M.E.Computer Engg.

Master Of Engineering

Question Papers Nov-Dec 2019

Sem–I to II

ME | Comp | Choice Based | Sem – I

4/12/2019

Q.P.Code: 39071

(3 Hours) [Total Marks : 80]

Please check whether you have got the right question paper.

N.B. (1)Question No. 1 is compulsory
(2) Attempt any three out of remaining five questions

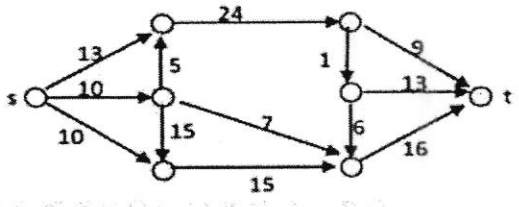
1. (a) Explain Asymptotic Notations 5
   (b) Explain Knuth Morris Pratt algorithm 5
   (c) Explain Randomized algorithms 5
   (d) Explain Bipartite Matching 5
2. (a) Solve following matrix chain multiplication 10
   p=<20,3,5,15,25,90>

   (b) What is convex hull? Explain Jarvis March in detail. 10
3. (a) Rewrite Bellman Ford Algorithm and Explain with example 10
   (b) Prove that 3CNF is NP complete algorithm 10
4. (a) Find LCS of following strings 10

   X= "abcdabacd"

   Y= "dacabacbb"

   (b) Prove that TSP is NP complete algorithm 10
5. (a) Apply Ford Fulkerson on following flow network. And find Maximum flow 10



   (b) Consider an RSA key set with p =11, q =29, n =319, and e =3. What value of d should be used in the secret key? What is the encryption of the message M =100? 10
6. Write short note on following (any 4) 20
   (a) Dijkstra Algorithm
   (b) Huffman coding using Greedy strategy
   (c) Amortized analysis
   (d) Game theoretic techniques
   (e) All pair shortest path

****

4B5860DF6148AB46DA06129EE2CE5849

ME| Compl ~~CBS~~ choice Based | Sem-1 9|12|2019

[Time: 3 Hours] **[Marks:80]**

Please check whether you have got the right question paper.

N.B:
1. Question No.1 is Compulsory.
2. Attempt any **THREE** questions from remaining questions..
3. Figure to the right indicates full marks

Q.1 A) What is Congestion Avoidance Mechanism? Explain DEC bit and RED approach. **(10)**

B) Write short note on Access, Distribution and Core Layer in CISCO Three layer hierarchical model. **(10)**

Q.2 A) Explain various Backbone network topologies with the help of appropriate diagram. **(10)**

B) Compare Proactive and reactive routing protocols for Adhoc Network? Explain DSDV in brief. **(10)**

Q.3 A) What is difference between congestion control and flow control? Describe additive increase and multiplicative decrease method in TCP congestion control. **(10)**

B) Compare IPV4 and IPV6. Explain Unicast, Multicast and any cast communication in IPV6. **(10)**

Q.4 A) An Autonomous Institution has 5 departments with 5 laboratories in each department. Each laboratory has 20 nodes. All the labs of respective department and department office is at separate floor in Multistoried building. All the labs and department offices needs to be networked. Each department and laboratory has to be identified by a unique subnet id. Design the IP addressing and subnetting using class C addressing. The proposed network design should be scalable. Draw the proposed network solution. **(10)**

B) Explain IGRP AND EIGRP. **(10)**

Q.5 A) List out Ethernet design rules and comment on campus design best practices. **(10)**

B) Explain anyone MAC protocol for Adhoc Wireless Network. **(10)**

Q.6 Write Short Note on **(Any Two)** **(20)**

i) PPDIOO

ii) RSVP

iii) SDN

****

M.E. Comp - I choice Base Sem-I 13/12/2019

(Time: 3 Hours) [Total Marks: 80]

Note: i) Question no. 1 is compulsory
ii) Attempt any three from remaining
iii) Assume necessary data

1.	(a)	What are the disadvantages of bad design?	5
	(b)	What are the goals of UX design?	5
	(c)	Explain Wireframe with example	5
	(d)	Explain process of User Research for UX design	5
2.	(a)	Explain steps in User Experience Design Process	10
	(b)	Explain different types of Usability Testing	10
3.	(a)	Explain User Research methods and their limitations.	10
	(b)	What is wireframing? Create Wireframe for online quiz competition site.	10
4.	(a)	Explain different Screen Design and Layouts	10
	(b)	Explain role of prototyping in UX design. Explain different types of prototyping approaches.	10
5.	(a)	How Usability Test feedback help to improve the design	10
	(b)	Explain different elements of user experience.	10
6.		Write short note on **(any Two)**	20

a) Importance of Information Architecture
b) Visual Design Principals
c) Storyboarding

****

6B81E74A486D7D074196DEAC87985C1C

Paper / Subject Code: 59213 / Elective II: Operation Research.

ME/Sem-I / CM / CBCS / 17/12/19.

(3 Hours) **(Marks: 80)**

N.B. : (1) Answer any four questions out of the six questions.
(2) Figures to the right indicate full marks.
(3) Answers to the questions should be grouped and written together.
(4) Assume suitable data if required.

1. (a) Solve the following Linear Programming problem by Simplex Method. 10

Maximize $z = 4x + 5y$
Subject to $2x + y \leq 6$
$x + 2y \leq 5$
$x + y \geq 3$
Such that $x \geq 0$ and $y \geq 0$

(b) What are the advantages and limitations of simulation? 10

2. (a) Solve the following problem by Big M method 10

Max $Z = -2X_1 - X_2$
Subject to
$3X_1 + X_2 = 3$
$4X_1 + 3X_2 \geq 6$
$X_1 + 2X_2 \leq 4$
$X_1, X_2 \geq 0$

(b) In a railway yard goods train arrive at a rate of 30 trains per day. Assuming that the inter arrival time follows an exponential distribution and the service time distribution is also exponential with an average 36 minutes. Calculate the following: 10

i. The average number of trains in the queue
ii. The probability that the queue size exceeds 10
iii. Expected waiting time in the queue
iv. The probability that the number of trains in the system exceeds 10
v. Average number of trains in the queue.

3. (a) Solve the following problem by two phase simplex method 10

Minimize $Z = 15/2\,X_1 - 3X_2$
Subject to
$3X_1 - X_2 - X_3 \geq 3$
$X_1 - X_2 + X_3 \geq 2$
$X_1, X_2, X_3 \geq 0$

(b) The profit for three markets as a function of sales effort expended, as given in the table. How will you distribute a given number of salesmen, so as to achieve maximum profit? 10

No. of salesmen	Markets		
	I	II	III
0	40	50	50
1	42	50	60
2	50	65	70
3	60	75	80
4	66	85	88

5	75	95	105
6	82	110	115
7	90	120	130

4. (a) Solve the following problem by dual simplex method 10

Minimize $Z = 3X_1 + X_2$

Subject to

$X_1 + X_2 \geq 1$

$2X_1 + 3X_2 \geq 2$

$X_1, X_2 \geq 0$

(b) A firm produces three products A,B,C and their unit contributions are Rs. 5/- ; Rs. 10/- & Rs.8/- respectively. Each unit of product A requires 3 kg of material, 5 machine hours and 2 labour hours; each unit of product B requires 4 kg of material, 4 machine hours and 4 labour hours and each unit of product C requires 2 kg of material, 4 machine hours and 5 labour hours. Every day 60 kg of material, 72 machine hours and 100 labour hours are available. From the above information formulate the linear programming problem. State the decision variables, constraints and Objective Function. 10

5. (a) A company has three factories X, Y, Z. It supplies goods to four warehouses W1, W2, W3 and W4. The production capacities of the factories and demand of the warehouses are as shown in the table. Determine the optimal solution of the problem. 10

		Warehouse				
		W1	W2	W3	W4	Production Capacity
Factory	X	19	30	50	12	7
	Y	70	30	40	60	10
	Z	40	10	60	20	18
Demand		5	8	7	15	

Solve the problem with any four methods for Initial Basic Feasible Solution.

(b) In a game of matching coins with two players, suppose one player wins Rs.2 when there are two heads and wins nothing when there are two tails; and looses Rs. 1 when there are one head and one tail. Determine the payoff matrix, the best strategies for each player and the value of the game. 10

6 (a) Find the sequence that minimizes the total time in hours required to complete the following tasks in the order $M_1M_3M_2$: 10

	Tasks						
	A	B	C	D	E	F	G
M 1	3	8	7	4	9	8	7
M 2	6	7	5	11	5	6	12
M 3	4	3	2	5	1	4	3

(b) The demand of an item is uniform at a rate of 25 units per month. The fixed cost is Rs. 15 each time a production run is made. The production cost is Rs.1 per item and the inventory carrying cost is Rs.0.30per item per month. If the shortage cost is Rs. 1.50per item per month, determine how often to make a production run and what size it should be? 10

D1D708E6AF092FD46BC169C9A0762114

ME - COMP - CHOICE BASED - SEM II - 10/12/2019

Time: 3 Hours **Total Marks: 80**

N.B.: (1) Question No. 1 is compulsory.
(2) Write any three questions out of remaining.
(3) Assume suitable data if required.
(4) Draw suitable diagrams wherever necessary.

1 (a)	Differentiate between computer forensics and network forensics.	**5**
(b)	Explain the steps taken by computer forensics specialists in live data acquisition?	**5**
(c)	Discuss in details how attacker will extract details information from DNS & Email Server.	**5**
(d)	Explain tools &Commands for following operations I. To know failed console login. II To dump registry. III. To transfer data from victim machine to forensics system. IV. To know failed remote login. V. To identify hidden files.	**5**
2 (a)	Why is ethical hacking necessary? Explain different steps to perform ethical hacking	**10**
(b)	What is CSIRT? Describe the role of team members to conduct organized incident response.	**10**
3 (a)	Explain concept & prevention technique of IP Address Spoofing.	**10**
(b)	Discuss in details handling & recovery mechanism of following incidents. I) Routing table manipulation. II) Theft of Information.	**10**
4 (a)	Explain steps of live data collection from Windows system.	**10**
(b)	What are the goals of network monitoring? Explain trap and trace monitoring in detail.	**10**
5 (a)	What are the sources of data to be used for forensics analysis? Explain in Brief	**10**
(b)	Explain different forensics software tools used to generate report. What is the major advantage of automated forensics tools in report writing?	**10**
6	Write short note on **(any two)**	**20**
(a)	NMAP	
(b)	Windows Registry	
(c)	Chain of custody	

****

2337C0CD50FE594F32A7EB635D2891B7