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<b>R-17</b>
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**Code: 7P2B21**

M.C.A. II Semester Regular 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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<b>UNIT-I</b>
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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

<b>UNIT-II</b>
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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

<b>UNIT-III</b>
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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

<b>UNIT-IV</b>
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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

<b>UNIT-V</b>
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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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R-17

Code: 7P2B26

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

## Data Structures

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) Define a Data structure. Explain the classification of data structures each with an example. 6M  
b) What is an algorithm? Explain the Big 'O' notation with an example. 6M

OR

2. Write an algorithm to find the multiplication of two n X n matrices and find its time complexity. 12M

### UNIT-II

3. a) Write an algorithm to insert a number in the correct position in the previously sorted single dimensional array. 6M  
b) What is Queue? Write an algorithm to insert the item in Queue using arrays. 6M

OR

4. a) How to insert the element in the sorted single linked list and explain with an example. 8M  
b) Write the applications of linked list. 4M

### UNIT-III

5. a) Write an algorithm for Bubble sort method. 6M  
b) Explain about Radix sort method with an example. 6M

OR

6. Write an algorithm to search a key using Binary Search method and also find all the possible occurrences of same key in the list. 12M

### UNIT-IV

7. a) Define a Binary Search Tree. Construct the Binary search tree for the following set of data. 6M  
{ 10,20,15,25,30,45,80,60 }  
b) Write the applications of a Binary Tree 6M

OR

8. Write algorithms for **Preorder** and **Inorder** traversal methods of a Binary Tree and explain each with an example. 12M

### UNIT-V

9. a) What is Graph? Explain about the traversal method of Graph with an example. 8M  
b) Explain about the applications of Graphs. 4M

OR

10. a) Write about Splay Trees. 6M  
b) Explain about Red Black Tree with an example. 6M

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**R-17**

**Code: 7P2B22**

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

**Introduction to Web Programming**

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) Explain briefly about any three web browsers. 6M  
b) Write short notes on the following  
i) Web Servers ii) URL 6M

**OR**

2. a) Explain in detail about Hyper Text Transfer Protocol 6M  
b) Briefly explain the features of HTML 5. 6M

**UNIT-II**

3. a) Write an HTML form for user registration. 7M  
b) Explain following HTML tags  
i) <form> ii) <img> 5M

**OR**

4. a) Write HTML program to display the class time table. 7M  
b) What is form? Explain about various form elements. 5M

**UNIT-III**

- 5 a) Explain the advantages of CSS. 5M  
b) What is CSS? Explain the ways by which CSS is included in the web page. 7M

**OR**

- 6 a) Explain color values in CSS. 6M  
b) Explain how to create boxes and columns using CSS. 6M

**UNIT-IV**

- 7 Explain about the following  
i) List Styles ii) Table layouts 12M

**OR**

- 8 Briefly explain about frames and controls of CSS with example. 12M

**UNIT-V**

- 9 a) List the advantages and features of XML. 6M  
b) Explain briefly about XML document structure. 6M

**OR**

- 10 a) Explain briefly about document type definition with suitable example. 6M  
b) Explain briefly about XSLT Style sheets 6M

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**R-17**

**Code: 7P2B25**

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

## **Java Programming**

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) Explain about Class, Objects and Methods in Java with an example. 6M
- b) The Object-Oriented thinking is analogous to viewing real world objects. Justify the statement with proper examples. 6M

**OR**

2. a) Write a short note on string buffer and string builder. 6M
- b) Explain the use of Enumerated Types in Java. 6M

### **UNIT-II**

3. a) What are the advantages/ disadvantages of using inheritance? Explain. 6M
- b) Define Method Overriding. Explain how it is differ from Method Overloading. 6M

**OR**

4. Write a short note on the following:
  - a) Local inner classes
  - b) super keyword12M

### **UNIT-III**

5. a) Discuss the variables in interface and extending interfaces. 6M
- b) Make a comparison between the classes and interfaces. 6M

**OR**

6. a) Explain about CLASSPATH while using packages 6M
- b) Illustrate with an example how a package can be imported to another program. 6M

### **UNIT-IV**

7. a) Explain try, catch, throw and finally with an example. 6M
- b) Illustrate how user defined exceptions can be created with an example 6M

**OR**

8. a) Distinguish between multi-threading and multitasking 6M
- b) Draw and explain the thread life cycle. 6M

### **UNIT-V**

9. a) Discuss the Socket connection and simple client server program. 6M
- b) Explain the File management using file class. 6M

**OR**

10. Write a short note on the following:
  - a) Byte streams
  - b) Binary input/output
  - c) random access file operations12M

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**R-17**

Code: 7P2C23

M.C.A. II Semester Regular 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 the bisection method to obtain the smallest positive root of the equation  $x^3 - 5x + 1 = 0$  6M  
 b) Use the Regular-Falsi method to determine the root of the equation  $\cos x - x e^x = 0$ . 6M

OR

2. Use the Muller method for the equation  $x^3 - 0.5 = 0$ ,  $x_0 = 0, x_1 = 1, x_2 = 1/2$ . 12M

**UNIT-II**

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

$x$	0.2	0.4	0.6	0.8	1
$f(x)$	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  $6x + 5y = 31$ . 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  $f(1.75)$  from the following data and hence evaluate it from the given data

$x$	1.7	1.8	1.9	2.0
$y$	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  $y(0.2)$ . 6M  
 b) Use Euler's method to find  $y(1)$  given  $y' = (x^2 + xy^2)e^{-x}, y(0) = 1$ . 6M

OR

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

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**Code: 7P2B24**

M.C.A. II Semester Regular 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 <sub>1</sub>	W <sub>2</sub>	W <sub>3</sub>	W <sub>4</sub>	Factory Capacity
F <sub>1</sub>	19	30	50	10	7
F <sub>2</sub>	70	30	40	60	9
F <sub>3</sub>	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 <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	S <sub>5</sub>
B <sub>1</sub>	4	6	7	5	11
B <sub>2</sub>	7	3	6	9	5
B <sub>3</sub>	8	5	4	6	9
B <sub>4</sub>	9	12	7	11	10
B <sub>5</sub>	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

Player A	3	5	4	9	6
	5	6	3	7	8
	8	7	9	8	7
	4	2	8	5	3

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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