Code No.: 50B12

MR 15

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 Sem Regular & Supplementary Examinations, NOVEMBER-2017

SUBJECT: **Applied Statistics**

Branch: **CSE**

Time: 3 hours **Max. Marks: 60**

PART – A

Answer All Questions **5x2Mark=10 Marks**

1. Define Skewness and Kurtosis
2. State any two assumptions of ANOVA
3. What is Latin square?
4. What are Natural Tolerance Limits
5. Write the measures of Seasonal Variations.

PART-B

Answer Any 5 Questions **5x10 Marks= 50 Marks**

1. Explain the uses and limitations of geometric mean and harmonic mean.
2. a) Perform a two-way ANOVA on the data given below:

Plot of land	Treatment			
	A	B	C	D
I	38	40	41	3
II	45	42	49	36
III	40	38	42	42

b) Explain about 2^2-factorial design.

3. A set of data involving four "Tropical feed stuffs A, B, C, D" tried on 20 chicks is given below. All 20 Chickens are treated alike in all respects except the following treatments and each feeding treatment is given to 5 chicks. Analyze the data

Feed	**Gain in Weight**					**TOTAL**
A	55	49	42	21	52	219
B	61	112	30	89	63	355
C	42	97	81	95	92	407
D	169	137	169	85	154	714

4. A machine is set to deliver the packets of a given weight. Ten samples of given sixe five each were examined and the following results are obtained .

Sample No	1	2	3	4	5	6	7	8	9	10
Mean	43	49	37	44	45	37	51	46	43	47
Range	5	6	5	7	7	4	8	6	4	6

Calculate the values for the central line and control limits for mean chart and range chart. Comment on the state of control (Given n=5, $d_2 = 2.326$, $d_3 = 0.864$)

5. Given the data for 2009-10 and 2010-11:

	Commodity			Commodity	
	A	B		A	B
p0	1	1	p1	2	x
q0	10	5	q1	5	2

Where p and q respectively stand for price and quantity and subscripts stand for different time periods. Find x, if the ratio between Laspeyeres(L)and Paasache's (P) index number is L:P=28:27

6. a) Obtain Karl Pearson's Measure of Skewness for the following data:

Class Interval:	5-10	10-15	15-20	20-25	25-30	30-35	35-40
Frequency:	6	8	17	21	15	11	2

b) Find the geometric mean of the following data: 2, 4, 16 and 32.

7. a) Discuss about ANCOVA.
b) State some applications of ANOVA.

8. An experiment was planned to study the effect of sulphate of potash and super phosphate on the yield of potatoes. All the combinations of 2 levels of super phosphate [0 cent (p_0) and 5 cent (p_1) / acre] and two levels of sulphate of potash [0 cent (k_0) and 5 cent (k_1/acre] were studied in a randomized block design with 4 replications for each. The (1/70) yields [lb. per plot = (1/70) acre obtained are given in table. Analyse the data and give your conclusions.

Block	Yields (lbs per plot)			
I	(1)	k	p	kp
	23	25	22	38
II	p	(1)	k	kp
	40	26	36	38
III	(1)	k	pk	p
	29	20	30	20
IV	kp	k	p	(1)
	34	31	24	28

Code No.: 50H16

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II B.Tech I Sem Regular End Examinations, NOVEMBER-2017

SUBJECT: **Environmental Sciences**

Branch: **Common to EEE, ECE & CSE**

Time: 3 hours **Max. Marks: 60**

PART – A

Answer All Questions **5x2Mark=10 Marks**

1. Write about the types of Energy Flow in Ecosystem?
2. What are the causes of pollution?
3. Write some of the reasons for the soil degradation?
4. Discuss the causes of deforestation.
5. Write a note on Clean Development Mechanism.

PART-B

Answer Any 5 Questions **5x10 Marks= 50 Marks**

1. a) Explain biotic and abiotic component with examples?
   b) Explain food web with neat labeled diagram.
2. a) Explain benefits and disadvantages of dams?
   b) Write short notes on Floods and Droughts.
3. How the modern agriculture causing soil pollution? Explain.
4. a) Write short note on International conventions
   b) Write short note on Effects of ozone depletion.
5. a) What are the threats to sustainability?
   b) Write a note on Urban Sprawl.
6. a) Give the classification of Ecosystem.
   b) "The flow of energy is one –way and continuous in an ecosystem". **Justify.**
7. a) Write short note on water logging.
   b) Write short note on Consumptive use value, productive use value of biodiversity.
8. a) Explain about Water pollution?
   b) Explain about automobile and industrial pollution.

Code No.: 501452

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II B.Tech I Sem Regular & Supplementary Examinations, NOVEMBER-2017

SUBJECT: **Digital Logic Design**

Branch: **CSE**

Time: 3 hours **Max. Marks: 60**

PART – A

Answer All Questions **5x2Mark=10 Marks**

1. Explain about gray code with example
2. Define Boolean Algebra and list out its axioms and laws.
3. Explain the design procedure for combinational circuits.
4. What is the difference between latches and flip flops?
5. What is the need of magnitude comparator in digital circuits?

PART-B

Answer Any 5 Questions **5x10 Marks= 50 Marks**

1.a. Convert the decimal number 10030.644 into corresponding binary number
b Using 2's complement method perform $(1024)_{10} - (512)_{10}$

2.a. Draw circuit diagram for the following Boolean expressions
i. AB+(ABC)'+(BCΘAD) ii. ABC'+AB+BC(B+C)+BC

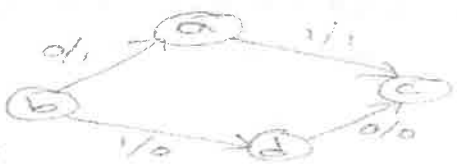
3.a. Explain the truth tables of universal Logic gates
b. Explain how you convert sum of products into product of sum. Give with an example. Also minimize the following function using K-Map Technique F=(0,2,4,6,8,9).Show the logic gate circuit after minimization.

4.a .Convert the following expression into NAND- NAND Implementation ((A+B)+C+D Θ Ɛ)
b. Convert the following expression to POS form (ABC + BCA+ AB) Minimize using k- map
Π(0,3,6,8,11) + d(9,10)

5.a. Draw and explain 4-16 decoder with 2 to 4 and 3-8 decoders.
b. Programmable logic devices

6.a. Programmable logic arrays
b. Carry propagate and carry generate

7.a. Analyse and design Mealy Machine.



b. Design synchronous Sequential logic with an example and show race free state assignment hazard

8.a. Explain the procedure to analyze an asynchronous sequential circuit with S-R latch?
b. Find a circuit that has no static hazards and implements the Boolean function
F(A,B,C,D)=Σ(0,2,6,7,8,10,12)

Code No.: 50505

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II B.Tech I Sem Regular & Supplementary Examinations, NOVEMBER-2017

SUBJECT: **Object Oriented Programming**

Branch: **CSE**

Time: 3 hours **Max. Marks: 60**

PART – A

Answer All Questions **5x2Mark=10 Marks**

1. Distinguish between Procedural Languages and Object Oriented Programming?
2. What is dynamic method dispatch?
3. How to implement an Interface? Explain with one example.
4. Write at least two methods of thread class in java?
5. Write about adapter classes in AWT?

PART-B

Answer Any 5 Questions **5x10 Marks= 50 Marks**

1. a) Explain the usage of finalize method in garbage collection.
   b) Explain two uses of 'this' keyword with an example.
2. a) What is meant by aggregation and explain with suitable example.
   b) What is method overriding and explain with suitable example.
3. Define a package. Why do we need packages? Illustrate with suitable examples class member access with respect to packages.
4. a) Explain sleep() method with example.
   b) How to achieve static synchronization.
5. a) Write a java program to handle keyboard events.
   b) Write short notes on Swings
6. a) Explain briefly about any three functions in String class with syntax.
   b) Create an abstract base class shape with two members "base and height", a member function for initialization and a function to compute area(). Derive two specific classes "triangle and rectangle" which override the function area(). Use three classes in a main function and display the area of a triangle and rectangle.
7. What is the use of inheritance and explain multilevel inheritance with suitable example in Java & C++.
8. Explain how is the concept of Interface used to indirectly represent the Multiple Inheritances.

Code No.: **50506**

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II B.Tech I Sem Regular & Supplementary Examinations, NOVEMBER-2017

SUBJECT: **Algorithm Design**

Branch: **CSE**

Time: 3 hours **Max. Marks: 60**

PART – A

Answer All Questions **5x2Mark=10 Marks**

1. Briefly write about amortized analysis?
2. What is Divide and conquer strategy.
3. What is Adjacency Matrix?
4. Define hamiltanian cycle?
5. Explain briefly the general method of branch and bound

PART-B

Answer Any 5 Questions **5x10 Marks= 50 Marks**

1. a) Solve the recurrence relation $T(n)=2T(n/2)+C$ prove that $T(1)=1$.
   b) Derive the fine complexity for the recurrence $T(n) = 4T(n/2) + Cn$
2. Write short notes on any two of the following
   a)accounting method b) answer nodes c) solution nodes
3. a) Explain about Probabilistic analysis?
   b) Derive Time complexity of Binary search tree.
4. Explain general method for Divide and Conquer approach with algorithm & example.
5. a) What is dynamic programming? Give example.
   b) Explain in detail about 0/1 knapsack problem using Dynamic programming.
6. a) Solve by using Matrix chain multiplication where dimensions are $(a_1,a_2,a_3,a_4)=(3,4,2,5)$ and $(b_1,b_2,b_3,b_4)=(1,2,3,4)$
   b) Write an algorithm of matrix chain multiplication?
7. Using Backtracking enumeration how you can solve the following problem?
   (a). 8-queen problem (b). hamiltanian circuit problem.
8. a) Explain LC Branch and Bound.
   b) What do you mean by bounding? Explain how these bounds are useful in branch and bound methods?

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II B.Tech I Sem Regular & Supplementary Examinations, NOVEMBER-2017

SUBJECT: **Mathematical Foundation of Computer Science**

Branch: **CSE**

Time: 3 hours **Max. Marks: 60**

PART – A

Answer All Questions **5x2Mark=10 Marks**

1. Write the Symbolic notation of the following statement using quantifier "all dogs are animals".
2. Find the converse and contra positive of the implication.
   if today is Thursday ,then I have a test today."
3. What is Isomorphism? Give an example.
4. Find the number of all possible five letter words using the letters from the word "DADDY".
5. If the roots different write Expression for Second order Recurrence Relations.

PART-B

Answer Any 5 Questions **5x10 Marks= 50 Marks**

1. a. What is Disjunctive Normal Form? Obtain Disjunctive Normal Form of
   $\sim (P \vee Q) \leftrightarrow (P \wedge Q)$.
   b. Prove that, for any three propositions p,q,r, $(p \veebar q) \Longleftrightarrow [(p \rightarrow q) \wedge (p \rightarrow r)]$
2. a. Solve $a_n + 7a_{n-1} + 10\, a_{n-2} = 0$, $n >= 2$ with $a_0 = 10$, $a_1 = 41$.
   b. For $n \geq 2$ suppose that there are n people at a party and that each of those people shakes hands exactly one time with all the other people there and no one shake hands with himself or herself. Find the no. of shake hands.
3. Prove the rule 'modus ponens' using automatic theorem proving.
4. a. What is relation? List and explain different binary relations.
   b. Explain in detail about lattice.
5. a. If H is a subgroup of a group G then show that $H^{-1}=H$ is converse is true?
   b. If H, K are subgroups of a group G then show that HK is subgroup if HK=KH.
6. a. Write short notes on Semi-groups and moniods, groups with example
   b. Let G be the set of all non-zero real numbers and let a*b=1/2(ab). Show that <G, * > is an abelian group.
7. In $(1 + X^5 + X^9)^{10}$ find
   a. the coefficient of X^{23}
   b. the coefficient of X^{32}
8. Solve the $a_n - 6a_{n-1} + 12\, a_{n-2} - 8a_{n-3} = 0$ by generating functions