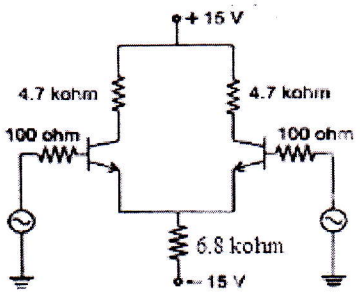
Shri Shankaracharya Institute of Professional Management & Technology
Department of Electronics and Telecommunication Engineering
Class Test – I Session- July– Dec, 2022 Month- December
Sem- ET&T 5th Subject- Design of Electronics Circuit – C028512(28)
Time Allowed: 2 hrs Max Marks: 40

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

Q. NO.	Questions	Marks	Levels of Bloom's taxonomy	COs
1.	The configuration of dual input, balanced output differential amplifier is given. Assume Si transistor with h_{ie}= 2.8 kΩ and h_{fe}=β=100. Calculate (i) Operating point values. (ii) Differential gain. (iii) Common mode gain (iv) CMRR. (v) Output if V_{s1}= 70 mV peak to peak at 1 kHz and V_{s2}= 40 mV peak to peak.  	[8]	Applying	CO1
2.	For an Op-Amp the value of R_f and R_1 are 100 kΩ and 1 kΩ respectively. It is an inverting amplifier with input offset voltage drift of 14 μV/^{0}C and input offset current drift of 0.5 nA/^{0}C . The amplifier is null at 25^{0}C. Calculate the error voltage and output at 45^{0}C if input is 7 mV dc.	[8]	Applying	CO1
3.	Draw the circuit of Dual Input Balanced Output differential amplifier and derive the expression of differential mode gain (A_d) using h-parameter model.	[8]	Applying	CO1
4.	Explain the input offset voltage compensation technique used in opamp.	[8]	Understanding	CO1
5.	Draw and explain the schmitt trigger circuit with output waveform and hysteresis curve.	[8]	Understanding	CO2
6.	Find the R_1 & R_f in practical integrator so that peak gain is 20 dB and gain is 3dB down from its peak when w=10000 rad/sec, use capacitance of 0.01 μF.	[8]	Applying	CO2
7.	Explain and derive mathematical equation of Log amplifier.	[8]	Understanding	CO2

Shri Shankaracharya Institute of Professional Management & Technology

Department of Electronics and Telecommunication Engineering

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

Sem- ET&T 5th sem Subject-Advance Data Structure- C022535(022)

Time Allowed: 2 hrs Max Marks: 40

*Note: - **All questions are compulsory.***

Q.NO.	Questions	Marks	Levels of Bloom's taxonomy	COs
1.	What is linear data Structure, also list example of it with example.	[2]	Remembering	CO1
2.	What is ADT?	[2]	Remembering	CO1
3.	What is internal pointer variable?	[2]	Remembering	CO2

4.	Find the output of the following code:
	void man() {
	char S1[80] = {"COMPUTER"}
	char S2[80] = {"Marc"}
	printf("Length (%s) = %d", S1, strlen(S1));
	printf("Length (%s) = %d", S1, strlen(S2)); }
		[2]	Understanding	CO1

5.	What is linked list and stack?	[3]	Understanding	CO1
6.	Consider the linear array NAME in fig. below, which is sorted alphabetically. NAME Adam Evan John Lane Smith a) Find NAME [2], NAME [4], NAME [7] b) Suppose David is to be inserted into the array. How many names must be moved to new locations. c) Suppose John is to be deleted from the array. How many names must be moved to new locations?	[3]	Understanding	CO1
7.	Differentiate Linear data structure and non-linear data/tree structure?	[3]	Understanding	CO2
8.	Write a program to print the prime numbers less than N.	[4]	Remembering	CO2

9.	What is the output of the following program?
	int main () {
	int i= 5, j =10;
	j =i++, j++?(i++,j++)?J++:j++;
	cout<<"i = "<<i<<" "<<"j = "<<j<<endl; }
		[4]	Remembering	CO1

10..	What is Tree and Binary search Tree, with example?	[5]	Remembering	CO2
11.	What is heap and explain its types of heaps?	[5]	Understanding	CO2
12.	Write a code, To multiply x by 8 without using multiplication (*) operator.	[5]	Understanding	CO1

SSIPMT RAIPUR

Shri Shankaracharya Institute of Professional Management & Technology
Department of Electronics and Telecommunication Engineering
Class Test – I , Month- December
Sem- ET&T 5th Subject- Digital Communication- C028511(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.	State and prove sampling theorem for low pass signal	[8]	Understanding	CO1
2.	i. What do you mean by Quantization? ii. Derive an expression for Mean square value of quantization error for PCM	[8]	Applying	CO1
3.	Compare: PAM, PDM, PPM	[8]	Understanding	CO1
4.	Explain with the help of a block diagram the transmitter and Receiver of a PCM	[8]	Understanding	CO2
5.	Explain Delta Modulation along with the waveform and Block diagram. Also explain types of noises in DM.	[8]	Understanding	CO2
6.	Explain Differential Pulse Code Modulation along with Generation and Demodulation Block diagram	[8]	Understanding	CO2

SSIPMT RAIPUR

Shri Shankaracharya Institute of Professional Management & Technology
Department of Electronics and Telecommunication Engineering
Class Test – I , Month- December
Sem- ET&T 5th Subject- Digital Communication- C028511(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.	State and prove sampling theorem for low pass signal	[8]	Understanding	CO1
2.	iii. What do you mean by Quantization? iv. Derive an expression for Mean square value of quantization error for PCM	[8]	Applying	CO1
3.	Compare: PAM, PDM, PPM	[8]	Understanding	CO1
4.	Explain with the help of a block diagram the transmitter and Receiver of a PCM	[8]	Understanding	CO2
5.	Explain Delta Modulation along with the waveform and Block diagram. Also explain types of noises in DM.	[8]	Understanding	CO2
6.	Explain Differential Pulse Code Modulation along with Generation and Demodulation Block diagram	[8]	Understanding	CO2

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SSIPMT RAIPUR

Class Test – I, December 2022

Sem- ET&T 5th Subject- ACS

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.	Derive Kp, Kv and Ka and comment on steady state error for type 0, 1, 2 and 3 system. Also represent in tabular form.	[8]	understanding	2
2.	Derive expression for rise time, peak time, maximum overshoot and settling time for std. second order system subjected to unit step input. $\{0< \zeta <1\}$	[8]	Application	1
3.	Construct Polar plot for G(s) and comment on stability. TF = $10/s^2(s+5)(s+7)(s+9)$.	[8]	Application	1
4.	Construct Root locus for G(s) and comment on stability. TF = $K/s(s+4)(s^2+2S+2)$	[8]	Application	2
5.	Construct Root locus for G(s) and comment on stability. TF = $K(S+1)(S+3)/(s+5)$	[8]	Application	2
6.	Write the steps involved in construction of Root Locus and discuss the criterion for stability	[8]	Understanding	2

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

SSIPMT RAIPUR

Class Test – I, December 2022

Sem- ET&T 5th Subject- ACS

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.	Derive Kp, Kv and Ka and comment on steady state error for type 0, 1, 2 and 3 system. Also represent in tabular form.	[8]	understanding	2
2.	Derive expression for rise time, peak time, maximum overshoot and settling time for std. second order system subjected to unit step input. $\{0< \zeta <1\}$	[8]	Application	1
3.	Construct Polar plot for G(s) and comment on stability. TF = $10/s^2(s+5)(s+7)(s+9)$.	[8]	Application	1
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5.	Construct Root locus for G(s) and comment on stability. TF = $K(S+1)(S+3)/(s+5)$	[8]	Application	2
6.	Write the steps involved in construction of Root Locus and discuss the criterion for stability	[8]	Understanding	2

Shri Shankaracharya Institute of Professional Management & Technology
Department of Electronics and Telecommunication Engineering
Class Test – I Session- July-Dec, 2022 Month- December
Sem- ET&T 5th Subject- Microcontroller & Embedded System
Time Allowed: 2 hrs Max Marks: 40

Note: - Solve any five question.

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.	Define addressing modes of 8051 & also explain register organization .	[8]	Apply	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	CO2
5.	WAP to monitor the switch and perform the following (i) if seitch=0, send a msg "HELLO" (ii) if switch =1, send a msg "GOOD BYE" Assume that switch is connected to pin P 2.0 & boud rate is 9600.	[8]	Design	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, 2022 Month- December
Sem- ET&T 5th Subject- Microcontroller & Embedded System
Time Allowed: 2 hrs Max Marks: 40

Note: - Solve any five question.

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.	Define addressing modes of 8051 & also explain register organization .	[8]	Apply	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	CO2
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