Note: -   **Part A is compulsory.Attempt any two part from B,C and D.**

Q.N.	Questions	Marks	Levels of Bloom's taxonomy	COs
	Part 1			
A.	Solve $z = y^2 + 2f\left(\dfrac{1}{x} + \log y\right)$	[4]	Applying	CO2
B.	Solve the following equation by method of separation of variables $4\dfrac{\partial u}{\partial x} + \dfrac{\partial u}{\partial y} = 3u$,given that $u = 3e^{-y} - e^{-5y}$, when $x = 0$.	[8]	Applying	CO2
C.	Solve $4\dfrac{\partial^2 z}{\partial x^2} - 4\dfrac{\partial^2 z}{\partial x \partial y} + \dfrac{\partial^2 z}{\partial y^2} = 16\log(x + 2y)$	[8]	Applying	CO2
D.	Solve $px\left(z - 2y^2\right) + qy\left(z - y^2 - 2x^3\right) = z\left(z - y^2 - 2x^3\right)$	[8]	Applying	CO2
	Part 2			
A.	(i) Determine the binomial distribution for which $mean = 2 \times var\,iance, mean + var\,iance = 3$ (ii) If a random variable has a poisson's distribution such that P(1)=P(2), find (i) Mean of the distribution (ii) P(4) .	[4]	Applying	CO3
B.	Fit Poisson's distribution to the following and calculate theoretical frequencies Deaths: 0 1 2 3 4 Frequency: 122 60 15 2 1	[8]	Applying	CO3
C.	In a normal distribution, 31% of the times are under 45 and 8% are over 64. Find the mean and S.D. of the distribution.	[8]	Applying	CO3
D.	The probability density function p(x) of a continuous random variable is given by $p(x) = y_0 e^{-|x|}, -\infty < x < \infty$ Prove that $y_0 = \dfrac{1}{2}$. Calculate mean and variance.	[8]	Applying	CO3

Shri Shankaracharya Institute of Professional Management & Technology
Department of Electronics and Telecommunication Engineering
Class Test – I   Session- July-Dec, 2021 Month- November
Sem- ET&T+IT 3rd Subject- Digital System Design- B000313(028)
Time Allowed: 2 hrs   Max Marks: 40

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

Q. NO.	Questions	Marks	Levels of Bloom's taxonomy	COs
1.	a) What is Hamming code? b) Explain sequential code? c) What do you mean by self complementing code? d) Advantages of gray code?	[8]	Understanding	CO1
2.	Reduce using mapping the expression $f_1 = \Pi M$ (2, 8, 9, 10, 11, 12, 14), $F_2 = \Sigma m$ (0, 1, 2, 3, 4, 8, 12) and implement the real minimal expression in universal logic?	[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.	Implement a full adder using 8 :1 multiplexer.	[8]	Design	CO2

Shri Shankaracharya Institute of Professional Management & Technology
Department of Electronics and Telecommunication Engineering
Class Test – I   Session- July. – Dec, 2021 Month- November
Subject- Network Theory - B000314(028)

Time Allowed: 2 hrs   Max Marks: 40

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 the Thevenin Equivalent circuit for the given circuit with respect to terminal a-b.	[8]	Applying	CO1
3.	State and Prove Maximum Power Theorem.	[8]	Remembering	CO1
4.	Determine the interrelationship between Transmission Parameter and Hybrid parameter.	[8]	Applying	CO4
5.	Calculate Y-Parameter in the circuit given	[8]	Applying	CO4
6.	Calculate Z-Parameter in the circuit given	[8]	Applying	CO4

Shri Shankaracharya Institute of Professional Management & Technology

Department of Electronics and Telecommunication Engineering

Class Test – I   Session- July – Dec, 2021 Month- October

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

Time Allowed: 2 hrs   Max Marks: 40

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

Q. NO.	Questions	Marks	Levels of Bloom's taxonomy	COs
1.	Explain the basic concept of object oriented programming.	[8]	Understanding	CO1
2.	What is an inheritance? Explain with suitable example.	[8]	Understanding	CO2
3.	Write a program to add complex number using the concept of overloading.	[8]	Apply	CO1
4.	Write a program in C++ to find the greatest number among three numbers using nested if-else statement.	[8]	Apply	CO1
5.	Explain function overloading concept with suitable example	[8]	Understanding	CO2
6.	Write a program in C++ to overload unary operator.	[8]	Apply	CO1
7.	Explain the rules for overloading operators. Also explain constructor and destructor with their properties.	[8]	Understanding	CO1, CO2

Shri Shankaracharya Institute of Professional Management & Technology
Department of Electronics and Telecommunication Engineering
Class Test – I, November - 2021
Sem- ET&T 3rd Subject- ED

Time Allowed: 2 hrs   Max Marks: 40

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

Q. NO.	Questions	Marks	Levels of Bloom's taxonomy	COs
1.	Define mobility and conductivity, also explain Einstein relationship & unit of diffusion constant and KT/q ?	[8]	Understanding	1
2.	Explain minonty change carrier injection in an n-type semiconductor with respect to time?	[8]	Understanding	1
3.	Explain mass action low for any type of semiconductor how to find majority and minority concentration in p and n type Semiconductor?	[8]	Understanding	1
4.	Determine the concentration of free electrons and holes in a sample of germanium at 3000K which has a concentration of donor atoms equal to $2*10^{14}$ atoms/cm^3 and a concentration of acceptor atoms equal to $3*10^{14}$ atoms/cm^3. Is this p or n type germanium? In other words, is the conductivity is due primarily to holes or electrons?	[8]	Application	2
5.	Write a short note on Full wave bridge rectifier.	[8]	Understanding	1
6.	A sample of germanium is doped with 10^{14} atoms of acceptor impurity per/cm^3 while 10^{13} atoms of donor impurity/cm3.Calculate the total current density if at the same temperature the intrinsic resistivity is 45 Ω-cm and applied electric field is 3 V/c?	[8]	Application	2
7.	Explain the energy band diagram for p type and n type Semiconductor?	[8]	Understanding	1