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*Note: -   **Attempt any 5 question. All questions carry equal marks**.*

Q. NO.	Questions	Marks	Levels of Bloom's taxonomy	COs
1.	Calculate the conductivity of copper having density **8.9 gm/cm^3 & mobility 34.8 cm^2/V-sec.** Atomic weight of copper is 63.57 while it has 1 valence electron pen atom. Assume the value of M=1.66 X 10^{-27} kg.	[8]	Apply	CO1
2.	State & prove the Law of mass action. ·	[8]	Understanding	CO1
3.	For a germanium diode, the reverse saturation current is **2 µA** at a reverse voltage of **0.26 V.** Calculate forward & reverse dynamic resistance values if forward biased voltage is also **0.26 V**, at room temperature.	[8]	Apply	CO1
4.	Two P-N germanium diodes are connected in series opposing. A **5 V** battery is impressed upon this series arrangement. Find the voltage across each at room temperature. Assume that the magnitude of zener voltage is greater than **5 V.**	[8]	Apply	CO2
5.	Prove that the ripple factor of a half wave rectifier is **1.21** & that of a full-wave rectifier is **0.482.**	[8]	Knowledge	CO2
6.	Prove that the maximum rectification efficiency of a HWR is **40.6%** & of FWR is **81.2%.**	[8]	Knowledge	CO2

"The day you **take complete responsibility for yourself**, the day
you **stop making any excuse, that's** the day you start to the top."

Shri Shankaracharya Institute of Professional Management & Technology
Department of Electronics and Telecommunication Engineering
Class Test – I   Session- July. – Dec, 2022 Month- December
Subject- Network Theory - B000314(028)

Time Allowed: 2 hrs   Max Marks: 40

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Note: -   Attempt any 5 question. All questions carry equal marks.

Q. NO.	Questions	Marks	Levels of Bloom's taxonomy	COs
1.	Determine V_x in the given circuit using nodal analysis.	[8]	Applying	CO1
2.	Determine i_{LOAD} through R_{LOAD} using Thevenin's theorem	[8]	Applying	CO1
3.	State and Prove Reciprocity Theorem.	[8]	Remembering	CO1
4.	Determine the interrelationship between Impedance and Admittance parameter.	[8]	Applying	CO4
5.	Calculate Y-Parameter in terms of ABCD and h-parameter	[8]	Applying	CO4
6.	Calculate ABCD Parameter. Also find ABCD parameter in terms of h_z parameter	[8]	Applying	CO4

Shri Shankaracharya Institute of Professional Management & Technology
Department of Computer Science & Engineering

Class Test – I   Session – July – Dec 2022   Month - December

Semester – CSE (AI), ET & IT III   Subject – Mathematics III   Code – B000311(014)

Time Allowed: 2 Hours   Maximum Marks: 40

Note: Solve Any 5 Questions

Q. N.	Questions	Marks	Level of Bloom's Taxonomy	COs
1.	The population of a town is as follows: Year : 1941 1951 1961 1971 1981 1991 Population: 20 24 29 36 46 51 Estimate the population increase during the period 1946 to 1986. Do all the calculation for 2 decimal places.	[8]	Applying	CO5
2.	Find Cos31 by Stirling's & Cos35 by Bessel's formula. x : 10 20 30 40 50 Cos$x$: 0.9848 0.9397 0.8660 0.7660 0.6428	[8]	Applying	CO5
3.	(i) Apply Lagrange's interpolation formula to find interpolating polynomial $f(x)$ satisfying the following data. (ii) Compute $f(2)$, by applying Newton's Divide difference formula. x : 0 1 3 4 $f(x)$: -12 0 6 12	[4+4]	Applying	CO5
4.	(i) The probability density function of a continuous random variable $f(x) = \begin{cases} \dfrac{k}{x^3}, & 5 \le x \le 10 \\ 0, & Otherwise \end{cases}$ Find value of k. (ii) Find the standard deviation for the following discrete probability distribution: x: 8 12 16 20 24 $p(x)$: 1/8 1/6 3/8 1/4 1/12 Do all the calculation for 2 decimal places.	[4+4]	Applying	CO4
5.	The frequency of the accidents per shift in a factory is as shown below: Accidents per shift : 0 1 2 3 4 Frequency : 180 92 24 3 1 Calculate mean number of accidents and fit Poisson's distribution. Do Calculations for 2 places of decimals.	[8]	Applying	CO4
6.	Articles are classified in three categories, 60% are less than 50, 35% are in the range 50-60, and only 5% are greater than 60. If this classification follows normal distribution, then find mean and standard deviation.	[8]	Applying	CO4

Shri Shankaracharya Institute of Professional Management & Technology
Department of Electronics and Telecommuication Engineering
Class Test – I   Session- July. – Dec, 2022 Month- December

Sem- ET&T 3rd sem   Subject - Data Structure using C++- B000315(028)

Time Allowed: 2 hrs   Max Marks: 40

Note: - All questions are compulsory. .

Q. NO.	Questions	Marks	Levels of Bloom's taxonomy	COs
1.	What are the benefits of OOPs?	[2]	Remembering	CO1
2.	Write the syntax of class?	[2]	Remembering	CO1
3.	What is nesting of member function?	[3]	Remembering	CO1
4.	What do you mean by memory allocation for objects?	[3]	Understanding	CO1
5.	Explain, Public member function and Private member function?	[3]	Understanding	CO1
6.	Write code for friendly function? Or Write short notes on, Objects and class?	[4]	Understanding	CO1
7.	Explain Constructors, destructors and copy constructor?	[7]	Understanding	CO1
8.	What is data member and data function, explain with example?	[7]	Remembering	CO1

9.	What is the output of the following program?
	
	(a) int main ( ) {
	
	int i = 5;
	
	cout<<++i++;
	
	return 0; }
	
	(b) int main( ) {
	
	int i = 5;
	
	cout<< i++ *i++;
	
	return 0; }
	
	(c) void disp (const int &a) {
	
	cout<< +a <<+a; }
	
	void main() {
	
	disp(4); }
		[9]	Remembering	CO1

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Note: -   *Q.1is compulsory and attend any 4 from 2,3,4,5,6.*

Q. NO.	Questions	Marks	Levels of Bloom's taxonomy	COs
1.	a) Find Gray Code equivalent of Hexadecimal number $(A2C)_{16}$. b) Find 5421 BCD equivalent of 83. c) Add 647 and 482 in 8421 BCD code. d) Using 9's complement, subtract 72532-3250.	[8]	Understanding	CO1
2.	Reduce the following Expression to the simplest possible POS and SOP Forms. $F_2 = \Sigma m\ (1, 5, 6, 12, 13, 14) + d\ (2, 4)$	[8]	Apply	CO1
3.	a) Device a signal error correcting code for a 11-bit group 01101110101? b)Test the following hamming code sequence for 11- bit massage and correct it if necessary (101001011101011)?	[8]	Apply	CO1
4.	Obtain the minimal expression using Quine – Mc Cluskey method. $f(A, B, C, D) = \Sigma m\ (1, 5, 6, 12, 13, 14) + d\ (2, 4)$	[8]	Apply	CO1
5.	Design B C D Adder by using IC's 7483. Or Explane Look ahead carry generator.	[8]	Design	CO2
6.	(a) Implement a full adder using 8 :1 multiplexer. (b) Design 16:1 multiplexer by using 4:1 multiplexer.	[8]	Design	CO2