MCA /Sem-III(CBSGS)/ Data Base Management System /May 17

Q.P. Code :06703

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

Please check whether you have got the right question paper.

N.B:
1. **Q.11 is compulsory.**
2. **Attempt any four from remaining sig questions**
3. **Answers to sub questions should be answered together.**

Q.1 a) Suppose you are given the following requirements for a simple database for the National Hockey League (NHL): 10

i) The NHL has many teams,
ii) Each team has a name, a city, a coach, a captain, and a set of players,
iii) Each player belongs to only one team,
iv) Each player has a name, a position (such as left wing or goalie), a skill level, and a set of injury records,
v) A team captain is also a player,
vi) A game is played between two teams (referred to as host_team and guest_team) and has a date (such as May 11th, 2016) and a score (such as 4 to 2).
Construct a clan and concise ER diagram for the NHL database.

b) Create a relational Schema or the above E-R diagram and normalize till 3NF 10

Q.2 a) Draw and explain various states of transaction in a database 08

b) Explain the significance of Query Optimization 07

Q.3 a) Explain how locking protocol canbe used to control the concurrency in database? 08

b) Explain lossless join decomposition and dependency preservation decomposition with the help of an example. 07

Q.4 a) Explain the terms minimal cover and functional dependency 08
For the relation R{A,B,C,D,E,F,G} following functional dependencies hold true
A-→ B,
BC-→ DE
AEF-→G
Show that ACF → DG

b) Explain Bell-La Pedulamodel? Explain intuition behind two models? 07

Q.5 a) Explain various deadlock detection and prevention techniques? 08

b) Explain architecture of database system with the help of diagram? 07

Q.6 a) Explain ARIES crash recovery in database. 08

b) Explain the roles and responsibilities of DBA for managing database 07

Q.7 Write short notes on any three 15

a) Weak Entity and Strong Entity
b) Shadow Paging
c) Network Data Model
d) Generalization and specialization

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Sem-III (CBSGS) / Computer Graphics / May-2017

Q.P. Code :05403

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

Please check whether you have got the right question paper.

N.B:
1. **Question No.1 is compulsory.**
2. **Solve any four from Question 2 to Question 7.**
3. **Use of non-programmable calculators allowed.**
4. **Mixing of sub-questions is not allowed.**

1. (a) Discuss the implementations issues of Sutherland Hodgeman and polygon clipping Algorithm. **10**
   (b) How region filling algorithms are developed for polygons and curved boundary objects? **10**

2. (a) Compare and contrast Parallel and perspective projections. **08**
   (b) Write the matrices for following transformations **07**
   i) Rotation about a pivot point ii) Scaling wrt a fix point iii) Translation iv) X-Y shear
   v) reflection about X axis vi) Reflection about a line L vii) Translation matrix

3. (a) Perform Histogram Equalization on the given image and draw the original as well as Equalized Histogram. **08**

Gray Level	0	1	2	3
Number of pixel	70	20	7	3

   (b) What is visible surface detection? Differentiated between Z-buffer A-buffer algorithms of visible surface detection. **07**

4. (a) Find out the final co-ordinates of a figure bounded by the co-ordinates (1,1), (3,4), (5,7), (10,3) when rotated about a point (8,8) by 300 in clockwise direction and scaled by two units in x-direction and three units in y-direction. **08**
   (b) What is fractal? What are different types of fractals? Explain the Kotch curve in brief. **07**

5. (a) Derive Bresenham's line drawing algorithm. **08**
   (b) Clip the Lines AB and GH against the window lower left (-3,1) and upper right (2,6) using Cohen Sutherland algorithm. (Lines end points A(-4,2) B(-1,7) G(1,-2) H(5,3)) **07**

6. (a) Define window and viewport. Derive the window to viewport transformation. **08**
   (b) Rasterize the circle having r=10 in first quadrant. **07**

7. (a) Compare and contrast Raster-Scan System and Random-Scan Systems **07**
   (b) Prove: Two successive Rotations are additive **08**
   Two successive scaling are multiplicative

MCA / CBSGS / SEM III / NS / MAY 2017

QP CODE : 515002

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

N. B : (1) Question number 1 is compulsory

(2) Attempt any 4 from question Nos. 2 to 7.

(3) Illustrate answers with sketches wherever necessary.

Q1a) What is network security? Why is it needed? Explain various security services. (10)

b) What is Key Distribution Centre? How does the key distribution work with multiple KDC domains? (10)

Q2 a) What do you mean by Hash function? Explain message digest algorithm of MD5. (08)

b) What is cryptography? In an RSA system, the public key of a user is e=7, n=527. What is the private key of the user? (07)

Q3 a) Explain mutual authentication and refection attack with the help of a diagram.

(08)

b) Explain how security of a message is achieved using the SSL (07)

Q4a) What do you mean by IDEA algorithm and also explain the detailed working principle of IDEA. (08)

b) Explain DES algorithm with Initial Permutation. (07)

Q5 a) Define Firewall. What are the types of Firewalls? Explain in brief. (08)

b) Explain how SET ensures a secure e-commerce transaction. (07)

Q6 a) What is Kerberos? Explain the working procedure of Kerberos? Define Kerberos V5 (08)

b) What is a digital certificate? Explain the stepwise process of certificate generation? (07)

Q7. Write short notes on: (any three) (15)

a) IPSec

b) Email security

c) ECB

d)Intrusion detection

MCA / Sem - III / [CBSGS] / T8623 / T0249 OPERATION RESEARCH / MAY - 2019

Q.P. Code :07834

[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 four questions from question 2 to 7.
3. Figure to the right indicates marks.
4. Use of scientific calculator is allowed.
5. mixing of sub-questions not allowed

Q.1 a. Find the optimal strategies and value of the game for the following problem **07**

	B		
A	1	-1	-1
	-1	-1	3
	-1	2	-1

b. The following are set of activities and different time estimates for a project in days **08**

Activity	1-2	2-3	2-4	3-4	3-5	5-6	3-6	4-6
Optimistic (to)	3	6	5	3	1	2	4	2
Most likely (tm)	6	12	11	9	4	5	19	5
Pessimistic (tp)	15	30	17	27	7	8	28	14

i) Draw the network. Determine the expected task times and their variances.
ii) Find the earliest and latest expected times for each node. Find the critical path. What is the probability of completing the project in 40 days[P(z=1.67)=0.9525]

c. Write dual of the following LPP **05**
maximize: z=8x1=2x2+5x3
Subject to: 3x1-2x2+5x3≤ 40
X1+7x2-4x3≤ 20
5x1-2x3≥12
X1,x2≥0,x3is unrestricted in sign

Q.2 A. The purchase price of a machine is 6000 Rs. From the past experience the operating cost of the machine is recorded and is given below. **08**

Age	1	2	3	4	5
Operating cost	10,000	12,000	15,000	18,000	20,000

After five years the operating cost =6,000k Where k=6, 7, 8, 9, 10(k is the age in years). If the resale value decreases by 10% of purchase price each year, What is the best replacement policy? Cost of money is zero

b. Solve the following LPP by simplex method **07**
Maximize: Z=3X1+2x2
Subject to: X1-X2≤1
3X1-2X2≤6
X1, x2≥0

Q.P. Code :07834

Q.3 a. Four new machines M1, M2, M3, M4 are to be installed in a machine shop. There are five vacant places A, B, C, D, E available. Because of limited space machine M2 cannot be placed at C and M3 cannot be placed at A. Cij, the assignment cost of machine i to place j in Rs. is shown below. Find the optimal assignment schedule **07**

	A	B	C	D	E
M1	4	6	10	5	6
M2	7	4	-	5	4
M3	-	6	9	6	2
M4	9	3	7	2	3

b. Solve the following LPP by Big-M method **08**

maximize Z=3x1-x2

Subject to: $2x_1+x_2 \leq 2$,

$x_1+3x_2 \geq 3$,

$x_2 \leq 4$,

and $x_1, x_2 \geq 0$

Q.4 a. Four jobs are to be processed on each of the five machines A,B,C,D,E in the order ABCDE. Find the total minimum elapsed time T and idle time of the machines C,D and E **08**

Job---->	1	2	3	4
A	7	6	5	8
B	5	6	4	3
C	2	4	5	3
D	3	5	6	2
E	9	10	8	6

b. A salesman has to visit five cities A,B,C,D,E. The distance between 5 cities are as below. If the salesman starts from city A and has to came back to city A which route will he select so that the total time to visit all cities will be minimum? **07**

		TO CITY				
		A	B	C	D	E
Form city	A	0	7	6	8	4
	B	7	0	8	5	6
	C	6	8	0	9	7
	D	8	5	9	0	8
	E	4	6	7	8	0

Q.5 A. Use two phase method to solve the following LPP **08**

Minimize Z=x1+x2

Subject to : $2x_1+x_2 \geq 4$,

$x_1+7x_2 \geq 7$,

and $x_1, x_2 \geq 0$

b. A cement factory manager is considering the best way to transport cement from his three manufacturing contains P,Q,R to depots A, B,C , D,E. The weekly production and demand along with transportation costs per ton are given below. The availability at the centers P, Q, R are 60,35,40 and the demand at the depots are 22,45,20,18,30 respectively. What should be the optimum distribution schedule? **07**

Q.P. Code :07834

	A	B	C	D	E
P	4	1	3	4	4
Q	2	3	2	2	3
R	3	5	2	4	4

Q.6 a. Consider the data shown below for a project **08**

i. Draw the network diagram and determine the project duration and the critical path

ii. Determine total float, Free float and independent float for each activity

Activity	1-2	1-3	1-4	2-5	3-5	4-6	5-6
Duration(Weeks)	2	4	3	1	6	5	7

b. Solve the following LPP by Dual simplex method **07**

Minimize Z=10x1+6x2+2x3

Subject to: x1-X2+X3≥1,

3x2-x2-x3≥2,

and x1,x2,x3≥0

Q.7 a. A food product company is contemplating the introduction of a revolutionary new product with new packaging to replace the existing product at much price (S1) or a moderate change in the composition of the existing product with a new package at a small increase in price (S2) or a small change in the composition of the existing product with a negligible increase in price (S3). The three possible states of nature of events are: i) High increase in sales (N1), ii) no change in sales (N2), and iii) decrease in sales (N3). The marketing department of the company worked out the payoffs in terms of yearly net profits for the each course of action for these events. This is shown below **08**

States of nature	Courses of action		
	S1	S2	S3
N1	7,00,000	5,00,000	3,00,000
N2	3,00,000	4,50,000	3,00,000
N3	1,50,000	0	3,00,000

Which strategy the company should choose on the basis of i) Maximin criterion, ii) Maximax criterion, iii) Minimax regret criterion iv) Laplace criterion

b) A firm makes two types of furniture, Chair and tables. The contribution for each product as calculated by the accounting department is Rs 20/ per chair and Rs 35/ per table. Both products are processed on three machines M1, M2 and M3. The time required in hours by each product and total time available in hour per week on each machine are as follows. **07**

Machine	Chair	Table	Available Time
M1	3	3	36
M2	5	2	50
M3	2	6	60

How should the manufacturing schedule his production in order to maximize contribution? Formulate as LPP and solve graphically.

Q.P. Code :02326

[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 **four** from the remaining six questions.

a)	What are the processes for developing the Business case? Explain with example.	10
b)	What are the different organizational structures? Explain briefly with suitable diagram.	10
c)	Explain different phases of Project life cycle with suitable diagram.	07
d)	What are traditional tools and techniques for quality Control? Explain any two in detail.	08
a)	How to define scope and create work breakdown structure? Explain with example.	07
b)	Explain in detail Six Sigma Quality Control.	08
c)	What is Outsourcing? Explain different processes involved in Procurement Management.	07
d)	What is Conflict? What are the three different views of conflict?	08
a)	What is project cost and Project Cost Management?	07
b)	Explain Ethics and Ethical Leadership.	08
a)	What are the skills required to become good project manager?	07
b)	What are the different ways to close a project? Explain each briefly.	08
e	Short Notes on Any three:-	15
a)	Change Management	
b)	Statistical Sampling	
c)	MOV	
d)	Information Distribution	