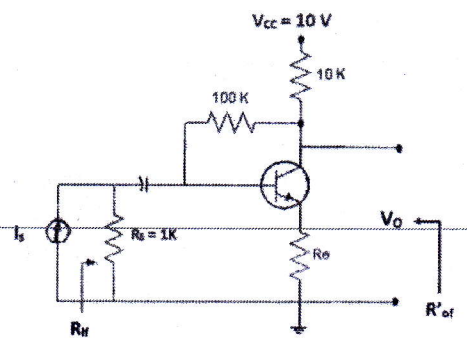
Shri Shankaracharya Institute of Professional Management & Technology
Department of Electronics & Telecommunication

Class Test – II Session- Jan. – June, 2023 Month- June

Sem- 4th Subject- Analog Circuits - B028412(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.	Construct and explain Colpitts Oscillator.	[8]	Create & Understand	CO5
2.	Construct and explain Resonant circuit oscillators. .	[8]	Create & Understand	CO5
3.	Justify that the bandwidth of negative feedback amplifier is greater then the bandwidth of an amplifier without feedback.	[8]	Evaluate	CO5
4.	Discuss the effect of cascading on Bandwidth with the help of expression for lower and higher cutoff frequencies.	[8]	Evaluate	CO3
5.	Discuss Low Frequency response of an RC-coupled Stage.	[8]	Understand	CO3
6.	i. ii. iii. Evaluate for the transistor feedback amplifier stage shown, h_{fe}= 100, h_{ie}= 1 KΩ while h_{re} and h_{oe} are negligible. Determine with R_e= 0 R_{if} R_{of} A_{vf} 	[8]	Evaluate	CO4

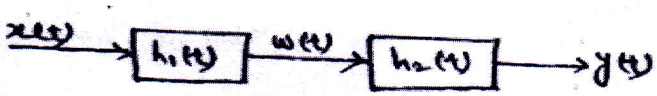
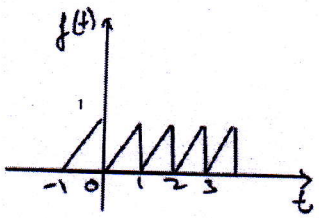
Shri Shankaracharya Institute of Professional Management & Technology
Department of Electronics and Telecommunication Engineering

Class Test – II Session- Jan. – June, 2023 Month- June

Sem- 4th Subject- Signal and System - B028414(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.	Calculate z-transform and RoC of the signal given below: $x(n)=a^{-n}u(-n-1)$	[8]	Apply	CO3
2.	Calculate the impulse response of overall system  $h_1(t)=e^{-2t}u(t),\ h_2(t)=2e^{-t}u(t)$	[8]	Apply	CO5
3.	Calculate the impulse response of over all system $\frac{d^2y(t)}{dt^2}+4\frac{dy(t)}{dt}+3y(t)=\frac{dx(t)}{dt}+2x(t)$	[8]	Apply	CO5
4.	**Find the inverse Z transform of** $x(Z)=\frac{-4+8z^{-1}}{1+6z^{-1}+8z^{-2}}$	[8]	Apply	CO3
5.	Find the Trigonometric Fourier Series for the Sawtooth Function shown 	[8]	Apply	CO2
6	Obtain the Trigonometric Fourier Series of $X(t)=\begin{cases}0 & \text{for } -T/2 < t < -T/4\\ A & \text{for } -T/4 < t < T/4\\ 0 & \text{for } T/4 < t < T/2\end{cases}$	[8]	Apply	CO2

Shri Shankaracharya Institute of Professional Management & Technology
Department of Electronics and Telecommunication Engineering
Class Test – II Session- Jan. – June, 2021 Month- June
Sem- ET&T 4th Subject- EMF - B028413(028)
Time Allowed: 2 hrs Max Marks: 40

Note: -
All Questions carry 8 marks. Attempt any 5 questions from .

Q. NO.	Questions	Marks	Levels of Bloom's taxonomy	COs
1.	State & Prove Stoke's Theorem	2	Understand & Apply	CO3
2.	Write Maxwell's equation for Static electric field.& Steady Magnetic field in point form as well as Integral form.	2	Understand & Apply	CO3
3.	State & Prove Poynting Theorm	2	Understand & Apply	CO4
4.	Derive wave equation for lossy dielectric medium & obtain equation for α β & η.	2	Understand & Apply	CO4
5.	Derive the general solution of a Transmission line terminated with any Load Impedance **Z**	2	Understand & Apply	CO5
6.	Explain SWR. And Derive Relation between SWR & Reflection coefficient	8	Understand & Apply	CO5

Shri Shankaracharya Institute of Professional Management & Technology
Department of Electronics and Telecommunication Engineering
Class Test – II Session- Jan. – June, 2023 Month- June
Sem- ET&T 4th Subject- Analog Communication- B028411(028)

Time Allowed: 2 hrs Max Marks: 40

Note: - Part "a" of both the questions is compulsory. Attempt any 2 from b,c and d

Q. NO.	Questions	Marks	Levels of Bloom's taxonomy	COs
1.	a) Define Sensitivity and Selectivity.	[2]	Understanding	CO4
	b) Explain in detail the Armstrong Method of generation of FM signal.	[8]	Understanding	CO3, CO4
	c) Explain the need of Pre-emphasis and De-emphasis in FM system	[8]	Understanding	CO4
	d) Explain in detail the working of a superheterodyne receiver with the help of a block diagram	[8]	Understanding	CO4
	a) Define Figure of Merit	[2]	Understanding	CO5
	b) Distinguish among DSB-FC, DSB-SC, SSB-SC and VSB	[8]	Understanding	CO2
	c) Derive an expression to calculate FOM for DSB-SC Signal.	[8]	Understanding	CO5
	d) Calculate the Output signal to noise ratio in FM system.	[8]	Understanding	CO5

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Shri Shankaracharya Institute of Professional Management & Technology
Department of Electronics and Telecommunication Engineering
Class Test – II Session- Feb– June, 2023 Month- June
Sem- ET&T 4th Subject- Probability Theory and Stochastic Theory – B028415(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.	Suppose height to the bottom of the clouds is a Gaussian random variable X for which a_x = 4000 m and σ_x= 1000 m. A person bets that cloud height tomorrow will fall in the set A = {1000 m <X≤ 3300 m) while a second person bets that height will be satisfied by B = (2000 m <X<4200 m). A third person bets that they both are correct. Find the probabilities that each person will win the bet.	[8]	Applying	CO2
2.	Find a constant b(in terms of a) so that the function is a valid joint density function. $f_{X,Y}(x,y) = \begin{cases} be^{-(x+y)} & 0<x<a \\ & 0<y<\infty \\ 0 & \text{elsewhere} \end{cases}$	[8]	Applying	CO2
3.	Define probability density function and Explain its properties. Explain types of probability density function.	[8]	Rememberi ng	CO2
4.	A random variable X has a probability density $f_X(x) = \begin{cases} \frac{\pi}{16}\cos\left(\frac{\pi x}{8}\right) & \lvert x\rvert \le 8 \\ 0 & \text{otherwise} \end{cases}$ Find: (i) Its mean value E[X (ii) Its second moment E[X^2] (iii) Variance	[8]	Applying	CO3
5.	Show that the mean value and variance of the random variable having uniform density are $\overline{X} = E[X] = \frac{(a+b)}{2}$ $\sigma_x^2 = \frac{(b-a)^2}{12}$	[8]	Applying	CO3
6.	Explain the Poisson and Gaussian random process.	[8]	Understandi ng	CO4
7.	Assume that an ergpdic random process X(t) has an auto correlation function. $R_{xx}(\tau) = 18 + \frac{2}{6+t^2}\left[1+4\cos(12\tau)\right]$ (i) Find |E[X]| (ii) Does this process have periodic component (iii) What is the average power in X(t)	[8]	Applying	CO4