

Model Question Paper-I/II with effect from 2022-23 (CBCS Scheme)

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First/Second Semester B.E. Degree Examination BASIC ELECTRONICS

(MODEL QP)

TIME: 03 Hours

Max. Marks: 100

Note:

Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE**.

Module -1			PO	CO	*Bloom's Taxonomy Level	Marks
Q.01	a	Explain the Forward and Reverse Characteristic of Semiconductor Diode.	1,2	1	2	8
	b	Explain Positive Half Wave Rectifier with input and output waveforms.	1,2	1	2	6
	c	Explain Zener Diode as Voltage Regulator with no load.	1,2	1	2	6
OR						
Q.02	a	Explain RC π filter.	1,2	1	2	8
	b	Explain DC load line analysis for Semiconductor Diode.	1,2	1	2	8
	c	Write down the characteristic of Zener Diode.	1,2	1	2	4
Module-2						
Q. 03	a	Explain BJT Current Amplification for increasing and decreasing IB Levels.	1,2	2	2	8
	b	Explain Common Base Input Characteristic of BJT.	1,2	2	2	6
	c	Explain the working of n channel JFET.	1,2	2	2	6
OR						
Q.04	a	Explain the operation of enhancement MOSFET.	1,2	2	2	8
	b	Draw the DC load line for transistor and identify Q points.	1,2	2	2	8
	c	Explain Common Emitter Input Characteristics.	1,2	2	2	4
Module-3						
Q. 05	a	Explain block diagram of Typical OpAmp.	1,2	3	2	6
	b	Explain working of a Differential Amplifier	1,2	3	2	8
	c	Explain OpAmp as an integrator circuit with an input and output waveform using square wave as input.	1,2	3	2	6
OR						
Q. 06	a	Explain basic Differential Amplifier	1,2	3	2	8
	b	Define Op Amp Parameters. Gain, CMRR, Slew rate, input resistance	1,2	3	2	8
	c	Explain Inverting Amplifier.	1,2	3	2	4
Module-4						
Q. 07	a	Convert Decimal to Binary : 1) 41, 2)153, 3) 0.6875,4) 0.513	1,2	4	2	8
	b	Write down Axiomatic Definition of Boolean algebra.	1,2	4	2	6
	c	Simplify the Boolean function to minimum number of literals ($xy + x'y + yz$) ($x'y + x(y+z) + y'z'$)	1,2	4	2	6
OR						
Q. 08	a	Convert Binary to Decimal D) 110111, 2) 10101010, 3) 0110, 4) 100.1010	1,2	4	2	8
	b	Explain SOP & POS with examples.	1,2	4	2	6
	c	Implement Half adder using basic gates.	1,2	4	2	6

Module-5						
Q. 09	a	Explain the working principle of Capacitive Transducer.	1,2	5	2	8
	b	Explain the working principle and applications of Piezoelectric Transducer.	1,2	5	2	8
	c	Write down the applications of Thermal Transducer.	1,2	5	2	4
OR						
Q. 10	a	Explain typical Radio Transmitter with neat block diagram.	1,2	5	2	6
	b	What is modulation? Explain the need for Modulation.	1,2	5	2	8
	c	What is noise? Explain the term Channel Noise and its effects.	1,2	5	2	6

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First/Second Semester B.E. Degree Examination Basic Electronics

TIME: 03 Hours

Max. Marks: 100

- Note: 01. Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE**.
02. Missing data may be suitably assumed.

Module -1			Bloom's Taxonomy Level	Marks
Q.01	a	Explain the forward and reverse characteristics of a silicon diode	L1	8
	b	Describe the working of a capacitor filter for a half wave rectifier with a neat circuit diagram and necessary waveforms.	L2	8
	c	Determine the peak output voltage and current for a bridge rectifier circuit when the secondary RMS voltage is 30V and the diode forward drop is 0.7V.	L3	4
OR				
Q.02	a	Describe the working of full wave rectifier with a neat circuit diagram and necessary waveforms.	L1	8
	b	Explain how a Zener diode can be used as voltage regulator by considering the no load and loaded condition.	L2	8
	c	A diode with $V_F=0.7V$ is connected as a half wave rectifier. The load resistance is 500Ω and the secondary RMS voltage is 22V. Determine the peak output voltage and the peak load current.	L3	4
Module-2				
Q. 03	a	Explain the output characteristics of a transistor in common emitter configuration.	L1	8
	b	Explain the working of an n-channel JFET.	L1	8
	c	With respect to BJT, describe the concept of obtaining the DC load line.	L2	4
OR				
Q.04	a	Explain the Enhancement type MOSFET along with the drain characteristics.	L1	8
	b	Explain the common base output characteristics.	L1	8
	c	Describe how a transistor can be used a voltage amplifier.	L2	4
Module-3				
Q. 05	a	With respect to an op-amp explain the following: I. Input offset voltage II. Slew rate	L1	8
	b	Describe a summing amplifier using an op-amp in an inverting configuration with three inputs.	L2	8
	c	An inverting amplifier using op-amp has a feedback resistor of $10K\Omega$ and one input resistor of $1K\Omega$. Calculate the gain of the op-amp and the output voltage if it supplied with an input of 0.5V.	L3	4
OR				

Q. 06	a	Describe the block diagram representation of an op-amp. Also describe its operational behavior with an equivalent circuit.	L1	8
	b	Describe an integrating amplifier using an op-amp in an inverting configuration.	L2	8
	c	Develop a summer circuit using op-amp to get the following output voltage $V_o = -(2V_1 + 2V_2)$	L3	4
Module-4				
Q. 07	a	Convert the following: i. $(110.1101)_2 = (?)_{10}$ ii. $(847.951)_{10} = (?)_8$ iii. $(CAD.BF)_{16} = (?)_{10}$	L3	6
	b	Express the Boolean function $F = A + BC$ in a sum of minterms	L3	6
	c	Describe how NAND and NOR gates can be used as universal gates.	L2	8
OR				
Q. 08	a	Simplify the following: i. $Y = AB + \bar{A}C + BC$ ii. $Y = (A + \bar{B} + \bar{C})(A + \bar{B} + C)$ iii. $Y = C(B + C)(A + B + C)$	L3	6
	b	Express the Boolean function $F = XY + \bar{X}Z$ in a product of maxterms	L3	6
	c	Describe the working of the full adder using basic gates.	L2	8
Module-5				
Q. 09	a	Explain the working of the potentiometric resistive transducer.	L1	8
	b	Write a note on photodiodes.	L1	6
	c	Explain the various blocks involved in an electrical communication system.	L1	6
OR				
Q. 10	a	Explain the working of Linear Variable Differential Transducer.	L1	8
	b	Write a note on piezoelectric transducer.	L1	6
	c	What is modulation? Describe the need of modulation in communication systems	L1	6