BESCK104C

Maharaja Education Trust (R), Mysuru
MAHARAJA INSTITUTE OF TECHNOLOGY MYSORE
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Belawadi, Srirangapatna Taluk, Mandya – 571 477
Approved by AICTE, New Delhi |Recognized by Govt. of Karnataka|

First Semester B.E Degree Examination, February/March 2024
Introduction to Electronics & Communication

Duration: **3 hrs**   Max. Marks: **100**

Note: *1. Answer five full questions choosing one complete question from each module.*
2. M: Marks, L: Bloom's level, C: Course outcomes.

Sl. No.	Questions	M	C	L
	Module 1			
1 a)	Illustrate how the high voltage ac is converted into regulated dc with a help of neat block diagram of power supply.	8	C02	L2
b)	Write a short note on Multistage Amplifiers.	7	C01	L2
c)	The RC smoothing filter in a 50hz mains operated half wave rectifier circuit consists of R1=100Ω and C2=1000µF. If 1 volt of ripple appears at the input of the circuit, Determine the amount of ripple appearing at the output.	5	C01	L2
	OR			
2 a)	With a neat block diagram of negative feedback, Obtain an expression for overall gain of an Amplifier.	8	C02	L2
b)	With neat circuit diagram and waveforms Explain Bridge wave rectifier.	7	C01	L2
c)	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 i) Voltage gain ii) Current gain iii) Power gain.	5	C01	L2
	Module 2			
3 a)	With a neat block diagram of Positive feedback, Obtain an expression for overall gain of an Oscillator.	8	C02	L2
b)	Explain the operation of Wein bridge oscillator with neat circuit diagram	7	CO1	L2
c)	Explain the Types of Multivibrators.	5	C01	L2
	OR			
4 a)	Illustrate the following op-amp Circuits i) Voltage follower ii) Differentiator iii) Integrator.	8	C02	L2
b)	Explain the characteristics of an operational amplifier.	7	CO1	L2
c)	An op-amp operating with Negative feedback produces an output voltage of 2V, when supplied with an input of 400mV.Determine the value of closed loop voltage gain. Also, Express the result in dB.	5	C01	L2
	Module 3			
5 a)	State and Prove De-Morgan's theorems with its truth table.	7	C03	L3
b)	Apply the knowledge of number system to Solve the following: Subtract using r 's complement method	8	CO3	L3

21-Feb-24 8:35:35 AM

	i)$72532_{(10)} - 3250_{(10)}$ Subtract using (r-1)'s complement method ii) $1000011_{(2)} - 1010100_{(2)}$				
c)	Describe the steps involved in design of combinational circuit.	5	C03	L2
OR					
6 a)	Implement the following Boolean functions by using logic gates. i)$F1 = X\bar{Y} + \bar{X}Z$ ii)$F2 = \bar{X}\bar{Y}Z + \bar{X}YZ + X\bar{Y}$	7	C03	L3
b)	Apply the knowledge of number system to Solve the following: i) $(B65F)_{16} = (?)_{10}$ ii) $(630.4)_8 = (?)_{10}$ iii) $(1010.011)_2 = (?)_{10}$ iv) $(0.513)_{10} = (?)_8$	8	CO3	L3
c)	Implement Half adder circuit with its truth table and write the Expressions for sum and carry.	5	C03	L2
Module 4					
7 a)	What is an Embedded system? Compare Embedded systems with general computer systems.	8	C04	L2
b)	Mention the classification of Embedded system based on complexity and performance.	6	C04	L2
c)	Write a short note on 7 segment LED display.	6	C04	L2
OR					
8 a)	Write a note on Core of Embedded systems with its block diagram.	8	C04	L2
b)	Differentiate between RISC and CISC processors.	6	C04	L2
c)	Using suitable diagrams, Explain Instrumentation and Control System.	6	C04	L2
Module 5					
9 a)	With the neat block diagram of basic communication system and briefly Explain the individual blocks.	8	C04	L2
b)	Discuss the types of communication systems.	5	C04	L2
c)	Differentiate between Analog Communication and Digital Communication.	7	C04	L2
OR					
10a)	Explain Frequency Modulation and Phase Modulation with neat waveforms.	8	C04	L2
b)	Discuss the concept of Radio wave propagation with its types.	5	C04	L2
c)	Explain Amplitude shift keying and Frequency shift keying shift keying with neat waveforms.	7	C04	L2

21-Feb-24 8:35:35 AM