Model Question Paper- I

CBCS SCHEME

First/ Second Semester B.E Degree Examination,

Introduction to Electronics and Communication (1BESC104C/204C)

TIME: 03 Hours **Max.Marks:100**

Notes:

1. *Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE***
2. *VTU Formula Hand Book is Permitted*
3. *M: Marks, L: Bloom's level, C: Course outcomes.*

		Module - 1	M	L	C
Q.1	**a**	Draw and explain the block diagram of a power supply system and describe the function of each block.	8	L3	CO1
	b	With neat circuit diagram, explain the working of a full-wave bridge rectifier.	6	L2	CO1
	c	Describe the operation of a Switched Mode Power Supply (SMPS) with neat diagram.	6	L2	CO1
		OR			
Q.2	**a**	Derive an expression for the gain of an amplifier with negative feedback. Explain how feedback improves performance.	8	L3	CO1
	b	What is an amplifier? Explain the types of amplifiers.	6	L2	CO1
	c	Define input resistance, output resistance, and phase shift and frequency response in amplifiers.	6	L2	CO1
		Module – 2			
Q.3	**a**	Explain the single state astable oscillator with circuit diagram.	6	L2	CO2
	b	List and explain the characteristics and parameters of an ideal operational amplifier.	6	L2	CO2
	c	Explain the operation of an Op-Amp integrator and differentiator with circuit diagrams and output waveforms.	8	L3	CO2
		OR			
Q.4	**a**	Explain the operation of three-stage ladder RC network oscillator with neat circuit diagram.	6	L2	CO2
	b	Write short notes on crystal controlled oscillator include working principle and waveform.	6	L2	CO2
	c	Draw and explain the working of inverting and non-inverting amplifier configurations using Op-Amp. Derive their voltage gain expressions.	8	L3	CO2

		Module – 3			
Q5	**a**	Draw the block diagram of a modern communication system and explain each block briefly.	7	L2	CO3
	b	Discuss the different types of radio wave propagation, ground, space, and skywaves	7	L2	CO3

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	c	Write short notes on noise and its effects in communication systems.	6	L2	CO3
		OR			
Q.6	**a**	Explain Amplitude Modulation (AM) with neat waveform.	7	L2	CO3
	b	Describe Frequency Shift Keying (FSK) and Phase Shift Keying (PSK) with neat labelled waveforms.	7	L2	CO3
	c	Compare analog and digital communication and list advantages of digital communication.	6	L2	CO3
		Module – 4			
Q.7	**a**	Define embedded system and explain the classification of embedded systems based on generation.	10	L2	CO4
	b	Discuss the purpose of embedded systems. Differentiate between embedded systems and general-purpose computing systems.	10	L2	CO4
		OR			
Q.8	**a**	Compare RISC and CISC architectures and GPP and ASIP processors	10	L2	CO4
	b	Write short notes on sensors, actuators, and LED displays used in embedded systems.	10	L2	CO4
		Module – 5			
Q.9	**a**	Convert the following numbers: i)$(101101_2$ to Decimal and Hexadecimal, ii) $(7F)_{16}$ to Binary and Octal.	6	L3	CO5
	b	Using basic Boolean theorems prove i) $(x + y)(x + z) = x+yz$ ii) $xy+xz+y\bar{z} = xz+y\bar{z}$	**7**	L3	CO5
	c	Explain 1's and 2's complement methods with examples.	**7**	L2	CO5
		OR			
Q.10	**a**	Explain the design procedure for combinational logic circuits with a suitable example.	6	L3	CO5
	b	Express the Boolean function $F=A+\bar{B}C$ in a sum of min terms.	7	L3	CO5
	c	Write short notes on half adder and its truth table.	7	L2	CO5

Model Question Paper- II

CBCS SCHEME

First/ Second Semester B.E Degree Examination,

Introduction to Electronics and Communication (1BESC104C/204C)

TIME: 03 Hours **Max.Marks:100**

Notes:

1. *Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE***
2. *VTU Formula Hand Book is Permitted*
3. *M: Marks, L: Bloom's level, C: Course outcomes.*

		Module - 1	M	L	C
Q.1	**a**	With a neat block diagram, explain the working of a regulated DC power supply, clearly describing each stage.	10	L3	CO1
	b	With circuit diagram and waveforms, explain the working of Bi - Phase full wave rectifier.	10	L2	CO1
		OR			
Q.2	**a**	Explain the frequency response of an amplifier and derive an expression for overall voltage gain of negative feedback amplifier	10	L3	CO1
	b	Draw the circuit of Zener diode voltage regulator, voltage doubler and explain the working of each	10	L2	CO1
		Module – 2			
Q.3	**a**	State and explain conditions for oscillations and with near circuit diagram explain the working of Wein bridge oscillator	10	L2	CO2
	c	Explain the working of crystal-controlled oscillator and single stage a stable oscillator with circuit diagram.	10	L2	CO2
		OR			
Q.4	**a**	Explain the operation of an inverting amplifier and derive its voltage gain expression.	10	L2	CO2
	b	Describe the working of a differentiator and integrator circuit using an Op-Amp with suitable waveforms.	10	L2	CO2
		Module – 3			
Q5	**a**	Draw the block diagram of a communication system and explain the function of each block.	10	L2	CO3
	b	Explain the concept of noise and briefly the different types of radio wave propagation.	10	L2	CO3
		OR			
Q.6	**a**	What are the advantages of digital modulation over analog modulation? Explain the generation of Frequency Modulation (FM) with neat waveforms.	10	L2	CO3
	b	With waveforms, explain ASK, FSK, and PSK modulation schemes.	10	L2	CO3
		Module – 4			

Model Question Paper- II

Q.7	**a**	Define embedded systems and list its key characteristics. Also list out the major application areas of embedded systems.	10	L2	CO4
	b	Explain the classification of embedded systems based on complexity and performance.	10	L2	CO4
OR					
Q.8	**a**	Compare Microprocessor vs Microcontroller in terms of architecture, performance, and applications.	10	L2	CO4
	b	Explain the role of memory, sensors, actuators, and display devices (LED and 7-segment) in embedded systems.	10	L2	CO4
Module – 5					
Q.9	**a**	Express the Boolean function F=xy+$\bar{x}$z in a product of max terms.	10	L3	CO5
	b	Convert: i) $(110101)_2$ → Decimal and Octal ii) $(25F)_{16}$ → Binary and Decimal. iii) $(41.6875)_{10}$→ Octal and Binary	10	L3	CO5
OR					
Q.10	**a**	Implement full adder circuit with its truth table and write the expressions for sum and carry.	10	L3	CO5
	b	State and prove De - Morgan's theorems with its, truth table. Subtract the following using 10's complement i) $(72532 - 3250)_{10}$ ii) $(3250 - 72532)_{10}$	10	L3	CO5