UNIVERSITY OF SCIENCE & TECHNOLOGY, YMCA FARIDABAD
B.TECH. EXAMINATION (Under CBS)
Elements of Electronics Engineering [E-101]

Hrs. M. Marks:60

Part -A is compulsory. Attempt any four out of 6 questions from part -B

Part-A

(a) What is slew rate in an OP-AMP? (2)
(b) Name the different quantity which can be measured by multimeter. (2)
(c) A crystal has the following parameters: L = 0.5H, C1 = 0.06pf,C2 =1pf and R = 5kΩ.Calculate the series and parallel resonant frequencies. (2)
(d) What is the Barkhausen's criterion of oscillations? (2)
(e) Write truth table of JK flip flop. (2)
(f) Differentiate between drift current and diffusion current. (2)
(g) How a zener diode is different from normal PN junction diode? (2)
(h) Why some gates are known as universal gates? Name them. (2)
(i) Name different types of liquid crystal? (2)
(j) What are characteristics of an ideal opamp? (2)

PART-B

2 (a) Differentiate between combinational & sequential circuits. (3)
(b) Explain SR flipflop with its diagram & truth table. (3)
(c) Convert (i) $(232.92)_{10}=(\ldots\ldots)_{16}$ (ii) $(11001100.0101)_2=(\ldots\ldots)_{10}$. (4)

3 (a) Describe the working of CRO with neat sketches. (5)
(b) Explain how the resistance of circuit can be measured using multimeter. Explain how does this process is carried out inside multimeter? (5)

4 (a) Explain construction, working of LED display. Also compare LCD with LED display. (5)
(b) Explain the applications of OP-AMP as a differentiator and adder. (5)

5 (a) How is SMPS different from Linear power supply? (5)
Derive the expression for frequency of oscillation of Wein bridge oscillator. (5)

6 (a) A transistor has I_B = 105 μA and Ic = 2.05 mA. Find (i) β of transistor (ii) α of transistor (iii) emitter current IE (iv) Now if IB changes by 27 μA and Ic changes by +0.65 mA, find the new value of β. (5)
(b) Discuss the working of R-C coupled amplifier with its frequency response and bandwidth. (5)

7 (a) Discuss breakdown mechanisms in a p-n junction diode. (3)
(b) An amplifier has a voltage gain of 40 and feedback factor of 0.01.Calculate the Gain with positive & negative feedback. (3)
(c) Write a short note on: (4)
(i) diffusion & storage capacitances
(ii) Voltage regulator