CBCS SCHEME

USN | | | | | | | | | | |

18ELN14/24

First/Second Semester B.E. Degree Examination, June/July 2025
Basic Electronics

Time: 3 hrs. Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. Explain the working of PN junction diode under forward and reverse bias condition. **(06 Marks)**

b. Explain with a neat diagram and waveform, the working of full wave bridge rectifier. **(08 Marks)**

c. Explain equivalent circuit of diode with necessary diagram. **(06 Marks)**

OR

2 a. Show that the efficiency of full wave bridge rectifier is 81.2%. **(06 Marks)**

b. Explain how zener acts as voltage regulator. **(06 Marks)**

c. Explain the working of half wave with and without capacitor filter with necessary waveforms. **(08 Marks)**

Module-2

3 a. Explain drain and transfer characteristics of JFET with necessary diagram. **(10 Marks)**

b. Explain the construction and working of enhancement type MOSFET. **(10 Marks)**

OR

4 a. Explain the V-I characteristics of SCR with necessary waveform. **(10 Marks)**

b. Explain digital circuit applications of CMOS. **(10 Marks)**

Module-3

5 a. Define the terms :
i) Voltage follower
ii) Virtual ground
iii) CMRR
iv) Slewrate
v) Input bias current. **(10 Marks)**

b. Explain the operation of an OPAMP an inverting amplifiers and write the necessary output waveform V_0 for an input $V_{in} = 1V$ and gain $A_v = 10$. **(10 Marks)**

OR

6 a. Explain how OPAMP can be used as integrator and differentiator with necessary waveform. **(10 Marks)**

b. Explain the operation of an adder circuit to meet the equation $V_0 = -[V_1 + V_2 + V_3]$. **(10 Marks)**

Module-4

7 a. Explain the properties and advantages of negative feedback amplifier. **(10 Marks)**

b. Explain the working principle of phase shift oscillator with necessary diagram. **(10 Marks)**

OR

8 a. List out the classification of oscillator. **(08 Marks)**

b. Explain the operation of IC555 as astable oscillator with necessary diagram, and waveform and also derive its charging and discharging time of the circuit. **(12 Marks)**

Module-5

9 a. Find :

i) $(1101011101101010)_{16} = (?)_8$

ii) $(EB986)_{16} = (?)_8$

iii) $(925.75)_{10} = (?)_2$

iv) $(745.36)_8 = (\ \ )_{10}$

v) Subtract (10101) from $(101010) = (?)_{10}$ **(10 Marks)**

b. What is flip flop? Explain the operation of master-slave JK flip flop. **(10 Marks)**

OR

10 a. Explain the basic elements of communication system with block diagram. **(10 Marks)**

b. Prove that

i) $\overline{A+B+C} = \overline{A} \cdot \overline{B} \cdot \overline{C}$

ii) $\overline{ABC} = \overline{A} + \overline{B} + \overline{C}$ **(10 Marks)**

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