Hall Ticket Number :										

Code: 5P2B21

R-15

M.C.A. II Semester Supplementary Examinations June 2018

Computer Organization

Max. Marks: 60 Time: 3 Hours

Answer all five units by choosing one question from each unit (5 x 12 = 60 Marks)

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UNIT–I

1. a) What is fixed point Representation? Explain with examples. 8M
   b) Find 2's complement of the following
      i) 10010 ii) 111000 iii) 0101010 iv) 111111 4M

OR

2. a) Assume A = (+8) and B = (+5). Multiply these two numbers using Booth algorithm. Show the step-by-step multiplication process. 6M
   b) Discuss three representations of Signed integers with suitable examples. 6M

UNIT–II

3. a) Analyze the memory hierarchy in terms of speed, size and Cost. 6M
   b) Discuss about the mapping procedures of cache memory. 6M

OR

4. a) What is associate memory? Explain with block diagram 8M
   b) Compare and contrast between Asynchronous DRAM and Synchronous DRAM. 4M

UNIT–III

5. a) Give the block diagram for register set in CPU. 6M
   b) Explain the different types of addressing modes 6M

OR

6. How computer instructions are classified? List and explain about them with examples. 12M

UNIT–IV

7. a) Give and explain the control sequence required for branch instruction in the single bus architecture. 6M
   b) Distinguish between circular shift and arithmetic shift with proper example. 6M

OR

8. a) With neat diagram, explain three bus organization and write control sequence for the instruction ADD R1, R2, R3 6M
   b) Explain various phases of instruction cycle with an example 6M

UNIT–V

9. Explain with block diagram the basic organization of a microprogrammed control unit 12M

OR

10. How the data transfer to and from peripherals is done? Discuss with neat diagrams and examples. 12M

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Hall Ticket Number :										

Code: 5P2C23

R-15

M.C.A. II Semester Supplementary Examinations June 2018

Numerical Methods

Max. Marks: 60 Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 12 = 60 Marks)

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UNIT–I

1. a) Perform five iterations of Bisection method to obtain the smallest positive root of the equation $x^3 - 5x + 1 = 0$ 6M

   b) Use the Regula – Falsi method to determine the root of the equation $Cosx - xex = 0.$ 6M

OR

2. Perform two iterations with the Muller method for the equation $x^3 - 0.5 = 0$, $x0 = 0, x1 = 1, x2 = 1/2.$ 12M

UNIT–II

3. a) Solve the following equations by using the Gauss elimination method.
   $x + y + z = 6, 3x + 3y + 4z = 20, 2x + y + 3z = 13$ 6M

   b) Solve the following equations by using the Jacobi iteration method.
   $4x + y + z = 2, x + 5y + 2z = -6, x + 2y + 3z = -4.$ 6M

OR

4. Solve the following equations by Relaxation method.
   3x+2y=5, 2x+3y-z=4, -y+2z=1. 12M

UNIT–III

5. Obtain the least squares straight line fit to the following data

	0.2	0.4	0.6	0.8	1
	0.447	0.632	0.775	0.894	1

12M

OR

6. Two random variables have the regression lines with equations $3x + 2y = 26$ and $6x + y = 31$. Find the mean values and the correlation coefficient between x and y. 12M

UNIT–IV

7. State appropriate interpolation formula which is to be used to calculate the values of $e^{1.75}$ from the following data and hence evaluate it from the given data

	1.7	1.8	1.9	2.0
$y = e^x$	5.474	6.050	6.686	7.389

12M

OR

8. Use Gauss forward interpolation formula to find *f*(30) given that *f*(21)=18.4708, *f*(25)=17.8144, *f*(29)=17.1070, *f*(33)=16.3432, *f*(37)=15.5154. 12M

UNIT–V

9. a) Solve $y' = x - y^2, y(0) = 1$ using Taylor's series method and compute $y(0.1), y(0.2)$. 6M

   b) Use Euler's method to find $y(0.1), y(0.2)$ given $y' = (x^3 + xy^2)e^{-x}, y(0) = 1.$ 6M

OR

10. Solve $y'' - x(y')^2 + y^2 = 0$ using R-K method for $x = 0.2$ given $y(0) = 1, y'(0) = 0$ taking $h = 0.2$. 12M

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Hall Ticket Number :										

Code: 5P2C24

R-15

M.C.A. II Semester Supplementary Examinations June 2018

Operations Research

Max. Marks: 60 Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 12 = 60 Marks)

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UNIT–I

1. Use penalty (Big-M) method to Maximize $z = x_1 - x_2$ subject to the constraints $2x_1 + x_2 \geq 2$, $x_1 + 3x_2 \leq 3$, $x_2 \leq 4$ 12M

OR

2. Apply principle of duality to solve the LPP Maximize $z = 3x_1 - 2x_2$ subject to the constraints $x_1 + x_2 \leq 5$, $x_2 \leq 4$, $1 \leq x_2 \leq 6$ and $x_1, x_2 \geq 0$ 12M

UNIT–II

3. Find the initial basic feasible solution of the following transportation problem by stepping stone method

Ware house → Factory ↓	W_1	W_2	W_3	W_4	Factory Capacity
F_1	19	30	50	10	7
F_2	70	30	40	60	9
F_3	40	8	70	20	18
Ware house requirement	5	8	7	14	34

12M

OR

4. Explain transportation algorithm by MODI method with suitable example 12M

UNIT–III

5. a) Give the mathematical formulation of assignment problem 6M

   b) Explain how you sequence 2 jobs on m machines. 6M

OR

6. There are five jobs to be assigned on 5 machines and associated cost matrix is as follows

Machines → Jobs ↓	**S_1**	**S_2**	**S_3**	**S_4**	**S_5**
B_1	4	6	7	5	11
B_2	7	3	6	9	5
B_3	8	5	4	6	9
B_4	9	12	7	11	10
B_5	7	5	9	8	11

find the optimum assignment and associated cost using assignment technique 12M

UNIT–IV

7. Discuss the algebraic method of solving 2x2 game by taking suitable example 12M

OR

8. Solve the following game using dominance principle

Player B

$$\text{Player A} \begin{bmatrix} 3 & 5 & 4 & 9 & 6 \\ 5 & 6 & 3 & 7 & 8 \\ 8 & 7 & 9 & 8 & 7 \\ 4 & 2 & 8 & 5 & 3 \end{bmatrix}$$

12M

UNIT–V

9. a) Write a short note on developing inventory model 6M

   b) Differentiate controlled variable and uncontrolled variables in inventory problem 6M

OR

10. Find the EOQ for the following data annual usage=1000 pieces, cost per piece=Rs. 250, ordering cost=RS 6 per order, expecting cost=RS 4 per order, Inventory holding cost =20% of average inventory material holding cost=Rs 1 per piece. 12M

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