Code: 7G159

III B.Tech. I Semester Supplementary Examinations February 2022

Computer System Architecture

(Electronics and Communication Engineering)

Max. Marks: 70   Time: 3 Hours

Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)

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Marks

UNIT–I

1. a) List the different types of computer and explain.   5M

   b) Describe various number systems with suitable examples.   9M

OR

2. a) How software is useful in computer system? Explain   7M

   b) Describe subtraction of Unsigned Numbers with suitable example.   7M

UNIT–II

3. a) Explain Binary Adder-Subtractor and Incrementer.   7M

   b) Describe the Input-Output configuration and Input-Output instructions.   7M

OR

4. a) How common bus system connect four registers? Explain with neat sketch.   7M

   b) Describe Computer Instructions.   7M

UNIT–III

5. a) Define Stack. Explain Register Stack and its operations.   7M

   b) Explain hardware algorithm for Addition and Subtraction with Signed – Magnitude Data   7M

OR

6. a) Explain Status Bit Conditions and Types of Interrupts in Program Control.   8M

   b) How comparison and non-restoring methods differ restoring method?   6M

UNIT–IV

7. a) Explain memory hierarchy in brief.   7M

   b) Draw and explain I/O Interface unit.   7M

OR

8. a) Explain auxiliary memory.   8M

   b) With neat sketch Priority Encoder and Interrupt Cycle.   6M

UNIT–V

9. a) Explain matrix multiplication in Vector Processing.   7M

   b) With neat sketch explain 8 X 8 omega switch network.   7M

OR

10. a) Illustrate memory interleaving in Vector Processing.   5M

    b) Describe the crossbar switch interconnection structures.   9M

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R-17

Code: 7G354

III B.Tech. I Semester Supplementary Examinations Jan/Feb 2022
Electronic Measurements and Instrumentation
(Electronics and Communication Engineering)

Max. Marks: 70 Time: 3 Hours

Answer any *five full* questions by choosing one question from each unit (5 x 14 = 70Marks)
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		Marks	CO	Blooms Level

UNIT–I

		Marks	CO	Blooms Level
1.	Explain operating mechanism of D'Arsonval Galvanometer using torque equation.	14M	CO1	L2

OR

| 2. | Differentiate between accuracy, precision and resolution. | 14M | CO1 | L1 |

UNIT–II

| 3. | Describe the working of square and pulse generators. | 14M | CO1 | L2 |

OR

| 4. | Discuss the detailed mechanism of harmonic distortion analyzers. | 14M | CO1 | L2 |

UNIT–III

| 5. | Explain the digital storage oscilloscope with a block diagram. | 14M | CO1 | L2 |

OR

| 6. | Describe the working of cathode ray tube and measurement methodology. | 14M | CO1 | L4 |

UNIT–IV

| 7. | Explain the principle of Maxwell's and Hays Bridge working. | 14M | CO1 | L4 |

OR

| 8. | Describe the different types of AC bridges and their applications. | 14M | CO1 | L4 |

UNIT–V

| 9. | Describe the transducers classifications. | 14M | CO1 | L2 |

OR

| 10. | Explain the principle and working of strip chart recorders and X-Y recorder. | 14M | CO1 | L2 |

END

Code: 7G353

III B.Tech. I Semester Supplementary Examinations February 2022

Analog & Digital Integrated Circuits Applicaitons

(Electronics and Communication Engineering)

Max. Marks: 70   Time: 3 Hours

Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)

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			Marks	CO	Blooms Level
		UNIT–I			
1.	a)	Define the following terms i)CMRR ii) PSRR iii) Slew rate iv) Output impedance	7M	CO1	L1
	b)	Explain about basic operational amplifier circuit with neat sketches	7M	CO1	L2
		OR			
2.		Explain the working principle of log and antilog amplifier with neat sketches.	14M	CO1	L2
		UNIT–II			
3.	a)	Explain the following for a phase locked loop (PLL) i) Lock in range ii) Capture range	8M	CO1	L2
	b)	Discuss about advantages and disadvantages of Flash ADC over successive approximation type ADC	6M	CO1	L2
		OR			
4.	a)	Explain the operation of a successive approximation ADC using a simplified block diagram	8M	CO1	L2
	b)	Outline the working principle of PLL with neat sketches	6M	CO1	L4
		UNIT–III			
5.	a)	Describe the VHDL based design flow.	8M	CO2	L2
	b)	Discuss about Libraries and Packages.	6M	CO2	L2
		OR			
6.	a)	Apply TTL technology to 2-input NAND circuit.	10M	CO2	L3
	b)	List out the advantages and disadvantages of TTL families	4M	CO2	L1
		UNIT–IV			
7.	a)	Design 8X1 Mux using 4x1 Mux.	8M	CO2	L6
	b)	List out the advantages of Combinational Circuits	6M	CO2	L1
		OR			
8.		Evaluate the performance of Three state Devices used in Combinational Logic Circuits	14M	CO3	L5
		UNIT–V			
9.	a)	Solve JK flip-flop into D Flip-Flop.	8M	CO3	L3
	b)	Describe the loc diagram of T Flip-Flop.	6M	CO3	L2
		OR			
10.		Explain the operation of SR-flip flop and T-flip-flop with VHDL code	14M	CO3	L2

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Code: 7G352

III B.Tech. I Semester Supplementary Examinations February 2022
Control Systems
(Electronics and Communication Engineering)

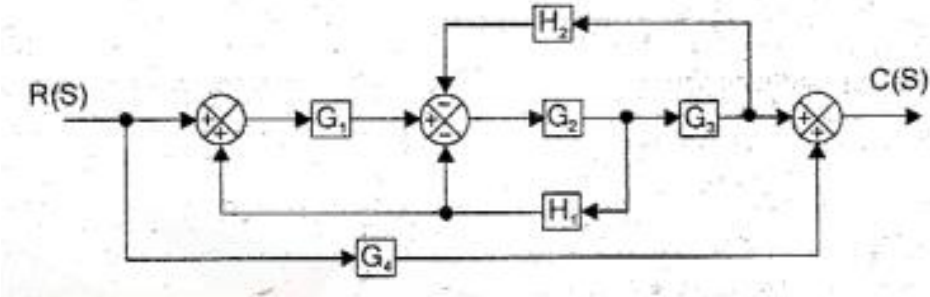Max. Marks: 70   Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

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UNIT–I

1. a) List out the advantages and drawbacks of open loop[and closed loop control systems   7M

    b) Explain the feedback characteristics of closed loop control system   7M

OR

2. a) Determine the closed loop transfer function C(s)/R(s) of the system as shown figurer below

10M

    b) Classify the types of control systems   4M

UNIT–II

3. a) Write the expressions for time domain specifications of a standard second order system with unit step input   7M

    b) Establish the Stability of the system having characteristic equation $s^6+2s^5+8s^4+12s^3+20s^2+16s+16=0$ using Routh stability criterion

OR

4. a) The Characteristic polynomial of a system is
        $s^7 + 9s^6 + 24s^5 + 24s^4 + 24s^3 + 24s^2 + 23s +15 = 0$. Determine the location of roots on s-plane and hence the stability of the system   7M

    b) Determine the range of K for stability of unity feedback system whose open loop[transfer function is G(s)= K/s(s+1)(s+2)   7M

UNIT–III

5. a) Distinguish between gain margin and phase margin   7M

    b) Draw the complete nyquist plot of the system whose open loop transfer function is given by Gs)= $10/s^2(1+0.25s)(1+0.5s)$ and hence determine the system is stable or not   7M

OR

6. a) A system has open loop pole and two closed loop poles in right half of s-plane. Show that nyquist plot encircles the (-1+j0) point once in clockwise direction   7M

    b) Addition of poles to the open loop transfer function reduces the closed loop stability of the system. Justify by Nyquist plots   7M

UNIT–IV

7. a) Explain about compensation? What are the different types of compensators?   7M

    b) List out the procedural steps to design lead compensator   7M

OR

8. a) Distinguish the lead and lag compensators   7M

    b) Calculate the transfer function of lead compensator   7M

UNIT–V

9. a) Define (i) state (ii) state variables (iii) state space representation   7M

    b) Find the state transition matrix for

$$\dot{X} = \begin{bmatrix} -2 & 1 & 0 \\ 0 & -2 & 1 \\ 0 & 0 & -2 \end{bmatrix} x.$$

    7M

OR

10. Diagonalize the given matrix

$$A = \begin{bmatrix} 0 & 1 & 0 \\ 3 & 0 & 2 \\ -12 & -7 & -6 \end{bmatrix}.$$

    14M

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