

CBCS SCHEME

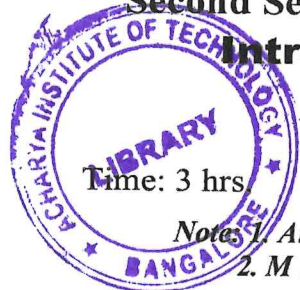
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1BESC204C

Second Semester B.E./B.Tech. Degree Examination, June/July 2026

Introduction to Electronics & Communication Engineering



Time: 3 hrs

Max. Marks: 100

*Notes: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks, L: Bloom's level, C: Course outcomes.*

Module – 1				M	L	C
Q.1	a.	Illustrate the block diagram of a regulated power supply and explain the function of each block.	8	L2	CO1	
	b.	Using a Block diagram derive the expression for overall gain of a negative feedback amplifier. Mention its advantages	7	L2	CO1	
	c.	With a suitable circuit diagram, describe the working of a voltage Doubler circuit.	5	L2	CO1	
OR						
Q.2	a.	Explain with a neat circuit diagram of a Bi-Phase rectifier with the help of suitable input and output waveforms.	8	L2	CO1	
	b.	Describe the operation of a Switched Mode Power Supply (SMPS) with neat diagram.	7	L2	CO1	
	c.	What is an amplifier? Explain the types of amplifiers.	5	L1	CO1	
Module – 2						
Q.3	a.	Draw the circuit diagram and input and output waveform of the following operational amplifier circuits: i) Differentiating opamp ii) Inverting Opamp.	8	L1	CO2	
	b.	Define the following operational amplifier parameters value : i) Open loop voltage gain ii) CMRR iii) Slew Rate.	6	L1	CO2	
	c.	Explain the Barkhausen criteria required for sustained oscillations. Calculate the Frequency of Oscillations for a three-stage RC phase-shift oscillator with $R=10\text{ k}\Omega$ and $C=0.01\text{ }\mu\text{F}$ in each stage.	6	L3	CO2	
OR						
Q.4	a.	Explain the operation of a single stage Astable oscillator with a neat circuit diagram.	8	L2	CO2	
	b.	With circuit diagram, Explain the operation of a Wien bridge oscillator.	6	L2	CO2	
	c.	With circuit diagram and waveform show how operational amplifier can be used as a comparator.	6	L2	CO2	
Module – 3						
Q.5	a.	Explain with a neat block diagram. the individual blocks of Modem Communication System.	8	L2	CO3	
	b.	Explain the concepts of ASK and FSK with the help of neat labelled waveforms.	6	L2	CO3	
	c.	Discuss different types of Communication system with example.	6	L2	CO3	

OR

Q.6	a.	Explain with a neat diagram the concept of radio wave propagation and its different types.	8	L2	CO3
	b.	Compare Digital communication over Analog communication.	6	L2	CO3
	c.	Explain the concepts of AM and FM with the help of waveforms.	6	L2	CO3

Module – 4

Q.7	a.	Describe how different segments of a 7-segment display are activated to represent the digits 0 through 9.	8	L2	CO4
	b.	Explain the classification of embedded systems based on generation.	6	L2	CO4
	c.	Compare Microprocessor vs Microcontroller in terms of architecture, performance, and applications	6	L2	CO4

OR

Q.8	a.	Describe the core components of an embedded system.	8	L2	CO4
	b.	Discuss major application of Embedded system with examples	6	L2	CO4
	c.	Differentiate between embedded systems and general-purpose computing systems.	6	L2	CO4

Module – 5

Q.9	a.	Apply the concept of half adders to realize a full adder using two half adders and an OR gate, and derive the Sum and Carry expressions along with the truth table.	8	L3	CO5
	b.	Perform the following Using 2's Complement i) $101000 - 10101$ ii) $100100 - 10100$	6	L3	CO5
	c.	Simplify the Boolean expression i) $(x + y)(x' + z)(y + z)$ ii) $(A + C)(AD + AD') + AC + C$	6	L3	CO5

OR

Q.10	a.	i) Convert the Boolean expression to Canonical SOP $F_1 = A + B.C + A.B$ ii) Convert the Boolean expression to Canonical POS $F_2 = (A + B) + (A' + C)$	8	L3	CO5
	b.	Perform the following a) Convert $(11010111)_2 = (?)_{10} = (?)_8 = (?)_{16}$ b) Find x if $(16)_{10} = (100)_x$	6	L3	CO5
	c.	Discuss the step-by-step procedure to design a Combinational circuit	6	L2	CO5
