R14

Code: 4P2B22

M.C.A. II Semester Supplementary Examinations January 2016
Business Data Processing

Max. Marks: 60   Time: 3 Hours
Answer *all five* units by choosing one question from each unit (5 x 12 = 60Marks)
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UNIT-I

1. a) Explain rules in forming the data name and identifies of COBOL with examples   6M

    b) Write about Environment in detail.   6M

OR

2. a) Write about structure of COBOL program   6M

    b) How files can be assigned to devices? Explain in detail.   6M

UNIT-II

3. a) Explain arithmetic verbs of COBOL. Demonstrate all of them with an example program.   6M

    b) Write about the statement which allows to modify a predetermined sequence of operations - its syntax and a program   6M

OR

4. a) Narrate significance of Working storage section with its different levels of declarations.   6M

    b) Various forms of IF statement with different conditions used with it. Explain with simple examples.   6M

UNIT-III

5. a) Significance of Justified and Sign clauses of COBOL.   6M

    b) Report the different forms of Perform statements with syntax   6M

OR

6. a) How to split the given string into multiple data names and how to concatenate multiple data names?   6M

    b) Explain arrays and write a program using arrays to accept the collections of three buses with five trips each. Display details with total collection finally.   6M

UNIT-IV

7. a) Explain the concept of writing, reading and updating a sequential file.   6M

    b) Merge statement in file processing.   6M

OR

8. a) Differentiate index files and Relative files.   6M

    b) Theoretically demonstrate Sorting concept of files with sample data.   6M

UNIT-V

9. a) Sort out the benefits of COBOL report writing.   6M

    b) Explain the purpose of CALL-USING with a simple example.   6M

OR

10. a) Explain the context of using COPY and CALL statements.   6M

    b) Importance of subroutines and passing parameters.   6M

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Code: 4P2C23

M.C.A. II Semester Supplementary Examinations January 2016
Numerical Methods
Max. Marks: 60   Time: 3 Hours
Answer *all five* units by choosing one question from each unit (5 x 12 = 60Marks)
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UNIT-I

1. a) Obtain a second degree polynomial approximation to $(1 + x)$ $[0, 0.1]$ using the Taylor series expansion about $x = 0$. Use the expansion to appropriate (0.05) and bound the truncation error.   6M

   b) Briefly explain the Secant method.   6M

OR

2. a) Briefly explain the Newton-Raphson method.   6M

   b) Find the root of the equation $x^3 - 5x + 1 = 0$ by using Bisection method.   6M

UNIT-II

3. a) Solve the equations $6, 3$ ... by using Gauss elimination method.   6M

   b) Find the largest Eigen value of the matrix $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$ by using Power method.   6M

OR

4. a) Solve the equations $2x_1 + 3x_2 + x_3 = 9, 3x_1 + 2x_2 + 3x_3 = 6$ and $3x_1 + x_2 + 2x_3 = 8$ By using the factorization theorem.   6M

   b) Find the solution to three decimals of the system $83x_1 + 11x_2 + 4x_3 = 95$, $7x_1 + 52x_2 + 13x_3 = 104$ and $3x_1 + 8x_2 + 29x_3 = 71$ by using Jacobian's method.   6M

UNIT-III

5. a) Fit a function of the form $y = ax^b$ to the following data

X	2	4	7	10	20	40	60	80
y	43	25	18	13	8	5	3	2
   6M

   b) Fit a function of the form $y = A_1 e^{\lambda_1 x} + A_2 e^{\lambda_2 x}$ to the data given by

x	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8
y	1.54	1.67	1.81	1.97	2.15	2.35	2.58	2.83	3.11
   6M

OR

6. Find the coefficient of correlation between industrial production and export using the following data and comment on the result

Production (in Crore tons)	55	56	58	59	60	60	62
Expotrs (in Crore tons)	35	38	38	39	44	43	45
   12M

UNIT-IV

7. Find the Value of $f(1.5)$ by using Newton's Forward formula for the following table

x	1	1.4	1.8	2.2
$f(x)$	3.49	4.82	5.96	6.5

12M

OR

8. Find the Value of $f(32)$ by using Gauss Backword formula for the following table

x	25	30	35	40
$y = f(x)$	0.2707	0.3027	0.3386	0.3794

12M

UNIT-V

9. a) Solve the differential equation $y' = x + y$, subject to the condition $y = 1$ when $x = 0$ by using Picard's method of Successive approximation.

6M

   b) Solve the differential equation $y' + y = x$, with the condition $y(0) = 1$ by using Euler's Method.

6M

OR

10. Using Runge-Kutta method of order 4, find y for $x = 0.2, 0.4, 0.6$ and 0.8 given that $y' = 1 + y^2$, where $y = 0$ when $x = 0$. Continue the solution at 0.6 and 0.8 using Milne's method.

12M

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Code: 4P2C24

M.C.A. II Semester Supplementary Examinations January 2016
Operations Research
Max. Marks: 60   Time: 3 Hours
Answer *all five* units by choosing one question from each unit (5 x 12 = 60Marks)
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UNIT-I

1. a) Solve the following LPP by Simplex method

$Min\ z = 8X_1 - 2X_2$

$subject\ to\quad -4\ X_1 + 2X_2 \leq 1$

$\qquad\qquad\quad 5X_1 - 4X_2 \leq 3$

$\qquad\qquad\quad X_1, X_2 \geq 0$ 6M

   b) Solve by Using Penalty method to

$Max\ z = 3X_1 + 2X_2$

$subject\ to\quad 2X_1 + X_2 \leq 2$

$\qquad\qquad\quad 3X_1 + 4X_2 \geq 12$

$\qquad\qquad\quad X_1, X_2 \geq 0$ 6M

OR

2. Solve by Using two phase simplex method to

$Min\ z = -2X_1 - X_2$

$subject\ to\quad X_1 + X_2 \geq 2$

$\qquad\qquad\quad X_1 + X_2 \leq 4$

$\qquad\qquad\quad X_1, X_2 \geq 0$ 12M

UNIT-II

3. Three warehouses supply five stores. The Table indicates the cost of shipment per unit between warehouses and stores, warehouse capacities and requirements of the stores. However, a major bridge has been damaged preventing deliveries from ware house A to store 5, from warehouse B to store 2, and from warehouse C to store 4. Within these limitations determine the optimum delivery scheme to minimize cost.

		Warehouse			
		A	B	C	Requirement
	1	2	4	6	75
	2	3	8	7	345
Store	3	4	3	8	180
	4	4	6	3	90
	5	2	6	5	210
Capacity		850	300	450	

12M

OR

4. a) Explain the difference between a transportation problem and an assignment problem?   6M

   b) A department has five employees with five jobs to be performed. The time(in hours) each man will take to perform each job is given in the cost matrix

		Employees				
		I	II	III	IV	V
	A	10	5	13	15	16
Jobs	B	3	9	18	13	6
	C	10	7	2	2	2
	D	7	11	9	7	12
	E	7	9	10	4	12

How should the jobs be allocated, one per employee, so as to minimize the total man-hours?   6M

UNIT-III

5. There are 4 jobs each of which has to go through the machines $M_i, i=1,2,3,\ldots, 6$ in the order $M_1, M_2, M_3, \ldots, M_6$. Processing time are given

Job(j)	Machine(i)					
	M_1	M_2	M_3	M_4	M_5	M_6
A	20	10	9	4	12	27
B	19	8	11	8	10	21
C	13	7	10	7	9	17
D	22	6	5	6	10	14

Determine a sequence for these four jobs which minimizes the total elapsed time T.   12M

OR

6. A machine job has four machines A,B,C and D. Two jobs must be processed through each of these machines. The time(in hours) taken on each of the machines and the necessary sequence of jobs through the shop are given

Job 1	Sequence	A	B	C	D	E
	Time in hrs.	2	4	5	1	2
Job 2	Sequence	D	B	A	C	B
	Time in hrs.	6	4	2	3	6

Find the total minimum elapsed time.   12M

UNIT-IV

7. The following failure rates have been observed for a certain type of light bulbs

Week	1	2	3	4	5
% failed by the end of week	10	25	50	80	100

There are 1,000 bulbs in use, and it costs Rs 2 to replace an individual bulb which has burnt out. If all bulbs were replaced simultaneously it would cost 50 paise per bulb. It is proposed to replace all bulbs at fixed intervals of time, whether or not they have burnt out, and to continue replacing burnt out bulbs as and when they fail. At what interval should all the bulbs be replaced? At what group replacement price per bulb would a policy of strictly individual replacement become preferable to the adopted policy?   12M

OR

8. a) Define i) Mixed Strategy ii) Two person zero sum game iii) Pay of matrix   6M

   b) Solve the following game by using the principle of dominance

Player B

Player A		I	2	3	4	5
	1	2	5	10	7	2
	2	3	3	6	6	4
	3	4	4	8	12	1

     6M

UNIT-V

9. An item is produced at the rate of 50 items per day. The demand occurs at the rate of 25 items per day. If the setup cost is Rs.100 per setup and holding cost is Re. 0.01 per unit of item per day, find the economic lot size for one run, assuming that shortages are not permitted. Also find the time of cycle and minimum total cost for one run.   12M

OR

10. A Contractor undertakes to supply diesel engines to a truck manufacturer at the rate of 25 per day. He finds that the cost of holding a completed engine in stock is Rs. 16 per month, and there is a clause in the contract penalizing him Rs. 10 per engine per day late for missing the scheduled delivery date. Production of engines is in batches, and each time a new batch is started there are setup costs of Rs. 10,000. How frequently should batches be started, and what should be the initial inventory level at the time each batch is completed?   12M

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Code: 4P2A25

M.C.A. II Semester Supplementary Examinations January 2016
Organization Structure and Personnel Management

Max. Marks: 60   Time: 3 Hours
Answer *all five* units by choosing one question from each unit (5 x 12 = 60Marks)
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UNIT-I

1. a) Why is the systems approach to management more appropriate today?

   b) What are the four approaches regarding the concept of social responsibility of business?

OR

2. a) What is Leadership? How is it an important managerial input?

   b) What is organization? What are its implication? What is the importance of organizing?

UNIT-II

3. a) What is personnel management? Explain the objectives of personnel management?

   b) Briefly explain the decision process approach to Management

OR

4. a) Explain the position of the personnel department in the organization.

   b) Explain the role of system in decision making.

UNIT-III

5. a) Explain the procedure of recruitment of a company.

   b) What is the difference between training and development?

OR

6. a) What are the steps in the selection process?

   b) What type of interviewing is used in staff selection?

UNIT-IV

7. a) Define communication and discuss its importance in managing an organization?

   b) Examine the barriers to effective communication?

OR

8. a) What is perception?

   b) What precautions should be taken by a communicator to make his advice effective?

UNIT-V

9. a) Briefly explain about People Capability Maturity Model (PCMM) levels,

   b) Explain balanced score card

OR

10. a) Briefly explain about Six Sigma.

    b) What is Performance management?

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Code: 4P2B26

M.C.A. II Semester Supplementary Examinations January 2016
Data Structures
Max. Marks: 60   Time: 3 Hours
Answer *all five* units by choosing one question from each unit (5 x 12 = 60Marks)
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UNIT-I

1. a)   Explain the fundamentals of Data Structures? What are Linear and Non linear data structures? Give two examples of each.   6M

   b)   What is asymptotic notation? Show that the following equations are correct/incorrect?
   i. $2n^2 2^n + n \log n = (n^2 2^n)$
   ii. $10n^2 + 9 = O(n)$ 6M

OR

2.   Explain about complexity of algorithm? Considering your own example analyze complexity of recursive and non recursive algorithms?   12M

UNIT-II

3.   What is queue? Write any two applications of queues? Write an algorithm for queue operations using linked list?   12M

OR

4. a)   What is hash table? Explain the functions of hash table.   6M

   b)   Convert the given Infix expression to Postfix expression using Stack and show the details of Stack at each step of conversion.
   Expression: (a + b * c ^ d) * (e + f / g).
   Note : ^indicates exponent operator.   6M

UNIT-III

5.   Write an algorithm for two way merge sort and analyze its complexity?   12M

OR

6. a)   What is the difference between linear and binary search techniques? Explain.   6M

   b)   Write a program in c/c++ for Fibonacci search.   6M

UNIT-IV

7. a)   Differentiate Binary tree and Threaded binary tree and explain the storage representation of trees. For the given Binary Tree, perform Inorder, Preorder and Postorder traversal.

                                                                                  12M
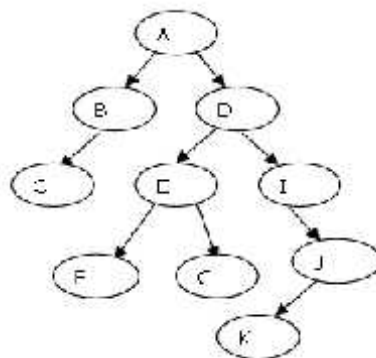
OR

8. a)   What is hashing? Explain the various Collision resolution techniques?   6M

   b)   What is hash function? How hash functions are choosed?   6M

UNIT-V

9. a)   How the graphs are represented? With an example explain the graph traversal methods   6M

   b)   Construct a Binary Search Tree from the given values. Consider the first value as the root value. Values: 45, 23, 29, 85, 92, 7, 11, 35, 49, 51   6M

OR

10. a)   How are AVL trees better than BSTs?   6M

    b)   What is Red-Black Trees? List its applications.
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