Code No.: 10M10/20M10 | MR 11 & MR12

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)

(Affiliated to JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD)
Gundlapochampally (H), Maisammaguda (V), Medchal (M), Medchal-Malkajgiri (Dist), Hyderabad.

II B.Tech I Semester Supplementary Examinations, NOVEMBER-2017

SUBJECT: **Probability and Statistics**

Branch: **Common to ME & CSE**

Time: 3 hours **Max. Marks: 75 Mark**

Answer Any 5 Questions **5x15 Marks= 75 Marks**

1. a) The odds that a book will be reviewed favourably by three independent critics are 5 to 2, 4 to 3 and 3 to 4. What is the probability that of the three, reviews, a majority will be favourable. [7M]
   b) Given P(A) = 114, P(B) = 1/3, P(AUB) = 1/2, evaluate P(A/B), P(B/A), P(A∩B) and P(Al B') [8M]

2. a) Find the standard deviation for the following distribution. [7M+8M]

X	:	8	12	16	20	24
P(x)	:	1/8	1/6	3/8	1/4	1/2

   b) The mean height of 500 students is 151cm, and the standard deviation is 15 cm. Assuring that the heights are normally distributed, find how many students heights lie between 120 and 155 cm.

3. a) Explain the terms population sample and sampling distribution. [7M]
   b) Explain the general procedure of testing a hypothesis. [8M]

4. Random sample of 400 men and 600 women were asked whether they would like to have a flyover near their residence.200 men and 325 women were in favour of the proposal. Test the hypothesis that proportions of men and women in favour of the proposal are same, at 5% level. [15M]

5. Fit a second degree polynomial for the following data. [15M]

X	1	2	3	4	5	6	7	8	9
Y	2	6	7	8	10	11	11	10	9

6. From the following data obtain the two regression equations and estimate the value of X when Y=40 and Y when X= 10. [15M]

X	2	4	6	8
Y	10	20	25	30

7. Barber A takes 15 minutes to complete a haircut. Customers arrive in his shop at an average rate of one every 30 minutes. Barber B takes 25 minutes to complete one haircut and customers arrive at his shop at an average rate of one every 50 minutes. The arrival processes are Poisson and the service times follow an exponential distribution. a) Where would you expect a bigger queue. b) Where would you require more time waiting included to complete a haircut? [15M]

8. A Housewife buys three kinds of cereals A, B, C. She never buys the same cereal on successive weeks. If she buys cereal A, then the next week she buys cereal B. However if she buys B or C, then next week, she is three times as likely to buy A as the other brand. Find the transition matrix. In the long run, how often she buys each of these brands? [15M]

Code No.: 10233/20233

MR 11 & MR12

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Gundlapochampally (H), Maisammaguda (V), Medchal (M), Medchal-Malkajgiri (Dist), Hyderabad.

II B.Tech I Semester Supplementary Examinations, NOVEMBER-2017

SUBJECT: Basic Electrical & Electronics Engg.

Branch: **Common to CE, CSE & IT**

Time: 3 hours **Max. Marks: 75 Mark**

Answer Any 5 Questions **5x15 Marks= 75 Marks**

1. (a) State and explain Kirchoff's Law. [7+8]
   (b) What is the voltage across A and B terminals in the circuit shown in the figure 1.

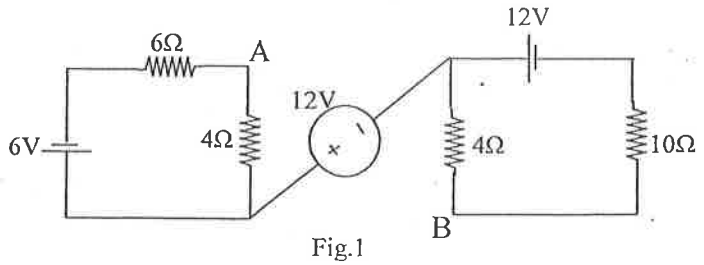

Fig.1

2. (a) Explain the constructional features of a D.C machine with the help of a neat sketch. [8+7]
   (b) A 200V d.c. series motor runs at 750 rpm when taking a current of 30A. The resistance of the armature is 0.5 Ω and that of field is 300Ω. If the current remains constant, calculate the necessary resistance to reduce the speed to 250rpm.

3. (a) Explain about the working principle of transformer. [7+8]
   (b) Clearly explain about core type Transformer and shell-type transformer. What are the main differences between them?

4. (a) Define slip. Hence deduce the expression for Rotor induced e.m.f under running condition of a 3-φ Induction motor? [7+8]
   (b) Discuss in detail the predetermination of regulation of an alternator.

5. (a) With usual notation derive an expression for the deflecting torque in a PMMC instrument. [7+8]
   (b) Explain how the PMMC instrument can be employed to measure (i) Voltage and (ii) Current.

6. (a) Show that, for the full-wave rectifier, the ratio of rectification is twice that of half-wave rectifier. [7+8]
   (b) A 230V, 60Hz voltage is applied to the primary of a 5:1 step down transformer used in a bridge rectifier having a load of 900Ω. If the diode resistance and secondary coil resistance together has a resistance of 100Ω, determine (i) D.C voltage across the

load (ii) D.C current flowing through the load (iii) PIV of each diode and (iv) ripple voltage and its frequency.

7. (a) Sketch the family of CB input and output characteristics for bipolar junction transistor and indicate the cutoff, active and saturation regions. Explain the importance of each region. [8+7]
(b) In a fixed bias circuit using n-p-n transistor, find the operating point if $V_{CC} = 24V$, $R_B = 220k\Omega$, $R_C = 4.7k\Omega$.

8. (a) An electron is moving perpendicular to magnetic field 'B'. Derive the expression for radius 'R' of the trajectory and period of rotation T [7+8]
(b) Derive the expression for the electro magnetic deflection sensitivity in the case of the CRT.

Code No.: **10504/20504**

MR 11 & MR12

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)

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Gundlapochampally (H), Maisammaguda (V), Medchal (M), Medchal-Malkajgiri (Dist), Hyderabad.

II B.Tech I Semester Supplementary Examinations, NOVEMBER-2017

SUBJECT: **Data Structures Through C++**

Branch: **Common to CSE & IT**

Time: 3 hours **Max. Marks: 75 Mark**

Answer Any 5 Questions **5x15 Marks= 75 Marks**

1. a) Explain different types of parameter passing techniques in C++. [10M]
   b) What is the use of this pointer in C++. [5M]

2. a) What is meant by multiple inheritance? Write a program to illustrate the concept of multiple inheritance. [8M]
   b) What is operator over loading? Write a program to illustrate how to overload the operators in C++. [7M]

3. Write a C++ program to implement linear queue (ADT) with its operations using class templates. [15M]

4. a) Write short notes on separate chaining. [7M]
   b) Compare hashing and skip list. [8M]

5. a. Sort the list of numbers:
   30, 22, 45, 10, 80, 30, 27, 3, 2 using min heap sort method. [10M]
   b. Differentiate between min heap and max heap? [5M]

6. a) Compare AVL Tree and Binary Search Tree. [5M]
   b) Write a program for insertion and deletion in BST. [10M]

7. a) What is a graph in data structures? Explain different types of graphs with suitable example.
   b) Explain linked representation of graph with an example. [7M +8M]

8. a) Differentiate standard tries and compressed tries? [8+7]
   b) Explain about Knuth-morris -prat pattern matching algorithms?

Code No.: **10434/20434** | MR 11 & MR12

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)

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Gundlapochampally (H), Maisammaguda (V), Medchal (M), Medchal-Malkajgiri (Dist), Hyderabad.

II B.Tech I Semester Supplementary Examinations, NOVEMBER-2017

SUBJECT: **Digital Logic Design**

Branch: **CSE**

Time: 3 hours **Max. Marks: 75 Mark**

Answer Any 5 Questions **5x15 Marks= 75 Marks**

1. a) Construct a table for 4-3-2-1 weighted code and write 9154 using this code. [8M]
   b) Find the difference of (3250-72546) using 10's *complement*. [7M]

2. a) Design a circuit with four inputs and One output where the output is 1 if input is divisible by 3 or 7. [7M]
   b) Obtain the complement of the following Boolean expressions [8M]
      i) $\overline{A}B+\overline{A}B\overline{C}+\overline{A}BCD+\overline{A}\,\overline{B}\,\overline{C}\,\overline{D}E$
      ii) $ABEF+AB\overline{E}\,\overline{F}+\overline{A}\,\overline{B}EF$

3. a) Simplify the following Boolean function using four-variable Karnaugh map
      $F(w,x,y,z) = \Sigma(1,3,7,11,15)+\Sigma d(0,2,5)$ **[9M]**
   b. Simplify to a sum of 3-terms $A|B|C| +ABD+A|C+A|CD+AC|D+AB|C|$ [6M]

4. a) Design a BCD to gray code converter using 8:1 multiplexers. [7M]
   b) Design a 4-bit magnitude comparator [8M]

5. a) A combinational circuit has 4 inputs (A, B, C, D) and three outputs (X, Y, Z), XYZ represents a binary number whose value equals the number of I's at the input: **[7M]**
      i) Find the min term expansion for the X, Y,Z.
      ii) Find the max term expansion for the Y and Z
   b) Draw the schematic circuit of D Flipflop .Give its truth table [8M]

6. a) Draw and explain 4-bit universal shift register. [7M]
   b) Explain about ROM [4M]
   c) Explain about HDL for counters [4M]

7. a) Write a brief notes on ROM's [7M]
   b) Explain about error detection and correction with example. [8M]

8. a) Give the implementation procedure for an SR latch using NOR gates. [7M]
   b) Explain about Hazards in sequential circuits [4M]
   c) Explain about Fundamental mode operation [4M]

Code No.: **10503/20503**

MR 11 & MR12

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)

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Gundlapochampally (H), Maisammaguda (V), Medchal (M), Medchal-Malkajgiri (Dist), Hyderabad.

II B.Tech I Semester Supplementary Examinations, NOVEMBER-2017

SUBJECT: **Mathematical Foundations of computer Sciences**

Branch: **CSE**

Time: 3 hours **Max. Marks: 75 Mark**

Answer Any 5 Questions **5x15 Marks= 75 Marks**

1. (a) if G = < Z_6, + >, H = < Z_3, + > and K = < Z_2+). Prove that G and H x K is isomorphic.
   (b) Define
   (i) Group (ii) Abelian Group (iii) Semi Group (iv) Sub Group.

2. Characterize each graph
   (a) $K_{3,3}$ U $K^1$3,3
   (b) K m, n U K m,n

3. (a) Prove or disprove the validity of the following arguments.
   (i) No mathemeticians are ignorant
   (ii) All ignorant people are haughty.
   (iii) Hence, some haughty people are not mathematicians.
   (b) Prove the following .

   $\forall x [P(x) \Lambda Q(x)] \Leftrightarrow \forall x, (P(x) \Lambda \Lambda x, Q(x)$.

4. (a) Write a generating function of or, where or is the number of integers between O and 999 whose sum of digits is r.
   (b) Find the coefficient of X^{20} is $(x^3 + x^4 + x^5 + \ldots, +)^5$

5. (a) If P is true, Q is false and R is true, then find the truth value of ((P Λ Q)→ R) V (PVR) without constructing truth table.
   (b) Find the disjunctive normal form of PV(¬ P → (Q V (Q → ¬ R)))

6. (a) Find the minimum number of edges that be removed from the complete graph K6 , so that the resulting graph is planar.
   (b) How many edges does a spanning tree of Km,n have?

7. A graph is said to be self – complementary if it is isomorphic to its complement.
   (a) Show a self – complementary graph with four vertices.
   (b) Show a self – complementary graph with five vertices.
   (c) Is there a self – complementary graph with three vertices? Six vertices.
   (d) Show that a self – complementary graph must have either 4K or 4K + 1 vertices.

8. (a) Let $f(x) : x^2 - 3x + 2$. Find (i) $f(x^2)$. (ii) f (x+3)
   (b) Prove that A – (B Λ C) = (A – B) Λ (A – C)
   (c) Define equivalence relation