commencement of fifth semester examination.

## REVALUATION

In the new system of grading, revaluation is permissible. The prevailing rules for revaluation are applicable. Students can apply for photocopies of answer scripts of external examinations. Applications for photocopies/scrutiny/revaluation should be submitted within 10 days of publication of results. The fee for this shall be as decided by the university.

## COURSE IMPROVEMENT

A maximum of two courses (Common, Core, Complementary or Open) can be improved in each semester. Improvement of a particular semester can be done only once. The student shall avail the improvement chance in the succeeding year after the successful completion of the semester concerned. The internal marks already obtained will be carried forward to determine the grades/marks in the improvement examination. If the candidate fails to appear for the improvement examination after registration, or if there is no change in the results of the

improvement examination appeared, the marks/grades obtained in the first appearance will be retained. Improvement and supplementary examinations cannot be done simultaneously.

## EVALUATION AND GRADING

Evaluation (both internal and external) is carried out using Mark system. The Grade on the basis of total internal and external marks will be indicated for each course, for each semester and for the entire programme.

Indirect Grading System in 10-point scale is as below:

Ten Point Indirect Grading System

| **Percentage of Marks (Both Internal &External put together)** | **Grade** | **Interpretation** | **Grade point Average ( G)** | **Range of grade points** | **Class** |
|---|---|---|---|---|---|
| 95 and above | O | Outstanding | 10 | 9.5 -10 | First Class with Distinction |
| 85 to below 95 | A+ | Excellent | 9 | 8.5 -9.49 | |
| 75 to below 85 | A | Very good | 8 | 7.5 -8.49 | |
| 65 to below 75 | B+ | Good | 7 | 6.5 -7.49 | First Class |
| 55 to below 65 | B | Satisfactory | 6 | 5.5 -6.49 | |
| 45 to below 55 | C | Average | 5 | 4.5 -5.49 | Second Class |
| 35 to below 45 | P | Pass | 4 | 3.5 -4.49 | Third Class |
| Below 35 | F | Failure | 0 | 0 | Fail |
| Incomplete | I | Incomplete | 0 | 0 | Fail |
| Absent | Ab | Absent | 0 | 0 | Fail |

**Example – 1 SGPA Calculation**

| Semester I Course Code | Course Name | Grade Obtained | Grade point (G) | Credit (C) | Credit point (CXG) |
|---|---|---|---|---|---|
| xxxxxxx | Xxxxxxx | A | 8 | 4 | 32 |
| xxxxxxx | Xxxxxxxxx | C | 5 | 3 | 15 |
| xxxxxxx | Xxxxxxxxx | A+ | 9 | 4 | 36 |
| xxxxxxx | Xxxxxxxxx | B+ | 7 | 3 | 21 |
| xxxxxxx | Xxxxxxxxx | P | 4 | 3 | 12 |
| xxxxxxx | Xxxxxxxxx | C | 5 | 4 | 20 |

**SGPA = Sum of the Credit points of all courses in asemester**

**Total Credits in thatsemester**

**SGPA = (32+15+336+21+12+20)/21=1 3 6 /2 1**

**SGPA = 6.476**

**Percentage of marks of semester I = (SGPA/10) x 100 = 64.76 %**

Note: The SGPA is corrected to three decimal points and the percentage of marks shall be approximated to two decimal points.

**Example: 2**

| Semester II Course Code | Course Name | Grade Obtained | Grade point (G) | Credit (C) | Credit point (CXG) |
|---|---|---|---|---|---|
| xxxxxxx | Xxxxxxx | A | 8 | 4 | 32 |
| xxxxxxx | Xxxxxxxxx | C | 5 | 3 | 15 |
| xxxxxxx | Xxxxxxxxx | A+ | 9 | 4 | 36 |
| xxxxxxx | Xxxxxxxxx | B+ | 7 | 3 | 21 |
| xxxxxx* | Xxxxxxxxx | F | 0 | 3 | 0 |
| xxxxxxx | Xxxxxxxxx | C | 5 | 4 | 20 |

*Failed course

Note: In the event a candidate failing to secure **'P'** grade in any Course in a semester, consolidation of SGPA and CGPA will be made only after obtaining **'P'** grade in the failed Course in the subsequent appearance.

**CGPA Calculation**

**Example**

$$\text{CGPA} = \frac{\textit{Total Credit points obtained in six semesters}}{\textit{Total Credits acquired (120)}}$$

CGPA = 136 + 145 + 161 + 148 + 131 + 141 / 120 = 862/120

CGPA = 7.183

Total percentage of marks= (CGPA/10) * 100

Total % of marks = (7.183/10) * 100 = 71.83

$$\text{CGPA of Core Courses} = \frac{\textit{Total Credit points obtained for Core Courses}}{\textit{Total Credits acquired for CoreCourses}}$$

Similarly CGPA of Complementary courses, Open courses, English Common coursesand Additional Language Common courses may be calculated and the respective percentage may be calculated. All these must be recorded in the Final Grade Card.

# GRADE CARD

The University shall issue to the students grade/marks card (by online) on completion of each semester, which shall contain the following information.

a) Name of University

b) Name of College

c) Title of UG Programme

d) Semester concerned

e) Name and Register Number of student

f) Code number, Title and Credits of each Course opted in the semester

g) Letter grade in each course in the semester

h) The total credits, total credit points and SGPA in the Semester (corrected to three decimal places)

The final Grade card issued at the end of the final semester shall contain the details of all courses taken during the entire programme including those taken over and above the prescribed minimum credits for obtaining the degree. The final grade card shall show CGPA (corrected to three decimal places), percentage of marks (corrected to two decimal places) and the overall letter grade of a student for the entire programme. The final grade card shall also include the CGPA and percentage of marks of common courses, core courses, complementary courses and open courses separately. This is to be done in a 10- point indirect scale. The final Grade card also contains the list of Audit courses passed and the details of Extra credits.

i) **Evaluation of Audit courses:** The examination shall be conducted by the college itself from the Question Bank prepared by the University. The Question paper shall be of 100 marks of 3 hour duration. For SDE/Private students it may be of MCQ/ fill in the blank type questions or online question paper may beintroduced.

## AWARD OF DEGREE

The successful completion of all the courses (common, core, complementary and open courses) prescribed for the B.Sc IT Programme with P grade (35 %) shall be the minimum requirement for the award of B.Sc IT Programme degree.

# GRIEVANCE REDRESSAL COMMITTEE

## COLLEGE LEVEL

The College shall form a Grievance Redressal Committee in each department comprising of course teacher and one senior teacher as members and the Head of the department as Chairman. This committee shall address all grievances relating to the internal assessment grades of the students. There shall be a College Level Grievance Redressal Committee comprising of Student Advisor, two senior teachers and two staff council members (one shall be elected member) as members and principal as Chairman.

## UNIVERSITY LEVEL

The University shall form a Grievance Redressal Committee as per the existing norms.

## (2019-20 ACADEMIC YEAR ONWARDS – AS PER CBCSSUG 2019 REGULATIONS)

**Total Courses: 37** | **Total Credits: 120**

| Semester | Course No | Course Cod | Course Title | Marks | | | Contact Hours | | | Credit |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Intern | Extern | Total | Theory | Lab | Total | |
| I Semester | 1 | XXXXA01 | Common English Course I | 15 | 60 | 75 | 4 | 0 | 4 | 3 |
| | 2 | XXXXA02 | Common English Course II | 15 | 60 | 75 | 4 | 0 | 4 | 3 |
| | 3 | XXXXA03 | Additional Language Course I | 20 | 80 | 100 | 5 | 0 | 5 | 4 |
| | 4 | BIT1B01 | Problem Solving Using C | 15 | 60 | 75 | 2 | 2 | 4 | 3 |
| | 5 | BIT1C01 | Mathematical Foundations of IT | 15 | 60 | 75 | 4 | 0 | 4 | 3 |
| | 6 | BIT1C02 | Foundations of Information Technology | 15 | 60 | 75 | 4 | 0 | 4 | 3 |
| | **Total (6 Courses)** | | | | | **475** | | | **25** | **19** |
| II Semester | 7 | XXXXA03 | Common English Course | 20 | 80 | 100 | 4 | 0 | 5 | 4 |
| | 8 | XXXXA04 | Common English Course IV | 20 | 80 | 100 | 4 | 0 | 4 | 4 |
| | 9 | XXXXA08 | Additional Language Course II | 20 | 80 | 100 | 5 | 0 | 5 | 4 |
| | 10 | BIT2B02 | Object Oriented Programming with C++ | 15 | 60 | 75 | 2 | 0 | 2 | 3 |
| | 11 | B1T2B03 | Programming Laboratory I – C++ | 20 | 80 | 100 | 0 | 2 | 2 | 4 |
| | 12 | BIT2C03 | Probability & Statistics | 15 | 60 | 75 | 4 | 0 | 4 | 3 |
| | 13 | BIT2C04 | Electronics & Communication Technology | 15 | 60 | 75 | 3 | 0 | 3 | 3 |
| **Total (7 Courses)** | | | | | | **625** | | | **25** | **25** |

| Semester | Course No | Course Code | Course Title | Marks | | | Contact Hours | | | Credit |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Intern | Extern | Total | Theory | Lab | Total | |
| III Semester | 14 | XXXXA11 | Python Programming | 20 | 80 | 100 | 4 | 0 | 4 | 4 |
| | 15 | XXXXA12 | Sensors and Transducers | 20 | 80 | 100 | 4 | 0 | 4 | 4 |
| | 16 | BIT3B04 | Database Design & RDBMS | 15 | 60 | 75 | 3 | 2 | 5 | 3 |
| | 17 | BIT3B05 | Data Structures Using C++ | 15 | 60 | 75 | 2 | 2 | 4 | 3 |
| | 18 | BIT3C05 | Discrete Mathematics | 15 | 60 | 75 | 4 | 0 | 4 | 3 |
| | 19 | BIT3C06 | Fundamentals of Digital Electronics | 15 | 60 | 75 | 4 | 0 | 4 | 3 |
| | **Total (6 Courses)** | | | | | **500** | | | **25** | **20** |
| IV Semester | 20 | XXXXA13 | Data Communication and Optical Fibers | 20 | 80 | 100 | 4 | 0 | 4 | 4 |
| | 21 | XXXXA14 | Microprocessors- Architecture and Programming | 20 | 80 | 100 | 4 | 0 | 4 | 4 |
| | 22 | BIT4B06 | Visual Programming Using VB.NET | 15 | 60 | 75 | 5 | 0 | 5 | 3 |
| | 23 | BIT4B07 | Programming Laboratory II - Data Structure Using C++ & RDBMS | 20 | 80 | 100 | 0 | 4 | 4 | 4 |
| | 24 | BIT4C07 | Numerical Methods & Operation Research | 15 | 60 | 75 | 4 | 0 | 4 | 3 |
| | 25 | BIT4C08 | Computer Organization and Architecture | 15 | 60 | 75 | 4 | 0 | 4 | 3 |
| | **Total (6 Courses)** | | | | | **525** | | | **25** | **21** |

| Semester | Course No | Course Code | Course Title | Marks | | | Contact Hours | | | Credit |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Intern | Extern | Total | Theory | Lab | Total | |
| V Semester | 26 | BIT5B08 | Computer Networks | 15 | 60 | 75 | 4 | 0 | 4 | 3 |
| | 27 | BIT5B09 | Software Engineering | 15 | 60 | 75 | 4 | 0 | 4 | 3 |
| | 28 | BIT5B10 | Java Programming | 15 | 60 | 75 | 2 | 4 | 6 | 3 |
| | 29 | BIT5B11 | Computer Graphics | 15 | 60 | 75 | 4 | 1 | 5 | 3 |
| | 30 | BIT5B12 | Management Information Systems | 15 | 60 | 75 | 3 | 1 | 4 | 3 |
| | 31 | XXX5DXX | Open Course (Other Streams) | 15 | 60 | 75 | 2 | 0 | 2 | 3 |
| | **Total (6 Courses)** | | | | | **450** | | | **25** | **18** |
| VI Semester | 32 | BIT6B13 | Android Programming | 15 | 60 | 75 | 4 | 0 | 4 | 2 |
| | 33 | BIT6B14 | Web Programming | 15 | 60 | 75 | 4 | 0 | 4 | 3 |
| | 34 | BIT6B15 | Operating Systems | 15 | 60 | 75 | 5 | 0 | 5 | 2 |
| | 35 | BIT6B16 | Programming Laboratory- III: Java & Web Programming | 20 | 80 | 100 | 0 | 6 | 6 | 4 |
| | 36 | BIT6B17 | Industrial Visit & Project Work (Industrial Visit- 1 Credit, Project Work- 2 Credit) | 15 | 60 | 75 | 0 | 2 | 2 | 3 |
| | 37 | BIT6B18X | Elective | 15 | 60 | 75 | 4 | 0 | 4 | 3 |
| | **Total (6 Courses)** | | | | | **475** | | | **25** | **17** |

| Semester | Course No | Course Code | Course Title | Marks | | | Contact Hours | | | Credit |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Intern | Extern | Total | Theory | Lab | Total | |
| Elective/Open Course | 31 | BIT5D01 | Introduction to Computers & Office Automation | 15 | 60 | 75 | 3 | 0 | 3 | 3 |
| | 31 | BIT5D02 | Introduction to Web Designing | 15 | 60 | 75 | 3 | 0 | 3 | 3 |
| | 31 | BIT5D03 | Introduction to Problem Solving and C Programming | 15 | 60 | 75 | 3 | 0 | 3 | 3 |
| | 37 | BIT6B18a | E-Commerce | 15 | 60 | 75 | 4 | 0 | 4 | 4 |
| | 37 | BIT6B18b | Multimedia Systems | 15 | 60 | 75 | 4 | 0 | 4 | 4 |
| | 37 | BIT6B18c | Software Testing & Quality Assurance | 15 | 60 | 75 | 4 | 0 | 4 | 4 |

| | |
|---|---|
| **Total Courses** | **37** |
| **Total Credits** | **120** |

## EVALUATION AND GRADING

Evaluation(both internal and external) is carried out using Mark system.The Grade on the basis of total internal and external marks will be indicated for each course, for each semester and for the entire programme. Indirect Grading System in 10 -point scale is as below:

Ten Point Indirect Grading System

| Percentage of Marks (Both Internal &External put together) | Grade | Interpretation | Grade point Average ( G) | Range of grade points | Class |
|---|---|---|---|---|---|
| 95 and above | O | Outstanding | 10 | 9.5 -10 | First Class with Distinction |
| 85 to below 95 | A+ | Excellent | 9 | 8.5 -9.49 | |
| 75 to below 85 | A | Very good | 8 | 7.5 -8.49 | |
| 65 to below 75 | B+ | Good | 7 | 6.5 -7.49 | First Class |
| 55 to below 65 | B | Satisfactory | 6 | 5.5 -6.49 | |
| 45 to below 55 | C | Average | 5 | 4.5 -5.49 | Second Class |
| 35 to below 45 | P | Pass | 4 | 3.5 -4.49 | Third Class |
| Below 35 | F | Failure | 0 | 0 | Fail |
| Incomplete | I | Incomplete | 0 | 0 | Fail |
| Absent | Ab | Absent | 0 | 0 | Fail |

| FIRST SEMESTER | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Semester** | **Course No** | **Course Code** | **Course Title** | **Marks** | | | **ContactHours** | | | **Credit** |
| | | | | **Intern** | **Extern** | **Total** | **Theory** | **Lab** | **Total** | |
| **I Semester** | | XXXXA01 | Common EnglishCourse I | 15 | 60 | 75 | 4 | 0 | 4 | 3 |
| | | XXXXA02 | Common English Course II | 15 | 60 | 75 | 4 | 0 | 4 | 3 |
| | | XXXXA03 | Additional Language Course I | 20 | 80 | 100 | 5 | 0 | 5 | 4 |
| | | BIT1B01 | Problem Solving Using C | 15 | 60 | 75 | 2 | 2 | 4 | 3 |
| | | BIT1C01 | Mathematical Foundations of IT | 15 | 60 | 75 | 4 | 0 | 4 | 3 |
| | | BIT1C02 | Foundations of Information Technology | 15 | 60 | 75 | 4 | 0 | 4 | 3 |
| | **Total (6 Courses)** | | | | | **475** | | | **25** | **19** |

## BIT1B01 – Problem Solving Using C

**Course Number**: 4

**Contact Hours**: 2T+2L

**Number of Credits**: 3

**Number of Contact Hours**: 30T+30L

**Course Evaluation:** Internal – 15 Marks + External – 60 Marks

**Aim of the Course**: To impart the students with the basic skill in problem solving using computer programs.

**Objectives of the Course:**

- To learn the concepts of programming.
- To learn the C language

**Prerequisites:** Background of the basic science at +2 level

**Course Outline**

**UNIT I (6T+6L)**

Introduction: The problem solving aspect, Top-down design, Implementation of algorithms, Program verification, efficiency of algorithms. Introduction to C Programming, overview and importance of C, C Program Structure and Simple programs, Creation and Compilation of C Programs under Linux and Windows Platforms.

**UNIT II (6T+6L)**

Elements of C Language and Program constructs: Character Set, C Tokens, Keywords and Identifier, Constants, Variables, Data types, Variable declaration and assignment of values, Symbolic constant definition. C- Operators, Arithmetic operators, relational operators, and logical operators, assignment operators, increment and decrement operators, conditional operators, special operators, arithmetic expressions, evaluation of expressions, precedence of arithmetic operators, Type conversion in expressions, operator precedence and associativity, Mathematical Functions, I/O operations.

**UNIT III (6T+6L)**

Decision making, Branching and Looping: Decision making with IF statement, Simple IF statement, If...else statement, Nesting of if...else and else...if Ladder, switch statement, Conditional operator, go-to statement.Looping: while loop, do-while and for Loops, Nesting of loops, jumps in loop, skipping of loops.

**UNIT IV (6T+6L)**

Array & Strings: One dimensional array, two dimensional array and multi- dimensional array, strings and string manipulation functions. The Concept ofmodularization and User defined functions-Multi-function Program, calling functions, various categories of functions, Nesting of functions and recursion, functions and arrays, scope and life-time of variables in functions, multi-file programs. Structures & Union structure definition, giving values to members, structure initialization, comparison of structure variables, arrays of structures, arrays within structures, structures within arrays, structures and functions, Unions.

**UNIT V (6T+6L)**

Pointers: Understanding pointers, accessing the address of a variable, declaring and initializing pointers, accessing a variable through its pointer,

pointer expressions, pointer and arrays, pointer and character string, pointers and functions, pointers and structures, pointer to pointer - dynamic memory allocation. Files: Defining, Opening and closing files - i/o operations on files - error handling on

files, random access of files, command line operations. Pre- processor directives: Macro substitution directives - simple macros - macros with arguments - nesting of macros, Compiler control directives.

**References:**


1. *Programming in Ansi C*, E Balagurusamy, Tata McGraw Hill
2. *Programming with C*, ByranGotfried
3. *Fundamentals of Computer*, V.Rajaraman
4. *Programming in C*, Kezningham&Ritchie
5. *Let us C*, YashvantKanetkar, BPB publications
6. *The spirit of C*, Mullish Cooper, Jasco books
7. *The Complete reference C*, Herbert Schildt, Tata McGraw Hill


## BIT1C01 -- Mathematical Foundations of IT

**Course Number**: 5

**Contact Hours**: 4T

**Number of Credits**: 3

**Number of Contact Hours**: 60T

**Course Evaluation:** Internal – 15 Marks + External – 60 Marks

**Aim of the Course**: To lay mathematical foundation for learning Com*puter* Science.

**Objectives of the Course:**

- To learn the basic principles of linear algebra and vectors.
- To learn the basic principles of differential and integral Calculus
- To learn the mathematical modelling using ordinary and partial differential equations

**Prerequisites:** Background of the basic science at +2 level

### Course Outline

**UNIT I (12T)**

Linear Algebra and Vector Calculus: Matrices: Matrix Definition, Order of A Matrix, Types of Matrices, Addition Of Matrices, Multiplication Of Matrices, Various Kinds Of Matrices, Transpose Of A Matrix. Linear System of Equations and Solutions Using Gauss Elimination, Linear Independence and Rank, Determinants, Inverse,

Eigen Values

**UNIT II (12T)**

Vectors: Scalar and Quantities. Different Types of Vectors, Addition of Vectors, Properties of Vector Addition, Collinear Vectors, Coplanar Vectors, Cross Product of Two Vectors, Properties of Vector Product, Dot Product.

**UNIT III (12T)**

Differentiation: Derivative At A Point, Derivative Of A Function, Differentiation From First Principle, Differentiation Of Important Functions, Product Rule, Quotient Rule, Differentiation Of A Function Of A Function (Problem Based), Higher Order Derivatives (Definition Only).

**UNIT IV (12T)**

Integration: Integral as Anti-Derivative, Indefinite Integral & Constant OfIntegration, Fundamental Theorems, Elementary Standard Results, Methods Of Integration-integration of the product or the quotient of two functions- Integration by substitution, Some special integrals.

**UNIT V (12T)**

Integration Through Partial Fractions, Integration by Parts. Definite Integral: Evaluation by Substitution, Properties of Definite Integrals (Problem Based)

**References:**

1. *Advanced Engineering Mathematics*, Erwin Kreyszig,Wiley
2. *Higher Engineering Mathematics*, John Bird, ElsevierDirect
3. *Skills in Mathematics: Algebra*, S.K.Goyal
4. *Higher Engineering Mathematics*, B S Grewal, Khanna Publishers
5. *Higher Engineering Mathematics*, Ramana, Tata McGraw Hill
6. *Engineering Mathematics*, P Kandasamy, S. Chand Group

# BIT1C02 – Foundations of Information Technology

**Course Number:** 6

**Contact Hours:** 4T

**Number of Credits:** 3

**Number of Contact Hours:** 60T

**Course Evaluation:** Internal – 15 Marks + External – 60 Marks

**Aim of the Course**: To build the basic foundations of IT.

**Objectives of the Course:**

- To learn the basics of computers and software

**Prerequisites:** Nil

## Course Outline UNIT I (12T)

Introduction- Characteristics of Computers, Evolution of computers,
Capabilities and limitations of computers, Generations of computers, Types of computers (micro, mini, main frame, supercomputers), Block diagram of computer, Basic components of a computer system- Input unit, output unit, Arithmetic logic Unit, Control unit, central processing unit, Instruction set, registers, processor speed, type of processors, Memory- main memory organization, main memory capacity, RAM, ROM, EPROM, PROM, cache memory, PCs specifications.

## UNIT II (12T)

Input devices- Keyboard, Pointing Devices-mouse, Touch Screens, Joystick, Electronic pen, Trackball, Scanning Devices-Optical Scanners, OCR, OMR, Bar Code Readers, MICR, Digitizer, Electronic card reader, Image Capturing Devices-Digital Cameras. Output devices- Monitors- CRT, LCD/TFT, Printers- Dot matrix, Inkjet, Laser, Plotters- Drum, Flatbed, Screen image projector. Secondary Storage Devices- Magnetic Tape, Magnetic Disks-Internal Hard Disk, External Hard Drives, Floppy Disks, Optical Disks- CD, VCD, CD-R, CD- RW, DVD, Solid State Storage-Flash Memory, USB Drives.

## UNIT III (12T)

Computer Languages: analogy with natural languages, machine language: advantages and limitations of machine language, assembly language: assembler, advantage of assembly language over machine language, limitation of assembly language, high level language: compiler, linker, interpreter, advantages and limitations of high-level

languages, object- oriented programming languages, some high-level languages (Fortran, Cobol, BASIC, Pascal), some more high-level languages (C++ and C, Java, RPG LISP, SNOBOL), Characteristics of a Good Programming Language, Selecting a Language for Coding and Application, Subprogram.

## UNIT IV (12T)

Computer Software - Software and its Need, Types of software-System software, Application software, System software: operating system, utility program, programming languages, assemblers, compilers and interpreter, introduction to operation system for PCs-DOS, windows, Linux, file allocation table (FAT & FAT32), files & directory structure and its naming rules, programming languages- machine, assembly, high level,4GL, their merits and demerits, application software and its types
– word-processing, spreadsheet, presentation graphics, Data Base Management Software, Educational Software, Entertainment Software. Characteristics, Uses and examples and area of application of each of them, Open Source Terminologies: Open Source Software, Freeware, Shareware, Proprietary Software, FLOSS, GNU, FSF, OSI, Virus working, feature, types of viruses, virus detection prevention and cure.

## UNIT V (12T)

Advanced Trends in IT. Wireless: Mobile Internet, GPS, 3G, 4G, Wi-Fi, Bluetooth, Social Networking, Cloud Technology, Virtual LAN Technology, Firewall, M-Commerce, Nanotechnology, Virtual Reality, BPO and KPO, Social and Ethical Issue YouTube, Facebook, Linkedin, Orkut

## References:

4. *The Internet Book*, Douglas Comer, PHI
5. *Information Technology Concept*, Madhulika Jain, BPB

# Second Semester

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| II Semester | 7 | XXXXA03 | Common English Course | 20 | 80 | 100 | 4 | 0 | 5 | 4 |
| | 8 | XXXXA04 | Common English Course IV | 20 | 80 | 100 | 4 | 0 | 4 | 4 |
| | 9 | XXXXA08 | Additional Language Course II | 20 | 80 | 100 | 5 | 0 | 5 | 4 |
| | 10 | BIT2B02 | Object Oriented Programming with C++ | 15 | 60 | 75 | 2 | 0 | 2 | 3 |
| | 11 | B1T2B03 | Programming Laboratory I – C++ | 20 | 80 | 100 | 0 | 2 | 2 | 4 |
| | 12 | BIT2C03 | Probability & Statistics | 15 | 60 | 75 | 4 | 0 | 4 | 3 |
| | 13 | BIT2C04 | Electronics & Communication Technology | 15 | 60 | 75 | 3 | 0 | 3 | 3 |
| **Total (7 Courses)** | | | | | | **625** | | | **25** | **25** |

## BIT2B02 – Object Oriented Programming with C++

**Course Number:** 10
**Contact Hours:** 2T
**Number of Credits:** 3
**Number of Contact Hours:** 30T
**Course Evaluation:** Internal – 15 Marks + External – 60 Marks

**Aim of the Course**: To equip the students with principles and concepts of object oriented design.

**Objectives of the Course:**

- To learn the basic concepts and principles of object oriented design
- To[25]study C++language

**Prerequisites:** Basic programming skill

**Course Outline**

**UNIT I (6T+6L)**

Introduction to Object Oriented Programming - Features of Procedure oriented programming - Basic Concepts of Object Oriented Programming - Benefits of OOP - Applications of OOP.

Introduction to C++: Comments - Output operator - Input operator -Cascading of I/O operators. Tokens - keyword, identifiers, constants, strings and operators. Basic data types - User defined data types - Dynamic initialization of variables - Referencevariables - Operators in C++ - Scope resolution operators - applications - Member dereferencing operators - Memory Management operators - new and delete. Control Structures - simple if, if else, nested if, switch, while do, break and continue statements

**UNIT II (6T+6L)**

Functions: Introduction - Function Prototyping - Call by reference - Return by reference - Inline functions - Default arguments - Const arguments

Classes and Objects: Introduction - Limitations of C structures - Defining a class - Class Vs structures - Creating objects - Accessing class members - Defining member functions - Outside the class definition - Inside the class definition - Outside functions as inline - Nesting of member functions - Private member functions - Memory allocation for objects - Array of objects. Friendly functions.

**UNIT III (6T+6L)**

Constructors and Destructors: Basic Concepts of constructors - Default constructor - Parameterized constructor - Multiple constructors in a class - Constructor with default arguments - Dynamic initialization of objects - Copy constructor - Dynamic constructors - Destructors.

Function and Operator overloading: Introduction - Rules for overloading operators - Defining operator overloading - Overloading Unary operators - Prefix and Postfix operators overloading - Overloading Binary operators - Overloading relational operators -

Overloading using friend functions - Overloading subscript operator. Function overloading.

**UNIT IV (6T+6L)**

Inheritance - Introduction - Defining derived classes - Types of inheritances - Single - Making a private member inheritable - Multilevel inheritance - Multiple inheritance - Hierarchical inheritance - Hybrid inheritance - Virtual base classes - Abstract classes -

Constructors in derived classes - Nesting of classes - Containership
Virtual functions and Run time polymorphism - Introduction - Compile time and Runtime polymorphism - Pointers to objects - this pointer - Pointer to derived classes - Virtual functions - Rules for virtual functions - Pure virtual functions

**UNIT V (6T+6L)**

Streams: C++ stream classes - put() and get() functions - getline() and write() functions - Overloading << and >> operators - Formatted Console I/O operations - ios class functions - width(), precision(), fill(), setf() and unsetf() - Formatting flags - Manipulators - User defined manipulators.
Files: Introduction - Stream classes for files - Opening files using constructor - Opening files using open() - File modes - Detecting end of file - eof() - Sequential input and output - put() and get() - Reading and writing objects - read() and write() - Random Access files - Manipulating file pointers - seekg(), seekp(), tellg() and tellp()
- Error handling during file operations - Command line arguments.
Templates: Generic programming, Class templates, Class templates with multiple parameters, Function templates, Overloading of template functions

**References:**


1. *The C++ programming language*, BjarneStroustrup, Addison Wesley
2. *C++ How to Program*, Deitel and Deitel, Pearson Education Asia
3. *Object oriented programming in C++*, Robert LaforeGalgotia
4. *Object Oriented Programming with C++*, E. Balagurusamy, TMH.
5. *Mastering C++*, K R Venugopal, Tata McGraw-Hill Publication.


## BIT2B03– Programming Laboratory I: C++ Lab

**Course Number**: 11
**Contact Hours**: 2L
**Number of Credits**: 4
**Number of Contact Hours**: 30L
**Course Evaluation:** Internal – 20 Marks + External – 80 Marks

**Aim of the Course:** To provide the students with hands on experience on OOP

**Objectives of the Course:** To get implementation skill on OOP

**Prerequisites:** Basic knowledge of OOP

**Course Outline**

Students are expected work in lab with an objective implementing the following tasks:

1. Simple C++ Programs to implement various Control Structures such as if, switch, do while, for, while, etc
2. Programs to understand Structure & Unions
3. Programs to understand Pointer Arithmetic
4. Programs to understand Functions & Recursion
5. Programs to understand Inline Functions
6. Programs to understand different function call mechanism such as Call by reference & Call by Value
7. Programs to understand Storage Specifiers
8. Use of Constructors & Destructors
9. Use of "this" Pointer
10. Programs to implement inheritance and function overriding such asmultiple inheritance and hierarchical inheritance
11. Programs to overload unary & binary operators as member function&non-member function
12. Programs to understand friend function & friend class
13. Programs on Class Templates

## BIT2C03 – Probability & Statistics

**Course Number:** 12

**Contact Hours:** 4T

**Number of Credits:** 3

**Number of Contact Hours:** 60T

**Course Evaluation:** Internal – 15 Marks + External – 60 Marks

**Aim of the Course**: To provide a reasonable grasp of basic statistical methods needed for a statistical investigation and forecasting.

**Objectives of the Course:**

- To present a broad overview of statistics as a subject
- To organize a statistical survey
- To understand the importance of summary measures to describe the characteristics of data set
- To analyze the relationship between two variables To use the various forecasting techniques

**Prerequisites:** Basic Mathematical skill

## Course Outline

### UNIT I (12T)

Statistical inquiries and sampling: Collection of Data, Primary & secondary, questionnaire, definition of statistics, population, census and sampling different sampling techniques, simple random sampling, stratified random sampling, systematic sampling, cluster sampling, sampling and non-sampling error.

### UNIT II (12T)

Characteristics of statistical data: Classification tabulation, diagrams and graphs Frequency distribution one &two dimensional bar diagram, pie diagram, line graph, histogram frequency polygon, curve, ogive.

### UNIT III (12T)

Analysis of data: Range, Q.D, M.D, Mean, Median, Mode, Standard deviation, coefficient of variation.

### UNIT IV (12T)

Probability: Basic concepts in probability, statistical dependence and independence, prior estimates of probabilities, Baye's theorem, random variables, expected value decision making, bionomial distribution, poisons continuous random variable, choosing correct probability distribution.

### UNIT V (12T)

Correlation & Regression: different types of correlation, different methods of studying correlation, correlation coefficient, rank correlation coefficient, two regression lines, estimation of dependent variable – difference between correlation & regression.

### References:


1. *Statistical Method*, S.P. Gupta
2. *An Introduction to Statistical Methods*, C. B. Gupta
3. *Business Statistics*, S.P. Gupta & M.P. Gupta, Sultan Chand & Sons.
4. *Fundamental of Mathematical Statistics*, S.C. Gupta & V.K. Kapoor, Sultan Chand & Sons.

## BIT2C04 – Electronics and Communication Technology

**Course Number**: 13
**Contact Hours**: 3
**Number of Credits**: 3
**Number of Contact Hours**: 60T
**Course Evaluation:** Internal – 15 Marks + External – 60 Marks

**Aim of the Course:** To provide a basic understanding on the fundamentals of Electronics and communication technology.

**Objectives of the Course:**

- To learn the basics of the semiconductor technologies
- To learn the basics of the modulation systems
- To learn the basics of the communication technologies

**Prerequisites:** Basic Mathematical skill

### Course Outline

**UNIT I (12T)**

Concept of Conductor, Semiconductor, Insulator, Semiconductor Diode, Forward bias, Reverse Bias, Application of Diode as Rectifier, Zener diode and its applications, Introduction to Transistor, PNP, NPN Transistors their Characteristics, Transistor biasing. Application of as amplifier and as a Switch

**UNIT II (12T)**

Application of BJT as single stage Amplifier, Frequency response of single stage Amplifier. Multistage Amplifiers: (Basics concepts) RC coupled, cascade, Darlington pair, DC amplifiers. Concept of Feedback: Negative Feedback and its advantage in Amplification, Positive Feedback: Oscillators, RC Phase Shift Oscillator, LCOscillator.

**UNIT III (12T)**

FET,Types of FET, JFET - characteristics, advantages, parameters, applications of MOSFET - types of MOSFET, characteristics, comparison. SCR - working, characteristics, applications, SCR-switching.

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**UNIT IV (12T)**

Need for modulation system, Concept of Modulation. AM: Definition of AM, Modulation index, Power relation in AM, Generation and Demodulation of AM. SSB: Power requirement in comparison with AM, Advantages of SSB over AM, Concept of Balanced Modulator, Generation of SSB, Pilot Carrier System, Independent Side System, Vestigial SidebandTransmission.

## UNIT V (12T)

FM: Definition of FM, Bandwidth, Noise triangle, Per-emphasis and De- emphasis. PM: Definition of PM. Difference between AM and FM. Radio receivers. Pulse Modulation: Sampling Theorem, PAM, PTM, PWM, PPM, pulse code modulation, Quantization noise, companding, PCM system, differential PCM, Delta modulation. Multiplexing: FDM/TDM. Introduction to Digital Communication: PSK, ASK, FSK

## References:

1. Principles of Electronics V.K.Mehtha
2. Electronic Devices and Circuits, Allen Mottershead,PHI
3. Electronics Devices and Circuits, Boylstead and Neshelesky , PHI.
4. An Introduction to Analog and Digital communications, Simon Haykin,John Wiley and Sons.
5. Communication Systems, R.B Carlson, MacGraw Hill
6. Electrical Communication Systems, George Kennedy,TMH
7. Electronics Communication, Roody Collin, PHI
8. Microelectronics, J. Millman and A Grabel, MacGrawHill
9. Digital Communications, Proakis J. J, McGraw Hill.

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# Third Semester

| Semester | Course No | Course Code | Course Title | Marks | | | Contact Hours | | | Credit |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Intern | Extern | Total | Theory | Lab | Total | |
| III Semester | 14 | XXXXA11 | Python Programming | 20 | 80 | 100 | 4 | 0 | 4 | 4 |
| | 15 | XXXXA12 | Sensors and Transducers | 20 | 80 | 100 | 4 | 0 | 4 | 4 |
| | 16 | BIT3B04 | Database Design & RDBMS | 15 | 60 | 75 | 3 | 2 | 5 | 3 |
| | 17 | BIT3B05 | Data Structures Using C++ | 15 | 60 | 75 | 2 | 2 | 4 | 3 |
| | 18 | BIT3C05 | Discrete Mathematics | 15 | 60 | 75 | 4 | 0 | 4 | 3 |
| | 19 | BIT3C06 | Fundamentals of Digital Electronics | 15 | 60 | 75 | 4 | 0 | 4 | 3 |
| | **Total (6 Courses)** | | | | | **500** | | | **25** | **20** |

# XXXXA11– **Python Programming**

Course Number: 14
**Contact Hours per Week: 4T**
**Number of Credits: 4**
**Number ofContact Hours: 64**
**Course Evaluation:** Internal – 20 Marks + External – 80 Marks

## Outcome of the Course:

- Understand various statements, data types and functions in Python
- Develop programs in Python programming language
- Understand the basics of Object oriented programming using Python

## Objectives of the Course:

- To learn basics of Python programming
- To learn decision making, looping and functions in Python
- Understand Object Oriented Programming using Python

## Prerequisites:

- Knowledge of C language.

## Course Outline

**UNIT I [16T]**

Introduction to python, features, IDLE, python interpreter, Writing and executing python scripts, comments, identifiers, keywords, variables, data type, operators, operator precedence and associativity, statements, expressions, user inputs, type function, eval function, print function.

**UNIT II [16T]**

Boolean expressions, Simple if statement, if-elif-else statement, compound boolean expressions, nesting, multi way decisions. Loops: The while statement, range functions, the for statement, nested loops, break and continue statements, infinite loops.

**UNIT III [16T]**

Functions, built-in functions, mathematical functions, date time functions, random numbers, writing user defined functions, composition of functions, parameter and arguments, default parameters, function calls, return statement, using global variables, recursion.

**UNIT IV [16T]**

String and string operations, List- creating list, accessing, updating and deleting elements from a list, basic list operations. Tuple- creating and accessing tuples in python, basic tuple operations. Dictionary, built in methods to access, update and delete dictionary values. Set and basic operations on a set.

**References:**


1. E. Balaguruswamy, Introduction to Computing and Problem Solving Using Python
2. Richard L. Halterman, Learning To Program With Python
3. Martin C. Brown, Python: The Complete Reference.


## A12 - Sensors and Transducers

**(Basic principle, working and applications only expected)**

**Course Number: 15**

**Contact Hours per Week:**

**4T Number of Credits: 4**

**Number of Contact Hours: 64 Hrs.**

**Course Evaluation: Internal – 20 Marks + External – 80 Marks**

### Course Outcome

The students will be able to

- Explain resistance, inductance and capacitance transducers.
- Perceive the concepts of temperature transducers.
- Perceive the concepts level transducers and pressure
- Explain flow transducers, electromagnetic transducers, radiation sensors and sound transducers

### Course Outline

**UNIT I**

Transducers: Definition, Principle of sensing & transduction, Classification, Characteristics of transducers. Resistance Transducer: Basic principle – Potentiometer –Loading effects, Resistance strain gauge–Types. Inductance Transducer: - Basic principle – Linear variable differential transformer –types. Capacitance Transducer: Basic principle- transducers using change in area of plates – distance between plates- variation of dielectric constants –Types

**UNIT** II

Thermal sensors: Resistance change type: RTD - materials, types, working principle, Thermistor - materials, working principle, Thermo emf sensors: Thermocouple – Principle and types, IR Radiation sensors: Principle and types.

**UNIT III**

Pressure Transducers: basic principle- different types of manometers-u tube manometer-well type manometers.

Level transducer-continuous level measurement-discrete level measurement-mass –capacitive level gauges

**UNIT IV**

Flow Transducers: Bernoulli's principle and continuity, Orifice plate, nozzle plate, venture tube, Rotameter, anemometers, electromagnetic flow meter.

Radiation sensors: LDR, Photovoltaic cells, photodiodes, photo emissive celltypes
Sound Transducers: Sound level meter, Microphone.
Hall Effect transducers
.

**Text Books**

1. D Patranabis, Sensors and Transducers, PHI, 2nd Edition.

2. Murthy D.V.S., —Transducers and Instrumentation, 2nd Edition, Prentice Hall of India Private Limited, New Delhi, 2010.

**Reference Books**

1. E. A. Doebelin, Measurement Systems: Application and Design McGraw Hill, New York
2. A.K. Sawhney,- A course in Electrical & Electronic Measurement and Instrumentation, DhanpatRai and Company Private Limited.
3. S.Renganathan, —Transducer Engineering, Allied Publishers, 2005

# BIT3B04 – Database Design & RDBMS

**Course Number**: 16

**Contact Hours**: 3T+2L

**Number of Credits**: 3

**Number of Contact Hours**: 45T+30L

**Course Evaluation:** Internal – 15 Marks + External – 60 Marks

**Aim of the Course:** To equip the students with principles and concepts of relational database design Objectives of the Course.

**Objectives of the Course:**

- To learn the basic principles of database and database design
- To learn the basics of RDBMS
- To learn the concepts of database manipulation SQL
- To study PL/SQL language

**Prerequisites:** Basic knowledge of the functional units computer of computers and their functioning along with basic programming knowledge

**Course Outline**

**UNIT I (9T+6L)**

Introduction: Purpose of database systems, View of data - Data abstraction, Instances and Schemas, Data models, Database languages, Database administrator, Database users, Database architecture. The Entity- Relationship model: Entity sets, Relationship sets, Attributes, Constraints, Mapping Cardinalities, Keys, ER diagrams, Weak entity sets, Strong entity sets.

**UNIT II (9T+6L)**

Relational Database Design: First, Second, Third, BCNF, Fourth and Fifth Normal forms. Transactions: ACID properties, States, Concurrent executions.

**UNIT III (9T+6L)**

Data Definition in SQL: Data types, Creation, Insertion, Viewing, Updation, Deletion of tables, Modifying the structure of the tables, Renaming, Dropping of tables. Data Constraints - I/O constraints, Primary key, foreign key, unique key constraints, ALTER TABLE command.

**UNIT IV (9T+6L)**

Database Manipulation in SQL: Computations done on table data: Select command, Logical operators, Range searching, Pattern matching, Grouping data from tables in SQL, GROUP BY, HAVING clauses, Joins -Joining multiple tables, Joining a table to itself. Views: Creation, Renaming the column of a view, destroys view, Granting and revoking permissions:Granting privileges, Object privileges, Revoking privileges.

**UNIT V (9T+6L)**

Programming with SQL: Data types, Using set and select commands, procedural flow, if, if /else, while, goto, global variables, Security:Locks, typesoflocks,evelsoflocks.Cursors:Workingwithcursors,ErrorHandling,

Developing stored procedures, create, alter and drop, passing and returning data to stored procedures, using stored procedures within queries, building user defined functions, creating and calling a scalar function, implementing triggers, creating triggers, multiple trigger interaction.

**References:**

1. *Database System Concepts*, Abraham Silberschatz, Henry F Korth, S.Sudharshan
2. *PL/SQL: The Programming Language of Oracle SQL*, Ivan Bayross.
3. *SQL Bible*, Alex Krigel and Boris M.Trukhnov, Wiley pubs
4. *Microsoft SQL Server 2000 Bible*, Paul Nielsen, Wiley Dreamtech India Pubs.

## BIT3B05 – Data Structures Using C++

**Course Number**: 17
**Contact Hours**: 2T+2L

**Number of Credits**: 3
**Number of Contact Hours**: 30T+30L

**Course Evaluation:** Internal – 15 Marks + External – 60 Marks

**Aim of the Course:** To train the students with the implementation of various data structures.

**Objectives of the Course:**

- To learn the contiguous and non-contiguous data structures and their implementation
- To learn linear and non-linear data structures and their implementation
- To learn the methods of searching, sorting and hashing techniques

**Prerequisites:** Programming skill in C++ language

**Course Outline**

**UNIT I (6T+6L)**

Algorithms (Analysis and Design): Problem solving - Procedure - Top-Down and Bottom-up approaches to algorithm design - Use of algorithms in problem solving: Developing an algorithm - Characteristics of algorithmic language - Design of algorithms - Implementation of algorithm - Verification of algorithm - Efficiency analysis of algorithms: Space, Time complexity, Frequency count - Simple algorithms. Data Representation: Abstract data type (ADT) - Fundamental and derived data types: Declaration - Representation - Primitive data structures: Symbol table - Recursion.

**UNIT II (6T+6L)**

Arrays: Definition - Terminology - One dimensional array - Memory allocation, Operations, Application - Multidimensional Arrays: Two dimensional Arrays - Sparse matrices - Three dimensional and n-dimensional Arrays - Pointer Arrays.

**UNIT III (6T+6L)**

Stacks: Introduction - Definition - Representation of stacks - Operations on

stacks - Applications of stack. Linked List: Definition - Single Linked List: Representation, Operations - Circular Linked List - Double Linked List: Operations - Circular Double Linked List - Operations Application of Linked Lists: Sparse Matrix Manipulation - Polynomial Representation - Dynamic Storage Management

**UNIT IV (6T+6L)**

Queues: Introduction - Definition - Representation of Queues - using Arrays, Linked list. - Various Queue structures: Circular Queue - De-queue - Priority Queue - Applic3a5tions of Queues. Trees: Concepts - Representation of Binary tree - Operations on Binary Tree - Types of Binary Trees. Graphs: Introduction - Graph terminologies - Representation of Graphs - Operations on Graphs - Application of Graph Structures.

**UNIT V (6T+6L)**

Searching and Sorting: Searching - Sequential and Binary Search - Indexed Search - Hashing Schemes - Hashing functions: Division/ Remainder methods - Mid Square method - Folding method - Hash Collision:linear probing - Chaining - Bucketing - Sorting: Selection sort - Bubble sort - Insertion sort - Quick sort - Merge sort - Radix sort - Shell sort - Heap sort -Comparison of time complexity.

**References:**


1. *Classic Data Structures*, D. Samanta, PHI
2. *Data Structure Made Simple*, Sathish Jain, Shashi Singh, BPB
3. *Fundamentals of Data Structures*, E.Horowiz&S.Sahani, Galgotia
4. *Data Structure Using C and C++*, Aron M Tenenbaum.
5. *An Introduction to Data Structures with Applications*, Tremblay J.P and Sorenson P.G, TMH.
6. *Magnifying Data Structures*, AppritaGopal, PHI Learning
7. *Data Structures &Algorithms*, R.S.Salaria, Khanna Book Publishing
8. *Data Structures using C and C++*, Y.Langsamet. al., PHI


## BIT3C05 – Discrete Mathematics

**Course Number**: 18

**Contact Hours**: 4T

**Number of Credits**: 3

**Number of Contact Hours**: 60T

**Course Evaluation:** Internal – 15 Marks + External – 60 Marks

**Aim of the Course:** To equip the students with basic principles of Discrete Mathematics.

**Objectives of the Course:**

- To learn the mathematical logic & Boolean Algebra
- To learn the basics of Groups & Rings

**Prerequisites:** Background of the basic science at +2 level

- **Course Outline**

**UNIT I (12T)**

36

Mathematical Logic: Propositions and logical operators, Truth tables, equivalence and implementation, Laws of logic, Quantifiers. Set theory: Introduction, concept of set of

theory relation, types of relation, equivalence relation.

**UNIT II (12T)**

Boolean Algebra and its properties, Algebra of propositions & examples, De-Morgan's Laws, Partial order relations, greatest lower bound , least upper bound, Algebra of electric circuits & its applications.

**UNIT III (12T)**

Graph: Simple and multigraph, Incidence and degree, Isomorphism, Sub graphs and Union of graphs, connectedness, Walks, Paths and Circuits, Euler's Formula, Eulerian graph, Hamiltonian graph, Complete, Regular and Bipartite graphs.

**UNIT IV (12T)**

Trees: Properties of trees, pendant vertices. Centre of a tree, rooted and binary trees, spanning trees, spanning tree algorithms, fundamental. circuits; spanning trees of a weighted graph: cutsets and cut-vertices; fundamental cutsets; connectivity and seperativity.

**UNIT V (12T)**

Planar Graphs, Chromatic Graphs,Travelling salesman problem, dual graphs, Kuratowski's two graph, matrix representation of graphs, incidence matrix, directed graphs, digraphs, directed paths and connectedness. Euler digraphs

**References:**


1. *Elements of Discrete Mathematics*, C. L. Liu, TMH Edition
2. *DiscreteMathematicalStructureswithapplicationstoComputerScience*,
3. J.K. Tremblay and R Manohar, McGraw Hill International Edition
4. *Discrete mathematical Structures*, Kolman, Busby, Ross, Pearson Education
5. *Graph theory*, Harry, F., Addison Wesley.
6. *Finite Mathematics*, S. Lipchutz, Schaum Series, MGH.
7. *Graph Theory, Deo. N, PHI*

# BIT3C06 – Fundamentals of Digital Electronics

**Course Number**: 19
**Contact Hours**: 4T
**Number of Credits**: 3
**Number of Contact Hours**: 60T
**Course Evaluation:** Internal – 15 Marks + External – 60 Marks

**Aim of the Course:** To provide a basic understanding on the digital circuitry of a computer.

**Objectives of the Course:**

- To learn number systems and booleanalgebra
- To learn combinational and sequentialcircuits
- To learn A/D and D/A converters **Prerequisites:** Basic Mathematical skill

## Course Outline

### UNIT I (12T)

Number Systems and Codes, Decimal numbers, binary numbers, binary arithmetic, 1's and 2's complements, octal numbers, hexadecimal numbers, interconversions of number systems, Digital codes: Binary coded decimal(BCD), Gray code, Excess-3 code, ASCII code, error detection and error correction codes, Hamming code.

### UNIT II (12T)

Logic Gates Positive and negative logic, NOT gate, OR gate, AND gate, NAND gate, NOR gate, EX-OR and EX-NOR gates, Universal gates. Boolean Algebra: Boolean operations, logic expressions, rules and laws of Boolean algebra, DeMorgan's theorems, minterms, maxterms, SOP and POS form of Boolean expressions for gate network, simplification of Boolean expressions using Boolean algebra and Karnaugh map techniques(up to 4 variables)

### UNIT III (12T)

Arithmetic and Combinational Logic Circuits Half adder, full adder, parallel

binary adder, decoders, BCD to 7-segment decoder, multiplexers and demultiplexers, multiplexer and demultiplexer trees.

### UNIT[3]I[8]V (12T)

Sequential Logic Circuits: SR latch, SR flip flop, JK flip flop, Master Slave JK flip

flop, D type flip flop, T type flip flop. Shift register: serial in - serial out, serial in - parallel out, parallel in - serial out, parallel in-parallel out configurations. Ring counter, Johnson's counter, asynchronous counters, synchronous counters, up/down asynchronous counter,

**UNIT V (12T)**

A/D and D/A converters: D/A conversions – Weighted-Register D/A converter, R-2R ladder D/A converter, A/D conversions-Counter type method using D/A, dual slope integrator method, successive approximation method, simultaneous method.

**References:**


1. *An Introduction to Digital Computer Design*, Rajaraman V. &Radhakrishnan, PHI.
2. *Digital Fundamentals*, Thomas L Floyd, Universal Book Stall
3. *Digital Principles & Applications*, Malvino& Leach, TMH
4. *Modern Digital Electronics*, Jain R.P. , TMH
5. *Digital Computer Electronics*, Malvino, TMH
6. *Digital Computer Fundamentals*, Bartee T.C., THM
7. *Digital Electronics: An Introduction to Theory and Practice*, William H. Gothmann, PHI


# Fourth Semester

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| IV Semester | 2 | XXXXA13 | Data Communication and Optical Fibers | 20 | 80 | 100 | 4 | 0 | 4 | 4 |
| | 2 | XXXXA14 | Microprocessors-Architecture and Programming | 20 | 80 | 100 | 4 | 0 | 4 | 4 |
| | 2 | BIT4B06 | Visual Programming Using VB.NET | 15 | 60 | 75 | 5 | 0 | 5 | 3 |
| | 2 | BIT4B07 | Programming Laboratory II - Data Structure Using C++ & RDBMS | 20 | 80 | 100 | 0 | 4 | 4 | 4 |
| | 2 | BIT4C07 | Numerical Methods & Operation Research | 15 | 60 | 75 | 4 | 0 | 4 | 3 |
| | 2 | BIT4C08 | Computer Organization andArchitecture | 15 | 60 | 75 | 4 | 0 | 4 | 3 |
| | **Total (6 Courses)** | | | | | **525** | | | **25** | **21** |

# XXXXA13– Data Communication and Optical Fibers

**Course Number: 20**
**Contact Hours per Week: 4T**
**Number of Credits: 4**
**Number ofContact Hours: 64**
**Course Evaluation:** Internal – 20 Marks + External – 80 Marks

## Course Outline

**Unit I [16T]:**

Introduction- Components, Networks, Protocols and standards, Basic Concepts: Line Configuration, Topology Transmission mode, analog and digital signals, Encoding and modulating- analog-to-digital conversion, digital to analog conversion, digital data transmission, DTE-DCE interface, modems, cable modems. Transmission media: guided media, unguided media, and transmission impairment.

Unit II [16T]

Multiplexing: Many to one/ one to many, frequency division multiplexing, wave division multiplexing, TDM, multiplexing applications: the telephone system, Cellular System, Mobile Communication-GSM, Mobile Services, GSM system Architecture, Radio Interface in GSM

**Unit III [16T]**

Data link Control: Line Discipline, flow control, error control, Data link Protocols: Asynchronous Protocols, synchronous protocols, character oriented protocols, bit – oriented protocols, link access procedures. Local Area Networks: Ethernet, token bus, token ring, FDDI, Comparison, Switching- circuit switching, packet switching, message switching, integrated services digital networks (ISDN): services, history, subscriber access to ISDN.

**Unit IV [16T] (Derivation not required)**

Overview of Optical Fiber Communication - Introduction, historical development, general system, advantages, disadvantages, and applications of optical fiber communication, optical fiber waveguides, fiber materials, Optical Sources And Detectors- Introduction, LED‟s, LASER diodes, Photo detectors. Ray theory, cylindrical fiber, single mode fiber, cutoff wave length, mode field diameter.

**Text Book:**

1. Behrouz A. Forouzan, Data Communication and Networking, TMH
2. Mobile Communications – Jochen H. Schiller , Second Edition ,Pearson
3. Optical Fiber Communication – Gerd Keiser, 4th Ed., MGH, 2008.

**Reference Books:**

1. William Stallings: Data & Computer Communications, 6/e, Pearson Education.

2. William L. Schweber : Data Communication, McGraw Hill.

3. Electronic Communication Systems - Kennedy and Davis, TMH

4. Optical Fiber Communications– – John M. Senior, Pearson Education. 3rd Impression,2007.

5. Fiber optic communication – Joseph C Palais: 4th Edition, Pearson Education.

## A14 - Microprocessors Architecture and Programming

**Course Number: 21**

**Contact Hours per Week:**

**4T**

**Number of Credits: 4**

**Number of Contact Hours: 64 Hrs.**

**Course Evaluation: Internal – 20 Marks + External – 80 Marks**

### Objective

- To understand internals of Microprocessor,
- To learn architecture of 8085 Microprocessor
- To learn instruction set of 8085 Microprocessor
- To learn how to program a Microprocessor

### Prerequisites

- Basic knowledge of Computer.

### Course Outline

**Unit I [16 T]**

General architecture of computer, Introduction to Microprocessor, Memory classification, Introduction to 8085,Microprocessor bus organizations ,data bus, address bus, control bus. Memory addressing, memory mapping. 8085 architecture in detail. General purpose registers and special purpose registers, flag register -8085 pins and signals.

**Unit II [16 T]**

Assembly language programming basics. Opcode, Mnemonics etc. 8085 instruction set ,Data transfer ,Arithmetic and Logic, Shifting and rotating, Branching/Jump, Program control. Addressing modes. Memory read and write cycle.Timing diagram. Instruction cycle , machine cycle and T-states.Types of I/O addressing. Simple programs.

**Unit III [16 T]**

Types of programming techniques looping, indexing (pointers),delay generation. Stack in 8085, call and return Instructions. Data transfer between stack and microprocessor. Subroutine and delay programs. Interrupts in 8085. Interrupt driven programs. Interfacing - Programmable peripheral devices - 8255A, 8254, 8237.

**Unit IV[16 T]**

Introduction to 8086/88 microprocessors – overview, 8086 internal architecture. The execution unit, BIU, Registers, Flags, Segmentation, physical address calculation, addressing modes.

**Text Books:**

1. Ramesh S. Gaonkar, Microprocessor Architecture Programming and Applicationwith 8085, Prentice Hall
2. Doughles V Hall, Microprocessors and Interfacing: Programming and Hardware, Tata McGraw Hill

**Reference Books:**

1. Microprocessor and Microcomputer - Based system Design - M. Rafiquzzman - CRC press
2. A.P Mathur, Introduction to Microprocessors, Tata McGraw-Hill Education
3. The Intel Microprocessors: 8086/8088, 80186/80188, 80286, 80386, 80486, Pentium, Pentium Pro, Pentium II, III, IV and Core 2 with 64 bit Extensions, Barry B. Brey, Prentice Hall Pearson
4. Microprocessors PC Hardware and Interfacing –N.Mathivanan – PH

## BIT4B06– Visual Programming Using VB.NET

**Course Number**: 22
**Contact Hours**: 5T
**Number of Credits**:
3
**Number of Contact Hours**: 75T
**Course Evaluation:** Internal – 15 Marks + External – 60 Marks

**Aim of the Course**: To provide the students with the basic knowledge in Visual Programming.

**Objectives of the Course:**

- To get a general understanding on .Net Frame Work
- To get a general understanding on

ADO.Net

- **Prerequisites:** Basic knowledge of OOP

## Course Outline

### UNIT I (15T)

Introduction to visual programming - Concept of event driven programming - Introduction to VB.Net environment, The .NET Framework and the Common Language Runtime. Building VB.NET Applications, The Visual Basic

Integrated Development - Basic Language - Console application and windows application, Data types, Declaring Variables, scope of variables, operators and statements.

### UNIT II (15T)

Making Decisions with If . . . Else Statements, Using Select Case, Making Selections with Switch and Choose, Loop statements - Do Loop, for, while - The With Statement - Handling Dates and Times - Converting between DataTypes - Arrays - declaration and manipulation - Strings & string functions - Sub Procedures and Functions.

### UNIT III (15T)

Windows Applications - Forms - Adding Controls to Forms, Handling Events, MsgBox , InputBox , Working with Multiple Forms, Setting the Startup Form, SDI & MDI Forms, Handling Mouse & Keyboard Events, Common controls (Text Boxes,

Rich Text Boxes, Labels, Buttons, Checkboxes, Radio Buttons, Group Boxes, List Boxes, Checked List Boxes, Combo Boxes, Picture Boxes, Scroll Bars, Tool Tips,

Timers properties - methods

**UNIT IV (15T)**

Object-Oriented Programming - Creating and using Classes & objects - Handling Exceptions - On Error GoTo - Raising an Exception - Throwing an Exception - Using Structured Exception Handling - Debugging and tracing.

**UNIT V (15T)**

Data Access with ADO.NET - Accessing Data with the Server Explorer - Accessing Data with Data Adaptors and Datasets - Creating a New Data Connection - Creating and populating Dataset - Displaying Data in a Data Grid - Selecting a Data Provider - Data Access Using Data Adapter Controls - Binding Data to Controls - Handling Databases in Code - Binding to XML data.

**References:**


1. *Visual Basic .NET Black Book*, Steven Holzner
2. *VB.NET for Developers*, Keith Franklin, Rebecca Riordan, SAMS
3. *Sams Teach Yourself Visual Studio .NET 2005 in 21 Days*, Jason Beres
4. *Learning Visual Basic .NET*, Jesse Liberty
5. *Visual Basic .Net programming in Easy Steps*, Tim Anderson, DreamTech Press.
6. *.NET Programming (6-in-1), Black Book*, Kogent Learning Solutions Inc., Wiely-Dream Tech Press.
7. *Visual Studio .Net*, Francisco, Microsoft Publication
8. *.Net Framework Essentials*, O'Reilly


## BIT4B07 – Programming Laboratory II: Data Structure Using C++ and RDBMS

**Course Number**: 23

**Contact Hours**: 4L

**Number of Credits**: 4
**Number of Contact Hours**: 30L
**Course Evaluation:** Internal – 20 Marks + External – 80 Marks

**Aim of the Course-**
To provide the students with hands on experience on OOP and data structures

**Objectives of the Course:**

- To get implementation skill on OOP
- To get used to the implementation of various data structures
    - To get skill in SQL and Databases

**Prerequisites:** Basic knowledge of OOP **Course Outline**

Students are expected work in lab with an objective implementing the following tasks:

**Data Structure using C++**

1. Simple C++ Programs to implement various Control Structures such as if, switch,do while, for, while, etc
2. Programs to understand Structure & Unions
3. Programs to understand Pointer Arithmetic
4. Programs to understand Functions & Recursion
5. Programs to understand Inline Functions
6. Programs to understand different function call mechanism such as Call by reference & Call by Value
7. Programs to understand Storage Specifiers
8. Use of Constructors & Destructors
9. Use of "this" Pointer
10. Programs to implement inheritance and function overriding such asmultiple inheritance and hierarchical inheritance
11. Programs to overload unary & binary operators as member function&non-member function
12. Programs to understand friend function & friend class
13. Programs on Class Templates
14. Operation on dynamic array such as − Creation − Passing to function − Insertion Implementation − Delete Implementation − Search Implementation − Sort Implementation − Separation implementation − Merge Implementation
15. Operation on linked list such as − Creation − Passing to function − Insertion Implementation − Delete Implementation − Search Implementation − Sort Implementation
16. Operationondoublylinkedlistsuchas−Creation−Passingtofunction − Insertion Implementation − Delete Implementation − Search Implementation − Sort Implementation- Seperation implementation – Merge Implementation
17. Implementing basic operation of stack (push, pop) using array implementation

18. Implementing basic operation of stack (push, pop) using linked list implementation
19. Implementing basic operation of Queue (Enqueue, Dequeue) using array implementation
20. Implementing basic operation of Queue (Enqueue, Dequeue) using linked list implementation
21. Implement Binary tree traversal methods: Preorder, In-order, Postordertraversal. Recursive Algorithms for above mentioned Traversal methods
22. Implementing Binary search tree operation (search, addition, deletion).
23. Implementing various searching and sorting techniques

**RDBMS**

1. SQL*Plus/MySQL and SQL: (a). Introduction (b). Logging on to SQL*Plus/MySQL and Leaving SQL*Plus/MySQL (c). Choosing and Describing Tables (d). Elements of the SQL Query (e). EditingSQL Statements (f). The System Dummy Table (g). Selecting Columns (h).Duplicate Information (DISTINCT) (i). Sorting Information
2. SQL Functions: (a). The Concatenation Operator (b). Elements of the SQL Query: Arithmetic (c). Column Aliases (d). String Functions (e). Arithmetic Functions (f). Date Functions (g). Mixed Functions (h). Operator precedence
3. Advanced SQL Functions: (a). Nesting Different Functions (b). Decode Crosstab (c). Decode with ">", "<" & "=" (d). Select with Minus Union and Intersect (e). Handling NULL
4. Filtering Data Using Where: (a). Where Operators (b). Where with Keywords (c). Where and Logical Operators (d). Where and Soundex
5. Retrieving Data from Multiple Tables: (a). Joining Tables (Equi-Joins) (b). Aliases for Table Names (c). Joining Tables (Non-Equi-Joins) (d). Joining Tables (Outer Joins) (e). Joining Tables (Inner Joins) (f). Virtual table
6. Group By and Group By Functions: (a). Group Function Examples (b).Group Function with Having
7. Sub-Queries: (a). Basic Subqueries (b). Multiple Column Subqueries (c). Subqueries with Having (d). Correlated Subqueries
8. Data Definition Language (DDL): (a). Create, Drop Alter Keywords (b). Tables (c). Column (d). Views (e). Synonyms (f). Sequences (g). Object (h). Alter table
9. Integrity Constraints: (a). Types of Constraint (b). Referential Integrity (c). Defining Constraints (d). Integrity Constraints and Data Dictionary (e). Disabled constraints
10. Indexes: (a). Create Index (b). Unique Option (c). When and What to Index (d). Drop Index (e). Validate Index (f). Index Type Overview
11. Data Manipulation Language (DML): (a). Insert (b). Update (c). Delete (d). OPS Commands (Commit, Rollback and Savepoints)

(e). Locking tables

12. Data Control Language (DCL): (a). Data Security (b). Grant and Revoke (c). Session control statements (d). System control statements

## BIT4C07 – Numerical Methods & Operation Research

**Course Number**: 24

**Contact Hours**: 4T

**Number of Credits**: 3

**Number of Contact Hours**: 60T

**Course Evaluation:** Internal – 15 Marks + External – 60 Marks

**Aim of the Course:** To provide the basic understanding on numerical and principles of Operation Research.

**Objectives of the Course:**

- To learn methods for finding solutions to linear and non-linear equations.
- To learn methods for finding solutions to differentials equations.
- To learn methods for finding solutions to linear programming problems.

**Prerequisites:** Mathematics at +2 Level

### Course Outline

**UNIT I (12T)**

Errors in Computing: Introduction, Significant digits inherent. Roots of Non- Linear Equations: Introduction, iterative methods, Bisection, False position, Newton – Raphson's, Secant.

**UNIT II (12T)**

Solution of Linear Equations: Gauss Elimination, Gauss-Jordan method, Jacobi iteration method, Gauss-Seidal methods, Interpolation: Linear interpolation, Newtons forward backward & divided difference interpolation methods – lagrangian's method.

**UNIT III (12T)**



Numerical differentiation: differentiation formula in the case of equally spaced points, numerical integration, Trapezodial and Simpsons rules, compounded rules. Numerical

solution of ordinary differential equations: single step methods, Taylor series methods, Eulers method, modified Eulers method, Picards iteration method, Runge- Kutta methods.

**UNIT IV (12T)**

Linear programming Problem: Mathematical formulation, graphical method of solution, Simplex method. Duality – Dual simplex.

**UNIT V (12T)**

Transportation problem: General transportation problem, Duality in transportation, LP formulation, Solution of TP, Test for optimality. Assignment problem: Mathematical formulation, Assignment method, Special cases, Typical AP.

**References:**


1. *Applied Numerical Analysis*, Curtis F. Gerald, Patrick O. Whieatley, Pearson Education Asia.
2. *Operations Research*, KantiSwarup, P.K Gupta, Man Mohan, Sultan Chand & Sons
3. *Operations Research: An Introduction*, Taha, H.A., MacMillan Publishing Co.
4. *Introduction to Numerical Analysis*, Froberg, C.E. Addison Wesly
5. *Introduction to Operations Research*, Hillier, F.S. and Lieberman, G.J. McGraw Hill.
6. *Computer Oriented Numerical Methods*, V.Rajaraman, PHI


## BIT4C08 -- Computer Organization and Architecture

**Course Number**: 25

**Contact Hours**: 4T

**Number of Credits**: 3

**Number of Contact Hours**: 60T

**Course Evaluation:** Internal – 15 Marks + External – 60 Marks

**Aim of the Course:** To learn basics of Computer Organization and Architecture.

**Objectives of the Course:**

- To learn logic gates, combinational circuits and sequential circuits
-

**Prerequisites:** • Basic knowledge in Boolean algebra

Course Outline

**UNIT I (12T)**

Digital Logic - Positive and negative logic, logic gates ,NOT gate, OR gate, AND gate, XOR and X-NOR gates, Universal gates- NAND gate, NOR gate,. Combinational circuits- Half adder, half subtractor, full adder, full subtractor, ripple carry adders, look-ahead carry adders, decoders, BCD to 7-segment decoder, encoders, multiplexers and demultiplexers.

**UNIT II (12T)**

Sequential Logic Circuits: Edge triggering, Pulse triggering ,SR latch, SR flip flop, JK flip flop, Master Slave JK flip flop, D flip flop, T flip flop. Shift register: serial in - serial out, serial in - parallel out, parallel in - serial out, parallel in-parallel out configurations. counters (asynchronous & synchronous), up/down counter, decade counter, mod N counter, Ring counter, Johnson's counter.

**UNIT III (12T)**

Basic Computer Organization and Design: Instruction Codes , Computer Registers, Computer Instructions, Instruction types, Timing and Control, Instruction Cycle, Memory reference Instructions, Register reference instructions, Input, Output and Interrupt Design of Basic Computer, Design of Accumulator logic.

**UNIT IV (12T)**

Micro programmed Control: Control Memory, Address sequencing, Micro program Example, Design of control unit. Processor Organization: general register organization, stack organization, instruction formats, addressing modes, data transfer and manipulation, program control

**UNIT V (12T)**

Memory Organization: Memory mapping, Associative memory, Cache memory, Virtual Memory, Memory Management Hardware, hit/miss ratio, Input-Output Organization: Peripheral devices, I/O interface, Modes of Transfer-asynchronous and synchronous, Priority Interrupt, Strobe Control, Handshaking. Direct Memory Access, Input-Output Processor, Serial Communication. I/O Controllers

**References:**


1. Thomas L Floyd, Digital Fundamentals, Universal Book Stall (Unit I and II)
2. M. Morris Mano, *Computer System Architecture*PHI (Unit III – V)
3. Rajaraman V & Radhakrishnan, An Introduction to Digital Computer Design, PHI.
4. William Stallings, *Computer Organization and Architecture*, PHI.
5. Malvino & Leach, Digital Principles & Applications, TMH
6. Jain R.P. , Modern Digital Electronics, TMH
7. Malvino, Digital Computer Electronics, TMH
8. Bartee T.C., Digital Computer Fundamentals, THM
9. William H. Gothmann, Digital Electronics: An Introduction to Theory and Practice, PHI

# Fifth Semester

| Semester | Course No | Course Code | Course Title | Marks | | | Contact Hours | | | Credit |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Intern | Extern | Total | Theory | Lab | Total | |
| V Semester | 26 | BIT5B08 | Computer Networks | 15 | 60 | 75 | 4 | 0 | 4 | 3 |
| | 27 | BIT5B09 | Software Engineering | 15 | 60 | 75 | 4 | 0 | 4 | 3 |
| | 28 | BIT5B10 | Java Programming | 15 | 60 | 75 | 2 | 4 | 6 | 3 |
| | 29 | BIT5B11 | Computer Graphics | 15 | 60 | 75 | 4 | 1 | 5 | 3 |
| | 30 | BIT5B12 | Management Information Systems | 15 | 60 | 75 | 3 | 1 | 4 | 3 |
| | 31 | XXX5DXX | Open Course (Other Streams) | 15 | 60 | 75 | 2 | 0 | 2 | 3 |
| | **Total (6 Courses)** | | | | | **450** | | | **25** | **18** |

## BIT5B08 – Computer Networks

**Course Number**: 26
**Contact Hours**: 4T
**Number of Credits**: 3
**Number of Contact Hours**: 60T
**Course Evaluation:** Internal – 15 Marks + External – 60 Marks

**Aim of the Course**: To provide the students with the basic knowledge in Networking.

**Objectives of the Course:**

- To get a general introduction to Computer Networks

- To get a general understanding on different OSI layers

**Prerequisites:** Basic knowledge in Communication Systems

## Course Outline

### UNIT I (12T)

Introduction to Computer networks, Topology, categories of networks, Internetwork, Internet, Network Models, Layered model, OSI and TCP/IP models, Physical layer, Switching - Circuit switching, Packet Switching and Message Switching, DTE - DCE Interface, EIA - 232 interface, X.21 modems.

### UNIT II (12T)

Data link layer, Error detection and correction, Types of errors, Single biterror and Burst error, Vertical redundancy check (VRC), longitudinal redundancy Check (LRC), Cyclic Redundancy Check (CRC), Errorcorrection
- Single bit error correction, Hamming code Data compression - Huffman code, data link control, Line discipline, Flow control, Error control, Multiple Access, Random Access, ALOHA, pure ALOHA and slotted ALOHA, CSMA/CD and SCMA/CA, Polling, Wired LANs, Ethernet - IEEE standards, Wireless LANs - IEEE - 802.11, Bluetoot

### UNIT III (12T)

Network layer, Networking and Internetworking devices - Repeaters, Bridges, Routers, Gateways, Logical addressing - IPv4 & IPv6 addresses, Network Address Translation(NAT), Internet protocols, internetworking, Datagram, Transition from IPv4 to IPv6, Address Mapping-Error reporting and multicasting - Delivery, Forwarding and Routing algorithms, Distance Vector Routing, Link State Routing, Multicast routing protocols, The Dijkstra Algorithm.

### UNIT IV (12T)

Transport layer, Process-to-process Delivery: UDP, TCP and SCTP, Congestion control and Quality of Service, Application Layer, Domain Name Systems-Remote Login-Email-FTP, WWW, HTTP; Network management: SNMP, Network security, Cryptography

### UNIT V (12T)

Network Administration, IP address - Configuring network host - setting hostname-



assigningIPaddress,configuring theNetwork Interface card,

Setup a LAN with more than two systems, Setting up Internet services FileTransfer Protocol (FTP), Trivial File Transfer Protocol (TFTP), Simple Mail Transfer Protocol (SMTP) and Post Office Protocol (POP), Setting up Intranet Services, Network File System(NFS), Network Information Service (NIS) and Dynamic Host Configuration Protocol (DHCP), Samba printing and Web server.

**References:**


1. *Introduction to Data Communications & Networking*, Behurouz &Forozan,TM
2. *Computer Networks*, Andrew S. Tanenbaum, PHI
3. *Data and Computer Communications*, William Stallings, VIIth Edition, Pearson Education
4. *Cryptography and Network Security*, Principles and Practices-WilliamStallings, Prentice Hall of India.


## BIT5B09 – Software Engineering

**Course Number**: 27

**Contact Hours**: 4T

**Number of Credits**: 3

**Number of Contact Hours**: 60T

**Course Evaluation:** Internal – 15 Marks + External – 60 Marks

**Aim of the Course**: To provide the students with the basic software development principles and skills.

**Objectives of the Course:**

- To learn engineering practices in Software development
- To learn various software development methodologies and practices
- To learn and study various evaluation methods in Software Development

**Prerequisites:** Basic programming knowledge

### Course Outline

**UNIT I (12T)**

Introduction, Software Engineering Discipline, Evolution and Impact, Programs Vs Software Products, Emergence of Software Engineering, Changes in Software Development Practices, Computer Systems Engineering. Software Life Cycle Models: Use of a Life Cycle Models, Classical Waterfall Model, Iterative Waterfall Model,

Prototyping Model, Evolutionary Model, Spiral Model. Software Project Management: Responsibilities of a Software Project Manager, Project Planning, Metrics for Project Size Estimation, Project Estimation Techniques, COCOMO, A Heuristic Estimation Technique, Staff Level Estimation, Scheduling, Organization and Team Structures, Staffing, Risk Management, Software Configuration Management.

**UNIT II (12T)**

Requirements Analysis and Specification: Requirements Gathering and Analysis, Software Requirements Specification (SRS), Formal System Development Techniques. Software Design: Characteristics of a Good

Software Design, Cohesion and Coupling, Neat Arrangement, Software Design Approaches, Object-Oriented Vs Function, Oriented Design.

**UNIT III (12T)**

Function-Oriented Software Design: Overview of SA/SD Methodology, Structured Analysis, Data Flow Diagrams(DFDs), Structured Design, Detailed Design, Design Overview. Object Modelling Using UML: Overview of Object- Oriented Concepts, UML, UML Diagrams, Use Case Model, Class Diagrams, Interaction Diagrams, Activity Diagrams, State Chart Diagram. Object- Oriented Software Development: Design Patterns, Generalized OOAD Process.

**UNIT IV (12T)**

User Interface Design: Characteristics of a User Interface, Basic Concepts, Types of User Interfaces, Component-Based GUI Development, User Interface Design Methodology. Coding and Testing: Coding, Code Review, Testing, UNIT Testing, Black-Box Testing, White-Box Testing, Debugging, Program Analysis Tools, Integration Testing, System Testing

**UNIT V (12T)**

Software Reliability and Quality Management: Software Reliability, Statistical Testing, Software Quality, Software Quality Management System, ISO 9000,SEI Capability Maturity Model. Computer Aided Software Engineering: CASE Environment, CASE support in Software Life Cycle, Characteristics of CASETools, Second Generation CASE Tool, Architecture of a CASE Environment. Software Maintenance: Characteristics of Software Maintenance, Software Reverse Engineering ,Software Maintenance,Models,Estimation of Maintenance Cost Software Reuse: Introduction, Issues in any Reuse Program, Reuse Approach, Reuse at Organization Level.

**References:**

1. *Fundamentals of Software Engineering*, Rajib Mall, Prentice Hall of India Private Limited
2. *An Integrated Approach to Software Engineering*, PankajJalote, NarosaPub.
3. *Software Engineering - A Practical Approach*, Roger S. Pressman McGraw Hill-International Ed.
4. *Software Engineering*, Ivan Somervelli.

## BIT5B10 – Java Programming

**Course Number**: 28

**Contact Hours**: 2T+4L

**Number of Credits**: 3

**Number of Contact Hours**: 30T+60L

**Course Evaluation:** Internal – 15 Marks + External – 60 Marks

**Aim of the Course**: To provide the students with the basic programming skill in Java.

**Objectives of the Course:**

- To have a review on concept of OOP.
- To learn Java Programming Environments.
- To practice programming in Java.
- To learn GUI Application development in JAVA.

**Prerequisites:** Basic knowledge in OOP

### Course Outline

**UNIT I (6T+12L)**

Principles & Concepts of Object Orientation - Basic Principles of Object Orientation (Abstraction, Encapsulation, Modularity, Hierarchy, Typing, Concurrency, Persistence), Basic Concepts of Object Orientation (Object, Class, Attribute, Operation, State, Behaviour, Identity, Relationships/Association, Polymorphism, Message Passing), Introduction to Java: History, Versioning, The Java Virtual Machine, Writing a Java Program, Packages, Simple Java Programs. Language Components: Primitive Data Types, Comments, The for Statement, The if Statement, The while and do… while Statements,the switch statement,the break statements , The continue Statement, Operators - Casts and Conversions, Keywords.

**UNIT II (6T+12L)**

Object-Oriented Programming: Defining New Data Types, Constructors, The String Class, String Literals, Documentation, Packages, The StringBuffer Class, Naming Conventions, The Date Class, The import Statement, Deprecation, The String Tokenizer Class. Methods: Introduction - Method

Signatures, Arguments and Parameters, Passing Objects to Methods, Method Overloading, Static Methods, The Math Class, The System Class, Wrapper Classes Arrays: Processing Arrays, Copying Arrays, Passing Arrays to Methods, Arrays of Objects, The Arrays Class, Command Line Arguments, Multidimensional Arrays. Encapsulation: Constructors, The this Reference, Data Hiding, public and private Members, Access Levels, Static Data Members Inheritance & Polymorphism: Inheritance, extends keyword, Polymorphism, The Object Class, Method Overloading & Overriding. Abstract Classes and Interfaces: Abstract Classes, Abstract Class Example, Extending an Abstract Class, Interfaces.

**UNIT III (6T+12L)**

Exceptions, I/O and Threads Input and Output in Java: The File Class, Standard Streams, Keyboard Input, File I/O Using Byte Streams, Character Streams, File I/O Using Character Streams - Buffered Streams, File I/O Using a Buffered Stream, Keyboard Input Using a Buffered Stream, Writing Text Files. Threads: Threads vs. Processes, Creating Threads by Extending Thread, Creating Threads by Implementing Runnable, Advantages of Using Threads, Daemon Threads, Thread States, Thread Problems, Synchronization. Exceptions: Exception Handling, The Exception Hierarchy, Triggering Exceptions with throws, Suppressing Exceptions with throw, Developing user defined Exception Classes-The finally Block.

**UNIT IV (6T+12L)**

Collections & Database Connectivity Collections: Vectors, Hash tables, Enumerations, Properties, Collection, Framework Hierarchy, Lists, Sets, Maps, The Collections Class. Networking: Networking Fundamentals, The Client/Server Model, Internet Address, URLs, Sockets, Writing Servers, Client/Server Example. Introduction to JDBC: The JDBC Connectivity Model, Database Programming, Connecting to the Database, Creating a SQL Query, Executing SQL Queries, Getting the Results, Updating Database Data, Executing SQL Update/Delete, Error Checking and the SQL Exception Class, The Statement Interface, The ResultSet Interface, ResultSetMetaData, Transaction Management.

**UNIT V (6T+12L)**

Applets, Events and GUI Applications: Introduction to GUI Applications -

Applets - Types of Applet, Applet Skeleton, Update Method, Html Applet tag and passing parameter to applet. Event Handling: The Delegation Event Model, Event Classes, Event Listener Interfaces, Adapter Classes, Inner Classes. Java Desktop Applications, Introduction to the AWT, Overview ofthe AWT, Structure of the AWT, The AWT hierarchy, Working with:Color, Button, Canvas, Checkbox, Choice, Frame, Label, List, Scroll bar, TextArea, TextField, Font, FontMetrics, Graphics, Image, Menu Component, MenuBar, MenuItem, Checkbox MenuItem, Menu, Point, Polygon, Rectangle, Layout Manager, Menu Component, Containers, Components, Event handling, Simple Graphics Drawing Lines, Rectangles,etc.

**References:**


1. *Java Complete Reference*, Herbert Schildt, Tata McGraw hill edition.
2. *J2EE Complete Reference*, Jim Keogh, Tata McGraw hill edition.
3. *Java Enterprise in a Nutshell*, David Flanagan, Jim Farley, William Crawford &Kris Mangnusson, OReill.
4. *Programming With Java - A Primer*, E Balagruswami, Tata McGrawHill,2008


## BIT5B11 – Computer Graphics

**Course Number**: 29

**Contact Hours**: 4T+1L

**Number of Credits**: 3

**Number of Contact Hours**: 60T+12L

**Course Evaluation:** Internal – 15 Marks + External – 60 Marks

**Aim of the Course**: To provide the students with the basic knowledge of Computer Graphics.

**Objectives of the Course:**

- To understand the basic knowledge of graphics devices
- The awareness of 2D
- To get the basic concepts graphics algorithms
- To learn the concepts of 3D

**Prerequisites: knowledge of** +2 level Mathematics

## Course Outline

### UNIT I (12T+3L)

Overview of Computer Graphics: Historical background of Computer Graphics; Applications of Computer Graphics; Popular Graphics Software; Display devices: Pixel, Resolution, Aspect Ratio; Raster-Scan Systems and Display : CRT, Refresh Rate and Interlacing; Bit Planes, Colour Depth and Colour Palette, Frame Buffer, Video Controller, Raster-Scan Display Processor, Lookup Table, RGB Colour Model, Colour CRT monitors; Random-Scan Displays; Flat Panel Display: LCD, Plasma Panel; Graphics Monitors and Workstations; Popular Graphics Input Devices; Hard- Copy Devices

### UNIT II (12T+3L)

Coordinate Representations; Graphics Primitives: Line Drawing Algorithms- DDA Algorithm, Bresenham's Algorithm; Different Line Styles; Circle- Generating Algorithms - Properties of Circles, Circle Drawing using Polar

Coordinates, Bresenham's Circle Drawing Algorithm; Ellipse Generating Algorithms; Anti-aliasing;

### UNIT III (12T+3L)

Geometric Transformations: Scaling, Translation, Rotation; Matrix Representations and Homogeneous Coordinates; Rotation Relative to an Arbitrary Point; Reflection; Shearing; Coordinate Transformation; Inverse Transformation; Affine Transformation; Raster Transformation; Composite Transformations; Fixed-point Scaling; Input Techniques: Pointing, Positioning, Rubber-band method, Dragging;

### UNIT IV (12T+3L)

Two-Dimensional Viewing: Window-to-Viewport
Coordinate Transformation; Zooming; Panning; Clipping: Point Clipping, Line Clipping- Cohen-Sutherland line clipping, Mid-point Subdivision Line Clipping; Polygon Clipping – Sutherland-Hodgeman Polygon Clipping; Text Clipping;

**UNIT V (12T+3L)**Graphics in Three Dimensions: Displays in Three Dimensions, 3-D Transformations; 3-D Viewing: Viewing Parameters, Projections, Parallel and Perspective projection; **Hidden Surfaces-Z-Buffer Method Painter's Algorithm**

### References:

1. *Computer Graphics*, Donald Hearn, M. Pauline Baker, PHI.
2. *Computer Graphics*, Apurva A. Desai, PHI
3. *Theory and Problems of Computer Graphics* (Shaums Series), PlastockR. and XiangZ
4. *Principles of Interactive Computer Graphics*, Newmann&Sproull, McGraw Hill
5. *Computer Graphics Principles & Practice*, Foley etc. Addison Wesley
6. *Procedural Elements of Computer Graphics*, Rogers, McGraw Hill
7. *Introduction to Computer Graphics and Multimedia*, AnirbanMukhopadhyay, Arup Chattopadhyay, Vikas
8. *Computer Graphics*, Zhigang Xiang, Roy Plastock, TMH
9. *Fundamentals of Computer Graphics and Multimedia*, D.P.Mukherjee, PHI

## BIT5B12 -- Management Information Systems

**Course Number**: 30

**Contact Hours**: 3T+1L

**Number of Credits**: 3

**Number of Contact Hours**: 45T+12L

**Course Evaluation:** Internal – 15 Marks + External – 60 Marks

**Aim of the Course**: To provide the students with the basic knowledge in Management Information Systems

**Objectives of the Course:**

- To get a general introduction to Information Systems
- To get a general understanding on the conceptual foundations
- To get a general understanding on organizational & management concepts
- To get a general understanding on developing &implementing application systems

**Prerequisites**: Basic knowledge in Information Systems

### Course Outline

**UNIT I (12T+3L)Introduction to information Systems: Definition of a management information system, MIS as an evolving concept, MIS & other academic disciplines, Subsystems of an MIS, Operating elements of an information system, Management information system**

support for decision making, MIS structure based on management activity, MIS structure based on organizational function, synthesis of MIS system structure, some issues of MIS

**UNIT II (12T+3L)**

Conceptual Foundations: Phases in decision Making Process, Concepts ofdecision Making, Behavioural models of the decision Maker, Behavioural Model of organizational decision making, decision making under psychological stress, Methods for decision among alternatives, relevance of

decision making concepts for information system design, Definition of information, quality of information in decision making, value of information other than in decision, General model of the human as an information processor, The Newwell-Simon model, tentative limits on human information processing, Concepts of human cognition & learning, Characteristics of human information processingperformance.

**UNIT III (12T+3L)**

System Concepts: Definition of a System, General model of a system, Types of systems, Subsystems, System concepts & Organizations, System concepts applied to MIS, Concepts of organizational Planning, Planning Process and Characteristics of control process.

**UNIT IV (12T+3L)**

Organizational structure & management concepts: The basic model of Organizational Structure, Modifications of basic organizational structure, Information processing model of organization structure, Organizational culture & power, Organizational change, Mana-gement theories, organizations as sociotechnical systems, implicat-ions of organizational structure & management theory of MIS.

**UNIT V (12T+3L)**

Developing & implementing application systems: A Contingency approach to choosing an application development strategy, Prototyping approach to application system development, Life cycle approach to application system development, Life cycle definition stage, Life cycle installation &operation stage, Implementation of IS as an organizational change process, Quality in IS, Organizational functions for control & quality assurance, Quality assurance for applications, Quality assurance with user developed systems, Post audit evaluation of IS Applications, Evaluation of existing Hardware & Software ,Evaluation of Proposed Hardware & Software,Auditing of IS.

**Reference:**

1. *Management Information Systems Conceptual Foundations, Structure And Development*, Gordon B Davis, Margrethe H Olson, Tata McGraw Hill

## Sixth Semester

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| VI Semester | 32 | BIT6B13 | Android Programming | 15 | 60 | 75 | 4 | 0 | 4 | 2 |
| | 33 | BIT6B14 | Web Programming | 15 | 60 | 75 | 4 | 0 | 4 | 3 |
| | 34 | BIT6B15 | Operating Systems | 15 | 60 | 75 | 5 | 0 | 5 | 2 |
| | 35 | BIT6B16 | Programming Laboratory- III: Java & Web Programming | 20 | 80 | 100 | 0 | 6 | 6 | 4 |
| | 36 | BIT6B17 | Industrial Visit & Project Work (Industrial Visit- 1 Credit, Project Work- 2 Credit) | 15 | 60 | 75 | 0 | 2 | 2 | 3 |
| | 37 | BIT6B18X | Elective | 15 | 60 | 75 | 4 | 0 | 4 | 3 |
| | **Total (6 Courses)** | | | | | **475** | | | **25** | **17** |

### BIT6B13 – Android Programming

**Course Number**: 32

**Contact Hours**: 3T+1L

**Number of Credits**: 2

**Number of Contact Hours**: 45T+15L

**Course Evaluation:** Internal – 15 Marks + External – 60 Marks

**Aim of the Course:** To familiarize the students with the basic concepts of Android Programming.

**Objectives of the Course:**

- To have a review on concept of Android programming.
- To learn Android Programming Environments.
- To practice programming in Android.
- To learn GUI Application development in Android platform with XML

**Prerequisites:** Knowledge in OOP & Java Programming

**Course Outline**

**UNIT I (9T+3L)**

Introducing the android computing platform, History of android, android software stack, Developing end user application using android SDK, android java packages, Setting up the development environment, Installing android development tools (ADT), Fundamental components, Android virtual devices, Running on real device, Structure of android application, Application life cycle.

**UNIT II (9T+3L)**

Understanding android resources - String resources, Layout resources, Resource reference syntax, Defining own resource IDs -Enumerating key android resources, string arrays, plurals, Color resources, dimension resources, image resources, Understanding content providers - android built in providers, exploring databases on emulator, architecture of content providers, structure of android content URIs, reading data using URIs, using android cursor, working with where clause, inserting updates and deletes, implementing content, Understanding intents - basics of intents, available intents, exploring intent composition, Rules for Resolving Intents to Their Components, ACTION PICK, GET CONTENT, pending intents

**UNIT III (9T+3L)**

User interfaces development in android - building UI completely in code, UI using XML, UI in XML with code, Android's common controls - Text controls, button controls, checkbox control, radio button controls, image view, date and time controls, map view control, understanding adapters, adapter views, list view, grid view, spinner control, gallery control, styles and themes, Understanding layout managers - linear layout manager, table layout manager, relative layout manager, frame layout manager, grid layout manager.

**UNIT IV (9T+3L)**

Android menus - creating menus, working with menu groups,respond- ing to menu items, icon menu, sub menu, context menu, dynamic menus, loading menu through XML, popup menus, Fragments in an- droid - structure of fragment, fragment life cycle, fragment transaction and back stack, fragment manager, saving fragment state, persistence of fragments, communications with fragments, startActivity() and set-TargetFragment(), using dialogs in android, dialog fragments, working with toast

**UNIT V (9T+3L)**

Persisting data-Files,saving state and preferences-saving application data,creating, saving and retrieving shared preferences, Working with file system, SQLLite – SQLLite types, database manipulation using SQLLite, SQL and database centric data

model for android, android database classes.

**References:**

1. *Pro Android 4*, SatyaKomatineni& Dave MacLean, Apress.
2. *Professional Android 4 Application Development*, Retomeier, Wrox.
3. *Programming Android*, ZigurdMednieks, Laird Dornin, G. Blake Meike, andMasumi Nakamura, O'Reilly.

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## BIT6B14 – Web Programming

**Course Number**: 33

**Contact Hours**: 4T

**Number of Credits**: 3

**Number of Contact Hours**: 60T

**Course Evaluation:** Internal – 15 Marks + External – 60 Marks

**Aim of the Course**: To provide the students with the basic skill in Web programming.

**Objectives of the Course:**

- To learn client side and server side scripting.
- To learn PHP Programming.
- To learn how to develop dynamic websites.
- To learn how to interact with databases through internet.

**Prerequisites**: Basic programming knowledge

### Course Outline

**UNIT I (12T)**

www, W3C, Web Browser, Web server, Web hosting, Web Pages, DNS, URL, Introduction e-documents - Static, Active & Dynamic. Web programming - client- side scripting and server-side scripting. HTML: Introduction to HTML, Basic formatting tags: heading, paragraph, underline break, bold, italic, underline, superscript, subscript, font and image. Different attributes like align, color, bgcolor, font face, border, size. Navigation Linksusing anchor tag: internal, external, mail and image links. Lists: ordered, unordered and definition, Table tag, HTML Form controls: form, text, password, textarea, button, checkbox, radio button, select box, hidden controls, Frameset and frames CSS: Introduction to Cascading Style Sheet (CSS), CSS Syntax, Comments, Id and Class, Background - Background Color,

Background Image - Text - Text Color, Text Alignment, Text Decoration, Text Transformation, Text Indentation - CSS Font - Font Families, Font Style, Font Size - Setting Text Size - Using Pixels and Em- CSS Lists - Different List Item Markers, Unordered List, Ordered List, An ImageasTheListItemMarker-CSSTables-TableBorders,Collapse

Borders, Table Width and Height, Table Text Alignment, Table Padding, Table Color CSS Positioning - Static Positioning, Fixed Positioning, Relative Positioning, Absolute Positioning, Overlapping Elements - Float - Horizontal Align - Image Gallery - Image Opacity/Transparency - Image Sprites

**UNIT II (12T)**

Javascript: Introduction, Client side programming, script tag, comments, variables, Document Methods: write and writeln methods, alert, Operators: Arithmetic, Assignment, Relational, Logical, Javascript Functions, Conditional Statements, Loops, break and continue. Events Familiarization: onLoad, onClick, onBlur, onSubmit, onChange

**UNIT III (12T)**

PHP: Introduction to PHP, Server side scripting, Role of Web Server software, including files, comments, variables and scope, echo and print, Operators: Logical, Comparison and Conditional operators, Branching statements, Loops, break and continue, PHP functions.

**UNIT IV (12T)**

Working with PHP: Passing information between pages, HTTP GET and POST method, String functions: strlen, strops, strstr, strcmp, substr, str_replace, string case, Array constructs: array(),list() and foreach(), PHP advanced functions: Header, Session,Cookie, Object-Oriented Programming using PHP: class, object, constructor, destructor and inheritance.

**UNIT V (12T)**

PHP & MySQL: Features of MySQL, data types, Introduction to SQLcommands - SELECT, DELETE, UPDATE, INSERT, PHP functions for MySQL operations: mysqLconnect, mysql_select_db, mysqLquery, mysql_fetch_row, mysql_fetch_array, mysql_fetch_object, mysqLresult, Insertion and Deletion of data using PHP, Displaying data from MYSQL in webpage. Introduction to AJAX, Implementation of AJAX in PHP, Simple examples like partial page update, Concept of master page, applying templates.

**References:**


1. *Web Programming with HTML, XHTML, CSS*, Jon Duckett, Wrox.
2. *PHP & MySQL Bible*, Jim Converse & Joyce Park, Wiley.
3. *Internet & World Wide Web How To Program*, Deitel, Harvey M. and Paul J.
4. *HTML 4.0 in Simple Steps*, Kogent Solutions, Wiley
5. *HTML 4 for Dummies*, Ed Tittel& Mary Burmeis- Ter, Wiley
6. *Beginning PHP*, D W Mercer, A Kent, S D Nowicki, Wrox
7. *PHP & MYSQL for Dummies*, Janet Valad, Wi


## BIT6B15 – Operating System

**Course Number**: 34

**Contact Hours**: 5T

**Number of Credits**: 2
**Number of Contact Hours**: 75T
**Course Evaluation:** Internal – 15 Marks + External – 60 Marks

**Aim of the Course**: To provide the students with the basic concepts of Operating Systems.

**Objectives of the Course:**

- To learn objectives & functions of Operating Systems.
- To understand processes and its life cycle.
- To learn and understand various Memory and Scheduling Algorithms.
- To have an overall idea about the latest developments in Operating Systems.

**Prerequisites**: Basic knowledge in data structures

### Course Outline

**UNIT I (15T)**

What is an OS, Functions, Structure, Types: Batch, Multiprogramming, Timesharing, Real time, Multiprocessor system, Distributed system, OS as Resource manager, Booting process, POST.

UNIT II (15T)



Processor Management: Functions, Process, Process states, State transition, PCB, Events related to process, Process scheduling, Scheduling objectives, Scheduling levels, Pre-emptive and non- pre-emptive scheduling algorithms, Concurrent

processes, Process synchronization, Mutual exclusion and critical section, Solution to mutual exclusion problem: Software, Hardware & Semaphore Solutions, Classical problems of mutual exclusion, Deadlock: Handling deadlock, Prevention, Avoidance, Detection and Recovery.

**UNIT III (15T)**

Memory Management: Functions, Contiguous: State and Dynamic, Non- contiguous: Segmentation and Paging, Virtual memory, Demand paging,

Page replacement policies, Working set principle.

**UNIT IV (15T)**

File Management: Information management: File system, Functions, File directory, File system structure, File system design: Symbolic, Basic, Logical and Physical file system layers, File organization, File allocation, Free space management, File protection and security.

**UNIT V (15T)**

Device Management: Disk scheduling, Disk scheduling policies, Device management: Functions, Techniques for device management: Dedicated, Shared, Virtual, Spooling, Channels and Control unit.

**References:**


1. *An Introduction to Operating System*, Dietel, Addison Wesly
2. *Operating System*, Madnick S.E., Donovan J.J., McGraw Hill
3. *William Stallings*, Operating System, PHI
4. *System Programming and Operating Systems*, D.M.Dhamdhare, TataMcGrawHill, 1996
5. *Modern Operating Systems*, Tanenbaum A.S., Prentice Hall Additional References:
6. *Operating System Concepts*, Silberschatz, Galvin & Gagne, John Wiley &Sons
7. *Operating Systems*, Madnick E., Donovan J., Tata McGraw Hill,2001
8. *Operating Systems - A design Oriented Approach*, Charles Crowley, TataMcGraw Hill


## BIT6B16 -- Programming Laboratory III - Java & Web Programming

Course Number :35

**Contact Hours**: 6L

**Number of Credits**: 4
**Number of Contact Hours**: 90T
**Course Evaluation:** Internal – 20 Marks + External – 80 Marks

**Aim of the Course**: To provide hands on experience in Java and PHP programming.

**Objectives of the Course:**

- To provide hands on experience in Java programming.
- To provide hands on experience in PHP programming.

**Prerequisites**: Basic programming knowledge in Java and PHP

## Course Outline

### Programming with JAVA: Lab Exercises

1. Programs to demonstrate the usage of all primitive data types and operators of Java
2. Programs to demonstrate the usage of control statements in Java
3. Programs to demonstrate the usage of arrays in Java
4. Programs to demonstrate the usage of command line arguments
5. Programs to demonstrate the usage of constructors
6. Programs to demonstrate the usage of call by value and call by reference
7. Programs to demonstrate the usage of 'this' operator. Also use the 'this' keywordas return statement.
8. Programs to demonstrate the usage of to static variables, methods and blocks.
9. Programs to demonstrate the reuse class.
10. Programs to demonstrate the usage of method overriding concepts.
11. Programs to demonstrate the usage of 'super' keyword.
12. Programs to demonstrate the usage of abstract class.
13. Programs to demonstrate the usage of interface
14. Programs to demonstrate the usage of multiple inheritance
15. Programs to demonstrate the usage of recursion
16. Programs to demonstrate the usage of package
17. Programs to demonstrate the usage of automatic type conversions apply to overriding.
18. Programs to demonstrate the usage of try and catch block.
19. Programs to demonstrate the usage of multiple catch statements
20. Programs to demonstrate the sub class exception precedence over base class

21. Programs to demonstrate the usage of try/catch with finally clause
22. Programs to demonstrate the usage of throws clause
23. Program for creation of user defined exception
24. Program to create a text file and check whether that file is exists.
25. Program to rename the given file, after renaming the file deletethe renamedfile. (Accept the file name using command line arguments.)
26. Program to create a directory and check whether the directory is created
27. Program to open one application using process class
28. Program using modifiers
29. Program to illustrate creation of threads using runnable class.
30. Program to get the reference to the current thread by calling currentThread() method.
31. Program to create two threads. In this class use one constructor to start the thread and run it. Check whether these two threads are run are not.
32. Create a multithreaded program by creating a subclass of Thread andthen creating, initializing, and staring two Thread objects from your class. The threads will execute concurrently and display Java is hot, aromatic, and invigorating to the console window.
33. An applet program to display the "Hello World " in the browser.
34. An Applet program that automatically display the text with Font Style, Font type
35. AnAppletprogramthatautomaticallydisplaythetextwithFontStyle,

    Font type Using getParameter Method.
36. Program that displays the menu bar and when You click the options it has to display a dialog box stating which option has been clicked.
37. Program that has menu bar and also a quit option and if the user clicks the quite option the applet should quit.
38. Program to create a dialogbox and menu
39. Program to create a grid layout control
40. Program to create a border layout control
41. Program to create a padding layout control
42. Program to give the example for button control
43. Program to give the example for panel control.
44. Program that will display check boxes and option buttons they are numbered from1 to. Usea textbox to display the number those corresponding boxes or button checked.
45. Program to create a simple calculator

46. Program as above with combo box and list boxes instead
47. Program that displays the x and y position of the cursor movement using Mouse
48. Program to create a canvas
49. Program that displays the x and y position of the cursor movement using Keyboard
50. Program to create a text box control
51. Program to create an analog clock.
52. Program to create a Applet life cycle

## Web Programming: Lab Exercises

53. Program to demonstrate different formats of text in XHTML
54. Program to demonstrate Anchor Tag in XHTML
55. Program to demonstrate Tables in XHTML
56. Program to demonstrate Cell Spacing and Cell Padding in a XHTML Table
57. Program to demonstrate different forms of Lists- Ordered, Unordered, Nested and description lists
58. Program to demonstrate Simple Frame using XHTML
59. Program to demonstrate Mixed Frames( combining Horizontal & Vertical frames)
60. Demonstration of Navigation through various frames
61. Program to demonstrate Form Fields
62. Program to demonstrate Character Entities
63. Program to demonstrate Internal Style Sheet
64. Program to demonstrate External CSS
65. Program to demonstrate Inline CSS
66. Program to demonstrate Border Colors using CSS
67. Program to demonstrate Text Alignments using CSS
68. HTML program to give different colours for different heading tags.
69. Using CSS invert the behaviour of the <h1> to <h6> tags.
70. Create a sample code to illustrate the procedure of creating user defined classes in CSS.
71. Demonstration of Simple Java Script program to display Date
72. Program to demonstrate Alert, Confirm and Prompt Message Boxes
73. **Program to handle various events using Java Script**
74. Program to handle Form Validation using Java Script

75. Create a java script program to accept the first, middle, last names of userandprint them.
76. Write a java script program to add two number
77. Write a java script program to find the factorial of given number.
78. Write a java Script program to print all prime numbers.
79. Write a java script program to sort the array (Bubble Sort).
80. Write a java script program to "Wish a user" at different hours of a day.
81. Prompt a user for the cost price and selling price of an article and output the profit and loss percentage.
82. Create a web page of customer profile for data entry of customer's in a Hotel. The profile should include Name, Address, Age, gender, Room Type (A/C, Non-A/C or Deluxe), Type of payment (Cash, Credit/Debit Card or Coupons).
83. Create an Online Bio-Data Form for the Current Employees in the organization.
84. Design the simple Calculator.
85. HTML program using FRAMESET Tag to first divide the web page into two columns, and right column bottom row having the main page with text . The left host column with some other images.
86. HTML program using Java script to analyse examination result of a class of 10 students.If no. of students passed in that class in greater than no. of students failed then display thetext 'Good Result'.
87. HTML program using Java script to demonstrate (a) Alert Box
(b) Prompt dialogue
88. HTML program using Java script to perform comparison between twonumbers entered by user, using relational operators.
89. HTML program using Java script to calculate the product of 3 integers.
90. PHP programs involving various control structures like: if, else, elseif/else if, while, do-while, for, foreach, switch, break, continue,etc
91. PHP programs involving the following: declare, return, require, include, require-once, include_once and goto.
92. Programs to demonstrate PHP Array functions such as PHP Array Sorting, PHPKey Sorting, PHP Value Sorting, PHP

MultiArray Sorting, PHP Array Random Sorting, PHP Array Reverse Sorting, Array to String Conversion, Implode() function, String to Array, Array Count, Remove Duplicate Values, Array Search, Array Replace, Array Replace Recursive, Array Sub String Search



93. PHP programs to demonstrate the following (a) use of regular expression to compare two strings, (b) Extract domain name from URL and (c) Find the number of rows

from a mysql database for your query.

94. PHP program to generate a Guestbook which will allow your website visitor to enter some simple data about your website.
95. PHP program for Email Registration
96. PHP program for making application form and performing degree admission on-line.

## BIT6B17 -- Industrial Visit & Project Work

**Course Number**: 36

**Contact Hours**: 2L

**Number of Credits**: 3
**Number of Contact Hours**: 30L
**Course Evaluation:** Internal – 15 Marks + External – 60 Marks
(Project Work -50 Marks + Industrial Visit-10 Marks)
**Aim of the Course**: To provide practical knowledge on software development.

**Objectives of the Course:**

- To provide practical knowledge on software development process

**Prerequisites**: Basic programming and system development knowledge

### Course Outline

The objective of the B.Sc. IT final project work is to develop a quality software solution by following the software engineering principles and practices. During the developmentof the project the students should involve in all the stages of the software developmentlife cycle (SDLC). The main objective of this project course is to provide learners a platform to demonstrate their practical and theoretical skills gained during five semesters of study in B.Sc. IT Programme. During project development students are expected to define a project problem, do requirements analysis, systems design, software development, apply testing strategies and do documentation with an overall emphasis on the development of a robust, efficient and reliable software systems. The project development process has to be consistent and should follow standard. For example database tables designed in the system should match with the E-R Diagram. SRS documents to be created as per IEEE standards.

Students are encouraged to work on a project preferably on a live software project sponsored by industry or any research organization. Topics selected should be complex and large enough to justify as a B.Sc IT final semester project. The courses studied by the students during the B.Sc IT Programme provide them the comprehensive background knowledge on diverse subject areas in Computer Science such as computer programming, data structure, DBMS, Computer Organization, Software Engineering, Computer Networks, etc., which will be helping students in doing project work. Students can also undertake group project to promote the concept of working in groups.

For internal evaluation, the progress of the student shall be systematically assessed through two or three stages of evaluation at periodic intervals.

A bonafied project report shall be submitted in hard bound complete in all aspects.

## Industrial Visit:

**Contact Hours per Week:** NIL
**Number of Credits:** 1
**Number of Contact Hours**: NIL
**Course Evaluation:** External – 10 Marks

**Guide Lines:**

- Minimum one day visit to National research Institutes, Laboratories, places of scientific Importance or Software Companies.

**OR**

- One week Industrial Training / internship at any software firms/ Research Labs
- The Industrial visit should be done in fifth or sixth semester.
- A 10 – 20 page Industrial visit / Training report have to be submitted with certificate from industry / institute, sufficient photos and analysis along with Project for evaluation in the sixth semester.

# Open Courses

## BCS5D01 - Introduction to Computers & OfficeAutomation

**Course Number**: 31

**Contact Hours**: 2T

**Number of Credits**: 3
**Number of Contact Hours**: 30T
**Course Evaluation:** Internal – 15 Marks + External – 60 Marks

**Aim of the Course**: To provide the students with the basic knowledge on Computers and office automation.

**Objectives of the Course:**

- To get a general introduction to office automation packages
- To get a general introduction to Internet **Prerequisites:** Basic knowledge

Computers and Internet **Course Outline**

### UNIT I (7T)

Introduction to Computers: Types of Computers - DeskTop, Laptop, Notebook and Netbook. Hardware: CPU, Input / Output Devices, Storage Devices – System - Software - Operating Systems, Programming Languages, Application Software - Networks - LAN, WAN - Client - Server.

### UNIT II (7T)

Documentation Using a Word Processor (OpenOffice Writer / M.S. Word)- Introduction to Office Automation, Creating & Editing Document, Formatting Document, Auto-text, Autocorrect, Spelling and Grammar Tool, Document Dictionary, Page Formatting, Bookmark, Advance Features - MailMerge, Macros, Tables, File Management, Printing, Styles, linking and embedding object,Template

### UNIT III (8T)

Electronic Spread Sheet(OpenOfficeCalc/MS-Excel) - Introduction to Spread Sheet, Creating & Editing Worksheet, Formatting and Essential Operations, Formulas and Functions, Charts, Advanced features - Pivot table & Pivot Chart, Linking and Consolidation.

**UNIT IV (8T)**

Presentation using (OpenOffice Impress/MS-Power Point): Presentations, Creating, Manipulating & Enhancing Slides, Organizational Charts, Charts, Word Art, Layering art Objects, Animations and Sounds, Inserting Animated Pictures or Accessing through Object, Inserting Recorded Sound Effect or In- Built Sound Effect.

**References:**

1. *Absolute Beginner's Guide to Computer Basics*, Michael Miller, Prentice Hall.
2. *Learn Microsoft Office*, Russell A.Stultz - BPB Publication.
3. *Internet & World Wide Web - How to program*, H.M.Deitel, P.J. Deitel, et al., Prentice Hall.

## BCS5D02 - Introduction to Web Designing

**Course Number**: 31

**Contact Hours**: 2T

**Number of Credits**: 3
**Number of Contact Hours**: 30T

**Course Evaluation:** Internal – 15 Marks + External – 60 Marks

**Aim of the Course**: To provide the students with the basic skills on Web designing.

**Objectives of the Course:**

- To get a general introduction to Internet
  - To achieve basic Web designing skills **Prerequisites**: Basic knowledge

Computers and Internet **Course Outline**

**UNIT I (7T)**

**HTML Introduction –History of HTML,sgml-structure of Html document**
web page layout, html tags and types - font type, paragraph formatting, meta data, blockquote, hyperlinks, linking, comments, white space, horizontal ruler,images, ordered and unordered lists,frames,tables ,forms

**UNIT II (7T)**

DHTML: Introduction, DHTML technologies, elements of DHTML, document object model, events - window events, form events, keyboard events, mouse events, style sheets, properties used in style sheets - background properties, positioning properties.

**UNIT III (8T)**

Javascript: Introduction and advantages of javascript, java script syntax, writing javascript in html, javascript operators, arrays and expressions, programming constructs - for .. in loop, while loop - dialog boxes andprompts
- alert, prompt, confirm methods - functions - built-in functions and user definedfunctions,scopeofvariables,handlingevents,usingeventhandlers

and event methods, form object, properties, methods, form element's properties and methods.

**UNIT IV (8T)**

HTML Editor (Frontpage/Bluefish): Introduction, advantages, creating, opening, saving a web page, building forms, formatting and aligning text and paragraph, adding lists, styles and themes, linking pages, working with images, frames

**References:**

1. *Internet and World Wide Web*, H.M.Dietel, Pearson.

## BCS5D03 - Introduction to Problem Solving and C Programming

**Course Number**: 31

**Contact Hours**: 2T

**Number of Credits**: 3

**Number of Contact Hours**: 30T

**Course Evaluation:** Internal – 15 Marks + External – 60 Marks

**Aim of the Course**: To provide the students with the basic programming skills.

**Objectives of the Course:**

- To introduce fundamental principles of Problem Solving aspects.
- To learn the concept of programming.

- To learn C language. **Prerequisites:** None **Course Outline**

**UNIT I (7T)**

Introduction: The problem solving aspect, Top-down design, Implementation of algorithms, Program verification, efficiency of algorithms. Introduction to C Programming, overview and importance of C, C Program Structure and Simple programs, Creation and Compilation of C Programs under Linux and Windows Platforms.

**UNIT II (7T)**

Elements of C Language and Program constructs. Character Set, C Tokens, Keywords and Identifier, Constants, Variables, Data types, Variable declaration and assignment of values, Symbolic constant definition. C- Operators, Arithmetic operators, relational operators, and logical operators, assignment operators, increment and decrement operators, conditional operators, special operators, arithmetic expressions, evaluation of expressions, precedence of arithmetic operators, Type conversion in expressions, operator precedence and associativity, Mathematical Functions, I/O operations.

**UNIT III (8T)**

Decision making, Branching and Looping. Decision making with If statement, Simple If statement, If...else statement, Nesting of If...else and else...if Ladder, Switch statement, Conditional operator, Go-to statement. Looping: While loop, Do-While, and For Loops, Nesting of loops, jumps in loop, skipping of loops.

**UNIT IV (8T)**

Array & Strings - One dimensional array, two dimensional array and multi- dimensional array, strings and string manipulation functions. Structures &Union structure definition, giving values to members, structure initialization, comparison of structure variables, arrays of structures, arrayswithin structures, structures within arrays, structures and functions, Unions, bit- fields.

**References:**


1. *Programming in ANSI C*, E. Balaguruswami.
2. *The C Programming Language*, Brian W. Kernighan & Dennis M. Ritchie.
3. *Let us C*, Yashvant P. Kanetkar.
4. *Programming with C, ByranGotfried, Schaums Outline series.*


## Elective Courses

## BIT6B18a -- E-Commerce

**Course Number**: 37

**Contact Hours**: 4T

**Number of Credits**: 3
**Number of Contact Hours**: 60T
**Course Evaluation:** Internal – 15 Marks + External – 60 Marks

**Aim of the Course**: To provide the students with the basic knowledge in E-Commerce

**Objectives of the Course:**

- To get a general introduction Electronic Commerce framework To get a general understanding on various electronic payment system
- To get a general understanding on Internal information systems To geta general understanding on the new age of Information

**Prerequisites:** Basic knowledge of Commerce

### Course Outline

**UNIT I (12T)**

History of E-commerce and Indian Business Context : E-Commerce, Emergence of the Internet, Emergence of the WWW, Advantages of E- Commerce, Transition to E-Commerce in India, The Internet and India, E- transition Challenges for Indian Corporates. Business Models for E-commerce: Business Model, E-business Models Based on the Relationship of Transaction Parties - E-business Models Based on the Relationship of Transaction Types.

**UNIT II (12T)**

Enabling Technologies of the World Wide Web: World Wide Web, Internet Client-Server Applications, Networks and Internets, Software Agents, Internet Standards and Specifications, ISP, e- Marketing: Traditional Marketing, Identifying Web Presence Goals, Online Marketing, E-

advertising, E-branding.

**UNIT III (12T)**

e-SecurityInformation system Security,Security on the internet E-Business Risk Management Issues, Information Security Environment in India. Legal and Ethical Issues: Cyberstalking, Privacy is at Risk in the Internet Age, Phishing, Application

Fraud, Skimming, Copyright, Internet Gambling, Threats to Children.

**UNIT IV (12T)**

ayment Systems: Main Concerns in Internet Banking, Digital Payment Requirements, Digital Token-based e-payment Systems, Classification of New Payment Systems, Properties of Electronic Cash, ChequePayment Systems on the Internet, Risk and e-Payment Systems, Designing e- payment Systems, Digital Signature, Online Financial Services in India, Online Stock Trading.

**UNIT V (12T)**

Information systems for Mobile Commerce: What is Mobile Commerce?, Wireless Applications, Cellular Network, Wireless Spectrum, Technologies for Mobile Commerce, Wireless Technologies, Different Generations in Wireless Communication, Security Issues Pertaining to Cellular Technology. Portals for E- Business: Portals, Human Resource Management, Various HRIS Modules

**References:**

1. *E-Commerce - An Indian Perspective*, P.T.Joseph, S.J., PHI
2. *E-Commerce Strategy, Technologies and Applications*, David Whiteley, Tata Mc-Graw-Hill
3. *Frontiers of Electronic Commerce*, Ravi Kalakota, Andrew B. Whinston, Pearson Education Asia
4. *E – Commerce*, Jeffery F. Rayport, Bernard J. Jaworski, TMCH
5. *E-Commerce - A Managerial Perspective*, P.T. Joseph, PHI

## BIT6B18b - Multimedia Systems

**Course Number**: 37

**Contact Hours**: 4T

**Number of Credits**: 3
**Number of Contact Hours**: 60T
**Course Evaluation:** Internal – 15 Marks + External – 60 Marks

**Aim of the Course**: To provide the students with an introductory knowledge on Multimedia technology and devices.



**Objectives of the Course:**

To get a general introduction to Multimedia techniques and tools

**Prerequisites:** Basic knowledge of +2 level Mathematics

## Course Outline

### UNIT I (12T)

Multimedia Definition, Use of Multimedia, Delivering Multimedia, Text: About Fonts and Faces, Using Text in Multimedia, Computers and Text, Font Editing and Design Tools, Hypermedia and Hypertext.

### UNIT II (12T)

Images: Plan Approach, Organize Tools, Configure Computer Workspace, Making Still Images, Colour, Image File Formats. Sound: The Power of Sound, Digital Audio, Midi Audio, Midi vs. Digital Audio, Multimedia System Sounds, Audio File Formats –Vaughan's Law ofMultimedia Minimums, Adding Sound to Multimedia Project.

### UNIT III (12T)

Animation: The Power of Motion, Principles of Animation, Animation byComputer, Making Animations that Work. Video: Using Video, Working with Video and Displays, Digital Video Containers, Obtaining Video Clips, Shooting and Editing Video

### UNIT IV (12T)

Making Multimedia: The Stage of Multimedia Project, The Intangible Needs, The Hardware Needs, The Software Needs, An Authoring Systems' Needs. Multimedia Production Team

### UNIT V (12T)

Planning and Costing: The Process of Making Multimedia, Scheduling, Estimating, RFPs and Bid Proposals. Designing and Producing, Content and Talent: Acquiring Content, Ownership of Content Created for Project, Acquiring Talent

### References:

1. *Multimedia: Making It Work*, TayVaughan
2. *Multimedia Computing, Communication & Applications*, RalfSteinmetz &KlaraNahrstedt, Pearson Education

## BIT6B18c - Software Testing & Quality Assurance

**Course Number**: 37

**Contact Hours**: 4T

**Number of Credits**: 3

**Number of Contact Hours**: 60T

**Course Evaluation:** Internal – 15 Marks + External – 60 Marks

**Aim of the Course**: To provide the students with an introductory knowledge on software testing and quality assurance techniques.

**Objectives of the Course:**

To get a general introduction and basic skills on software testing andquality assurance techniques and tools

**Prerequisites:** Basic knowledge of Software Engineering

## Course Outline

### UNIT I (12T)

Phases of Software project - Quality Assurance, Quality control - Testing, Verification and Validation - Process Model to represent DifferentPhases - Life Cycle models. White-Box Testing: Static Testing - Structural Testing Challenges in White-Box Testing.

### UNIT II (12T)

Black-Box Testing: What is Black, Box Testing?, Why Black, Box Testing?, When to do Black, Box Testing?, How to do Black, Box Testing?, Challenges in White Box Testing, Integration Testing: Integration Testing as Type of Testing, Integration Testing as a phase of Testing, Scenario Testing, Defect Bash.

### UNIT III (12T)

System and Acceptance Testing: system Testing Overview, Why System testing is done? Functional versus Non, functional Testing, Functional testing, Non, functional Testing, Acceptance Testing, Summary of Testing Phases.

### UNIT IV (12T)

Performance Testing: Factors governing Performance Testing, Methodology of Performance Testing, tools for Performance Testing, Process for Performance Testing, Challenges. Regression Testing: What is Regression Testing?, Types of Regression Testing, When to do Regression Testing, How to do Regression Testing, Best Practices in Regression Testing.

### UNIT V (12T)

Test Planning, Management, Execution and Reporting: Test Planning, Test Management, Test Process, Test Reporting, Best Practices. Test Metrics and

Measurements: Project Metrics, Progress Metrics, Productivity Metrics, Release Metrics.

**References:**

1. *Software Testing Principles and Practices*,SrinivasanDesikan&Gopalswamy, Ramesh, Pearson Education.
2. *Effective Methods of Software Testing*, William E. Perry, Wiley
2. *Software Testing*, RenuRajani and Pradeep Oak, TMH
3. *Software Testing Tools*, K. V. K. K. Prasad, Dreamtech Press
4. *Introducing Software Testing*, LauiseTamres, Pearson Education

# UNIVERSITY OF CALICUT

THENHIPALAM, CALICUT UNIVERSITY P.O.

## DEGREE OF

## BACHELOR OF SCIENCE

IN

## INFORMATION TECHNOLOGY (B.SC IT)
## (CHOICE BASED CREDIT AND SEMESTER SYSTEM)

UNDER THE

## FACULTY OF SCIENCE

# MODEL QUESTION PAPERS

(FOR THE STUDENTS ADMITTED FROM THE ACADEMIC YEAR 2019-20 ONWARDS)

## BOARD OF STUDIES IN COMPUTER SCIENCE (UG)

**THENHIPALAM, CALICUT UNIVERSITY P.O KERALA, 673 635, INDIA**

**August, 2020**

# FIRST SEMESTER

| Semester | Course No | ourse Code | Course Title | Marks | | | ontact Hours | | | Credit |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Intern | Extern | Total | Theory | Lab | Total | |
| I Semester | 1 | XXXXA01 | Common English Course I | 15 | 60 | 75 | 4 | 0 | 4 | 3 |
| | 2 | XXXXA02 | Common English Course II | 15 | 60 | 75 | 4 | 0 | 4 | 3 |
| | 3 | XXXXA03 | Additional Language Course I | 20 | 80 | 100 | 5 | 0 | 5 | 4 |
| | 4 | BIT1B01 | Problem Solving Using C | 15 | 60 | 75 | 2 | 2 | 4 | 3 |
| | 5 | BIT1C01 | Mathematical Foundations of IT | 15 | 60 | 75 | 4 | 0 | 4 | 3 |
| | 6 | BIT1C02 | Foundations of Information Technology | 15 | 60 | 75 | 4 | 0 | 4 | 3 |
| | **Total (6 Courses)** | | | | | **475** | | | **25** | **19** |

(MODEL QUESTION PAPER)

**First Semester B.Sc Degree Examination**

Information Technology

**BIT 1B 01 Problem Solving Using C**

(2019 Admissions)

**Time: 2 Hours** **Maximum:60 marks**

**Section A - Short Answer Type Questions**
**(Each correct answer carries a maximum of 2 marks, Ceiling 20 Marks)**

1. Differentiate between local and global variables in C.
2. Explain the structure of if…else statement.
3. What is a Pointer variable? How is it declared and initialized in C?
4. Distinguish between ++b and b++ Operators in c.
5. What do you mean by top down design?
6. Explain the differences between break and continue statements in C.
7. What is Recursion? Give an example.
8. Explain Conditional Operator with a suitable example.
9. Differentiate between call by value and call by reference.
10. How can we declare and initialize String variables in C?
11. Differentiate between Structure and Union.
12. What are Pre-Processor Directives?

**Section B – Ceiling-30 Marks**
**Each question carries 5 marks**

13. Explain the structure of C Program.
14. What are the different looping constructs in c with examples.
15. Write a C Program to check whether a number is Armstrong or not.
16. Give a detailed Account on different Storage Classes in C.
17. Explain the structure and purpose of any four String Handling functions in C

18. Write a C Program to find the factorial of a number using Recursion.

19. Explain the different Dynamic Allocation functions in C.

**Section C -10 Marks**
**Answer any one question**

20. What are Operators? Explain various operators available in C with suitable examples.
21. What is a file? How can we open a file? Write a Program to create a Data File containing N numbers and then read the above file and separate all the Even numbers to “EVEN.Dat” and all Odd numbers to “ODD.Dat".

(MODEL QUESTION PAPER)

**First Semester B.Sc Degree Examination**

Information Technology

**BIT 1C 01 Mathematical Foundation of Information Technology**

(2019 Admissions)

Time: 2 Hours Maximum:60 marks

## Section A - Ceiling-**20** Marks

Each question carries **2** marks

1. If A= $\begin{bmatrix} 2 & 3 & 4 \\ -1 & 0 & 2 \end{bmatrix}$ and B=$\begin{bmatrix} 1 & 2 & 5 \\ 0 & 1 & -3 \end{bmatrix}$ find A+B and A-B
2. Find the values of a,b,c ,d if the matrices A= $\begin{bmatrix} 2 & 3 \\ -1 & 4 \end{bmatrix}$ and B= $\begin{bmatrix} a & b \\ c & d \end{bmatrix}$ satisfy the condition A+B=0
3. Show that the matrix $\begin{bmatrix} 2 & 1 & 2 \\ 3 & 0 & 3 \\ 4 & 2 & 4 \end{bmatrix}$ is singular matrix
4. Find the dot product of the vectors 2a+b and a-2b if a=i+3j-2k and b=4i-2j+4k
5. Find the unit vector perpendicular to both of the vectors a=i+j+k and b =i+3j-k
6. Differentiate $5x^3-7x^2+3x$ with respect to x
7. Differentiate $5x^9 \tan x$ with respect to x
8. Find the second derivative of log(log x) with respect to x
9. Integrate $(x-1)(2x^2-1)$ with respect to x
10. Integrate $x^5\cos(x^6)$ with respect to x
11. Differentiate 7x+ 3 using first principle
12. Find $\int_0^2 4x^2+x\,dx$

## Section B – Ceiling-**30** Marks

Each question carries **5** marks

13. If A=$\begin{bmatrix} 1 & 2 \\ 3 & 4 \\ 5 & 6 \end{bmatrix}$ and B= $\begin{bmatrix} 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$ Find the product AB and BA ,Show that AB≠ BA

14. Compute inverse of The Matrix $\begin{bmatrix} 1 & 0 & 2 \\ 2 & 1 & 0 \\ 3 & 2 & 1 \end{bmatrix}$

15. Find (a x b) . c if a = 2i-3j+k , b = i-j+2k and c= 2i+j-k

16. If a=2i-3j-k and b = i-7j Find the value of (a+b) x(a-b)

17. Find the derivative of $\frac{x}{sin\,3x}$ with respect to x

18. Using Gauss Elimination method solve the equations

x+y+z =6
x-y+z = 2
2x-y+3z = 9

19. $\int \frac{x-5}{10x+11}\,dx$

## Section C -**10** Marks

Answer any **one** question

20. a ) Find The eigen values of the matrix $\begin{bmatrix} 1 & -1 & 0 \\ 2 & 3 & 2 \\ 1 & 1 & 2 \end{bmatrix}$

b) Show that $\begin{bmatrix} 2 & 3 & -2 \\ -1 & 0 & 8 \\ 4 & 0 & 3 \end{bmatrix}$ Can be expressed as sum of symmetric and skewsymmetric matrix

21 a) $\int \frac{1}{(x+1)(x+2)}\,dx$

b) $\int_0^{\pi T2} (sin\,x + 2\,cos\,x)^2\,dx$

c) Differentiate $\frac{x}{1+tan\,x}$ with respect to x

(MODEL QUESTION PAPER)

**First Semester B.Sc Degree Examination**

Information Technology

**BIT 1C 02 Foundations of Information Technology**

(2019 Admissions)

Time: 2 Hours Maximum:60 marks

## Section A - Ceiling-**20** Marks

Each question carries **2** marks

1. What is ALU?
2. What are solid state storage devices?
3. What is a linker?
4. What is MICR?
5. What is Bluetooth?
6. What do you mean by Firewall?
7. What is EEPROM?
8. Explain Spread sheet? Give its use?
9. What is assembly language?
10. What is BPO?
11. Write a note on Linux Operating System?
12. Differentiate between compiler & interpreter?

## Section B – Ceiling-**30** Marks

Each question carries **5** marks

13. What is Computer? Explain its characteristics & limitation.
14. Explain the different types of Printers?
15. What is GPS. Explain advantages of GPS.
16. Explain the types of processors?.
17. Write a note on memory hierarchy architecture with speed & size.
18. Explain the features of Object Oriented Programming Language.

19. Explain salient features of 4GL.

## Section C -**10** Marks

Answer any **one** question

20. Give detailed account on generations of computers.
21. Write note on a)Cloud computing b) Nano Technology c) FLOSS d) Virus

# Second Semester

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **II Semester** | 7 | XXXXA03 | Common English Course | 20 | 80 | 100 | 4 | 0 | 5 | 4 |
| | 8 | XXXXA04 | Common English Course IV | 20 | 80 | 100 | 4 | 0 | 4 | 4 |
| | 9 | XXXXA08 | Additional Language Course II | 20 | 80 | 100 | 5 | 0 | 5 | 4 |
| | 10 | BIT2B02 | Object Oriented Programming with C++ | 15 | 60 | 75 | 2 | 0 | 2 | 3 |
| | 11 | B1T2B03 | Programming Laboratory I – C++ | 20 | 80 | 100 | 0 | 2 | 2 | 4 |
| | 12 | BIT2C03 | Probability & Statistics | 15 | 60 | 75 | 4 | 0 | 4 | 3 |
| | 13 | BIT2C04 | Electronics & Communication Technology | 15 | 60 | 75 | 3 | 0 | 3 | 3 |
| **Total (7 Courses)** | | | | | | **625** | | | **25** | **25** |

(MODEL QUESTION PAPER)

# SECOND SEMESTER (CBCSS) B.SC.-INFORMATION TECHNOLOGY

## BIT2B02 - Object Oriented Programming with C++

(2019 Admissions)

Time: 2 Hours Maximum:60 marks

## Section A – Ceiling-**20** Marks

*Each question carries 2 marks*

1. Distinguish between Class and Object.
2. List any four bitwise operators in C++.
3. What do you mean by function overloading ?Give an example.
4. What are pure virtual functions ?
5. What is generic programming?
6. Describe the two ways to include comments in a C++program.
7. What is Encapsulation?
8. What is destructor? Why do we need it?
9. Define single level inheritance. Give an example.
10. What is a stream?
11. Explain C++ Stream classes
12. Explain File Pointers in C++

## Section B – Ceiling-**30** Marks

*Each question carries **5** marks*

13. Write a C++ program to find the sum of the digits of a multiple digit integer using while loop.

14. Explain the differences between inline function and friend function.

15. What is a class? Explain the use of different access specifiers in a class.

16.. Mention the differences between overloading a unary operator and binary operator

17.What is Inheritance, Explain the need of inheritance.

18. What is class template ? Explain the syntax of a class template with suitable example.

19. What are manipulators ? List the various predefined manipulators supported by C++ 1/0 Streams

## Section C -**10** Marks

*Answer any **one** question*

20. What are abstract classes? Explain the role of abstract class while building class hierarchy

21. What is Function Overloading? Write a program to compute the area of a triangle and circle by overloading the area() function

(MODEL QUESTION PAPER)

# SECOND SEMESTER (CBCSS) B.SC.-INFORMATION TECHNOLOGY

## BIT2C03 - PROBABILITY & STATISTICS

## (2019 Admissions)

Time: 2 Hours Maximum:60 marks

## Section A – Ceiling-**20** Marks

*Each question carries 2 marks*

1. Define: (i) population and (ii) sample.
2. What is secondary data Mention any two sources of secondary data.
3. A card is drawn from a pack of 52 cards. What is the probability of getting a king or a red card ?
4. What is scatter diagram ? What is its use?
5. State Bayes theorem on probability.
6. Define stratified random sampling
7. Show that $P(\bar{A}) = 1 - P(A)$
8. Define rank correlation. Give the Spearman rank correlation coefficient formula.
9. Write down the distribution if the mean and variance of the binomial random variable are respectively 6 and 2.4.
10. Explain less than ogive and more than ogive.
11. If a sample of size 22 items has a mean of 15 and another sample of size 18 items has a mean of 20, find the mean of the combined sample.
12. Distinguish between simple and partial correlation.

## Section B – Ceiling-**30** Marks

*Each question carries **5** marks*

13. Describe the construction of histogram.

14. Explain stratified random sampling technique.

15. Define Poisson distribution. Explain its importance in real situations

16. Find mean deviation about median of the observation 300, 440, 420, 400, 580, 480, and 460.

17. The mean of runs scored by three batsmen, Hari, Arjun and Siva in the same series of 10 innings us are 50, 48 and 12 respectively. The standard deviation of their runs is respectively 15, 12 and 2.

    Who is the most consistent player? If one of the three is to be selected, who will be selected?

18. Find median from the following frequency distribution:

| Class | 30-40 | 40-50 | 50-60 | 60-70 | 70-80 | 80-90 |
|---|---|---|---|---|---|---|
| Frequency | 18 | 37 | 45 | 27 | 15 | 8 |

19. Explain the various statistical tools used for analyzing a problem.

## Section C -**10** Marks

*Answer any **one** question*

20. Calculate the coefficient of variation of the grades obtained by 20 students :

    62, 85, 73, 81, 74, 58, 66, 72, 54, 84, 65,50, 83, 62, 85, 52, 80, 86, 71, 75.

21. Write short notes on the following :-

    (i) Coefficient of variation.

    (ii) Mathematical expectation.

    (iii) Frequency polygon.

    (iv) Sources of secondary data.

    (v) Define coefficient of variation. Give The advantage of this measure.

(MODEL QUESTION PAPER)

# SECOND SEMESTER (CBCSS) B.SC.-INFORMATION TECHNOLOGY

## BIT2C04 - ELECTRONICS AND COMMUNICATION TECHNOLOGY

(2019 Admissions)

Time: 2 Hours Maximum:60 marks

## Section A – Ceiling-**20** Marks

*Each question carries 2 marks*

1. The layer formed at the PN junction is called depletion layer. Why ?
2. Why a bridge type full wave rectifier is preferred over centre-tap full wave rectifier?
3. The base of a transistor is lightly doped and very thin. Why
4. What are the advantages of pulse modulation system?
5. What are the main features of frequency division multiplexing?
6. Explain forward and reverse bias.
7. What is a multi-stage amplifier ?
8. Define Modulation Index.
9. State Sampling theorem.
10. Differentiate PSK and ASK
11. Explain advantages of Semi Conductors
12. What is Quantization

## Section B – Ceiling-**30** Marks

*Each question carries **5** marks*

13. Explain application of Zener diode.

14. Explain Darlington pair.

15. Explain working of LC oscillator.

16. Explain Vestigal side band transmission.

17. With the help or a block diagram explain television transmitter.

18. Explain Delta modulation.

19. Explain FSK in detail

## Section C -**10** Marks

*Answer any **one** question*

20. Explain working principle of RC coupled amplifier.

21. Explain generation of SSB. List advantages of SSB over AM.

# THIRD SEMESTER

| Semester | Course No | Course Code | Course Title | Marks | | | Contact Hours | | | Credit |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Intern | Extern | Total | Theory | Lab | Total | |
| III Semester | 14 | XXXXA11 | Python Programming | 20 | 80 | 100 | 4 | 0 | 4 | 4 |
| | 15 | XXXXA12 | Sensors and Transducers | 20 | 80 | 100 | 4 | 0 | 4 | 4 |
| | 16 | BIT3B04 | Database Design & RDBMS | 15 | 60 | 75 | 3 | 2 | 5 | 3 |
| | 17 | **BIT3B05** | Data Structures Using C++ | 15 | 60 | 75 | 2 | 2 | 4 | 3 |
| | 18 | **BIT3C05** | Discrete Mathematics | 15 | 60 | 75 | 4 | 0 | 4 | 3 |
| | 19 | **BIT3C06** | Fundamentals of Digital Electronics | 15 | 60 | 75 | 4 | 0 | 4 | 3 |
| | **Total (6 Courses)** | | | | | **500** | | | **25** | **20** |

**THIRD SEMESTER BSc IT EXAMINATION 2020**

**CBCSS-UG**

**(MODEL QUESTION PAPER)**

**BIT3B04: DATABASE DESIGN AND RDBMS**

**(2019 Admissions)**

Time: 2 Hours Max Marks:60

## PART A (Ceiling-20 marks.Each question carries 2 marks)

1. What is 1NF?
2. What is functional dependency in RDBMS?
3. Explain one to one and one to many mapping cardinalities?
4. Explain views of data?
5. What is DDL? Explain
6. What is trivial functional dependency?
7. What is Database instances and schemas?
8. What is strong and weak entity sets?
9. What is the use of 'GROUP BY' and 'HAVING' clause in RDBMS?
10. Explain about the ACID properties
11. What do you mean by triggers?
12. What is BCNF?

## PART B(Ceiling-30 marks.Each question carries 5 marks)

13. Explain about Database users?
14. Explain about Data Models?
15. Explain the advantages of Database system over traditional file system?
16. With an example show how can we create, insert, update, delete data from a table?
17. With an example show how can we pass and return data to and from a stored procedure?
18. With a neat diagram explain Database Architecture and different keys used in RDBMS?
19. Explain about the join operation with example?

## PART C(Answer any one question Carries 10 Marks)

20 Explain about the following

1. Database Languages 2. E-R Diagram

21. What is Normalization? Explain about 2NF and 3NF with example?

(MODEL QUESTION PAPER)

# THIRD SEMESTER B.Sc DEGREE EXAMINATION

## Information Technology

## A11- PYTHON PROGRAMMING

(2019 Admissions)

Time: 2.5 Hours Maximum: 80 Marks

Section A – Short Answer type questions

(Answer all questions, each correct answer carries a maximum of 2Marks. Ceiling 25 marks)

1. What you meant by operator precedence?
2. What is the difference between list and tuples in Python?
3. What is an identifier? Give examples
4. What is Python? What are the benefits of using Python?
5. Write a short note on global keyword in Python.
6. What is Random Number Generator in Python?
7. Write a Python program to calculate the length of a string?
8. What is a set in Python?
9. What is default parameter in Python?
10. How do you write comments in Python?
11. What is eval( ) in python? What is its syntax?
12. Write a Python program to check given number is Prime or not.
13. Write a function to give the sum of all the numbers in list?
14. What is the purpose of break statement in Python?
15. What are Python dictionaries?

**Section B – Short Essay type questions**

**(Answer all questions, each correct answer carries a maximum of 5 marks. Ceiling 35 marks)**

16. What are the different data types available in Python?
17. Write a Python program to remove an item from a set if it is present in the set.
18. Explain the use of functions in Python in detail.
19. What is a tuple? Explain different tuple operations in Python.
20. Write a short note on Python IDLE.
21. Write a Python program to sum all the items in a list.
22. Explain recursion in Python with suitable examples?
23. What are the key features of Python

**Section C – Essay type questions**

**(Answer any 2 one questions, each correct answer carries a maximum of l0 marks)**

24. What is a function? Explain different functions available in Python with suitable examples.
25. What is a loop? Explain different looping statement in Python.
26. Explain different types of operators in Python in detail.
27. What is a string? Explain different string operations in Python with example.

# THIRD SEMESTER B.Sc DEGREE EXAMINATION

Information Technology

**A12 – SENSORS AND TRANSDUCERS**

(2019 Admissions)

Time: 2.5 Hours Maximum: 80 Marks

**Section A – Short Answer type questions**

**(Answer all questions, each correct answer carries a maximum of 2Marks. Ceiling 25** marks)

1. Define Transducers with example
2. List static

characteristics of a sensor

3, Explain LVDT and

RVDT

4. Application of capacitance sensors
5. Explain basic principle Thermistors
6. What is the principle of thermocouple
7. List application of RTD
8. Explain principle of Hall effect sensors
9. Explain the function electromagnetic flowmeter
10. List characteristics of photodetectors
11. What are the commonly used photoresistive materials
12. Explain Bernoull's principle
13. Explain the working of Rotmeter
14. List the function of venture tube
15. What is sound levelmeter

**Section B – Short Essay type questions**

**(Answer all questions, each correct answer carries a maximum of 5 marks. Ceiling 35** marks)

16. Explain resistive sensors with help of a potentiometer
17. List advantage and disadvantages of thermocouple
18. List different type of Magnetic sensors
19. What is eddy current Explain working of eddy current sensors
20. Explain working of photoemissive cell Transducers
21. With neat diagram explain the function of pressure sensors
22. What is the order of resolution of a torque type sensors
23. In what different mode P_ N junction used for radiation detection

**Section C – Essay type questions**

**(Answer any 2 one questions, each correct answer carries a maximum of l0 marks)**

24. Explain working of inductive sensor with example
25. Write essay about Thermistors
26. Describe any two level transducer with application
27. Explain working of dynamometer and gyroscope

(MODEL QUESTION PAPER)

# THIRD SEMESTER B.Sc DEGREE EXAMINATION

Information Technology

## BIT3B05 DATA STRUCTURES USING C++

(2019 Admissions)

**Time: 2 Hours** **maximum: 60 marks**

## Section A - Ceiling-20 Marks

Each question carries 2 marks

1. Define array?
2. What is sparse matrix?
3. Define data structure?
4. Write the postfix notation of (((A/B) – C) +(D*E)) – (A*C)
5. What is time complexity?
6. What is an abstract data type?
7. What do you mean by top down & bottom up design?
8. What are the terminologies of two dimensional arrays?
9. What is hashing
10. What is circular queue?
11. Represent a stack with 10 elements
12. What are the applications of queue?

## Section B– Ceiling-30 Marks
## Each question carries 5 marks

13. What are the various operations that can be performed on different data structures?
14. What is stack? What are its applications?
15. Explain bubble sort technique?
16. Discuss de-queue and priority queue?
17. Write a program to find an element using binary search concept

18. What is linked list and what are its types?

19. Define graph data structure? Discuss its applications?

## Section C -10 Marks
### Answer any one question

20. What is an algorithm? Explain the performance analysis of an algorithm with example?
21. What is a queue? Write a program to implement a queue using array?

(MODEL QUESTION PAPER)

# THIRD SEMESTER B.Sc. IT MODEL EXAMINAION, 2020

(CBCSS – UG)

## BIT 3C 05 – DISCRETE MATHEMATICS

(2019 Admissions)

**Time: 2 Hrs** **Maximum: 60 Marks**

**PART A (Ceiling – 20 marks. Each question carries 2 marks)**

1.Give an example of a relation which is reflexive and transitive but not transitive.

2.Give an example for a graph which is Eulerian, but not Hamiltonian.

3.S.T $(p \rightarrow q) \leftrightarrow (\sim pvq)$

4.S.T $K_4$ is planar.

5. Find the power set of (a). A={2,4} (b). B =∅

6. Define a null graph

7. Define the Chromatic number of a graph .

8. S.T If A⊆ C and B ⊆ C then A∪ B ⊆ C where A, B and C are sets

9. Is the " divides " relation on the set of positive integers symmetric? Give the reasons.

10. Define a regular graph

11. Define bipartite graph.

12. Determine the truth value of each of these statements if the domain consist of all integers

(a). ∃ n ( n = 5n) , (b).∀n ( $n^3 \geq$ n)

**PART B (Ceiling – 30 marks. Each question carries 5 marks)**

13. Discuss Kongsberg Bridge Problem and its importance in the history of Graph theory

14. S.T $(p \rightarrow r) v (q \rightarrow r)$ and (p Aq) → r are logically equivalent

15. Define Boolean Algebra and give an example.

16. P.T the relation R = ). {a , b) : a – b is a multiple of m } is an equivalence relation on The set of integers.

17. Define complete graph and draw the complete graphs on 'n' vertices where n= 1,2,3,4,5,6

18. (a). S.T the sum of degrees of the vertices in a graph G is even.

(b). ). A graph G has 21 edges, 3 vertices of degree 4 and other vertices are of degree 3 Find the number of vertices of G.

19. (a). Define spanning tree of a graph.

(b). P.T there is only one path between every pair of vertices of a tree.

**PART C (Answer any One Question, Carries 10 marks)**

20. (a). If P(S) is the power set of non-empty set S then P.T $(P(S), \subseteq)$ is a poset

(b). The relation R on the set S of all real numbers is defined as aRb if and only if $1 + ab > 0$ ,S.T this relation is reflexive and symmetric but not transitive.

21. (a). Define Euler graph and Hamiltonian graph with examples.

(b). S.T the graph G is Euler if and only if every vertex of G is even.

(MODEL QUESTION PAPER)

**THIRD SEMESTER BA/BSc DEGREE EXAMINATION 2020**

BIT3C06 Fundamentals of Digital Electronics
(2019 Admissions Onwards)
**Information Technology**

**Time: 2Hrs** **Maximum: 60**

**SECTION A- Ceiling 20 Marks**
**Each Question carries 2 marks**

1. $(734)_8 = (\ )_{16}$
2. Draw 8 – to – 1 multiplexer with description
3. The 2's complement of the number 1101101
4. Write the code where all successive numbers differ in 3
5. Which of the memory is volatile memory?
6. The digital logic family which has the lowest propagation delay time is
7. What is Boolean algebra? Write some Boolean equations
8. What is truth table? Write truth table of OR gate
9. State De Morgan's theorem
10. Write notes on essential gates
11. What is Karnaugh map and explain with an example
12. What is an ASCII code? Give an example.

**SECTION B- Ceiling 30 Marks**
**Each Question carries 5 marks**

13. Write notes on signed and unsigned numbers
14. Write SOP and POS
15. Write note on universal gates
16. Explain arithmetic operations in digital circuit with example
17. Write a note on any two Number Systems
18. Write theorems of Boolean algebra
19. What are Pair, Quad and Octet?

**SECTION C - 10 Marks**
**Answer Any One Question**

20. What is memory, write note on different types of memory?

21. What are the advantages of using tabulation method? Determine the prime implicants of the following function using tabulation method

F( W,X,Y,Z) = _(1,4,6,7,8,9,10,11,15)

## FOURTH SEMESTER

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| IV Semester | 20 | XXXXA13 | Data Communication and Optical Fibers | 20 | 80 | 100 | 4 | 0 | 4 | 4 |
| | 21 | XXXXA14 | Microprocessors-Architecture and Programming | 20 | 80 | 100 | 4 | 0 | 4 | 4 |
| | 22 | BIT4B06 | Visual Programming Using VB.NET | 15 | 60 | 75 | 5 | 0 | 5 | 3 |
| | 23 | BIT4B07 | Programming Laboratory II - Data Structure Using C++ & RDBMS | 20 | 80 | 100 | 0 | 4 | 4 | 4 |
| | 24 | BIT4C07 | Numerical Methods & Operation Research | 15 | 60 | 75 | 4 | 0 | 4 | 3 |
| | 25 | BIT4C08 | Computer Organization and Architecture | 15 | 60 | 75 | 4 | 0 | 4 | 3 |
| | **Total (6 Courses)** | | | | | **525** | | | **25** | **21** |

(MODEL QUESTION PAPER)

# FOURTH SEMESTER (CBCSS) B.SC.-INFORMATION TECHNOLOGY

BIT4B06 - Visual Programming Using VB.NET

(2019 Admissions)

Time: 2 Hours Maximum:60 marks

## Section A – Ceiling-**20** Marks

*Each question carries 2 marks*

1. what is CLR?
2. List and explain any two string functions.
3. What do you mean by binding of data?
4. Define class and objects.
5. Give the syntax of switch and if statements.
6. List data types in VB.
7. How will you declare arrays in VB? Give examples.
8. What do you mean by a Tool Tip?
9. What is an exception?
10. What is a data grid?
11. What is XML
12. What is Data set

## Section B – Ceiling-**30** Marks

*Each question carries **5** marks*

13. Explain .NET frame work.
14. Differentiate between console application and window applications.
15. Write a VB program to read a list of names and print only names that start with

R or end with U.

16. Explain properties and methods of Labels and Buttons.
17. Explain the concept or event driven programming. Illustrate with suitable examples
18. Discuss the constructs in VB for making decisions and selections.
19. With suitable examples, explain event handling or keyboard events.

Section C -**10** Marks

*Answer any **one** question*

20. Explain raising and throwing exceptions with suitable examples.
21. Write a VB application using forms to design a simple calculator

# FOURTH SEMESTER B.A/B.Sc DEGREE EXAMINTION

Information Technology

## A13 - DATA COMMUNICATION AND OPTICAL FIBERS

(2019 Admissions)

Time: 2 .5Hours Maximum: 80 Marks

**Section A – Short Answer type questions**

(Answer all questions, each correct answer carries a maximum of 2Marks. Ceiling 25 marks)

1. What is Topology?
2. Define Modems?
3. Expand BTS. What is its purpose?
4. What is Ray theory transmission?
5. Define Networks.
6. Define FDDI.
7. Name any two examples of many to one multiplexing.
8. What is bit oriented Protocol?
9. What is Ethernet?
10. Define flow Control.
11. What is cut of wavelength?
12. List any two applications of Optical fiber communications. 13, Explain Optical fiber communication general system
14. What are photo detectors?
15. What are fiber materials?

**Section B – Short Essay type questions**

(Answer all questions, each correct answer carries a maximum of 5 marks. Ceiling 35 marks)

16. Distinguish between frequency and divisionmultiplexing.
17. Explain analog to digital and digital to analog conversion.
18. Explain various topologies.
19. Differentiate character oriented protocol and bit oriented protocol.
20. Write short note on DTE-DCE interface.
21. Explain various services of ISDN.
22. Write a short note on optical sources.
23. Write advantage and disadvantages of Optical fiber communication.

**Section C – Essay type questions**

(Answer any 2 one questions, each correct answer carries a maximum of l0 marks)

24. Explain various transmission media.
25. Illustrate GSM architecture with neat diagram.
26. Discuss various switching techniques used in Networks.
27. Write a note on data link asynchronous and synchronous protocols.

# FOURTH SEMESTER B.A/B.Sc DEGREE EXAMINTION

Information Technology

## A14– MICROPROCESSORS - ARCHITECTURE AND PROGRAMMING

(2019 Admissions)

Time: 2.5 Hours Maximum: 80 Marks

### Section A – Short Answer type questions

(Answer all questions, each correct answer carries a maximum of 2Marks. Ceiling 25 marks)

1. Define register and various registers used in microprocessor ?
2. Distinguish between RAM and ROM?
3. What do you meant by T state?
4. What is subroutine?
5. Write about buses used in microprocessor
6. Define an instruction cycle.
7. What is the well-known problem in assembler design?
8. What is DMA?
9. Write about interrupt inputs are handled by programmable Interrupt controller?
10. Define BIOS.
11. What is the use of HLDA and HOLD signals?
12. Write a program to add two 8-bit numbers.
13. What are the flag registers of 8085.
14. Define addressing modes.
15. Define segmentation.

### Section B – Short Essay type questions

(Answer all questions, each correct answer carries a maximum of 5 marks. Ceiling 35 marks)

16. Write down the important features of 8085?
17. Give an account on Assembler Directive?
18. Explain the addressing modes of 8085.
19. Differentiate between makeable and non makeable interrupt.
20. Write a short note on instruction set?
21. What is the use of branch displacement directive? Write the syntax of the same.
22. What are the salient features of 8255.
23. What are the difference between DOS and BIOS?

### Section C – Essay type questions

(Answer any 2 one questions, each correct answer carries a maximum of l0 marks)

24. Explain the architecture and operation of 8085 microprocessor
25. Explain the processor control and string instruction in 8086
26. What is interrupt and explain different type of interrupt in 8085
27. With the neat figure explain 8086/88 pin diagram

(MODEL QUESTION PAPER)

# FOURTH SEMESTER B.A/B.Sc DEGREE EXAMINTION

Information Technology

## BIT 4C07—NUMERICAL METHODS AND OPERATIONS RESEARCH

(2019Admissions)

Time: 2hours Maximum: 60 Marks

## Section A

Ceiling -**20** Marks

Each question carries 2 Mark.

1. Explain error?
2. Compare Gauss-Jacobi's and Gauss Seidel method for solving linear system of the form AX= B.
3. State Newton's forward formula for interpolation.
4. Define basic feasible solution?
5. Distinguish between slack variable and surplus variable.
6. Write the dual of the following LPP.
7. Maximize Z= 2 $x_1$ + $x_2$ + 6$x_3$ subject to the constraints :
   4 $x_1$ + $x_2$ – $x_3 \leq$ 32; 5 $x_1$ -4 $x_2$ +2 $x_3 \leq$ 42 and $x_1$, $x_2$, $x_3 \geq 0$
8. What is an unbalanced Transportation Problem?
9. Explain transcendental equations?
10. Give Lagrange's formula in linear interpolation.
11. Explain Assignment Problem.
12. Explain the methods of solving differential equations.

## Section B

Ceiling -**20** Marks

Each question carries **5** Mark.

13. Evaluate square root of 7correct to 4 decimal places by Newton Raphson Method.
14. The table gives the distance in nautical miles of the visible horizon in feets above the earth surface

| Height | 100 | 150 | 200 | 250 | 300 | 350 | 400 |
|---|---|---|---|---|---|---|---|

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Distance | 10.63 | 13.03 | 15.04 | 16.81 | 18.42 | 19.90 | 21.27 |

Find the values of y when x=218 and x=410

15. Using Newton's difference formula find the missing values from the table

| | | | | | |
|---|---|---|---|---|---|
| X | 1 | 2 | 4 | 5 | 6 |
| Y | 14 | 15 | 5 | | 9 |

16. Using Euler's method y(0.1) given that $dy/dx = x + y$, $y(0) = 1$
17. Give the steps in solving LPP using Simplex Method.
18. Solve the following LPP graphically Max $Z = X_1 + X_2$

subject to $X_1 + X_2 \leq 1$

$-3X_1 + X_2 \geq 3$

$X_1, X_2 \geq 0$

19. Explain MODI method.

Section C
**(20** Marks)

Answer any **one** question

20. Solve the Transportation Problem (use VAM for IBFS)

| | I | II | III | IV | Supply |
|---|---|---|---|---|---|
| I | 5 | 8 | 3 | 6 | 30 |
| II | 4 | 5 | 7 | 4 | 50 |
| III | 6 | 2 | 4 | 6 | 20 |
| Demand | 30 | 40 | 20 | 10 | 100 |

21. Given $dy/dx = x^3 + y$, $y(0)$ compute $y(0.2)$, $y(0.4)$, $y(0.6)$ Using Runge Kutta Method.

(MODEL QUESTION PAPER)

# FOURTH SEMESTER BSc DEGREE EXAMINATION

## Information Technology

## BIT4C08 Computer Organization and Architecture

(2019 Admissions)

Time: 2 Hours Maximum: 60 Marks

### Section A – Short Answer type questions

(Answer all questions, each correct answer carries a maximum of 2Marks. Ceiling 20 marks)

1. What is priority interrupt?
2. What is the difference between strobe and handshaking?
3. Explain about serial communication.
4. What is encoder?
5. What is hit / miss ratio ?
6. What Accumulator?
7. Differentiate Memory reference Instructions and Register reference instructions
8. What is JK flip flop?
9. Differentiate Edge triggering and Pulse triggering
10. What is Direct Memory Access?
11. Differentiate ripple carry adders and look-ahead carry adders
12. What is virtual memory?

### Section B – Short Essay type questions

(Answer all questions, each correct answer carries a maximum of 5 marks. Ceiling 30 marks)

13. Write a short note about Cache memory
14. What is Multiplexer?
15. Describe Full Adder and Half Adder.
16. List any 5 registers with their functions for the Basic Computer
17. Explain about memory mapping?
18. Describe about asynchronous & synchronous counters
19. Write a short note about parallel processing.

### Section C – Essay type questions

(Answer any one question, correct answer carries l0 marks)

20. Describe about different types of logic gates.
21. Explain about addressing modes

## FIFTH SEMESTER

| Semester | Course No | Course Code | Course Title | Marks | | | Contact Hours | | | Credit |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Intern | Extern | Total | Theory | Lab | Total | |
| V Semester | 26 | BIT5B08 | Computer Networks | 15 | 60 | 75 | 4 | 0 | 4 | 3 |
| | 27 | BIT5B09 | Software Engineering | 15 | 60 | 75 | 4 | 0 | 4 | 3 |
| | 28 | BIT5B10 | Java Programming | 15 | 60 | 75 | 2 | 4 | 6 | 3 |
| | 29 | BIT5B11 | Computer Graphics | 15 | 60 | 75 | 4 | 1 | 5 | 3 |
| | 30 | BIT5B12 | Management Information Systems | 15 | 60 | 75 | 3 | 1 | 4 | 3 |
| | 31 | XXX5DXX | Open Course (Other Streams) | 15 | 60 | 75 | 2 | 0 | 2 | 3 |
| | **Total (6 Courses)** | | | | | **450** | | | **25** | **18** |

(MODEL QUESTION PAPER)

**FIFTH SEMESTER BSc DEGREE EXAMINATION**

Information Technology

**BIT5B08 COMPUTER NETWORKS**

(2019 Admissions)

**Time: 2 Hours** **Maximum Marks: 60**

**Section A – Ceiling 20 Marks**

**Each question carries 2 marks**

1. List the basic network topologies?
2. What is datagram?
3. What do you mean by burst error?
4. Why flow control needed in a data transmission?
5. What is the function of a repeater?
6. Differentiate ARP and RARP?
7. Define multicasting?
8. What do you mean by connection oriented protocols?

9. What is encryption and decryption?
10. In Email what is the role of user agent?
11. Differentiate FTP and TFTP?
12. What is NIC?

***Section B – Ceiling 30 marks***

***Each question carries 5 marks***

13. Explain different network categories?
14. Explain CRC error detection mechanism with an example?
15. Compare circuit switching and packet switching?
16. Explain salient features of classfull addressing?
17. Give an account on NAT?
18. Explain the connection management in TCP?
19. Write a note on SMTP?

***Section C – Answer any ONE***

***The question carries 10 marks***

20. Explain the architecture of OSI reference model with a diagram?
21. Discuss about any two routing algorithms with example?

(5 x 8 = 40 marks)

(MODEL QUESTION PAPER)

**FIFTH SEMESTER B.Sc DEGREE EXAMINATION, NOVEMBER 2019**

(CUCBCSS-UG)

Information Technology

BIT 5B 09 -- SOFTWARE ENGINEERING

(2017 Admissions)

Time : 2 Hours Maximum :60 Marks

**Part A**

**Section A – Ceiling 20 Marks**

**Each question carries 2 marks**

1. What is the prime objective of software engineering?
2. Mention any two shortcoming of classical waterfall model?
3. Write any two objectives of OOD?
4. Mention the primary objective of CASE tool?
5. What are the different types of software requirements? Explain.
6. Define UML? Mention any two UML diagrams.
7. Briefly discuss about Type checking.
8. Differentiate validation and verification?
9. What is Acceptance test?
10. Define any software re-engineering approach?
11. List the Umbrella activities of a software process.
12. What is the goal of concurrency control?

**Section B – Short Essay type questions**

**(Answer all questions, each correct answer carries a maximum of 5 marks. Ceiling 30 marks)**

13. Explain Waterfall model with diagram.
14. What activities are addressed in Extreme programming?
15. What kinds of errors are sought out during requirements validation? Explain.
16. Write a note on Gantt and PERT chart.
17. Distinguish between a program and a software product?
18. What is meant by size of a software project ? How is the size estimated ?
19. Differentiate between Cohesion and Coupling.

**Section C – Essay type questions**

**(Answer any one question, correct answer carries l0 marks)**

20. Which are the major phases in the classical waterfall model of software development ? Explain in detail.

21. What is a DFD ? Draw DFDs up to 3rd level for a Grade Card Generation System. Make necessary assumptions. Mention the assumptions made.

(MODEL QUESTION PAPER)

# FIFTH SEMESTER BSc DEGREE EXAMINATION

Information Technology

## BIT5B10-Java Programming

(2019 Admissions)

**Time: 2 Hours** **Maximum Marks:60**

### Section A

**(Each question carries maximum 2 marks. Ceiling 20 marks)**

1) Define java programming?
2) What you mean by inheritance in java?
3) Write an example for do...while statement?

4) Define StringBuffer Class?

5) What do you mean by the terms Arrays?

6) Compare overloading and overriding?
7) What is JDK?
8) Describe the threads in java?

9) What is byte code in java?
10) What do you mean Hash tables?

11) Describe SQL Exception class?

12) Define Applet?

### Section B

**(Each question carries maximum 5 marks. Ceiling 30 marks)**

13) Explain basic concept of object orientation?
14) Discuss the 'import' statement in java with example? 15) Write java program given number is amstrong or not?

16) What is the use of Abstract class in java with example? 17) Discuss file I/O Using Byte Stream?

18) Differentiate threads and process?

19) How work JDBC model?

## Section C

**(Answer any one. Each question carries 10 marks)**

20) What is Exception handling? explain five keywords in exception handling with an example?

21) a) Discuss various of AWT containers with examples? b) Explain about the Adapter class with the examples?

(MODEL QUESTION PAPER)

# FIFTH SEMESTER B.Sc DEGREE EXAMINATION ,NOVEMBER 2019

(CUCBCSS—UG)

Information technology

## BIT 5B 11—COMPUTER GRAPHICS

(2019 ADMISSIONS)

Time: 2 hours Maximum:60 marks

**Section A**

**(Each question carries maximum 2 marks. Ceiling 20 marks)**

1. Define aspect ratio.
2. Define Staircase effect.
3. What is transformation.
4. What is a window? Also define a viewport.
5. Define view reference point.
6. Write a short note on flat panel displays.
7. Write short note on Data glove.
8. Write the algorithm for generating circle using Bresenham's circle drawing method.
9. Define homogenous coordinates. What are the advantages of homogenous coordinates?
10. Among the various line clipping algorithms, which algorithm is more efficient? Explain.
11. Differentiate Zooming and Panning.
12. Briefly describe how parallel projection is classified.

## Part B

**(Each question carries maximum 5 marks. Ceiling 30 marks)**

13. Explain the different methods used for displaying color pictures in Raster scan and Random scan display devices.
14. What are the different categories of flat panel display? Explain with example.
15. Explain DDA line drawing algorithm.
16. Derive various reflection transformation matrices.
17. Explain midpoint subdivision line clipping algorithm.

18. What are the basic transformations? Explain each with example.

19. Explain oblique types of parallel projection ?

## Part C
**(Answer any one. Each question carries 10 marks)**

20. Explain in detail, the orthographic and oblique types of parallel projection.

21. Explain Painter's algorithm in detail. Explain the situation where this algorithm does not work properly.

(MODEL QUESTION PAPER)

# FIFTH SEMESTER B.A/B.Sc DEGREE EXAMINTION MARCH 2020

(CUCBCSS—UG)

Information Technology

**BIT 5B 12-MANAGEMENT INFORMATION SYSTEMS**

(2019 Admissions)

Time: 2hours Maximum : 60 Marks

## Part A

**(Each question carries maximum 2 marks. Ceiling 20 marks)**

1. What is Management Information system?
2. What do you mean by personal information system?
3. What are the components of a system?
4. What are the various types of information system?
5. What you meant by boundary of a system?
6. Discuss the major faces involved in decision making process
7. Discuss on management information system on decision making
8. Explain cognition style
9. Distinguish between programmed and non-programmed decision
10. Explain how information reduce uncertainty
11. Write a note on Threats of information systems
12. Explain information

## Part B

**(Each question carries maximum 5 marks. Ceiling 30 marks)**

13. Explain Learning Theory
14. Explain briefly about the post audit evaluation of information system application

15. What are the characteristics of MIS? Explain in detail types of MIS System
16. Explain the structure of Management Information System based on organizational functions
17. What is information? What are the functions of information system?Discuss good and bad impact Of information system
18. Explain in detail DSS system and its role in organization
19. Explain the SDLC approach to systemdevelopment

Part C

**(Answer any one. Each question carries 10 marks)**

20. Describe the basic models of organizational structure
21. Explain the different phases of system implementation

# OPEN COURSES

(MODEL QUESTION PAPER)

**FIFTH SEMESTER B.Sc DEGREE EXAMINATION, NOVEMBER 2016**

(CUCBCSS-UG)

**0PEN COURSE**

BCS 5D 01 – INTRODUCTION TO COMPUTERS AND OFFICE AUTOMATION

Time : Two Hours Maximum :60 Marks

**Part A**

Answer **all** questions.

**Section A – Short Answer type questions**
**(Answer all questions, each correct answer carries a maximum of 2Marks. Ceiling 20 marks)**

1. What is layering object?
2. How to use Document Dictionary in MS-Word?
3. How to insert Charts in MS-Word?
4. Write a short note about programming language
5. Differentiate laptop and netbook
6. How to check spelling and grammar in MS Word?
7. How to add table to our documents?
8. How add images to our documents?
9. What is client server model?
10. Write a short note about printing styles in MS Word
11. How to embed an object in our document.
12. Write a short note about operating system.

**Section B – Short Essay type questions**
**(Answer all questions, each correct answer carries a maximum of 5 marks. Ceiling 30 marks)**

13 Explain about storage devices?
14. Explain about computer networks?
15. Explain about Mail Merge?
16. Explain the use of Macros in MS Word?
17. List any five functions using in MS Excel?
18. How to add sounds and video to your Power Point presentation?
19. Explain about Pivoted Table and Pivoted charts.

**Section C – Essay type questions**
**(Answer any one question, correct answer carries l0 marks)**

20. Explain about input output devices?
21. How to create a beautiful presentation using MS Power Point?

(MODEL QUESTION PAPER)

# FIFTH SEMESTER B.Sc DEGREE EXAMINTION MARCH 2020

(CUCBCSS—UG)

Information Technology

**BCS5D02—INTRODUCTION TO WEB DESIGNING**

Time: 2hours Maximum : 60 Mark

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**Part A**

Answer **all** questions.

Each question carries 2 Mark. **Ceiling 20 marks**

1. Explain the basic HTML structure.
2. What are the basic data types used in HTML?
3. What is SGML?
4. Discuss paragraph tag with its attributes.
5. What do you mean by HTML – Div element?
6. What is a website?
7. How to include comments in HTML?
8. What is a filter in DHTML page?
9. What is JavaScript?
10. Differentiate user defined and built in function in JavaScript.
11. What is a variable? How to declare a variable in a Java Script?
12. What do you mean by HTML Editor?

**Section B – Short Essay type questions**
**(Answer all questions, each correct answer carries a maximum of 5 marks. Ceiling 30** marks)

13. Explain Frameset tag in detail.
14. Explain the attribute of frame and iframe tags.
15. Write short note on features of JavaScript.
16. Explain looping statements in JavaScript.
17. Explain any five built-in functions in JavaScript.
18. Explain how a dynamic web page is created with DHTML.
19. Explain “Alert”,” prompt” and “confirm” method in JavaScript

**Section C – Essay type questions**
**(Answer any one question, correct answer carries l0 marks)**

20. (a) Create a page using JavaScript that accept two integers and display the result of arithmetic operations (+,-,*, /) selected using button. (5 marks)

(b) Write a note on User defined function in JavaScript. Give suitable example.

21. (a) Write a HTML code to create a webpage to promote an electronic product.

(b) What is a webpage? Explain the steps to create open and save a webpage.

(MODEL QUESTION PAPER)

# FIFTH SEMESTER B.Sc DEGREE EXAMINTION MARCH 2020

(CUCBCSS—UG)

Information Technology

Time: 2Hours

Maximum: 60 Marks

**BCS5D03 - Introduction to Problem Solving and C Programming**

**Part A** Each question carries 2 Mark **Ceiling 20 marks**

1. What is an Expression in C language?Give example?
2. Define Actual and Formal parameters.
3. What are library functions?Give example?
4. What is the purpose of conditional operator?
5. Write the advantages of pointer?
6. What is character set?
7. Write the structure of C program?
8. What is an identifier?
9. What is an escape sequence?
10. What is the difference between gets() and scanf()?
11. Write a note on do-while statement?
12. Define Union.

**Section B – Short Essay type questions**

**(Answer all questions, each correct answer carries a maximum of 5 marks. Ceiling 30** marks)

13. What is recursive function?Give an example.
14. Define storage classes in C. Write importance of storage classes.
15. What is meant by looping?
16. What is an array?Explain different types of array?
17. Write a program to print prime numbers?
18. Explain about file handling functions?
19. How structure different from aray? Explain.

**Section C – Essay type questions**

**(Answer any one question, correct answer carries l0 marks)**

20. Write a c program to perform matrix multiplication.
21. Briefly explain about control statements.

## SIXTH SEMESTER

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **VI Semester** | 32 | BIT6B13 | Android Programming | 15 | 60 | 75 | 4 | 0 | 4 | 2 |
| | 33 | BIT6B14 | Web Programming | 15 | 60 | 75 | 4 | 0 | 4 | 3 |
| | 34 | BIT6B15 | Operating Systems | 15 | 60 | 75 | 5 | 0 | 5 | 2 |
| | 35 | BIT6B16 | Programming Laboratory- III: Java & Web Programming | 20 | 80 | 100 | 0 | 6 | 6 | 4 |
| | 36 | BIT6B17 | Industrial Visit & Project Work (Industrial Visit- 1 Credit, Project Work- 2 Credit) | 15 | 60 | 75 | 0 | 2 | 2 | 3 |
| | 37 | BIT6B18X | Elective | 15 | 60 | 75 | 4 | 0 | 4 | 3 |
| | **Total (6 Courses)** | | | | | **475** | | | **25** | **17** |

(MODEL QUESTION PAPER)

**SIXTH SEMESTER BSc DEGREE EXAMINATION INFORMATION TECHNOLOGY**

**BIT6B13 ANDROID PROGRAMMING**

**(2019 Admissions)**

**Time 2 hrs** **60 marks**

*Section A – Ceiling 20 Marks Each question carries 2 marks*

1. Explain the importance of emulator in Android application.
2. What is the use of an activity Creator?
3. Explain the differences between Activities and Services.
4. What are Intents?
5. Define fragment.
6. What is spinner control? Explain its use?
7. What is the difference between SQL and SQLite?
8. What is AndroidManifest.xml?
9. What are the limitations of layout XML format?
10. What is GridView?
11. Explain how to display toast in Android.
12. Define view in SQLite.

***Section B – Ceiling 30 marks Each question carries 5 marks***

13. Explain the importance of Android in mobile market.
14. Explain how SMS is sent in Android.
15. Explain different TableLayout attributes.
16. Write a short note on MapView class.
17. Explain how events are handled in android.

18. Write a note on <string-array>resources.
19. Explain the salient features of SQLite.

***Section C – Answer any ONE The question carries 10 marks***

20. Explain the important life-cycle methods in Android applications.
21. Write an Android application to change ring tone a phone.

(MODEL QUESTION PAPER)

**SIXTH SEMESTER B.A./B.Sc DEGREE EXAMINATION,MARCH 2020**

(CUCBCSS-UG)

Information Technology

**BIT 6B 14-WEB PROGRAMMING**

(2019 Admission)

Time:2 Hours Maximum:60 Marks

## Section A- Short Answer type questions

(Answer all questions, each correct answer carries a maximum of 2Marks. Ceiling 20 marks)

1. What is meant by DNS?
2. What is Java script?
3. Describe the use of ternary operator in PHP.
4. Explain the syntax function of **foreach** statement in PHP.
5. What is AJAX?
6. Explain the use of IMG tag in HTML with suitable example.
7. Write down the HTML code to change the color of the background or text.
8. what are style sheets?Explain its use in detail.
9. Explain how function can be written in Java scriptwith example.
10. What are the different types of arrays in PHP?Expain the way of creating eachone.
11. Explain how the result set of MySQL is handled in PHP?
12. explain the reasons for choosing LAMPas a tool for web development.

## Section B- Short Essay type questions

(Answer all questions, each correct answer carries a maximum of 5Marks. Ceiling 30 marks)

13. Explain the implementation of AJAX in PHP.
14. differentiate between client-side and server-side scripting with suitable examples.
15. Describe how do you use Java Script for form validation.develop a suitable Java Script application that include the function for validatinguser input data.
16. Explain different control statements in PHP with examples.
17. Explain any four event handling methods in Java Script with illustration.
18. Expain the commands needed to establish connection between a PHP script and MySQL database.

19. Describe the Date object in Java Script with its properties and methods.

## Section C- Essay type questions

**(**Answer any one, each question 10 marks. Ceiling 10 marks)

20.(i) Give a brief account on HTML frames.

(ii)Write a PHP script to accept personal details of students such as RegNo,Name,class and marks of six subjects (out of 100)and print the mark list in a suitable format with RegNo,Name,class,marks,total,and percentage.

21. (a) Explain relational operators in JavaScript with example.

(b) write a PHP program to create a table using pg_execute() method.

**MODEL QUESTION PAPER**

Name:……

Reg No...……

**FIFTH SEMESTER B.Sc DEGREE EXAMINATION**

(CBCSS-UG)

Information Technology

**BIT6B15 - OPERATING SYSTEMS**

(2019 Admissions)

Time:2 Hours Maximum: 60 Marks

**Section A- Short Answer type questions**

(Answer all questions, each correct answer carries a maximum of 2Marks. Ceiling 20 marks)

1. Define operating systems.
2. List out types of operating systems.
3. What is a process? Write an example.
4. What is PCB?
5. Explain POST.
6. Explain dedicated technique?
7. Explain Working Set?
8. Explain virtual memory?
9. List contiguous memory allocation?
10. What is seek time?
11. Explain Shared technique?
12. What is spooling?

**Section B- Short Essay type questions**

(Answer all questions, each correct answer carries a maximum of 5Marks. Ceiling 30 marks)

13. Write note on Goals of system protection.
14. Discuss any two CPU Scheduling algorithms?

15. Explain CSCAN algorithm with Suitable example.

16. Write notes on virtual memory and benefits of using a virtual memory

17. Explain logical and physical file type layers?

18. What is deadlock condition? Explain in detail.

19. Explain Demand Paging.

## Section C- Essay type questions

**(**Answer any one, each question 10 marks. Ceiling 10 marks)

20.

A) Explain free space management techniques.

B) 18 38 66 102 44 55 22 11 4 55 156 160 188 190. Find the seek count using LRU page replacement algorithm. Total number of cylinder=200.current position=55.

21. Explain the concept of process.

A) Consider the situation:

While you're listening music, your system gets shutdown due to some electrical issues. Explain the phenomenon happened here with a neat diagram.

B) After sometimes (Electrical issues solved): You can see the music in paused condition when you switch on the system. At this time which states hold music? With the help of a neat diagram, explain what happened while applying the play button.

# ELECTIVES

# (MODEL QUESTION PAPER)

**(Pages:2)**

**SIXTH SEMESTER B.A/B.Sc DEGREE EXAMINATION, MARCH 2020**

(CUCBCSS-UG)

Information Technology

**BIT 6B 18 b – MULTIMEDIA SYSTEMS**

(2019 Admissions)

Time: Three Hours

Maximum: 60 Marks

Part A **- Short Answer type questions**

(Answer all questions, each correct answer carries a maximum of 2Marks. Ceiling 20 marks)

1. Explain multimedia
2. Explain SCSI
3. Explain digital audio
4. Explain RFP.
5. Write a note on morphing.
6. Explain the use of multimedia in business.
7. Explain cel animation.
8. Explain scheduling.
9. How to bring an audio recording into multimedia project?
10. Explain MPEG.
11. Explain content acquisition.
12. Explain audio file formats.

## Part B- Short Essay type questions

(Answer all questions, each correct answer carries a maximum of 5Marks. Ceiling 30 marks)

13. Write a note on different types of authoring tools.

14 Explain the history of multimedia.

15. Explain computer animation.

16, Explain digital videos.

17. Which are the different uses of multimedia?

18. Explain analog video.

19. Write a note on scheduling and estimating.

## Part C- Essay type questions

**(**Answer any one, each question 10 marks. Ceiling 10 marks)

20. Describe what is MIDI. What are its benefits?

21 Write a short note on roles of the multimedia production team.

**SIXTH SEMESTER B.A./B.Sc DEGREE EXAMINATION,MARCH 2020**

(CUCBCSS-UG)

Information Technology

**BIT 6B 18c-SOFTWARE TESTING AND QUALITY ASSURANCE**

(2019 Admission)

Time: Three Hours

Maximum: 60 Marks

**Part A Short Answer type questions**

**(Answer all questions, each correct answer carries a maximum of 2Marks. Ceiling 20 marks)**

1. Define static Testing?
2. Why is Black box testing done?
3. Define Localization testing?
4. Define Throughput?
5. Define function point
6. What are the challenges in Whitebox testing.
7. What are the different advantages for effective verification and validation offered by ETVX model?
8. What are the different characteristics of Blackbox testing?
9. What are the steps followed in forming a decision testing?
10. Briefly explain the importance of System testing
11. Give some examples of compliance testing
12. What are the factors which decide the choice and prioritization of features to betested?

**Part B Short Essay type questions**

**(Answer all questions, each correct answer carries a maximum of 5Marks. Ceiling 30 marks)**

13. What are the some of the common ways to identify risks in testing?
14. Briefly explain the types of coverages in code overage testing?
15. Explain waterfall model with a diagram?
16. What are the different methodologies available to decide the order of integrationtesting?
17. Define scenario testing. Briefly explain the two methods to evolve scenarios?
18. Define functional testing. Briefly explain the common technique used for same?

19. What are the different acceptance criteria used for acceptance testing?

## Part C Essay type questions

**(Answer any one, each question 10 marks. Ceiling 10 marks)**

20. What are the different steps in metrics program? Explain with diagram

21. Write a short note on project metrics. What are the different metrics used for the same?