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SILVER OAK COLLEGE OF ENGINEERING & TECHNOLOGY

BE - SEMESTER–IV • MID SEMESTER-I EXAMINATION – SUMMER 2019

SUBJECT: MICROPROCESSOR & INTERFACING (2141001) (EC)

DATE: 28-01-2019 TIME: 02:15 pm to 03:45 pm TOTAL MARKS: 40

Instructions:
1. All the questions are compulsory.
2. Figures to the right indicate full marks.
3. Assume suitable data if required.

Q.1	(a)	Write a program to add two 16-bit numbers assume that the answer does not generate carry.	[03]
	(b)	Explain all addressing modes supported by 8085 with suitable examples.	[03]
	(c)	Explain de-multiplexing of AD_0 - AD_7 lower order address and data bus	[04]
Q.2	(a)	Draw pin diagram of 8085 and explain functions of any 3 pins.	[06]
	(b)	Draw and explain programming model of 8085 microprocessor.	[05]
	(c)	Draw timing diagram of opcode fetch machine cycle.	[04]

OR

Q.2	(a)	Draw architectural block diagram of 8085.	[06]
	(b)	Write a detailed note on Memory Classification.	[05]
	(c)	Explain I/O writes machine cycle.	[04]
Q.3	(a)	Draw and explain a circuit to generate control signals.	[06]
	(b)	If the 8085 adds 87H and 79H, specify the contents of the accumulator and the status of the S, Z and CY flags.	[05]
	(c)	Write an 8085 program to copy block of five numbers starting from location 2001 H to locations starting from 3001 H.	[04]

OR

Q.3	(a)	(i) Explain the functions of following instructions of 8085.	[06]
		1. MOV A, M 2. LXI H,2500H 3. STA 9100H	
		(ii) Specify the crystal frequency required for 8085 microprocessor to operate at 2 MHz.	
	(b)	Write a program to perform multiplication of two 8-bit numbers.	[05]
	(c)	An array of Ten numbers is stored from memory location 2000 H onwards. Write an 8085 assembly language program to separate out and store the EVEN and ODD numbers on new arrays from 2100 H and 2200 H, respectively	[04]

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SILVER OAK COLLEGE OF ENGINEERING & TECHNOLOGY

BE - SEMESTER–IV • MID SEMESTER-I EXAMINATION – SUMMER 2019

SUBJECT: ELECTRONICS MEASUREMENT & INSTRUMENTATION (2141003) (EC)

DATE: 29-01-2019 TIME:02:15 pm to 03:45 pm TOTAL MARKS:40

Instructions: 1. All the questions are compulsory.
2. Figures to the right indicate full marks.
3. Assume suitable data if required.

Q.1	(a)	Enlist all types of Error and Specify any two example of error.	[03]
	(b)	Explain International Standard in brief.	[03]
	(c)	Define Following Terms: 1)Measurement, 2)Precision, 3) Accuracy, 4) Resolution	[04]
Q.2	(a)	Determine Wheatstone bridge in details.	[06]
	(b)	Explain Hay's Bridge and derive equation for Rx and LX.	[05]
	(c)	Write down Difference between Static Error & Dynamic Error.	[04]

OR

Q.2	(a)	Determine equation to measure the value of unknown resistor using Kelvin double bridge .	[06]
	(b)	Explain wien Bridge in detail.	[05]
	(c)	Write down Difference between AC bridge & DC Bridge.	[04]
Q.3	(a)	Describe the construction and working of L.V.D.T. in brief	[06]
	(b)	Explain all types of Resistive Transducers in detail.	[05]
	(c)	Describe Thermometer in brief	[04]

OR

Q.3	(a)	Explain Electrical Standards in detail.	[06]
	(b)	Explain salient features of Maxwell's Inductance capacitance bridge. Draw phasor diagram and derive balance equation.	[05]
	(c)	List advantages and disadvantages of L.V.D.T.	[04]

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SILVER OAK COLLEGE OF ENGINEERING & TECHNOLOGY

BE - SEMESTER–IV • MID SEMESTER-I EXAMINATION – SUMMER 2019

SUBJECT: CONTROL SYSTEM ENGINEERING (2141004) (EC)

DATE: 30-01-2019 TIME: 02:15 pm to 03:45 pm TOTAL MARKS:40

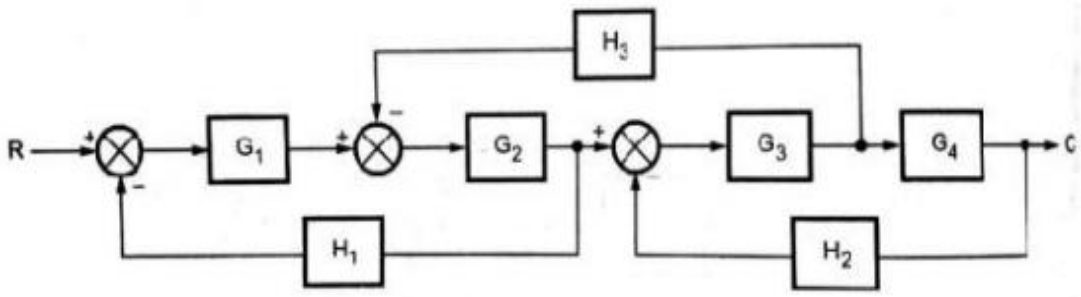
Instructions:
1. All the questions are compulsory.
2. Figures to the right indicate full marks.
3. Assume suitable data if required.

Q.1* (a) Write short notes on open loop control systems and closed loop control systems. [03]

(b) State advantages and limitations of Routh's Criterion. [03]

(c) Define Terms: [04]
1) Take off Point
2) Sink and Source
3) Asymptote
4) Centroid

Q.2 (a) A linear feedback control system has the block diagram shown in below Figure. Using block diagram reduction rules, obtain overall transfer function C(s) / R(s). [06]



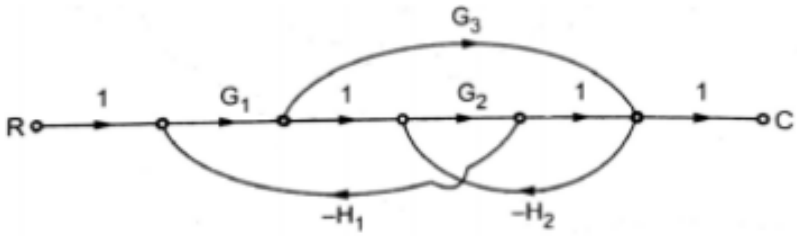
(b) State and explain Mason's gain formula with suitable example. [05]

(c) Give the comparison of Block diagram method and Signal Flow Diagram Method. [04]

OR

Q.2 (a) Describe any seven block diagram reduction techniques in detail. [06]

(b) For the signal flow graph shown in below figure, using Masson's gain formula determine the overall transmission C(S)/R(S). [05]



(c) Find the Stability by using Hurwitz Criterion method. [04]

$S^4 + 8S^3 + 18S^2 + 16S + 5 = 0$

Q.3 (a) For a unity feedback system, G(S) = $\frac{K}{S(S+2)(S+4)}$, Sketch the Root locus and comment on the stability of the system. [06]

(b) Find range of values of 'K' using Routh Criterion, so that system with following [05]

characteristic equation will be stable. S (S^2 + S + 1)(S + 4) + K = 0

(c) Examine the stability by Routh's criterion. [04]

$S^5 + S^4 + 2S^3 + 6S + 6 = 0$

OR

Q.3 (a) Explain Rules for construction of root locus. [06]

(b) Using Routh's criterion check the stability of a system whose characteristic equation is given by, [05]

$S^6 + 2S^5 + 8S^4 + 12S^3 + 20S^2 + 16S + 16 = 0$

(c) Define Stability and State the limitations of traditional method for stability. [04]

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SILVER OAK COLLEGE OF ENGINEERING & TECHNOLOGY

BE – SEMESTER – IV • MID SEMESTER- I EXAMINATION – SUMMER 2019

SUBJECT: SIGNAL & SYSTEMS (2141005) (EC)

DATE: 31-01-2019 TIME: 02:15 pm to 03:45 pm TOTAL MARKS: 40

Instructions:
1. All the questions are compulsory.
2. Figures to the right indicate full marks.
3. Assume suitable data if required.

Q.1 (a) Explain whether the following signal is power signal or energy signal: Cos(ωt). [03]

(b) Find even and odd components of following signal: [03]
$x(t) = (1 + t^3) \cos^3(10t)$.

(c) The discrete time signal: [04]
x[n] = 1, n = 1, 2
= -1, n = -1, -2
= 0, n = 0 & $|n| > 2$
Find and sketch the signal y[n] = x[n + 3].

Q.2 (a) (I) Determine whether following is (i) Memory less, (ii) Stable, (iii) Causal, (iv) Linear, (v) Time invariant: y'(t) + 10y(t) = x(t). Justify your answer. [06]
(II) Determine whether or not following signal is periodic. If periodic, determine its fundamental period: x[n] = **$\sin(\frac{6\pi}{7}n + 1)$**

(b) Determine the inverse z – transform of the following X(z) by the partial fraction expansion method. [05]
$X(z) = [z + 1] / [2z^2 – 7z + 3]$

(c) Find the inverse z – transform of [04]
$X[z] = [z^3 – 10z^2 – 4z + 4] / [2z^2 – 2z – 4]$, $|z| < 1$

OR

Q.2 (a) (I) Determine whether following is (i) Memory less, (ii) Stable, (iii) Causal, (iv) Linear, (v) Time invariant: y(t) = x (t – 2) + x (2 – t). Justify your answer. [06]
(II) Determine whether or not following signal is periodic. If periodic, determine its fundamental period: x[n] = $3\sin(\frac{1}{8}n)$.

(b) Determine Inverse z – transform of following using partial fraction method. Given that ROC of X(z) includes unit circle. **$X(z) = 3 / [1 – (10/3)z^{-1} + z^{-2}]$** [05]

(c) Using Long Division method, determine the sequence that goes with the following z – transforms: [04]
$X[z] = [1 – (1/2)z^{-1}] / [1 + (1/2)z^{-1}]$ & x[n] is right handed sequence.

Q.3 (a) Determine z – transform of the following signals using properties: - [06]
(i) $x(n) = 2^n . u(-n)$
(ii) $x(n) = (1/4)^n u(n-1)$
(iii) $x(n) = n a^n u(n)$

(b) Explain classification of Signals. [05]

(c) State and prove Time shifting and Time reversal properties of Z transform. [04]

OR

Q.3 (a) Determine z – transform of following sequences: [06]
(i) $X[n] = \alpha^{-|n|}$, $0 < |\alpha| < 1$
(ii) $X[n] = 2^n u[n] + 3^n u[-n -1]$

(b) Explain the properties of Continuous time & Discrete time systems. [05]

(c) Define z – transform. Explain region of convergence. [04]

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SILVER OAK COLLEGE OF ENGINEERING & TECHNOLOGY

BE - SEMESTER–IV • MID SEMESTER- I EXAMINATION – SUMMER 2019

SUBJECT: Analog Circuit Design (2141002) (EC)

DATE: 01-02-2019 TIME: 02:15 pm to 3:45 pm TOTAL MARKS:40

Instructions: 1. All the questions are compulsory.

2. Figures to the right indicate full marks.

3. Assume suitable data if required.

Q.1	(a)	Draw block diagram and pin diagram of op-amp.	[3]
	(b)	Draw the transfer curve of op-amp and equivalent circuit of operational amplifier of op-amp	[3]
	(c)	List the ideal characteristics of op-amp	[4]
Q.2	(a)	Explain three different open loop configuration of op-amp.	[6]
	(b)	Derive the voltage gain for voltage series feedback amplifier.	[5]
	(C)	Define CMRR, PSRR, Slew rate, input offset voltage.	[4]

OR

Q.2	(a)	What are the problems associated with op-amp based basic differentiator circuit? Suggest possible solution	[6]
	(b)	Derive the voltage gain for voltage shunt feedback amplifier.	[5]
	(c)	Explain the different types of feedback configuration.	[4]
Q.3	(a)	Explain application of op-amp(inverting) as summing, scaling and averaging amplifier	[6]
	(b)	Why CMRR and input resistance should be high in op-amp?	[5]
	(c)	Explain the requirement of Instrumentation amplifier	[4]

OR

Q.3	(a)	Explain op-amp as integrator	[6]
	(b)	How can we convert voltage to current using op-amp for grounded load? Draw necessary circuit and justify your answer with mathematical proof.	[5]
	(c)	Why negative feedback is important?	[4]