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, MAY-2018

Subject: **Probability and Statistics**

Branch: **CSE**

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

Answer any **FIVE** Questions of the following   5x15M=75M

1. a) In a group consisting of equal number men and women, 10% of the men and 45 % of the women are unemployed. If a person is selected randomly from the group then find the probability that the person is an employee.   [5 M]
   b) Suppose 5 men out of 100 and 25 women out of 10,000 are colour blind. A colour blind person is choosen at random. What is the probability of the person being a male (Assume male and female to be in equal numbers)?   [10 M]

2. a) If three coins are tossed. Find the probability of getting i) three heads ii) two heads iii) No heads   [5M]
   b) The marks obtained in mathematics by 100 students is normally distributed with mean 78% and standard deviation 11%. Determine i) How many students got marks above 90% ii) with in what limits did the middle of 90% of the student lie.   [10M]

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

4. Two types of new cars produced in USA are tested for petrol mileage, one sample is consisting of 42 cars averaged 15 kmpl while the other sample consisting of 80 cars averaged 11.5 kmpl with population variance 2.0 and 1.5 respectively. Test whether there is any significant difference in the petrol consumption of these two types of cars. (use $\alpha= 0.01$).   [15 M]

5. Fit the Parabola which fits most closely with the observations.

X	-3	-2	-1	0	1	2	3
Y	4.63	2.11	0.67	0.09	0.63	2.15	4.58

6. The equation of two regression lines obtained in a correlation analysis are $3x + 12y = 19$, $3y +9x = 46$ Find i) Coefficient of correlation ii) Mean values of x and y iii) The ratio of the coefficient of variability of x to that of y.

7. a) Explain briefly about queueing characteristics?   [10 M]
   b) A Self service canteen employs one cashier at its counter. 8 customers arrive per every 10 minutes on an average. The cashier can serve on average one per minute. Assuming that the arrivals are poisson and the service time distribution is exponential, determine
   i) the average number of customers in the system. ii) The average queue length
   iii) Waiting of a customer in the sytem iv) waiting time of a customer v) Traffic intensity [5 M]

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]

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, MAY-2018

Subject: **Data Structures through C++**

Branch: **Common to CSE & IT**

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

Answer any **FIVE** Questions of the following   **5x15M=75M**

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?

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, MAY-2018

Subject: **Basic Electrical & Electronics Engineering**

Branch: **Common to CSE & IT**

Time: 3 hours

Max. Marks: 75

Answer any **FIVE** Questions of the following

5x15M=75M

1. (a) Explain faraday's law. A metal ring is placed on top of a vertical solenoid. When current is switched on to the solenoid, the ring jumps vertically upward. Explain.
   (b) Find self-inductence of a long solenoid per unit length, carrying N turns per unit length, and having radius R. [8+7]

2. (a) State and explain the superposition theorem. [8+7]
   (b) Using super position theorem find the current in 2 ohms resistor in the network shown below.
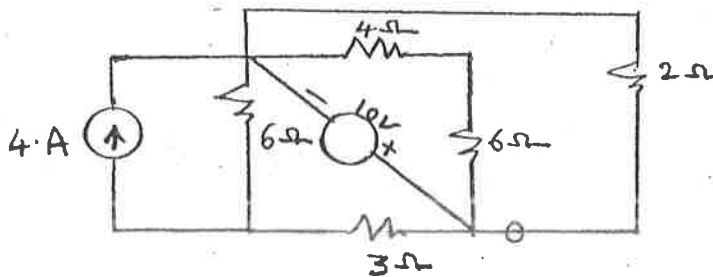
3. (a) Define coefficient of coupling, magneto motive force, reluctance and permeability. [8+7]
   (b) Derive the emf equation of transformer and explain principle of operation.

4. (a) Explain the principle of operation of DC generator along with its constructional details. [8+7]
   (b) Explain the following (i) slip (ii) rotor frequency and (iii) synchronous speed

5. (a) Define law of junction? Explain about the term cut in voltage associated with p-n junction diode? How do you obtain cut in voltage from forward $V - I$ characteristics?
   (b) Briefly discuss about avalanche breakdown and zener breakdown. [8+7]

6. (a) What is a MOSFET? How many types of MOSFET are there? With suitable diagrams explain the working of different MOSFETS. [8+7]
   (b) Compare CB; CE and CC Configurations.

7. (a) Compare common collector and common emitter configuration with regards to R_i, R_0, A_I, A_V. [8+7]

(b) Draw the circuit diagram of CC amplifier using hybrid parameter and derive expressions for A_I, A_V, R_i, R_O.

8. (a) Explain the main difference between an amplifier and an oscillator? What are the main constituents parts of an oscillator.   [8+7]

(b) An amplifier has voltage gain with feedback is 100. If the gain without feedback changes by 20% and gain with feedback should not vary more than 2%. Determine the open loop gain A and feedback ratio B.

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, MAY-2018

Subject: Digital Logic Design

Branch: CSE

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

Answer any FIVE Questions of the following   **5x15M=75M**

1. a) Show the weights of three different 4 bit self complementing codes whose only negative weight is -4 and write down number system from 0 to 9.
    b) What is the Gray code? What are the routes to construct gray code. Develop the 4- bit gray code for the decimal 0 to 15.

2. a) What is parity checking? How it is implemented? Explain its necessity?
    b) Distinguish between Mealy & Moore machines in Detail

3. a) Find all prime implicants and indicate which are essential through the kmap
    b) Show that a Positive logic NAND gate is a negative logic NOR gate and vice versa.
    c) Minimize the following Boolean function to four literals $(A|+C) (A| +C|) (A+B+C|D)$

4. a Design a full sub tractor using two half subtractors,
    b. Implement the following function with a multiplexer
    $F(A,B,C,D)=\Sigma (0,1,3,4,8,9,15)$
    c. Construct of 4x16 decoder with two 3x8 decoders.

5. Explain the differences among a truth table, a state table, a characteristic table and an excitation table. Also explain the difference among a Boolean equation, state equation, a characteristic equation and a flip-flop input equation.

6. Explain about the following
    a) Merger diagrams
    b) Serial addition in 4- bit shift register.
    c) Universal shift register

7. Explain about Read Only Memory (ROM) in detail.

8. Explain about the derivation of latch circuit from transition table?