



MAHARAJA INSTITUTE OF TECHNOLOGY MYSORE
Dept. of Electronics and Communication Engineering
1st Internal Assessment
1stSemester

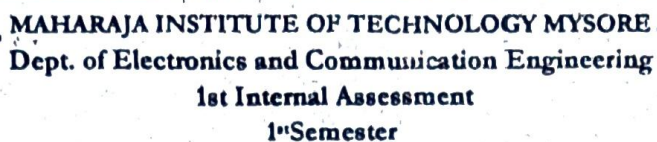
Sub. Name: Introduction to Electronics & Communication (BESCK104C)
Schedule: 10/11/2023 and 2.30 – 3:45 pm
Total Marks: 30
Faculty: Dr. BK, RH, LM, SR, HRN, SNG

Instructions to students: Answer any TWO Full questions selecting at least ONE from each Part

Q#	Question Description		M	BTL	COs
Part-A					
1	a	With a block diagram, explain the working of DC power supply. Also mention the principal components used in each block.	8	L2	CO1
	b	What is an amplifier? Explain the types of amplifier. An amplifier produces an output voltage of 2V for an input of 50mV. If the input and output currents in this condition are, respectively, 4mA and 200mA, Determine a) voltage gain b) current gain c) power gain	4 3	L2 L3	CO1 CO2
2	a	With neat circuit diagram and waveforms explain full wave bridge rectifier.	8	L2	CO1
	b	With relevant equations and diagram, explain the concept of negative feedback. An amplifier with negative feedback applied has an open-loop voltage gain of 50 and one-tenth of its output is fed back to the input. Determine the overall voltage gain with negative feedback applied.	4 3	L2 L3	CO1 CO2

Part-B

3	a	Explain the operation of single stage Astable multivibrator with its circuit diagram.	8	L2	CO2
	b	Explain the conditions for oscillations. In Wien bridge oscillator if $C_1=C_2=100\text{nF}$, Determine the frequency of oscillations when $R_1=R_2=1\text{K}\Omega$.	2 5	L2 L3	CO1 CO2
4	a	Explain the operation of three-stage ladder RC network oscillator with neat circuit diagram	8	L2	CO2
	c	Explain the principal types of multivibrator. In three-stage ladder RC network oscillator if $C=10\text{nF}$ and $R=10\text{K}\Omega$, Determine the frequency of oscillation.	2 5	L2 L3	CO1 CO2




Sub. Name: Introduction to Electronics & Communication (BESCK104C)
Schedule: 07/12/2023 and 2:30 – 3:45 pm
Total Marks: 30
Faculty: Dr. BK, RH, LM, SR, HRN, SNG

Q#	Question Description	M	BTL	COs
Part-A				
1	a Explain the operation of the following op-amp applications (i) Voltage follower (ii) comparator	8	CO1	L2
	(i) Define the following op-amp parameters also give its typical values: a) Open loop voltage gain b) Input offset voltage	4	CO2	L2
	(ii) During measurements on an operational amplifier under open-loop conditions, an output voltage of 12 V is produced by an input voltage of 1 mV. Determine the open-loop voltage gain expressed in dB.	3		L3
Or				
2	a Explain the operation of the following op-amp applications (i) Integrator (ii) summing amplifier	8	CO1	L2
	(i) Define the following op-amp parameters also give its typical values: a) Input resistance b) slew rate	4	CO2	L2
	(ii) An operational amplifier has an input resistance of 2 MΩ. Determine the input current when an input voltage of 5 mV is present	3		L3
Part-B				
3	a Apply the knowledge of number system to Solve the following: i. $(255)_{10} = ()_2 = ()_8 = ()_{16}$ ii. $(10010011)_2 = ()_{10} = ()_8 = ()_{16}$	8	CO3	L2
	b Apply the knowledge of number system to Solve the following: Perform subtraction on the given binary numbers using 1's complement method: (a) 10011 - 10010 (b) 100010 - 100110 Perform subtraction on the given binary numbers using 2's complement method: (a) 1001 - 110101 (b) 101000 - 10101	7	CO3	L3
or				
4	a Apply the knowledge of number system to Solve the following: Subtract using $(r-1)$'s complement method a) $4456_{(10)} - 34234_{(10)}$ Subtract using r 's complement method a) $1010100_{(2)} - 1000100_{(2)}$	8	CO3	L2
	c Apply the knowledge of number system to Solve the following: i) $(623)_8 = ()_{10} = ()_2 = ()_{16}$ ii) $(2AC5)_{16} = ()_{10} = ()_8 = ()_2$	7	CO3	L3

$$\begin{array}{r} 43210 \\ 10011 \\ 10010 \\ 43210 \end{array} = \begin{array}{r} 19 \\ 26 \\ 10 \\ 18 \end{array} = \begin{array}{r} 110 \\ 3536 \\ 1918 \end{array} = 1(001)$$

$$\begin{array}{r} 543210 \\ 100010 = 34 \\ 100110 = 35 \\ 543210 \cdot 35 = -101 \end{array}$$

64
 12
 10
 12
 64
 32
 16
 8
 4
 2
 1
 $32 + 16 + 4 + 1$

		MAHARAJA INSTITUTE OF TECHNOLOGY MYSORE Dept. of Electronics And Communication Engineering 3rd Internal Assessment 1st Sem.		Sub. Name : Introduction to electronics and communication(22BESCK104C) Schedule: 09/01/2024 and 2.15PM –3.30PM Total Marks: 30 Faculty: SR,SNG,LM,HRN,Dr.BK,RH			
Instructions to students Note: Answer any TWO questions selecting at least ONE from each Part							
Q.No		PART-A			M	BTL	COs
1	a	Implement half adder circuit with its truth table and write the expressions for sum and carry.			8	C03	L3
	b	Discuss the typical Embedded system Elements.			7	C02	L2
OR							
2	a	Implement full adder circuit with its truth table and write the expressions for sum and carry.			8	C03	L3
	b	Discuss the classification of Embedded system based on Complexity and Performance.			7	C02	L2
PART-B							
3	a	Compare Embedded system and General computing system.			8	C02	L2
	b	Analyze the working of basic communication system with a neat block diagram.			7	C04	L4
OR							
4	a	Compare i)RISC and CISC ii)Microcontroller and Microprocessor.			8	C02	L2
	b	Analyze the operation of Analog and Digital Communication systems, Differentiate between the two systems.			7	C04	L4