7. COMPUTER SCIENCE-II

Course Content

Unit 1: System Development Concept

1.1 Introduction: System, Information System
1.2 Types of Information System
1.3 System Analyst – roles, responsibilities and characteristics
1.4 System development Life Cycle (SDLC)
1.5 Importance and the necessity of SDLC
1.6 System Development Models: Waterfall, Prototype, Spiral
1.7 System Development Phase
1.7.1 System Study
1.7.2 System Analysis Feasibility Analysis
1.7.3 Feasibility Study: Technical, Economical, Operational
1.7.4 System Design
1.7.5 System Development
1.7.6 System Testing
1.7.7 Implementation
1.7.8 Maintenance and Reviews
1.8 Concept of System Design Tools (Context Diagram, DFD, E-R Diagram, System Flow Chart, Decision Table, Decision Tree, Use Case, UML)
1.9 Case Study

Unit 2: Database

2.2.1 **Concept of Database**
2.1.1 Introduction: Data, Information, Database and DBMS
2.1.2 Objectives of DBMS
2.1.3 Database Model: Relational Model ,Network Model, Hierarchical Model, Entity Relational Data Model
2.1.4 Concept of Normalization
2.1.5 Types of Normalization 1NF, 2NF, 3NF
2.1.6 Structured Query Language
2.1.7 Centralized Vs. Distributed Database
2.1.8 Data Security
2.2 **Design Database using DBMS Software**
2.2.1 Create a Database
2.2.2 Create Tables and Fields and its properties
2.2.3 Create a Relational Databases
2.2.4 Create and Run Queries
2.2.5 Working with Forms
2.2.6 Generate Reports
2.2.7 Formatting Forms and Reports
2.3 **Project Work on DBMS Software**

Unit 3: Communication and Networking

3.1 Introduction: Definition, Purpose of networking
3.2 Analog and Digital Signal, Modulation(AM, FM, PM)
3.3 Direction of communication flow(Simplex, Halfduplex,)
3.4 Types of Network: Peer-to-peer and Client/Server, LAN, MAN and WAN
3.5 LAN Topologies :Bus, Star, Ring, Tree, Mesh Topologies (Its definition, structure, advantages & disadvantages)
3.6 Transmission Media: Bound Media (Coaxial Cable, Twisted Pair cable and Optical Fiber Cable – its description, structure, advantages and disadvantages), Unbound Media (Satellite, Wireless Media, Microwave Transmission)
3.7 Network Connecting Device: Modem, NIC, Switch / Hub, Router, Gateway, Repeater, Bluetooth, IR, WiFi
3.8 OSI Reference Model – Layer wise use and function
3.9 Communication Protocol: TCP/IP, SMTP, POP3, FTP, HTTPs, Telnet protocol
3.10 Demonstration of Communication Media and Connecting Devices

Unit 7: Multimedia
7.1   Introduction to Multimedia
7.2   Component of Multimedia : Text, Graphics, Audio, Video and Animation
7.3   Application of Multimedia

Unit 8: Artificial Intelligence
8.1   Concept of AI   8.2   Component of AI
8.3   Uses of AI   8.4   Ethical Aspect of AI

Unit 9: Contemporary Technology
9.1   e- Business   9.2   e-Learning
9.3   e-Governances   9.4   e-Medicine
9.5   Virtual Reality   9.6   Robotics

Unit 10: Final Project Work
10.1   Project Synopsis of the Project   10.2   Project Development using C Programming
10.3   Project Report (Project should be assigned to individual students.)

Model Question 2068

Time: 3 hrs.   Full marks: 75
                                                           Pass marks: 27

Attempt **all** questions.

Group A (Long Answer Questions)

Attempt any FOUR Questions.   **[4×10=40]**

1.   What is Entry-Relationship Data Model ? Give an ER-diagram for a database showing fatherhood, motherhood and spouse relationship among men and women. **[4+6] [From Unit 2]**

2.   The rate of interest offered by a bank on fixed deposit :
      i. Period < 6 month 5%   ii. Period 6 to 12 month 6%   iii. Above 1 year 10%
      Write a flowchart and program using C language to calculate monthly interest of customers.   **[3+7] [From Unit 4]**

3.   Write a program that reads several different names and addresses into the computer rearrange the names into alphabetical order. Make use of structure variables.   **[10]**
                                                               [From Unit 4]

4.   Write a program that will read successive records from the new data file and display each record on the screen in an appropriately formatted form.   **[10] [From Unit 2]**

5.   Write a program with function and input menu from keyboard and activate these functions.   **[10] [From Unit 2]**
      i.   print a circle ( )   ii.   reverse string ( )

Group B (Short Answer Questions)

Attempt any SEVEN Questions.   **[7×5=35]**

6.   What is feasibility study ? Why feasibility study is important in system analysis phase ? Explain.   **[2+3] [From Unit 1]**

7.   What are the different types of LAN topology ? Write merits and demerits of Star Topology.   **[2+3] [From Unit 3]**

8.   Write short notes on (any two) :
      (a) Coaxial cable (b) Fiber-Optic Cable (c) Switch   **[2.5+2.5] [From Unit 3]**

9.   Differentiate between array and structure with suitable examples.   **[2.5+2.5] [From Unit 4]**

10.   What do you mean by parameter 'Passing by value' and 'Passing by reference' in C ? Explain with suitable example.   **[2.5+2.5] [From Unit 4]**

11.   Explain the terms Polymorphism and inheritance.   **[2.5+2.5] [From Unit 5]**

12.   Describe the limitations of using *getchar* () and *putchar* () functions for reading strings.   **[2.5+2.5] [From Unit 4]**

13.   What do you understand by AI ? How it may effect the society ?   **[3+2] [From Unit 8]**

14.   Write short notes on (any two) :   **[2.5+2.5]**
      (a) Cyber Law **[From Unit 6]**   (b) Normalization **[From Unit 2]**
      (c) Context Diagram **[From Unit 1]**

Exam Questions

Unit 1: System Development Concept

1. Describe SDLC with diagram.   5 [Q.N.6, 2072'C']
2. Describe the components of feasibility study.   5 [Q.N.6, 2072'D']
3. Who is system analyst? List out characteristics of system analyst. 1+4[Q.N.7, 2072'D']
4. Describe system flowchart with diagram.   5[Q.N.8, 2072'D']
5. What is feasibility study ? Why it is necessary before designing a system ?
       2+3=5 [Q.N.6, Supp. 2071]
6. What is system analysis and design? Describe briefly.   5 [Q.N. 6, 2071]
7. Explain SDLC with appropriate diagram.   5 [Q.N.6, 2070 'Supp']
8. What is feasibility study? Explain different levels of feasibility study. 1+4 [Q.N. 6, 2070 'C']
9. What is system? Explain the basic elements of system.   1+4 [Q.N. 6, 2070 'D']
10. Who is system analyst? List out the roles of system analyst.   1+4 [Q.N. 7, 2070' D']
11. Who is system analyst? List the major roles of system analyst.2+3 [Q.N. 6, Supp. 2069]
12. What is feasibility study? Explain the different levels of feasibility study?
        4+1 [Q.N. 9, Supp. 2069]
13. Explain different stages of system development life cycle with clear figure. 5 [Q.N. 6, 2069]
21. What is feasibility study ? Why feasibility study is important in system analysis phase ?
    Explain.   2+5 [Group – B, Q.N. 4, 2068 1st Exam.]
14. Who is system analyst ? Highlight the characteristics of a good analyst.   2+5
        [Group – B, Q.N. 8, 2068 1st Exam.]
15. What are the documentation techniques ? Explain with examples.   7
        [Group – B, Q.N. 10, 2068 1st Exam.]
16. What is feasibility study ? Explain different levels of feasibility study.   2+5
        [Group – B, Q.N. 5, 2068 2nd Exam.]
17. What is system analysis ? What are the major objectives of system analysis ? Explain.
        2+5 [Group – B, Q.N. 8, 2068 2nd Exam.]
18. Define program logic. Explain different types of program logic tools.   2+5
        [Group – B, Q.N. 7, 2068 2nd Exam.]
19. What is system analyst ? Explain the major roles of system analyst.
        2+5=7 [Group - B, Q.N. 4, 2067]
20. What is feasibility study ? Explain the different levels of feasibility study.
        2+5=7 [Group – B, Q.N. 5, 2067]
21. Explain about the system design methodologies.   7 [Group – B, Q.N.5, 2066]
22. What are the different program logic tools? Explain about the decision table and
    decision tree with examples.   2+5 [Group – B, Q.N.9, 2066]
23. Explain about the different testing techniques during the system development.
        7 [Group – B, Q.N.11, 2066]
24. Who is a system analyst ? Explain the major role of system analyst.   2+5
        [Group – B, Q.N.5, 2065]
25. What is documentation ? Explain the importance of documentation in program
    designing.   2+5 [Group – B, Q.N.11, 2065]
26. Who is system analyst ? Explain the different stages of system development life cycle.
        2+5 [Group – B, Q.N. 6, 2064]
27. What is feasibility study ? Explain different levels of feasibility study.   2+5
        [Group – B, Q.N. 9, 2064]
28. What is program logic ? Explain the different types of program logic design tools.
        2+5 [Group – B, Q.N. 4, 2063]

29. Who is a system analyst ? Explain the major role of system analyst. 2+5 [Q.N. 4, 2062]
30. What is feasibility study ? Explain the different levels of feasibility of study.   2+5
      [Q.N. 5, 2062]
31. What is system analysis ? Explain the different steps of system development life cycle.
      2+5[Group – B, Q.N. 11, 2062]
32. Define feasibility study. Why feasibility study is important in system development
      process. Explain.   2+5 [Group – B, Q.N.5, 2061]
33. What are the documentation techniques ? Explain any three of them.   2.5+4.5
      [Group – B, Q.N.9, 2061]
34. What do you mean by feasibility study ? Why is it necessary before designing a
      system ?   4+3 [Group – B, Q.N.4, 2060]
35. State the steps involved in system development cycle in chronological order. Explain
      data security laws.   5+2 [Group – B, Q.N.9, 2059]
36. What is the importance of Data Flow Diagrams in the S.D.L.C. ? What do you mean by
      the following terms ? (any two):   3+4
      (a) Physical System   (b) C.A.S.E.   (c) P.I.E.C.E.S.   (c) Feasibility Study
      [Q.N. B.1., 2058]
37. Define the term system. List different stages of system development life cycle.
      Highlight the importance of the first two stages.   [Group – B , Q.N. 1, 2057]
38. Who is systems analyst ? Highlight the characteristics of a good analyst.
      [Group – B , Q.N. 2, 2057]
39. Write short notes on :
      (i)   E–R diagram   [Q.N. 15. (a), Supp. 2069]
      (ii)   Feasibility Study.   [Group – B, Q.N.12(b), 2065]
      (iii)   Feasibility study   [Group – B, Q.N. 12(i), 2063]

Unit 2: Database

1. Define DBMS. List out the objectives of DBMS.   1+4[Q.N.7, 2072'C']
2. What is Relational database model? List the advantages and disadvantages of
      Relationship database model.   1+4[Q.N.8, 2072'C']
3. Describe the terms 'SQL' and 'DML'.   2.5+2.5 [Q.N.9, 2072'C']
4. Describe any two database model with diagram.   5[Q.N.10, 2072'D']
5. What is Ms-Access ? What are the basic components of micro-soft Access ? List out.
      1+4 [Q.N.8, Supp. 2071]
6. Who is database administrator ? List the roles of database administrator.
      1+4=5 [Q.N.10, Supp. 2071]
7. What is database? List out the advantages of Database Management System.
      1+4=5 [Q.N. 7, 2071]
8. Describe the centralized and distributed database system.   5 [Q.N. 9, 2071]
9. Explain the database models with clear diagrams.   5 [Q.N.7, 2070 'Supp']
10. What is DBMS ? List out the functions of DBMS.   1+4 [Q.N.8, 2070 'Supp']
11. What is Hierarchical database model? List out the advantages and disadvantages of
      Hierarchical database model.   1+4 [Q.N. 7, 2070' C']
12. Explain the centralized and distributed database models.   2.5+2.5 [Q.N. 9, 2070 'C']
13. Differentiate between DBMS and RDBMS with examples.   2.5+2.5 [Q.N. 8, 2070 'D']
14. Explain the major features of database application software.   5 [Q.N. 8, Supp. 2069]
15. Explain the benefits of centralized database.   5 [Q.N. 10, Supp. 2069]
16. What is database? List the major uses of database application software.   1+4 [Q.N. 8, 2069]

17. What is E-R diagram? Explain the advantages of E-R diagram in system design.
1+4 [Q.N. 9, 2069]

18. Explain the database model with suitable examples. 5 [Q.N. 10, 2069]

19. Define the term RDBMS. State the guiding principles used in database design.
2+5 [Group – B, Q.N. 7, 2068 1st Exam.]

20. What is data integrity ? State and describe different types of data integrity.
2+5 [Group – B, Q.N. 9, 2068 1st Exam.]

21. What is normalization ? How it is used in data analysis ? Explain. 7
[Group – B, Q.N. 11, 2068 1st Exam.]

22. What do you understand by the term data integrity ? Why it is important in designing a database ? 2+5 [Group – A, Q.N. 4, 2068 2nd Exam.]

23. Explain the benefits of centralized database. 7[Group – B, Q.N. 9, 2068 2ndExam.]

24. What is normalization ? Explain the normalization process with examples.
2+5=7 [Group – B, Q.N. 8, 2067]

25. What do you understand by the term data integrity ? Why it is important thing to be considered while designing a database ? Explain. 2+5=7[Group – B, Q.N. 11, 2067]

26. Define database and DBMS. Explain the advantages of Database system over flat-file system. 2+5 [Group – B, Q.N.7, 2066]

27. What are the advantages of distributed database system over centralized database system. 7 [Group – B, Q.N.10, 2066]

28. What is normalization ? Explain the normalization process with example. 2+5
[Group – B, Q.N.6, 2065]

29. What is data security ? How it can be implemented ? 2+5 [Group – B, Q.N.10, 2065]

30. Differentiate between database and database management system. Explain the top down methodology of database design. 3+4 [Group – B, Q.N. 4, 2064]

31. Explain the benefits of centralized database. What are the major responsibilities of a Database Administrator. Explain in detail. 3+4 [Group – B, Q.N. 8, 2064]

32. What do you mean by data security ? Explain briefly the type of security methods normally adopted in computerized environment. 2+5 [Group – B, Q.N. 11, 2064]

33. Define database administrator. Explain the duties and responsibilities of a database administrator. 2+5 [Group – B, Q.N. 6, 2063]

34. What is normalization ? Explain the normalization process with examples. 2+5 [Q.N. 8, 2063]

35. What do you understand by the term data integrity ? Why it is an important thing to be considered while designing a database. State the describe different types of data integrity. 20 [Group – A, Q.N. 2(b)Or, 2062]

36. Who is database administrator ? Explain the benefits of centralized database system.
3+4 [Group – B, Q.N.4, 2061]

37. What is data security ? How it can be implemented ? 3+4 [Group–B,Q.N.6, 2061]

38. Give two advantages of using a database rather than a number of separate files. What are major responsibilities of a Database administrator ? 3+4[Group – B, Q.N.7, 2060]

39. Why is normalization needed ? Explain normalization process with example.
2+5 [Group – B, Q.N.9, 2060]

40. You have been asked to create a database programme for a library to find out who has overdue books that were borrowed from library. The information are stored in BORROWER, BOOK, LOAN files :

Borrower	Book	Loan
Borrower ID	Book ID	Book ID
Surname	Title	Borrower ID
First name	Author	Date Due
Title	Date Published	
Address	Publisher	
Post code		
Date of birth		

(a) Creat a data flow diagram for the overdue books processing.5[Group – A, Q.N.1.(a), 2060]

(b) Explain the terms logical physical design mapping logical design to physical design. 5 [Group – A, Q.N.1(b)., 2060]

(c) Write a program using any x-base system to generate the overdue books report. 10 [Group – A, Q.N.1(c)., 2060]

41. Answer *any two* of the following questions in Group - A. 2×20=40

A hospital deals with a large number of patients each day. Appointments are made for each hour of the day from 09.00 to 18.00 for OPD patients. Different registers are maintained to record different aspects of hospital such as Doctor's details, doctor's time table and registration file for each doctor. When patient arrive, they are register depending on their request or requirement. These registration are made in the registration file. Which is made available to the respective doctors.

(a) Create a flow chart to show registration this system of management has to be computerized. 5

(b) Identify the entities of the system, their attributes and relationship between these entities. Use ERD to show the relationship. 5

(c) Using any xBASE system write down a program that would be used to create a program that be used by the counter person to register the patient based on your ERD developed in question.1 (b). 10 [Group – A, Q.N.1., 2059]

42. (a) What do you understand by the term data integrity ? Why it is important thing to be considered while designing a database. State and describe different types of data integrity. 5 [Group – A, Q.N.2(a)., 2059]

(b) What is data security ? How it can be implemented ? 5 [Group – A, Q.N.2(b)., 2059]

(c) Now different banks are using ATM system. These machines read the information of the account from the ATM card and accept the pin code. Suppose validation is made based on pin code in ATM, and pin code entered for the account holder and Account number is read from the card. If valid amount to withdraw is accepted, it is again verified to the amount is account. If withdraw is possible then the amount is provided and is recorded in respective files. Write a program for the ATM coming any xBase system. 10 [Group – A, Q.N.2(c)., 2059]

43. You have been asked to create a database program for a departmental store to generate sales bill. The information are stored in stock, bill and bill details file.

Stock			Bill		
Item Code	Numeric	4	Bill No.	Numeric	6
Item Name	Character	40	Bill Date	Data time	
Re-order level	Numeric	2	**Bill Details**		
Sales price	Numeric	5	Bill No.	Numeric	6
Quantity in Hand	Number	4	Item Code	Numeric	4
			Rate	Numeric	5
			Quantity	Numeric	2

(a) Create a data flow diagram for the billing process. 5

(b) Explain the terms logical physical design mapping logical design to physical design. 5

(c) Write a program using any xBASE system to generate the bill for the sales.10 [Group – A, Q.N.3., 2059]

44. Differentiate between Database and DBMS. Explain the top down methodology of Database design. 3+4 [Group – B, Q.N.4., 2059]

45. Write a function using any xBase system, which will accept a number and returns true if prime number and false if non-primary number. 7 [Group – B, Q.N.6., 2059]

46. Explain the benefits of Centralized Database. What are major responsibilities of a Database Administrator ? What are the objectives of system analysis ? 2+3+2 [Group – B, Q.N.11., 2059]

47.   The company XYZ Pvt. Ltd. wishes to computerise its payroll process. The company
       has employed a data entry operator to enter the data into a database that has the
       following database structure: 20

Field	Field Name	Type	Width	Dec
1.	Emp Code	Numeric	3	
2.	First Name	Character	20	
3.	Surname	Character	10	
4.	Post	Character	20	
5.	Department	Character	20	
6.	Basic	Numeric	7	2
7.	Married	Logical	1	
8.	JobStatus	Character	1	

Develop a program in any one xBASE package which uses this database and prints out
the payroll slip for each employee at the end of each month.

Calculation rules:

The following allowances are added to the basic salary:

(a) House Rent Allowance (HRA) (b) Transportation Allowance (TA) The following
    deductions are made from the basic salary:

(a) Provident Fund (PF)

(b) Income tax deduction.

The rules for calculating the net salary are:

1. The field 'Job Status' may contain either a 'T' (for temporary status) or 'p'(for
   permanent status). The Field 'Married' may contain the value .T. (for married) or .F.
   (for unmarried)

2. HRA is calculated at 10% of BASIC salary for permanent employees
   (JobStatus = P)

3. TA is calculated at 10% and 6% of BASIC salary for permanent and temporary
   (JobStatus) =T) employees respectively.

4. PF is calculated at 10% of BASIC salary for permanent employees only.

5. Income tax is calculated on the annual income (12 x Basic) and has the following
   rules:

Annual Salary	Married	Unmarried
a. Upto 45,000	0%	0%
b. Greater than 45,000 and upto 60,000	0%	5%
c. Greater than 60,000 and upto 75,000	5%	10%
d. Greater than 75,000	10%	15%

                                                          [Q.N. A.1., 2058]

48.   Name the different models of DBMS. Write short notes on any three of the following:1+6
       (a) S.Q.L.   (b) Data Dictionary   (c) E.R.D   (d) D.D.L.   **[Q.N. B.2., 2058]**

49.   What are Domains and Tuples ? What are the characteristics of a good data model ?
                                                          2+5 **[Q.N. B.3., 2058]**

50.   What is prototyping? Write short notes on any two of the following: 2+5
       (i) Normalization of data   (ii) Data security   (iii) RDBMS
                                                          [Q.N. B.8., 2058]

51.   What is the role of a Database Administrator? What are the duties and responsibilities
       of a System Analyst?   2+5 **[Q.N. B.9., 2058]**

52.   Define the term RDBMS. State the four guiding principles used in database design.
                                                          [Group – B , Q.N. 3, 2057]

53. A database file contains the records of items with following fields.

Fieldname	Field Type	Field Size
Item code	Numeric	4
Item name	Alphabetic	15
Quantity in stock	Numeric	3
Recorder level	Numeric	3
Minimum level	Numeric	3

Minimum level is the quantity of items in stock that must be maintained at any cost for the smooth operation of the organization. The reorder level is the quantity of items above the minimum level which when reached indicates that the management has to place the order for that particular item.

Develop a program in any one of xBASE packages, which displays a main menu with options for Item Entry, Item Update, Item Delete and Report. The program should not allow to enter two records with same Item code when entering Item details. The program should display a message such as "Module yet to be developed" for Update and Delete options in the main menu. If an user chooses a Report option in the main menu, the program should print the names of items.

(a) Whose stock is below the minimum level.
(b) Whose stock is within 10% above reorder level.   **[Group – A , Q.N. 1, 2057]**

54. Write short notes :
(a) Data security   **[Q.N.15(b), Supp. 2071]**
(a) Normalization   **[Q.N. 15 (b), 2071]**
(b) Normalization   **[Q.N. 15. (a), 2070 'D']**
(c) Data dictionary   **[Q.N. 15 (b), 2070 'C']**
(d) SQL   **[Q.N. 15 (b), Supp. 2069]**
(e) Data dictionary   **[Group – B, Q.N. 12(a), 2068 2nd Exam.]**
(f) Data security   **Group – B, [Q.N. 7 (a), 2067]**
(g) Normalization   **[Group – B, Q.N. 12(b), 2064]**
(h) Data security   **[Group – B, Q.N. 12(ii), 2063]**
(i) Normalization   **[Group – B, Q.N. 12(c), 2062]**
(j) Data dictionary   **[Group – B, Q.N. 7(a), 2062]**
(k) DML   **[Group – B, Q.N.5(a)., 2059]**
(ℓ) Date modeling   **[Group – B , Q.N. 4(c), 2057]**
(m) Advantage of DBMS   **[Group – B , Q.N. 4(b), 2057]**
(n) Data security   **[Group – B , Q.N. 4(a), 2057]**

Unit 3: Communication and Networking

1. Define computer netwrok and explain its uses.   2+3[Q.N.10, 2072'C']
2. Describe 'simplex', half duplex' and 'full duplex' with example. 1+2+2 [Q.N.11, 2072'C']
3. What is Networking? List the advantages of Networking.   1+4[Q.N.9, 2072'D']
4. Describe Network topologies with diagram.   5[Q.N.11, 2072'D']
5. What is computer network ? Explain its uses.   2+3=5 [Q.N.7, Supp. 2071] 2
6. What is Network topology? Describe any two network topologies with clear diagram.
                                                      1+4=5 [Q.N. 8, 2071]
7. Describe the 'Coaxial cable' and 'Satellite' with examples.   2.5+2.5=5[Q.N. 10, 2071]
8. Define computer networks and explain their uses.   1+4 [Q.N.9, 2070 'Supp']
9. Describe 'Simplex', 'half duplex' and 'full duplex' channel of communications with examples.   5 [Q.N.10, 2070 'Supp']
10. What is Networking? List out the advantages and disadvantages of Networking.
                                                      1+4 [Q.N. 8, 2070 'C']
11. Explain any two transmission media with appropriate diagrams. 2.5+2.5 [Q.N. 10, 2070 'C']

12. Describe the types of network topologies with clear diagrams. 5 [Q.N. 10, 2070 'D']
13. What is LAN? Explain the different types of LAN topologies with diagram.
1+4 [Q.N. 7, Supp. 2069]
14. What are the types of LAN topologies? Explain with diagrams. 5 [Q.N. 7, 2069]
15. What are types of LAN topology ? Explain with diagram. 7 [Group - B, Q.N.,10,2068 2nd Exam.]
16. What is local area network ? Explain different types of topologies with diagrams.
2+5 [Group - B, Q.N.,6,2068 1st Exam.]
17. What is network topology ? Explain the different types of network topologies with diagram. 7 [Group – B, Q.N. 6, 2067]
18. Define Network Architecture. Explain client-server and peer-to-peer networking.
2+5 [Group – B, Q.N.4, 2066]
19. Explain about OSI/ISO model of networking. 7 [Group – B, Q.N.6, 2066]
20. What is local area network ? Explain the different types of topologies with diagrams.
2+5 [Group – B, Q.N.4, 2065]
21. What is networking ? Distinguish between star topology and ring topology of networking principles with the help of clean diagram. 2+5[Group – B, Q.N. 10, 2064]
22. What is networking ? Explain the advantages and disadvantages of networking.
2+5 [Group – B, Q.N. 10, 2063]
23. What is local area network ? Explain the different types of topologies with diagram.
2+5 [Group – B, Q.N. 6, 2062]
24. What are the different types of LAN topology ? Explain. 7 [Group – B, Q.N.7, 2061]
25. What is network topology ? What are the different types of LAN topology ? Explain.
3+4 [Group – B, Q.N.5, 2060]
26. What do you mean by transmission media ? Write short notes on UTP cable and fibre optical cable. 3+2+2 [Group – B, Q.N.10, 2060]
27. What do you mean by Topology ? What do you understand by the following terms *(any two)*: 1+6
(a) Client-Server Network   (b) Workstation   (c) Protocol   [Q.N. B.4., 2058]
28. What is a local area network ? List the different types of topologies with diagrams.
[Group – B , Q.N. 5, 2057]
29. Write short notes on the following:
(a)   Protocol   [Q.N.15(a), Supp. 2071]
(b)   Satellite   [Q.N. 15 (ii), 2069]
(c)   Coaxial Cable   [Q.N. 15. (i), 2069]
(d)   Packet switching.   [Group – B, Q.N. 12(b), 2068 2nd Exam.]
(e)   Coaxial cable   [Group – B, Q.N. 12 (a), 2067]
(f)   Satellite   [Group – B, Q.N. 12 (b), 2067]
(g)   Client server network   [Group – B, Q.N. 7(i), 2063]
(h)   Workstation   [Group – B, Q.N. 7(ii), 2063]
(i)   Protocol   [Group – B, Q.N. 7(iii), 2063]
(j)   Coaxial Cable   [Group – B, Q.N. 12(a), 2062]
(k)   Satellite   [Group – B, Q.N. 12(b), 2062]
(l)   Fiber-optic Cable   [Group – B, Q.N.8(b), 2061]
(m)   Bus-Topology   [Group – B, 5(b), 2059]
(n)   Transmission media   [Group – B, 5(c), 2059]

Unit 4: Programming in C

1. Write a program which find the sum, difference and product of 2 numbers using switch case statement. 10 [Q.N.1, 2072'C']
2. (a) Differentiate between while and Do-while loop with appropriate example.
2.5+2.5 [Q.N.2(a), 2072'C']

(b) Write a program to display the following: 5
1
1 2
1 2 3
1 2 3 4
1 2 3 4 5
[Q.N.2(b), 2072'C']

3. Write a program which askes n^{th} terms of numbers and sort them in ascending order.
[Q.N.3, 2072'C']

4. (a) What is function? List out the advantages of functions. 1+4 [Q.N.4(a), 2072'C']
(b) Write a program to find the factorial of a given number. 5[Q.N.4(b), 2072'C']

5. (a) Describe fscanf and fprintf function. [Q.N.5(a), 2072'C']
(b) Write a program which asks name, age, roll-number of student and write it in a file student. dat. 5[Q.N.5(b), 2072'C']

6. Differentiate between array and structure with example. 5 [Q.N.12, 2072'C']

7. (a) What is looping? Describe 'for' and while loop with appropriate exmaples. 1+2+2
[Q.N.1(a), 2072'D']
(b) Write a program to check if a given number is odd of even using if statement. 5
[Q.N.1(b), 2072'D']

8. Describe any five string handling functions with examples. 10 [Q.N.2, 2072'D']

9. What is array? Write a program to find addition of two matrices (3×3). 2+8
[Q.N.3, 2072'D']

10. (a) Differentiate between Structure and Union. 2.5+2.5 [Q.N.4(a), 2072'D']
(b) Write a program to find greatest number among four numbers.
5[Q.N.4(b), 2072'D']

11. (a) Describe any two file handling functions. 2.5+2.5[Q.N.5(a), 2072'D']
(b) Write a program to display name, age and address reading from file "record .dat". 5[Q.N.5(b), 2072'D']

12. What are the data types available in C programming ? Explain in detail with examples.
10 [Q.N.1, Supp. 2071]

13. What is looping ? Write a program to calculate and display the multiplication table using nested loop. 2+8=10 [Q.N.2, Supp. 2071]

14. Describe the "strcat", "strcpy", "strcmp", "strlen" and "strrev" string functions with examples. 10 [Q.N.3, Supp. 2071]

15. Write a program to arrange the elements of an array in ascending order.
10 [Q.N.4, Supp. 2071]

16. What is "fscanf" function ? Write a program to display name, age and address reading from a file named "record.dat." 2+8=10 [Q.N.5, Supp. 2071]

17. What are operators used in C programming ? Explain with examples.
5 [Q.N.8 (or), Supp. 2071]

18. Explain the array and structure with examples. 2.5+2.5 [Q.N.9, Supp. 2071]

19. What is function? Write a program to generate factorial of a given number using recursive function. 2+8=10 [Q.N. 1, 2071]

20. Describe any five 'file handling functions' with examples. 10[Q.N. 2, 2071]

21. What is looping? Describe 'for loop', 'while loop' and 'do-while loop' with appropriate examples. 1+9=10 [Q.N. 3, 2071]

22. Write a program which asks 100 numbers and sort them in ascending order.
10 [Q.N. 4, 2071]

23. Write a program to find greatest number among four numbers. 10 [Q.N. 5, 2071]

24. Describe the different data types which are used in C–programming. 5 [Q.N. 11, 2071]

25. Write a program which finds the sum, difference and product of 2 numbers using switch case statement. 10 [Q.N.1, 2070 'Supp']

26. Describe the types of loop with flowchart and examples. 10 [Q.N.2, 2070 'Supp']

27. Write a program which asks the user to input 'n' terms of number and find out the greatest and smallest number among those numbers. 10 [Q.N.3, 2070 'Supp']

28. Differentiate between array and structure with suitable examples.5+5 [Q.N.4, 2070 'Supp']

29. Write a program which asks name, age, roll number of students and write them in a file "xyz.dat". 10 [Q.N.5, 2070 'Supp']

30. What is operator ? Describe the types of operators with appropriate examples. 1+4 [Q.N.11, 2070 'Supp']

31. What is nested loop? Write a program to display the multiplication table of nth terms of given numbers. 2+8 [Q.N. 1, 2070 'C']

32. Describe any five "string handling functions" with examples. 10[Q.N. 2, 2070 'C']

33. Describe array, structure and pointer with examples. 10 [Q.N. 3, 2070 'C']

34. Write a program which reads salary of 25 employees and count the number of employees who are getting salary between 30,000 to 40,000. 10 [Q.N. 4, 2070 'C']

35. Describe f print f scan f file handling functions. Write a program which writes "Welcome to Nepal" in a file. 10 [Q.N. 5, 2070 'C']

36. Differentiate between "While" and "Do–While" loop with flowchart. 2.5+2.5 [Q.N.11,2070'C']

37. What is control statement? Describe 'Sequence'. 'Selection' and 'Loop' with flowchart and examples. 2+8 [Q.N. 1, 2070 'D']

38. Write a program which reads name of 20 employees and sort them in alphabetical order. 10[Q.N. 2, 2070 'D']

39. Differentiate between structure and union with suitable examples. 5+5 [Q.N. 3, 2070 'D']

40. What is recursion? Write a program to calculate factorial value of given number using recursive function. 5+5 [Q.N. 4, 2070 'D']

41. Write a program which reads name, department and age from a file named "employee.dat" and display them. 10 [Q.N. 5, 2070 'D']

42. Describe the data types which are used in C programming. 5 [Q.N. 9, 2070 'D']

43. Differentiate between user defined function and library function with examples.

44. What is control statement? Write a program which selects and prints largest among 3 numbers using if–else statement with flow charts. 2+8 [Q.N. 1, Supp. 2069]

45. What is recursion? Write a program to calculate factorial of a given number using recursive function. 2+8[Q.N. 2, Supp. 2069]

46. What is looping? Describe "for", "while" and "do while" loop with appropriate examples. 1+9 [Q.N. 3, Supp. 2069]

47. How do you initialize an array? Write a program to subtract two matrices by supplying elements of matrices by the user. 2 +8[Q.N. 4, Supp. 2069]

48. What is 'f print f ' function? Write a program which asks name, age and roll–number of students and write it in a file named "record.dat". 2 +8 [Q.N. 5, Supp. 2069]
[Q.N. 8,(or), Supp. 2069]

49. What is looping? Describe "for", "while" and "do-while" loops with appropriate examples. 1+9 [Q.N. 1, 2069]

50. What is control statement? Write a program which selects and prints largest among 3 numbers using "if-else" statement with flow charts. 2+8[Q.N. 2, 2069]

51. What is string? Explain any four string handling functions with example. 2+8 [Q.N. 3, 2069]

52. Write a program to add two matrices by supplying elements of matrices by the user. 10 [Q.N. 4, 2069]

53. Write a program which reads name, department and age from a file named "employee.dat" and display them on the monitor. 10 [Q.N. 5, 2069]

54. Differentiate between array and structure. 1+4 [Q.N. 8(or), 2069]

55. (a) Explain data types used in programming with examples. 5
[Group – A, Q.N. 1(a), 2068 1st Exam.]

    (b) Write a program to read a line of text and to convert in into uppercase. 5
[Group – A, Q.N. 1(b), 2068 1st Exam.]

(c) Compare "While", "do-while" and "for" loops with examples.   5
[Group– A, Q.N. 1(c), 2068 1st Exam.]

(d) Write a program to find out whether it is an odd number or even number.
5 [Group – A, Q.N. 1(d), 2068 1st Exam.]

56. (a) What is recursive function ? Write a program to calculate the factorial of an integer using recursion.   3 + 7 [Group – A, Q.N. 2(a), 2068 1st Exam.]

(b) Define pointer. Discuss the relation between the pointer and array with suitable examples.   2+8[Group– A, Q.N. 2(b), 2068 1st Exam.]

57. (a) Write a program to open a new file and read roll-on, name, address and phone numbers of students until the user says "no", after reading the data, write it to the file then display the content of the file
10 [Group – A, Q.N. 3(a), 2068 1st Exam.]

(b) Write a program to input names of 'n' numbers of students and short them in alphabetical order.   10 [Group – A, Q.N. 3(b), 2068 1st Exam.]

58. (a) What is an operator ? Explain different types of operators used in programming with examples.   1+4 [Group– A, Q.N.1(a), 2068 2nd Exam.]

(b) Define 'Nested Loop'. Write a program to calculate and display the multiplication table using nested loop.   2+3 [Group– A, Q.N.1(b), 2068 2nd Exam.]

(c) Write a program to find out factorial of any number.   5
[Group– A, Q.N. 1(c), 2068 2nd Exam.]

(d) What do you mean by "local", "global" and "static" variables ? Explain with examples.   5 [Group – A, Q.N. 1(d), 2068 2nd Exam.]

59. (a) What is an array ? Write down the similarities and differences of array with pointer.   2+3+5 [Group – A, Q.N. 2(a), 2068 2nd Exam.]

(b) Write a program to read salaries of 300 employees and count the number of employees getting salary from 10,000 to 15,000.
10 [Group – A, Q.N. 2(b), 2068 2nd Exam.]

60. (a) Write a program to sort an array of 'n' elements in descending order.
10[Group – A, Q.N. 3(a), 2068 2nd Exam.]

(b) Write a program to enter "name", "roll-no" and "marks" of 10 students and store them in a file. Read and display the same from the file.   10
[Group – A, Q.N. 3(b), 2068 2nd Exam.]

61. (a) What is looping ? Write a program to print first 10th terms of the following series using for loop.
1 5 9 13 ....   2+3=5 [Group - A, Q.N. 1 (a), 2067]

(b) Write a recursive functions to calculate the factorial of any integer number.   5
[Group - A,Q.N. 1 (b), 2067]

(c) Write a program to display all prime numbers from 1 to 100.   5
[Group - A, Q.N. 1 (c), 2067]

(d) What do you mean by string manipulation ? Explain about strepy and strcat.
2+3=5 [Group - A, Q.N. 1 (d), 2067]

62. (a) How do you declare an array ? Write a program to arrange the elements of an array in ascending order.   3+7=10 [Group - A, Q.N. 2 (a), 2067]

(b) What is the difference between library function and user-defined function ? Write a program using user-defined function to calcuate y raise to ppower x.
5+5=10 [Group - A, Q.N. 2 (b), 2067]

63. (a) Differentiate between array and structure with suitable example.
10 [Group - A, Q.N. 3 (a), 2067]

(b) Write a program to delete and rename the data file using remove and rename command.   10 [Group - A, Q.N. 3 (b), 2067]

64. (a) Write an algorithm for a program that input cost price (CP) and selling price (SP) and determines whether there is gain or loss. Convert this algorithm into program code. 5 [Group – A, Q.N.1(a), 2066]

(b) Write a program to display the name of day on the basis of entered number 1 to 7. For example, 1 for Sunday. [Group – A, Q.N.1(b), 2066]

(c) Write a program to input an integer number and check whether it is prime or not. [Group – A, Q.N.1(c), 2066]

(d) Explain data types used in C-Programming with examples.5 [Group – A, Q.N.1(d), 2066]

65. (a) Write a program to store name and mark of 20 students. Sort the data according with mark in descending order and display them. 10
[Group – A, Q.N.2(a), 2066]

(b) Write a program to find the sum of 'n' integer numbers using function.
10 [Group – A, Q.N.2(b), 2066]

66. (a) Write a program to store std-no, name and mark of 'n' students in a data file. Display the records in appropriate format reading from the file.1 [Group – A, Q.N.3(a), 2066]

(b) Differentiate array and structure with examples.10[Group – A, Q.N.3(b), 2066]

67. Write an algorithm and a flow chart for a program that checks whether the number entered by user is exactly divisible by 5 but not by 11. 5 [Group – A, Q.N.1(a), 2065]

68. Write a program that reads three numbers and displays the largest among them. 5
[Group – A, Q.N.1(b), 2065]

69. What is an operator ? Explain different types of operators used in programming. 2+3
[Group – A, Q.N.1(c), 2065]

70. Write a program to read a four digit number and display it in reverse order. 5
[Group – A, Q.N.1(d), 2065]

71. Write a program to add two matrices. 10 [Group – A, Q.N.2(a), 2065]

72. Write differences between structure and union with syntax. 10 [Group – A, Q.N.2(b), 2065]

73. Write a program to enter name, roll-number and marks of 10 students and store them in the file. 10 [Group – A, Q.N.3(a), 2065]

74. Write a program to enter 'n' numbers into one dimensional array and sort and display them in ascending order. 10 [Group – A, Q.N.3(b), 2065]

75. Differentiate between while and do-while loop. 3.5+3.5 [Group – B, Q.N.9, 2065]

76. (a) Differentiate between break and continue statements with examples. Write a program to print first 10 terms of any series using 'for' loop: 2+3
[Group – A, Q.N. 1(a), 2064]

(b) What is an operator ? Explain assignment, Ternary, Comma operators with examples. 2+3 [Group – A, Q.N. 1(b), 2064]

(c) Write a program for reading a data file. 5 [Group – A, Q.N. 1(c), 2064]

(d) Write the advantages of function. Write a recursive function to calculate the factorial of any integer number. 2+3 [Group – A, Q.N. 1(d), 2064]

77. (a) Describe the importances of an array. Write a program to store ten different constant variables in any array and print out the greatest number.
3+7 [Group – A, Q.N. 2(a), 2064]

(b) Write a program that reads different names and addresses into the computer and sorts the names into alphabetical order using structure variables. 10
[Group – A, Q.N. 2(b), 2064]

78. (a) Write a program to delete and rename data file using remove and rename command. 10 [Group – A, Q.N. 3(a), 2064]

(b) Write a program to count the number of vowels and consonants in a given text. 10 [Group – A, Q.N. 3(h), 2064]

79. What are the different symbols used to construct a flow chart ? Give brief explanation along with a neat diagram. 7 [Group – B, Q.N. 11, 2063]

80. (a) What is looping ? Write a C program to display the sum of 'n' terms of even numbers. 2+3 [Group – A, Q.N. 1(a), 2063]

(b) Write a C program to calculate the factorial of a given number using functions. 5 [Group – A, Q.N. 1(b), 2063]

(c) What is an operator ? Describe different types of operators that are included in C. 2+3 Group – A, Q.N. 1(c), 2063]

(d) What are the differences between break and continue statement ? Write a C program to print first 10 terms of the following series using FOR loop. 1, 5, 9, 13, ... 2+3 [Group – A, Q.N. 1(d), 2063]

81. (a) What is an array ? Write a C program to sort integer values in descending order. 2+8 [Group – A, Q.N. 2(a), 2063]

(b) Write a C program to read age of 40 students and count the number of students of the age between 15 and 22. 10 Group – A, Q.N. 2(b), 2063]

82. (a) Differentiate between structures and pointers with examples. 10 [Group – A, Q.N. 3(a), 2063]

(b) Write a C program design a menubase system which has the following features: 10
    (i) Appending record (ii) Reading record
    (iii) Delete record (iv) Quit [Group – A, Q.N. 3(b), 2063]

83. (a) Write a C Program to print the 10 positive integers and their factorials. 5 [Group – A, Q.N. 1(a), 2062]

(b) Differentiate between while and Do while loop with suitable examples. 5 [Group – A, Q.N. 1(b), 2062]

(c) For any integer input through the keyboard, write a C Program to find out whether it is an odd number or even number. 5[Group – A, Q.N. 1(c), 2062]

(d) Write a C Program to input 'n' numbers and find out greatest and smallest number. 5 [Group – A, Q.N. 1(d), 2062]

84. (a) Draw a flowchart and write a C Program to read in a positive integer less than 20 and display its multiplication table. 10[Group – A, Q.N. 2(a), 2062]

(b) Write a C Program to input names of 'n' numbers of students and sort them in alphabetical order. 10 [Group – A, Q.N. 2(b), 2062]

85. Write an algorithm and C Program to read salaries of 200 employees and count the number of employees getting salary between 5,000 – 10,000. 10 [Group – A, Q.N. 3(a), 2062]

86. Write a C Program that will read successive records from the new data file and display each record on the screen in an appropriate format. 10[Group– A, Q.N. 3(b), 2062]

87. Describe the limitation of using getchar and putchar functions for reading strings. 7 [Group – B, Q.N. 9, 2062]

88. Write a program that reads different names and addresses into the computer and rearrange the names into alphabetical order using the structure variables. 10 [Group – A, Q.N.1(b), 2061]

89. Describe either in flowchart or algorithm the steps required to display the multiplication table of a series of given numbers (entered by the user). Convert this flowchart or algorithm into program code of any of the 4GL or HLL of your choice. The program should use the 'For' looping structure in calculating and displaying the multiplication table. 20 [Group – A, Q.N.1(b)Or, 2061]

90. Write a program using C language to read the age of 100 persons and count the number of persons in the age group between 50 and 60. Use "For" and "Continue" statements. 10 [Group – A, Q.N.2(a), 2061]

91. Differentiate between while and do while loop. What are the advantages of object oriented programming over structured programming ? 5+5[Group – A, Q.N.2(b), 2061]

92. Write a program using C language that reads successive records from the new data file and display each record on the screen in an appropriate format. 10
[Group – A, Q.N.3(a), 2061]

93. What is pointer ? Explain the meaning of each of the following declarations : 2.5+7.5
(i) int *p; (ii) int *p [10];
(iii) int (*p) [10]; (iv) int *p [void];
(v) int *P(char *a); [Group – A, Q.N.3(b), 2061]

94. Differentiate between array and structure. 7 [Group – B, Q.N.10, 2061]

95. The marks obtained by a student in 7 different subjects are entered through the keyboard. The student gets a division as per the following rules: 10

Percentage greater or equal to 60 First division
Percentage between 45 and 59 Second division
Percentage between 35 and 44 Third division
Percentage less than 35 Fail
Mark less than 35 in a subject will be declared as Fail

Write a program using C language to process result of all students based on the specification state above. [Group – A, Q.N.1(a), 2061]

96. What do you mean by program algorithm ? Explain the aims of program design and building blocks of a structured programming. 3+4[Group – B, Q.N.8, 2060]

97. Write a program to store Kathmandu valley's 7 days maximum and minimum temperature (in centigrade) and calculate average, maximum, minimum temperature using function and print 7 days temperature, maximum minimum and average temperature using any high level programming language.12[Group – A, Q.N.2(a)., 2060]

98. Write a programme to input a message from keyboard and display the menu. 5×4=20
1. Print the message length in terms characters. [Group – A, Q.N.3(a)., 2060]
2. Print the message in reverse order. [Group – A, Q.N.3(b)., 2060]
3. Print the message in capital letters. [Group – A, Q.N.3(c)., 2060]
4. Copy the message from one location of screen to another location.
[Group – A, Q.N.3(d)., 2060]

99. Differentiate between internet and intranet. Explain the term Normalization in terms of database design. 5+2 [Group – B, Q.N.7., 2059]

100. What is Program Logic ? What are different tools to explain the logic and design of a program ? What is infinite loop ? What are symbols used to draw a flow chart ?
1+3+1+2 [Group – B, Q.N.12., 2059]

101. What are Logical Operators ? Give two examples of their use. Compared to procedure-oriented programing what advantages does event-driven programming offer? 3+4 [Q.N. B.6., 2058]

102. Describe either in flowchart or algorithm form the steps required to display the multiplication table of a given number (inputted by the user). Convert this flowchart/algorithm into program code of the 4GL or HLL of your choice. The program should use the 'FOR' looping structure to calculate and display the multiplication table.
10+10 [Q.N. A.2., 2058]

103. A higher secondary school has asked you to write a HLL program to help them analyze their class test scores. The program must first ask for the number of students 'n' and should have a looping structure that loops through 'n' times to accept, validate and store the data in an array. The structure for each student is given below: 20

Field Name	Field Type	Size	Validation Rules
roll	numeric	2.0	1-99
name	alphabetic	25.0	
marks	numeric	2.1	0.0-10.0

The program must:
  (a) Print out the data for students who have failed (obtained marks <4.0)
  (b) Print out the data for students scoring more than 7.9.
  (c) Print out the average class mark.   [Q.N. A.3., 2058]
104. Write an algorithm and draw a flowchart to enter names of the students and ages of 10 different students in arrays, then arrange them in descending order according to the age and print them.   [Group – A , Q.N. 2, 2057]
105. An organization has 5 stores and it deals in items. The stock position of these items is shown below.

	Item 1	Item 2	Item 3	Item 4
Store 1	30	35	0	40
Store 2	20	0	25	0
Store 3	80	175	25	35
Store 4	0	21	32	28
Store 5	10	80	15	40

Develop a computer program in any of the high level language you are taught in your class, to input this table and to indicate the items that are completely out of stock at store *i*, where the value of *i* may be input from the keyboard.
Your program should also calculate the total stock of each item in the organization and also the stock in store number 5.   [Group – A , Q.N. 3, 2057]

Unit 5: Object-Oriented Programming (OOP)

1.   What is OOP? List the characteristics of OOP.   1+4 [Q.N.12, 2072'D']
2.   Explain the terms polymorphism and inheritance.   5 [Q.N.14, Supp. 2071]
3.   What is OOP? List the advantages of OOP.   1+4=5 [Q.N. 12, 2071]
4.   What is OOP ? List out the advantages of OOP.   1+4 [Q.N.12, 2070 'Supp']
5.   What is procedural oriented programming? Explain.   5 [Q.N. 12, 2070 'C']
6.   Explain polymorphism and inheritance with examples.   2.5+2.5 [Q.N. 11, 2070 'D']
7.   Explain the elements of OOP.   5 [Q.N. 14, Supp. 2069]
8.   Write the advantages and disadvantages of OOP.   5 [Q.N. 14, 2069]
9.   What is object-oriented programming ? How it is different from the procedure oriented programming ?   2+5 [Group – B, Q.N. 5, 2068 1st Exam.]
10. Why polymorphism and inheritance are important concepts of OOP ? Explain.   7 [Group - B, Q.N.6, 2068 2nd Exam.]
11. Explain the terms polymorphism and inheritance.   7 [Group – B, Q.N. 9, 2067]
12. Define the terms polymorphism and inheritance with examples.   3.5+3.5 [Group – B, Q.N.8, 2065]
13. Explain the terms polymorphism and inheritance in terms of OOPs.   4 [Group– B,Q.N. 5,2064]
14. Explain the terms Polymorphism and Inheritance.   7 [Group – B, Q.N. 5, 2063]

15. Why polymorphism and inheritance are important concepts of OOP ? Explain.
7 [Group – B, Q.N. 8, 2062]

16. Explain the terms Polymorphism and Inheritance. 7[Group – B, Q.N.11, 2061]

17. In event driven programming what are event handeler ? Explain the term **recession**.
5+2 [Group – B, Q.N.10., 2059]

18. Name the tools that are used in program design. Polymorphism and Inheritance are important concepts of OOP. What do you understand by there two terms?
2+5 [Q.N. B.5., 2058]

19. What is object–oriented programming ? How is it different from the procedure oriented programming.
[Group – B , Q.N. 8, 2057]

20. Write short notes on:
(a) Polymorphism [Group – B, Q.N.6(c), 2060]
(b) Inheritance [Group – B, Q.N.12(b), 2066]

Unit 6: Information Communication Technology and Cyber Law

1. Describe computer crime and it's various forms. 1+4 [Q.N. 12, 2070 'D']
2. What are the advantages of ICT? Explain. 5 [Q.N. 13, Supp. 2069]
3. Define computer crime and its various forms. 5 [Group – B, Q.N. 13, 2069]
4. Explain about the importance of computer security in this knowledge based society. 7
[Group – B, Q.N.8, 2066]
5. What do you mean by IT ? Explain the advantages and disadvantages of IT.
2+5 [Group – B, Q.N. 10, 2062]
6. Write short notes on:
(a) Computer crime [Q.N.15(a), 2072'C']
(b) Social impact of the ICT. [Q.N.15(b), 2072'C']
(c) Digital divide and social impact of ICT. 2.5+2.5=5 [Q.N.13, Supp. 2071]
(d) Cyber law. [Group – A, Q.N. 12(b), 2068 2nd Exam.]
(e) Cyber law. [Group – B, Q.N.12(a), 2065]
(f) Cyber law [Group – B, Q.N. 12(a), 2064]
(g) Cyber Law [Group – B, Q.N. 7(c), 2062]
(h) Cyber Law [Group – B, Q.N.8(a), 2061]

Unit 7: Multimedia

1. Describe any five application of multimedia. 5[Q.N.14, 2072'C']
2. What is multimedia? List out the components of multimedia. 1+4[Q.N.13, 2072'D']
3. Define multimedia. List the advantages and disadvantages of multimedia.
1+4 [Q.N.12, Supp. 2071]
4. Describe the advantages of multimedia. 5 [Q.N. 14, 2071]
5. What is multimedia ? List out the advantages of multimedia system.
1+4 [Q.N.13, 2070 'Supp']
6. What are the components of multimedia? Explain. 5 [Q.N. 14, 2070 'C']
7. List out the advantages and disadvantages of multimedia 5 [Q.N. 13, 2070 'D']
8. Explain the application of multimedia with examples. 5 [Q.N. 12, Supp. 2069]

9. What is multimedia? What are the components of multimedia? List out.   1+4
                                                                    [Q.N. 12, 2069]
10. Define the term multimedia. Explain the application areas of multimedia.   2+5
                                                             [Group – B, Q.N. 9, 2063]
11. What is multimedia? What are the hardware devices required by a personal computer
    to make it 'multimedia capable'?   1+2 [Q.N. B.7., 2058]

Unit 8: Artificial Intelligence

1. Describe applications of AI.   5[Q.N.14, 2072'D']
2. What is expert system ? Explain the field of expert system.
                                                      1+4 [Q.N.11 (or), Supp. 2071]
3. Describe the application areas of AI.   5 [Q.N. 13, 2071]
4. What is AI ? Explain the application areas of AI.   1+4 [Q.N.14, 2070 'Supp']
5. What is AI? Explain the application areas of AI.   1+4 [Q.N. 13, 2070 'C']
6. Explain the uses of robotics system with example.   [Q.N. 11 (or), Supp. 2069]
7. What is AI? Describe the applications of AI.   [Q.N. 11 (or), 2069]
8. What do you understand by AI ? How it affects the modern society ?
                                          2+5 [Group - B, Q.N.11, 2068 2nd Exam.]
9. What do you understand by AI ? How it affects the society ?   1+2
                                                           [Group – B, Q.N. 5, 2064]
10. What is computer animation ? How is it used in film making industry ?   2+5
                                                           [Group – B, Q.N. 7, 2064]
11. What do you understand by AI ? How it effects the modern society ?   3+4
                                                          [Group – B, Q.N. 12, 2061]
12. What do you understand by AI ? How it may affect the society ? Explain the terms
    polymorphism and inheritance in terms of oops.   2+2+3 [Group – B, Q.N.8, 2059]
13. Who does an AI application work ? Can a computer really think with the aid of
    AI ?   [Group – B , Q.N. 7, 2057]
14. What is computer animation ? How is it used on one film making industry ?
                                                           [Group – B , Q.N. 9, 2057]
15. Write short notes on:
    (a) Expert System   [Q.N.15(a), 2072'D']
    (b) Expert system   [Q.N. 15 (b), 2070 'D']
    (c) Application of AI   [Group – B, Q.N.6(b), 2060]

Unit 9: Contemporary Technology

1. What is E-governance? List out the objectives of E-governance. 1+4[Q.N.13, 2072'C']
2. What is e-governance ? List the importance of e-governance. 1+4[Q.N.11,Supp.2071]
3. List out the advantages and disadvantages of e-business.   5 [Q.N.15, 2070 'Supp']
4. What are the objectives of e-governance? Explain.   5 [Q.N. 14, 2070 'D']
5. What are the key challenges of implementing e-governance in developing countries
    like Nepal?   5 [Q.N. 11, Supp. 2069]

6.   What are the key challenges of implementing e-governance in developing countries? 5
                                                                    [Q.N. 11, 2069]
7.   What is Internet ? Explain the uses of internet in business.
                                                      2+5=7 [Group – B, Q.N. 10, 2067]
8.   Differentiate between Internet and intranet with suitable example.   2+5
                                                              [Group – B, Q.N.7, 2065]
9.   What is E-commerce ? Write impact of E-commerce technology in our society.
                                                      3+4 [Group – B, Q.N. 11, 2060]
10.   What do you mean by 'e-commerce' ? Distinguish between W.W.W. (World Wide Web)
      and Internet ?   2+2 [Q.N. B.7., 2058]
11.   Write short notes on:
      (a)   E-learning.   [Q.N.15(b), 2072'D']
      (b)   E-commerce   [Q.N. 15. (a), 2071]
      (c)   E–learning   [Q.N. 15. (i), 2070 'C']
      (d)   e-commerce.   [Group - B Q.N,12(a),2068 1st Exam.]
      (e)   E-commerce   2+5=7 [Group - B, Q.N. 7 (b), 2067]
      (f)   E-commerce   [Group – B, Q.N. 12(iii), 2063 Group – B, Q.N.12(a), 2066]
      (g)   Internet   [Group – B, Q.N.6(a), 2060]

Unit 10: Final Project Work

Only for practical.

□□□

केटाकेटीलाई स्कुल जान नजिक; पानी भर्न जानलाई सिकिस्को थिएन; सडक सजिलो रामो, न हावाको डर न पहिरोको डर । बित्तैमा नदुखेको कपाल बारी लिने भएर दुखाएको .... ।

प्रश्नहरू :

(अ)   माथिको कथांश कसको भनाइका रूपमा आएको छ ?

(आ)   यहाँ वक्ताले कुन कारणबाट आपद् बेसाएको अनुभूति गरेको छ ?

(इ)   बजारको बसाइ कसरी सुविधाजन हुन सक्छ ?

(ई)   'बित्तैमा नदुखेको कपाल बारी लिने भएर दुखाएको' भन्नुको तात्पर्य के हो ?

(उ)   यस कथांशको मूल भाव के हो ?

२.   "बाल बालिकाका बिचमा विभेद सिर्जना गर्ने मूल कारण समाज नै हो ।" यस भनाइप्रति 'मधुशालतीको कथा' का आधारमा आफ्नो प्रतिक्रिया लेख्नु होस् ।   ५[प्र.नं.१६, २०७३]

(घ) निबन्ध

१.   तलको निबन्धांश पढी सोधिएका प्रश्नहरूको एक-दुई वाक्यमा उत्तर दिनु होस् :
[प्र.नं.१५(ग), २०७३]

स्वास्नीमान्छेलाई लोग्नेमान्छे र लोग्नेमान्छेलाई स्वास्नीमान्छे साथी बनाउन अप्ठ्यारो पार्ने एउटा ठूलो कारण सिद्धान्तलाई पूजा गर्ने हाम्रो बानी पनि हो अर्थात् हामी सिद्धान्तलाई व्यावहारिक रूप दिने प्रयत्न गर्नुको सट्टा त्यसको खालि गुन गाएर हिँड्छौं । हामी न्यायको महात्म्य गाउँछौं तर स्वयम् अन्याय गर्नबाट पछि सर्दैनौं । हामी विश्वबन्धुत्व र देशभक्तिको बयान गर्छौं तर खुद मानवताको विपरीत र देश भाँड्ने काम गरेर हिँड्छौं । हामी साम्प्रदायिकताका निन्दा गर्छौं, आर्थिक समानता र स्त्री पुरुषको समानताको ओड लिन्छौं तर आफैं साम्प्रदायिक भावना अनुसार चल्छौं, आफैं स्त्री पुरुषको समानता र आर्थिक समानताको उल्टो हिँड्छौं । हाम्रा सबैजसो सिद्धान्त र व्यवहारमा यस्तै ठुला ठुला विरोधाभासहरू देखिन्छन् ।

प्रश्नहरू :

(अ)   सिद्धान्तलाई पूजा गर्ने हाम्रो बानीले के कुरामा अप्ठ्यारो पर्छ ?

(आ)   न्याय सम्बन्धी हाम्रो दृष्टिकोण र व्यवहार कस्तो छ ?

(इ)   हामीले दिने देशभक्तिको नारा र देशप्रतिको हाम्रो काममा के कस्तो भिन्नता छ ?

(ई)   स्त्री र पुरुषबिचको समानताका सम्बन्धमा हाम्रा भनाइ र गराइमा के बेमेल देखिन्छ ?

(उ)   यस निबन्धांशले स्त्री र पुरुषबिच कस्तो सम्बन्धको अपेक्षा गरेको छ ?

(ङ) नाटक

१.   'नालापानीमा' नाटकको तलको अंश पढी सोधिएका प्रश्नहरूको उत्तर दिनु होस् :   २×५=१०
[प्र.नं.१४, २०७३]

घाइते भो मानिस यो मानिस कहाँ आयो,
मानिसले मानिसबाट सहयार पनि पायो,
धन्य कहलाऊ खोली हृदयको द्वार,
गुन लाएर मानिसलाई बैगुनी नपार,
कस्तूरीलाई हिमालको शिरमा चर्न देऊ,
नेपालीलाई नेपालका निम्ति मर्न देऊ, अब जान देऊ,
        कि यो प्रान लेऊ ....
कि जसको प्रान हो उसलाई यो दान गर्न देऊ,
        अब जान देऊ । जान देऊ ....

प्रश्नहरू:

(क)   माथिको नाट्यांशमा के कस्तो मानवतावादी चिन्तन व्यक्त भएको छ ? प्रष्ट पार्नु होस् ।

(ख)   माथिको नाट्यांशको पनि आधार लिई 'नालापानीमा' नाटकमा नरे कार्कीद्वारा अभिव्यक्त देशभक्तिको वर्णन गर्नु होस् ।

7. COMPUTER SCIENCE-II

Exam Questions

Unit 1: System Development Concept

1. What are the major activities in SDLC with based on waterfall mode ?   5 [Q.N.6, 2073 'C']
2. Who is system analyst? Explain the roles of system analyst.   1+4 [Q.N.6, 2073'D']
3. Write the importance and necessity of SDLC.   5 [Q.N.7, 2073'D']
4. Describe the importance of SDLC is system design.   5[Q.N.6, Supp. 2072]

Unit 2: Database

1. What is DBMS ? Explain data integrity with suitable example.   2+3[Q.N.7, 2073 'C']
2. Define DML and DDL with example.   3+2 [Q.N.8, 2073 'C']
3. Differentiate between guided and unguided networking media.   5 [Q.N.10, 2073 'C']
4. What is DBMS? Differentiate between centralized and distributed database. 2+3[Q.N.8, 2073'D']
5. Explain Relational database model.   5 [Q.N.9, 2073'D']
6. Who is database administrator? List the responsibilities of database administrator.
   5[Q.N.7, Supp. 2072]
7. Describe the objectives of RDBMS.   5[Q.N.8, Supp. 2072]
8. Write short notes :
   (a) DBMS   [Q.N. 15. (a), 2073 'C']
   (b) Normalization   [Q.N. 15. (b), 2073 'D']

Unit 3: Communication and Networking

1. Describe the Bus and Star topology with suitable diagram.   2.5+2.5[Q.N.9, 2073 'C']
2. Explain Bus and Star topology with advantages and disadvantages.
   2.5+2.5 [Q.N.10, 2073'D']
3. List out the advantages and disadvantages of Networking. 2.5+2.5[Q.N.9, Supp. 2072]
4. Describe any two network topologies with diagram.   2.5+2.5[Q.N.10, Supp. 2072]
5. Write short notes on the following:
   (a)   Network protocols   [Q.N. 15. (b), 2073 'C']
   (b)   WiFi   [Q.N.15(a), 2073 'D']
   (c)   Satellite   [Q.N.15(a), Supp. 2072]

Unit 4: Programming in C

1. Describe the switch statement with example.   5 [Q.N.1(a), 2073 'C']
2. What are the difference between while and Do while loop ? Explain with syntax.
   3+2 [Q.N.1(b), 2073 'C']
3. Write program to read five positive number using array and find out the smallest among them.   10 [Q.N.2, 2073 'C']
4. Describe the string manipulation function in C. Explain strcpy and strcmp with example.   2+3 [Q.N.3(a), 2073 'C']
5. Write a program to demonstrate the value of variables and address of variable using pointer in C.   [Q.N.3(b), 2073 'C']
6. Describe the function in C. Write a program to find the sum of 'n' integer number using function in C.   4+6 [Q.N.4, 2073 'C']

7. Differentiate between structure and union. Write a program to input the employee name and post of five employees and display the records in proper format using structure.   3+7 [Q.N.5, 2073 'C']
8. What is variables in programming ? List out the different data types in C program. 5[Q.N.11, 2073 'C']
9. Describe the different mode of file handling concept in C.   5 [Q.N.12, 2073 'C']
10. What is loop? Differentiate between while and do-while loop. Describe with example.
    1+4 [Q.N.1(a), 2073'D']
11. Write a program to display first ten even nos.   5 [Q.N.1(b), 2073'D']
12. What is string? Explain any four string handling functions with example.2+8 [Q.N.2, 2073'D']
13. What is array? Write a program to sort twenty integer nos. in ascending order.   2+8
    [Q.N.3, 2073'D']
14. Write a program to add two integer nos. using function.   5 [Q.N.4(a), 2073'D']
15. Define simple and compound statements. Describe logical operator with example.
    1+1+3 [Q.N.4(b), 2073'D']
16. What is pointer? Write its advantages.   5 [Q.N.5(a), 2073'D']
17. Write a program to enter name, post and salary of a employee and write it in a file "employee.dat."   [Q.N.5(b), 2073'D']
18. Describe the control statement with examples.   5[Q.N.1(a), Supp. 2072]
19. Write a program to display the multiplication table to n^{th} terms of given number.
    5[Q.N.1(b), Supp. 2072]
20. Describe Data-types and operators which are used in C-programming.
    5+5[Q.N.2, Supp. 2072]
21. Write a program which reads salary of 60 employees and count the number of employees who are getting salary between 10,000 to 20,000.   10[Q.N.3, Supp. 2072]
22. Describe Built in function and user defined function with examples.
    2.5+2.5[Q.N.4(a), Supp. 2072]
23. Write a program to generate factorial of the given number using recursive function.
    5[Q.N.4(b), Supp. 2072]
24. Describe different mode of file operation.   5[Q.N.5(a), Supp. 2072]
25. Write a program which reads name, address and salary from file named "employee dat" and display them.   5[Q.N.5(b), Supp. 2072]

Unit 5: Object-Oriented Programming (OOP)

1. Explain class and object.   2.5 + 2.5 [Q.N.11, 2073 'D']
2. Describe the objectives of OOP.   5[Q.N.12, Supp. 2072]

Unit 6: Information Communication Technology and Cyber Law

1. Describe the cyber crime in Nepal. What are protection method to the cyber crime ?2+3
    [Q.N.13, 2073 'C']
2. What is AI? Explain cyber law.   2+3 [Q.N.12, 2073'D']
3. Describe computer crime and its various forms.   2+3[Q.N.13, Supp. 2072]

Unit 7: Multimedia

1. What is multimedia ? List out the component of multimedia.   2+3 [Q.N.14, 2073 'C']
2. Explain the components of multimedia.   5 [Q.N.13, 2073'D']
3. What is multimedia? Describe any two application of multimedia.   1+4[Q.N.11, Supp. 2072]

Unit 8: Artificial Intelligence

1. What is AI? Describe the advantages of AI.   1+4[Q.N.14, Supp. 2072]

Unit 9: Contemporary Technology

1. What is E-governance? List out the objectives of E-governance.   1+4[Q.N.13, 2072'C']
2. Define the terms e-learning and virtual reality.   2.5+2.5 [Q.N.14, 2073'D']
3. Write short notes on:
    (a)   e-Governance   [Q.N.15(b), Supp. 2072]

Unit 10: Final Project Work

Only for practical.