MCA - SEM III / Database Management Systems / MAY 2018

Q.P. Code: 38908

(3 Hours) [Total Marks : 100]

N.B. : 1) Question No.1 is **compulsory.**
2) Attempt any **four** from the remaining **six** questions.

Write a short note on following (any Four)

1. (a) Construct an E-R diagram for a car-insurance company whose customers own one or more cars each. Each car has associated with it zero to any number of recorded accidents (10)
   (b) Write Schema definition and normalize all tables till 3NF for the above ER diagram (10)
2. (a) Define Transaction? Explain ACID properties of transaction ? (10)
   (b) Define Serializability? Explain view serializability with the help of an example. (10)
3. (a) Define deadlock ? How deadlocks can be resolved in database. (10)
   (b) Define hash based indexing with the help of an example. (10)
4. (a) Explain architecture of DBMS with the help of neat diagram (10)
   (b) Define data model ? Name various data models used in DBMS ? Also explain them with the help of an example. (10)
5. (a) Explain the significance of timestamp protocol for controlling the concurrency in DBMS. (10)
   (b) What is the need of query optimization in DBMS explain with the help of an example . (10)
6. (a) Define locking protocols in DBMS ? How strict 2 phase locking protocol is better then 2 phase locking protocol? Explain with the help of an example. (10)
   (b) Explain Bell-la pedula model for database security ? (10)
7. Write short notes on any four (20)
   (a) Physical and logical Data Indpendence
   (b) Shadow Paging
   (c) Views
   (d) Triggers
   (e) Dirty Read and Blind Write

MCA SEM III (CBSGS) May 2018.
C.G.

Q.P. Code :05402

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

Please check whether you have got the right question paper.

N.B:
1. **Q**uestions No.1 is **compulsory.**
2. **Figures** to the **right** indicate **maximum marks.**
3. **Attempt any four questions from Question No. 2 to 7.**

Q.1 (a) Explain shearing transformation and Reflection transformation with diagram. **[10]**
(b) Describe Sutherland Hodgeman techniques for polygon clipping. **[05]**
(c) Write in brief Image negative and Log transformation. **[05]**

Q.2 (a) Derive midpoint circle algorithm and use it to rasteize a circle centered at origin with radius 7. **[08]**
(b) Explain the Z buffer algorithm for hidden surface removal. **[07]**

Q.3 (a) Explain image addition and image subtraction with example. **[08]**
(b) Rasterize the line whose endpoints are A (-2,5), B(-10,8) using Bresenham's algorithm. **[07]**

Q.4 (a) Explain window to Viewport Transformation. Find the normalization transformation window to viewport, with window, lower left corner at (1,1) and upper right corner at (3,5) onto a viewport with lower left corner at (0,0) and upper right corner at (1/2,1/2). **[08]**
(b) Compare and contrast Parallel and Perspective projections. **[07]**

Q.5 (a) Describe the major steps of Cohen Sutherland algorithm for 2 Dimensional line clipping against a rectangular clipping window. **[08]**
(b) Perform histogram stretching so that the new image has a dynamic range of [0,7] **[07]**

Gray Level	0	1	2	3	4	5	6	7
Number of Pixels	0	0	50	60	50	20	10	0

Q.6 (a) Construct a Cubic Bezier Curve with 4 polygon vertices A(1,1), B(2,3) C(4,3) and D(3,1). Generate atleast 3 point on the curve. **[08]**
(b) Explain Halftone shading technique and compare this with the Dithering technique. **[07]**

Q.7 Write short notes on the following (any 3) **[15]**
(a) Fractal Dimension (b) Boundary Fill Algorithm
(c) High-boost filter (d) Animation

May 2018

MCA SEM III (CBSGS)
Network Security

Q.P. Code: 37535

(3 Hours) **Marks: 80**

N.B. 1) Question No. 1 is compulsory
2) Attempt any four from the remaining Questions No. 2 to No. 7.
3) Illustrate answers with proper example wherever necessary.

Q 1. a) Define Network Security and why it is required? Explain Principles of Network Security. Explain various types of attacks. 10

b) Explain the importance of message digest? Explain MD2 and MD4 message digest scheme? 10

Q 2. a) Define Hash? Discuss briefly SHA-1 and compare it with predecessor MD5? 8

b) What is KDC? How is it different from CA ? 7

Q 3. a) What is Man-In-The- Middle attack? Alice and Bob establish a secret key using Diffie-Hellman key exchange using g=7, n=13.Alice takes x as 3 and Bob takes y as 9. Tom an intruder selects x as 8 and y as 6. Show working of Man-In-The-Middle Attack. 8

b) Discuss concept of certificate revocation. 7

Q 4. a) What do you mean by IDEA algorithm and also explain the detailed working principle of IDEA. 8

b) What is Firewall and explain the types of firewall? 7

Q 5. a) Explain Certification Authorities? How are they different from Key Distribution Center? Which of the two is preferable and why? 8

b) Explain following steps in DES algorithm. 7
1. Basic principle
2. Initial Permutation
3. Rounds

Q 6. a) Explain RSA with example In a RSA system the public key of a given user is c=31,n=3599.What is a private key of the user? Perform encryption and Decryption using RSA for P=3 q=11 e=7 m=5 8

b) What is Algorithm mode? Explain the different types of Algorithm mode. 7

Q 7 Write short notes on: (Any 3) 15

a) Viruses
b) Intrusion
c) Smart card
d) SSL
e) IP security

MCA/Sem-III (CBSGS)/Operation Research/May-2018

CODE No.07836

[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

Q1 a) A diet for a sick person must contain 4000 units of vitamins, 50 units of minerals and 1400 calories. Two foods A and B are available at a cost of Rs.4 and Rs.3 respectively. If one unit of A contains 200 units of vitamins, 1 unit of minerals and 40 calories; and 1 unit of B contains 100 units of vitamins, 2 units of minerals and 40 calories; find by graphical method what combination of foods should be used at the least cost. **10**

b) The following estimates (days) are provided **10**

Activity	Optimistic time	Most Likely time	Pessimistic time
1-2	3	6	15
1-3	2	5	14
1-4	6	12	30
2-5	2	5	8
2-6	5	11	17
3-6	3	6	15
4-7	3	9	27
5-7	1	4	7
6-7	2	5	8

i) Draw the project network. Determine the expected task times and their variances.
ii) Find the earliest and latest finish times for each activity. Find the critical path.
iii) What is the probability of completing the project in 27 days [P(Z=0.35) = 0.1368]

Q.2 a) Reduce the game by dominance property and solve **08**

		Player B				
		I	II	III	IV	V
Player A	I	1	3	2	7	4
	II	3	4	1	5	6
	III	6	5	7	6	5
	IV	2	0	6	3	1

b) Solve the following problem by Two Phase method **07**

Maximize $Z = 2x1 + 3x2 + 4x3$

Subject to:

$3x1 + X2 + 6x3 \leq 600$

$2x1 + 4x2 + 2x3 \geq 480$

$2x1 + 3x2 + 3x3 = 540$

And $x1, x2, x3 \geq 0$

Q.3 a) Solve the following using Big-M Method

Minimize Z = 2x1 + 4x2

Subject to,

$2x1 + x2 \leq 18$

$3x1 + 2x2 \geq 30$

$x1 + 2x2 = 26$

And $x1, x2 \geq 0$

b) A firm is using a machine whose purchase price is Rs.150000. The maintenance and repair cost for various years are as given in the table below

Year	1	2	3	4	5	6	7	8	9	10
Cost ('000)	3.5	9.5	12	18	21	26	34	42	55	62

The firm wants to determine after how many years the machine should be replaced considering the overall cost?

Q.4 a) Solve the following transportation problem, cell entries represent unit cost of shipping

	1	2	3	4
A	21	16	25	13
B	17	18	14	23
C	32	27	18	41

The availability at resources 1,2,3,4 are 6, 10, 12, 15 respectively. The requirements at destination A,B,C

Are 11, 13, 19 respectively. Find the IBFS using

i) VAM

ii) North west Corner Rule

b) Use Simplex method to solve the following LPP

Maximise Z = 80 x1 + 55x2

Subject to

$4x1 + 2x2 \leq 40$

$2x1 + 4x2 \leq 32$

And

$X1, x2 \geq 0$

Q5 a) The following data shows the processing times of jobs on 3 machines M1, M2, M3. The order of processing is M1, M2, M3. Determine the sequence that minimizes the total elapsed time required to complete the following jobs. Also calculate the idle times.

	A	B	C	D	E	F	G
M1	30	80	70	40	90	80	70
M2	40	30	20	50	10	40	30
M3	60	70	50	110	50	60	120

b) Solve the following simplex problem using Big M method **07**

Minimize $Z = 2x1 + 8x2$

Subject to

$5x1 + 10x2 = 150$

$x1 \leq 20$

$x2 \geq 14$

And $x1, x2 \geq 0$

Q.6 a) An automobile dealer wishes to put four repairmen to four jobs. The repairmen have different kinds of skills and exhibit different levels of efficiency from one job to another. The dealer has estimated the number of man hours that would be required for each job man combination. This is given in the table below. Find the optimum assignment that will result in the minimum man hours needed. **08**

Jobs

Men	A	B	C	D
1	5	3	2	8
2	7	9	2	6
3	6	4	5	7
4	5	7	7	8

b) Solve the following using the Dual Simplex Method **07**

Minimize $Z = 2x1 + 2x2 + 4x3$

Subject to

$2x1 + 3x2 + 4x3 \geq 2$

$3x1 + x2 + 7x3 \leq 3$

$x1 + 4x2 + 6x3 \leq 5$

And

$X1, x2, x3 \geq 0$

Q7 a) Explain the following terms **08**

i) Branch and Bound method of solving the travelling salesman problem

ii) Matrix method to solve a game theory problem

b) The marketing department of a company has worked out the payoff in terms of yearly net profit for each course of action for various states of nature. This is shown in the table below. Which strategy should the company choose based on i) maximin criterion ii) maximax criterion iii) minimax regret criterion. **07**

States of Nature	Course of Action		
	A1	A2	A3
S1	220	180	100
S2	160	190	180
S3	140	170	200

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MCA/Sem-III/CBSGS/Software project-mang./May18.

Q.P. Code :02325

[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.

Q.1	a)	What are the different organizational structures? Explain briefly with suitable diagram.	10
	b)	What is project communication plan? What are different things addressed in it?	10
Q.2	a)	What is change management? Explain how to deal with conflict and resistances.	07
	b)	Explain in detail Six Sigma quality control.	08
Q.3	a)	What is the difference between Scope Verification and Scope Control?	07
	b)	Explain Project leadership with modern approaches and different leadership styles.	08
Q.4	a)	How to define scope and create work breakdown structure? Explain with example.	07
	b)	What is outsourcing? List different reasons for outsourcing.	08
Q.5	a)	What is role of project manager in an IT project? What are the skills required for good project manager?	07
	b)	What are the different ways to close a project? Explain each briefly.	08
Q.6	a)	What are the different steps involved in project risk management? Explain.	07
	b)	What is project procurement management? Explain different processes involved in it.	08
Q.7	Write Short Notes on any three:-		15
	a)	Gantt Chart	
	b)	Project Charter	
	c)	Business Case	
	d)	MOV	
