Shri Shankaracharya Institute of Professional Management & Technology
Department of Electronics and Telecommunication Engineering
Class Test – I Session- July – Dec, 2021 Month- October
Sem- ET 5th Subject- Digital Communication- C028511(028)
Time Allowed: 2 hrs Max Marks: 40

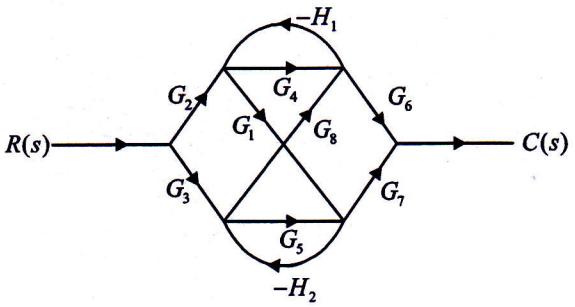
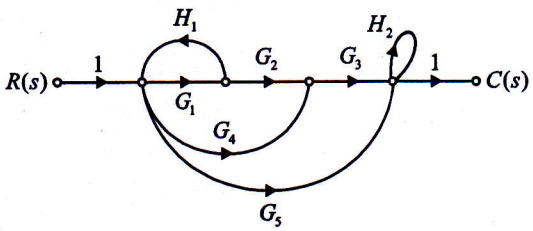
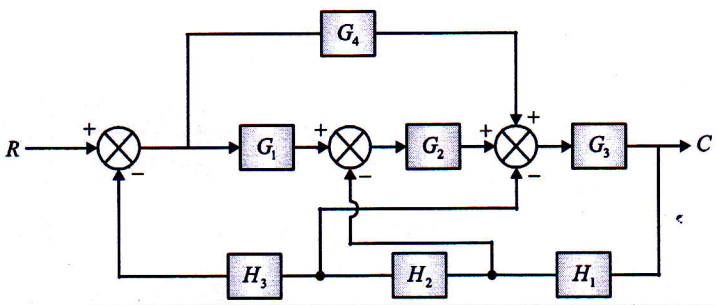
*Note: - **Attempt Both the question.Each Question has 4 parts. Part a is compulsory. Attempt any 2 out of b,c and d.***

Q. NO.	Questions	Marks	Levels of Bloom's taxonomy	COs
1				
a.	Find the Nyquist rate and Nyquist interval for the following signals i) $m(t)=\sin(500\pi t)\pi t$ ii) $m(t)=12\pi\cos(4000\pi t)\cos(1000\pi t)$	4	Apply	CO1
b.	State and Prove Sampling Theorum	8	Understanding	CO1
c.	An analog voltage wave form having an absolute bandwidth of 100Hz and an amplitude range of -10v to +10v and an amplitude over a PCM system with+ or - 0.1% accuracy(full scale) a)determine the minimun sampling rate needed b)determine the no. of bits needed in each PCM word c)determine the minimum bit rate required in the PCM signal	8	Apply	CO2
d.	Differentiate among PAM, PWM and PPM	8	Understanding	CO1
2				
a.	Draw the block diagram of TDM PAM System	4	Understanding	CO2
b.	Explain in detail Natural and Flat top sampling	8	Understanding	CO1
c.	Explain Pulse Code Modulation in details with the help of a block diagram	8	Understanding	CO2
d.	Derive Quantization Noise and Find the expression for Signal to Quatization Noise ratio	8	Understanding	CO2

Shri Shankaracharya Institute of Professional Management & Technology
Department of Electronics and Telecommunication Engineering
Class Test – I, October - 2021
Sem- ET&T 5th Subject- CS

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.	Obtain the transfer function $\frac{C(s)}{R(s)}$ from the signal flow graph shown in figure. 	[8]	Application	CO1
2.	Find the transfer function of the signal flow graph shown in figure using Mason's gain formula. 	[8]	Application	CO1
3.	Obtain the transfer function of the block diagram shown in figure. 	[8]	Application	CO1
4.	Construct Root locus for G(s) and comment on stability. TF = K/s(s+3)(s2 +2S+2)	[8]	Application	CO2
5.	Construct Root locus for G(s) and comment on stability. TF = K(S+1)(S+3)/(s+5)(S+7)	[8]	Application	CO2
6.	Write the steps involved in construction of Root Locus and discuss the criterion for stability	[8]	Understanding	CO2

Shri Shankaracharya Institute of Professional Management & Technology
Department of Electronics and Telecommunication Engineering
Class Test – I Session- Jul-Dec, 2021 Month- October
Sem- ET&T 5th Subject- Microcontroller & Embedded System - C028513(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.	Write Short notes on : a. Features of 8051, 8052, 8031, 8751 and AT89C51. b. Harvard Architecture Vs Von-Neumann Architecture.	[8]	Understanding	CO1
2.	Draw Pin Configuration & internal Block Diagram of 8051 microcontroller.	[8]	Understanding	CO1
3.	Write an ALP to generate a square wave of frequency 2 KHz with 66% duty cycle on port pin P1.2. Use timer 1 in mode 2. Assume crystal oscillator frequency is 22MHz.	[8]	Apply	CO2
4.	Write a program to find the maximum number from the ten 8-bit numbers. Assume numbers stored from 2000H and result should be stored in R3 register.	[8]	Apply	CO1
5.	What is the job of TMOD and TCON registers & also explain each bit of TMOD and TCON registers.	[8]	Apply	CO2
6.	Discuss interrupt structure of 8051 microcontroller. Also discuss interrupt versus polling.	[8]	Understanding	CO2

Shri Shankaracharya Institute of Professional Management & Technology
Department of Electronics and Telecommunication Engineering
Class Test – I Session- Jul-Dec, 2021 Month- October
Sem- ET&T 5th Subject- Microcontroller & Embedded System - C028513(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.	Write Short notes on : a. Features of 8051, 8052, 8031, 8751 and AT89C51. b. Harvard Architecture Vs Von-Neumann Architecture.	[8]	Understanding	CO1
2.	Draw Pin Configuration & internal Block Diagram of 8051 microcontroller.	[8]	Understanding	CO1
3.	Write an ALP to generate a square wave of frequency 2 KHz with 66% duty cycle on port pin P1.2. Use timer 1 in mode 2. Assume crystal oscillator frequency is 22MHz.	[8]	Apply	CO2
4.	Write a program to find the maximum number from the ten 8-bit numbers. Assume numbers stored from 2000H and result should be stored in R3 register.	[8]	Apply	CO1
5.	What is the job of TMOD and TCON registers & also explain each bit of TMOD and TCON registers.	[8]	Apply	CO2
6.	Discuss interrupt structure of 8051 microcontroller. Also discuss interrupt versus polling.	[8]	Understanding	CO2

Shri Shankaracharya Institute of Professional Management & Technology
Department of Electronics and Telecommunication Engineering
Class Test – I Session- July. – Dec, 2021 Month- October
Subject- Design of Electronics Circuit- C028512(028)

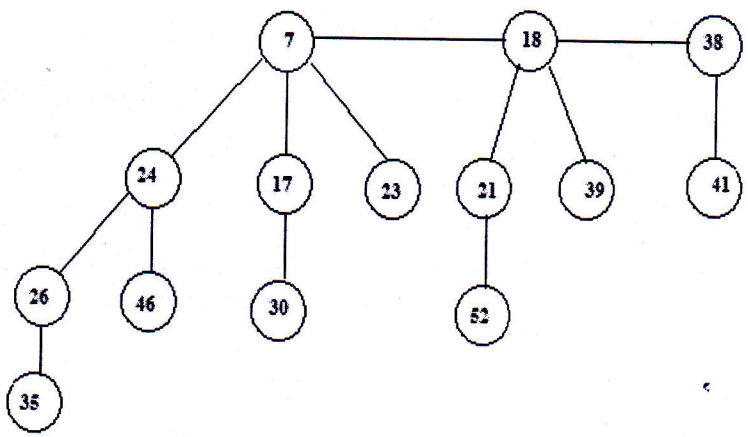
Time Allowed: 2 hrs Max Marks: 40

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

Q. NO.	Questions	Marks	Levels of Bloom's taxonomy	COs
1.	Discuss the Ideal characteristics of Op-amp.	[8]	Understanding	CO1
2.	Construct the block diagram of Op-amp and explain each block in details.	[8]	Creating &Understanding	CO1
3.	Construct the circuit of Dual input, Balanced output Differential Amplifier. Derive the expression for differential voltage gain A_D.	[8]	Creating & Understanding	CO1
4.	Design and discuss Logarithmic Amplifier.	[8]	Creating & Understanding	CO2
5.	Discuss Input offset voltage, Input bias current, Input offset current.	[8]	Understanding	CO1
6.	DiscussCurrent to voltage and Voltage to current converter	[8]	Understanding	CO2

Shri Shankaracharya Institute of Professional Management & Technology
Department of Electronics and Telecommunication Engineering
Class Test – I Session- July – Dec, 2021 Month- October
n- ET&T 5th Subject- Advanced Data Structures and Algorithms- C022535(022)
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.	What is Stack and also explain PUSH and POP operation of Stack with algorithm and design.	[8]	Understanding	CO1
2.	Write short notes on the following: 1. Full binary tree 2. Complete binary tree 3. Strictly binary tree	[8]	Understanding	CO2
3.	Explain the following with example: 1. Linked List 2. Queue	[8]	Understanding	CO1
4.	Explain Fibonacci Heap and compare it's time complexity with binomial heap.	[8]	Understanding	CO2
5.	Solve the given tree using Fibonacci heap extract the minimum operation. 	[8]	Apply	CO2
6.	Explain the insertion and deletion operation in queue with algorithm and diagram.	[8]	Understanding	CO1