Hall	Tick	et Number :	
Code:	76	353 R-17	
couc.		B.Tech. I Semester Supplementary Examinations December 2020 Analog & Digital Integrated Circuit Applications (Electronics and Communication Engineering)	
Max. I Ai	-	ks: 70 er all five units by choosing one question from each unit (5 x 14 = 70 Marks)	Jrs
1.	a)	Define the following terms as applied to an operational amplifier and mention their typical values for IC 741: i) CMRR ii) PSRR iii) Slew rate iv) Output impedance	7M
	b)	With a neat circuit diagram, explain basic operational amplifier circuit	7M
		OR	
2.		Using block diagram of log and antilog amplifier explain the working of analog multiplier circuit. How you can convert it into a square? Explain.	14M
_			
3.	a)	Explain the functional diagram of IC 555 with a neat sketch	7M
4	b)	Design a monostable multivibrator using 555 timer to obtain a pulse of width 10 msec. OR	7M
4.	a)	Explain the operation of a successive approximation ADC using a simplified block diagram.	7M
	b)	Draw the block diagram representation of PLL and explain	7M
		UNIT–III	
5.		Report in detail steady state electrical behavior of CMOS OR	14M
6.	a)	With declaration syntax of procedure, explain its facts	7M
	b)	Bring out the difference between functions and procedures	7M
		UNIT–IV	
7.		Implement the Boolean function $F(a,b,c,d) = m(0,1,2,4,5,7,8,9)$ using a 8:1 multiplexer. Draw the logic diagram and explain the operation. Additional gates can be used if required.	14M
		OR	
8.		Design a circuit that accepts 2 unsigned 4 bit binary numbers and provides 3 outputs. The inputs are $A_3A_2A_1A_0$ and $B_3B_2B_1B_0$. Outputs are A=B,A>B,A <b. diagram<="" draw="" logic="" td="" the=""><td>14M</td></b.>	14M
		UNIT-V	
9.		Draw the logic diagram of a Master slave JK flop using gates. Write its function table and derive the characteristic equation. What is the type of triggering used in master slave flip flops?	14M
		OR	
10.		Design a mod-5 synchronous binary counter using clocked J-K flip flops.	14M

Hall	Ticke	et Number :	
Code	• 7G	R-17	
couc		.Tech. I Semester Supplementary Examinations December 2020	
		Antennas and Wave Propagation (Electronics and Communication Engineering)	
Мах	. Mc	arks: 70 Time: 3 Ho	Urs
A	nsw	rer all five units by choosing one question from each unit (5 x 14 = 70 Marks)	
1.	a)	Define Reciprocity Theorem as applicable to antennas. State the antenna theorems and relate them to reciprocity theorem.	7M
	b)	The maximum radiation intensity of a 90% efficiency antenna is 200 mW/st. Find the directivity and gain (dimensionless and in dB)	
		i) The input power is 125.66 mW	
		ii) Radiated power is 125.66 mW	7M
2.	2)	OR Compare far fields of small loop and short dipole?	6M
۷.	a) b)	Show that the radiation resistance of Half Wave Dipole is 73 .	8M
	D)	UNIT-II	OW
3.		Find the array factor and phase pattern of the Uniform Linear Array	
		considering the first element as phase reference.	14M
		OR	
4.	a)	A linear broadside array consists of 16 identical isotropic radiators with	
		spacing /2. Derive an expression and plot the radiation pattern. Also find directivity and beam width.	7M
	b)	What is principle of pattern multiplication? Explain its utility with examples.	7M
-		UNIT-III	714
5.	a)	Sketch and explain the constructional features of a helical antenna.	7M
	b)	Explain about flat sheet and corner reflector antennas. OR	7M
6.	a)	Give various causes of side lobes in the pattern of the dish antennas.	9M
	b)	The aperture diameter of a 1.43 GHz dish antenna is 64 meters. Find its FNBW and also its power gain with respect to half wave dipole.	5M
		UNIT-IV	JIVI
7.	a)	A VHF communication link is established with 35 watt transmitter at 90 MHz.	
	,	Determine	
		i. The distance up to which LOS communication may be possible if the height	
		of the transmitting and receiving antenna are 40 m and 25 m respectively. ii. Evaluate field strength at the receiver end.	7M
	b)	Describe the phenomenon of ground wave propagation.	7M
	2)	OR	
8.		What is the field strength due to ground wave according to Sommerfeld?	
		What are the factors that are incorporated into this formula?	14M
_		UNIT-V	
9.		Describe the structure of the ionosphere and how its layers are aiding long distance communication at radio frequencies.	14M
		OR	1 4 1 V I
10.		Describe the phenomenon of 'ghosting' and 'shadow zone'? What are the	
		preventive measures that can be taken?	14M

Hall Ticket Number :						r
Code: 7G352	<u> </u>	<u> </u>		<u>]</u>		 R-17
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III B.Tech. I Semester Supplementary Examinations December 2020

Control Systems

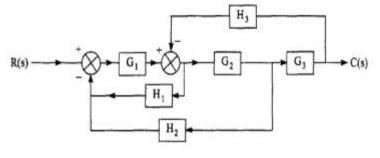
(Electronics and Communication Engineering)

Max. Marks: 70

Answer all five units by choosing one question from each unit ($5 \times 14 = 70$ Marks)

UNIT-I

- 1. a) Explain about the classification of control systems.
 - b) Derive the transfer function C(s)/R(s) for the following diagram by using block diagram reduction technique.



8M

7M

7M

7M

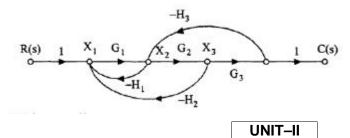
7M

6M

Time: 3 Hours

OR

- 2. a) Compare in detail about Block diagram and signal flow graph methods. 7M
 - b) Find transfer function C(s)/R(s).



3. a) Explain the time response of under damped 2nd order system along with its transient response specifications.

b) The open – loop transfer function of a unity feedback system is $G(s) = \frac{8}{s(s+6)}$

Determine the nature of response of the closed – loop system for a unit – step input. Also determine the rise time, peak time, peak over shoot and settling time.

OR

- 4. a) What are rules in construction of root loci?
 - b) For a unity feedback system with open loop transfer function $G(s)H(s) = \frac{K}{s(s+4)(s+6)}$. Find the range of K for which the system will be stable using RH Criterion.

7M

7M

7M

6M

8M

7M

7M

UNIT–III

5. a) Find the Gain margin and phase margin of the system if the open loop transfer function is: $G(s) = \frac{10}{s(s+1)}$

b) Draw the polar plot of $G(s)H(s) = \frac{K}{s(s+3)(s+5)}$ and there from determine range of K for stability using Nyquist Criterion. 7M

OR

6. The open loop transfer function of a unity feedback system is given by $\frac{10(s+3)}{s(s+2)(s^2+4s+100)}$ draw the bode plot, find the gain margin and phase margin and comment on stability by bode plot. 14M

UNIT-IV

- 7. a) Derive the expression for the transfer function of a lag-lead compensator. 7M
 - Explain the design procedure of lag compensator

OR

8.	a)	List various types of controller. Explain proportional plus derivative controller.	7M
	b)	Explain PID Controllers with at least one example.	7M
		UNIT–V	

9. a) Discuss about the properties of state transition matrix.

b) The state equation of a linear-time invariant system is given:

$$\begin{bmatrix} \mathbf{\dot{x}}_1 \\ \mathbf{\dot{x}}_2 \end{bmatrix} = \begin{bmatrix} 0 & 5 \\ -1 & -2 \end{bmatrix} \begin{bmatrix} X_1 \\ X_2 \end{bmatrix} + \begin{bmatrix} 1 \\ 1 \end{bmatrix} u \text{ and } Y = \begin{bmatrix} 1 & 1 \end{bmatrix} X$$

Determine state transition matrix.

OR

10. a) Obtain the state model of the system described by the following transfer function: $\frac{Y(s)}{U(s)} = \frac{5}{s^2 + 6s + 7}$

b) Explain about diagonalization.

	Hall	Ticke	et Number :	
(Code:	7C1	R-17	
			Tech. I Semester Supplementary Examinations December 2020	
			Computer System Architecture	
			(Electronics and Communication Engineering)	
		-	rks: 70 Time: 3 Hour er all five units by choosing one question from each unit (5 x 14 = 70 Marks)	ΓS
	A	112000		
			UNIT–I	
	1.	a)	Explain in brief about the performance of a computer system.	7M
		b)	Explain about the fixed point representation of integers. Discuss about the	714
			arithmetic addition and subtraction of signed-magnitude system. OR	7M
	2.	a)	Discuss about the error detection using parity bit code with examples.	8M
	۷.	b)	Convert the following decimal numbers to the bases indicated.	OW
		0)	1) 7562 to octal ii) 1938 to hexadecimal iii) 175 to binary.	6M
				0.VI
	3.	a)	Explain the execution of micro instructions with a neat diagram.	7M
		b)	What is shift register? Explain the general capabilities of shift registers.	7M
		,	OR	
	4.	a)	Discuss about steps involved in instruction cycle with interrupt enabled.	8M
		b)	Give the control sequence for the instruction ADD R4,R5,R6	6M
			UNIT–III	
	5.	a)	Explain the floating point addition / subtraction algorithm with flow chart.	8M
		b)	With examples explain the Data transfer, Logic and Program Control Instructions.	6M
	0	-)	OR Oise the major characteristics of DICO and OICO architectures	
	6.	a)	Give the major characteristics of RISC and CISC architectures	7M
		b)	Perform the arithmetic operations 35 + 40 and - 35 + (- 40) with binary numbers in singed 2's complement representation and signed- magnitude representation	7M
				7 101
	7.	a)	What is Cache memory? Explain different types of mappings from main	
		,	memory to cache memory.	8M
		b)	Briefly explain various peripheral devices used in computer system.	6M
			OR	
	8.	a)	Explain look-aside system organization for caches.	7M
		b)	Discuss Direct Memory Access (DMA).	7M
			UNIT–V	
	9.	a)	Discuss about Flynn's classification of parallel processor systems	7M
		b)	Explain the characteristics of Multiprocessors	7M
	40	-)	OR Discuss shout execution in multiple execution unit pipelined processors with	
	10.	a)	Discuss about exception in multiple execution unit pipelined processors with examples.	8M
		۲		6M
		b)	Explain how synchronization is achieved in multiprocessor systems.	

Code: 7C3354 R-17 III B.Tech. I Semester Supplementary Examinations December 2020 Electronic Measurements and Instrumentation	Hall	Tick	et Number :	
III B.Tech. I Semester Supplementary Examinations December 2020 Electronic Measurements and Instrumentation (Electronics and Communication Engineering) Max. Marks: 70 Answer all five units by choosing one question from each unit (5 x 14 = 70 Marks) UNIT-I 1. a) Describe with the help of circuit diagram the construction and working of a shunt-type ohm meter. b) Explain the fundamental principle on which DC meter is constructed. 6 7 8 9) Explain the fundamental principle on which DC meter is constructed. 6 7 8 9) Explain with the help of circuit diagram the construction and working of a series type ohm meter. 7 9) Explain in detail about the principle and operation of Arbitrary Wave Generator with the help of neat block diagram. 7 9) Discuss briefly about operation of Logic Analyzer. 7 8 9) Discuss the basic principle of AF wave analyzer with neat diagram. 10 10 11 5 1 3. a) Explain in detail about the principle and operation of pulse and square wave. 8 b) Discuss the basic principle of AF wave analyzer with neat diagram. 10 10 11 5 12 3. a) With a neat block diagram the vorking of sampling oscilloscope? 8 b) A sampling oscilloscope is being used to observe a 400MHZ signal and places a dot at the sampled point on each of the five cycles. 10 6 6 6 6 7 8 8 10 10 10 10 10 10 10 10 10 10			R-17	
(Electronics and Communication Engineering) Time: 3 Hours Answer all five units by choosing one question from each unit { 5 x 14 = 70 Marks } ••••••••••••••••••••••••••••••••••••	Juce.			
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10. a) Explain working of strain gauge with neat sketch. 7		b)		6
		-	OR	
b) Explain the Data Acquisition system with neat sketch. 7	10.	a)	Explain working of strain gauge with neat sketch.	71
		b)	Explain the Data Acquisition system with neat sketch.	71
