

S.No. 18012

MCA, Semester II Examinations, May 2018

Computer Networks and Data Communication

Time: 3 Hours

Marks:80

Note: Attempt five questions in all, selecting one question from each of the four units. Q. No. 1 is compulsory.

- Q. 1 Explain following: 8x3=24
- i. Topology
 - ii. ATM
 - iii. Bandwidth
 - iv. Communication Mode
 - v. GSM
 - vi. Error Control
 - vii. Flooding
 - viii. Load Shedding

UNIT-I

- Q. 2 Explain functions and design issues of each layer of OSI Reference Model. 14
- Q. 3 (a) Define computer network. Explain categorization of network with suitable examples. 7
- (b) State and explain the concept of Frame relay. 7

UNIT-II

- Q. 4 Explain Data communication model. Discuss various types of guided transmission media and wireless media. 14
- Q. 5 (a) Compare FDM and TDM 7
- (b) Compare Circuit switching and packet switching. 7

UNIT-III

- Q. 6 Explain various design issues of Data Link Layer. Discuss various types of protocols at DLL with their specifications. 14

- Q. 7 Make a comparison among IEEE 802.3, IEEE 802.4 and IEEE 802.5. 14

UNIT-IV

- Q. 8 What is Routing? Explain various types of routing algorithms. Discuss the principles of routing in Adhoc networks. 14
- Q. 9 (a) Explain various design issues of network layer. 7
- (b) Explain various congestion control algorithms. 7

S.No. 18011

MCA, Second Semester, May 2018

Object Oriented Modelling & Programming Using C++

Time: 3 Hours

Marks:80

Note: Attempt five questions in all, selecting one question from each of the four units. Q. No. 1 is compulsory.

8x3=24

- Q. 1 Explain following:
- Deployment diagram
 - Hierarchy
 - Structure in C++
 - Object initialization
 - Overriding
 - Abstract class
 - Vector
 - Containers

UNIT-I

- Q. 2 What is object orientation? Explain its various characteristics? Discuss in brief object oriented system development life cycle. 14
- Q. 3 Explain the role of modeling with suitable example. Discuss various components of Use-case and sequence diagram. 14

UNIT-II

- Q. 4 What is a function? Explain the definition and syntax of a function. Write a program to illustrate use of recursion function. 14
- Q. 5 (a) What is a constructor? Explain various types of constructors with programming example. 7
- (b) Explain with suitable example the public, private and protected derivations. Also discuss the concept of virtual base class. 7

P.T.O.

UNIT-III

- Q. 6 What is an Exception? Explain the process of handling exceptions and re-throwing an exception. Give suitable example. 14
- Q. 7 (a) Compare overloading and overriding 4
(b) Explain new and delete operators 5
(c) What is polymorphism? Explain various types of polymorphism. 5

UNIT-IV

- Q. 8 What is a template? Discuss in brief various types of templates. Explain the process of overloading of template. 14
- Q. 9 (a) Discuss various components of STL. 7
(b) Explain the process of error handling during file operations. 7
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Time: 3 Hours

Note: Attempt any five questions, selecting one question from each unit. Question No. 1 is compulsory. Max. Marks: 80

1. Explain the following: 8x3=24
 - a) What are the main phases of operation research study?
 - b) Explain the role of sensitivity analysis in decision making.
 - c) Name three methods of finding an initial basic feasible solution to a transportation problem.
 - d) What is traveling salesman problem?
 - e) What is two person zero sum game?
 - f) What are different properties of a dynamic programming problem?
 - g) Write down some important applications of queuing theory.
 - h) Define Simulation, and why it is necessary for solving O.R. problems.

Unit - I

2. a) Define operation Research (OR) and explain the main characteristics features. Also give examples to highlights the scope of Operation Research in business and Industry. 7
- b) What is role of Decision Making in O.R. Explain its scope. 7
3. Solve the following Linear Programming Problem by graphical method: 14
 Maximize $Z = 5x_1 + 7x_2$ Subject to the constraints
 $x_1 + x_2 \leq 4$
 $3x_1 + 8x_2 \leq 24$
 $10x_1 + 7x_2 \leq 35$
 $x_1, x_2 \geq 0$

Unit - II

4. Consider the transportation problem having the following parameter table: 14

	A	B	C	D	Supply
I	3	5	2	4	5
II	4	6	6	1	6
III	3	1	12	1	7
IV	8	4	5	3	4
Demand	3	5	4	5	

Use Vogel's approximation method to obtain an initial solution and then solve the problem.

5. Consider the problem of assigning four operators to four machines. The assignment cost in Rupees are given below. Operator 1 cannot be assigned to machine 3 and operator 3 can not be assigned to machine 4. Find the optimal assignment using the "Hungarian Assignment method". 14

		Machine			
		1	2	3	4
Operator	1	5	5	-	2
	2	7	4	2	3
	3	9	3	5	-
	4	7	2	6	7

Unit - III

6. a) Explain the importance of CPM and PERT in the management of projects. 7
- b) Write the steps to solve a problem by dynamic programming approach. 7
7. A and B play a game in which each has three coins, 5 paise, 10 paise and 20 paise coins. Each player selects a coin with the knowledge of the others choice. If the sum of the coins is an odd amount A wins B's coins. If the sum is even B wins A's coins. Find the optimal strategies for the players and value of the game. 14

Unit - IV

8. a) Discuss Single Server and Multi Server Queuing Models in terms of mathematical expression. 7
- b) Write a short note on classification of simulation models. 7
9. a) Write and explain algorithm for processing n jobs through 3 or more machines. 7
- b) How to build and apply computer simulation? Explain. 7

Examination MCA 2nd Sem. May-2018
 Subject - Advanced Computer Architecture
 Paper: MCA-MT17-22

Time: 3 hrs

Max. Marks: 80

Note: Question number 1 is Compulsory (24 marks). Attempt five questions in all by selecting at least one question from each unit (14 marks). All questions carry equal marks.

Q1.Explain the following :

- a) Computational Model
- b) Branch Problem
- c) single shared buses
- d) Pended & split transaction buses
- e) hierarchical cache coherence protocols
- f) Pipelined Processing of integer
- g) COMA models
- h) Superscalar processors

Unit-1

Q2.a). What is Instruction level parallel (ILP) Processors? Explain the Code-Scheduling for ILP-Processors in detail.

b).Explain in detail the evolution and interpretation of computer architecture?

Q3 a).Explain in detail the relations between programming languages and parallel architectures.

b).What is parallel processing? Explain the Types and levels of parallelism in detail.

Unit-2

Q4..Explain the following in detail:

- a) Branch penalties and schemes to reduce them
- b) Delayed branching and branch detection and prediction schemes

Q5.What is Superscalar Processors? Explain the different tasks of superscalar processing in detail.

Unit-3

Q6.What is MIMD Architectures? Explain the concepts of distributed and shared memory MIMD architectures in detail.

Q7 a).What is Direct Interconnection Networks? Explain in detail

b).Explain the following in detail:

- i. 2D mesh and Barrel shifter
- ii. Linear array and Hypercubes

Unit-4

Q8.What is Cache coherence problem? Explain Snoopy cache protocol, Directory schemes and software based protocols in detail.

Q9.Explain the following in detail:

- a) Comparison of bandwidths of locked and Crossbar
- b) Multistage Networks