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Paper Id: 238143 **Roll No.** | | | | | | | | | | |

B.TECH
(SEM IV) THEORY EXAMINATION 2022-23
ELECTRONICS ENGINEERING

Time: 3 Hours ***Total Marks: 100***

Note: Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. **2 x 10 = 20**

(a) Breakdown voltage of a zener diode is 10V. It can dissipate a maximum power of 350 mW. Determine the maximum current the diode can handle?
(b) What you mean by Doping.
(c) Explain the principle of operation of LED.
(d) What is meant by voltage multiplier?
(e) Define Threshold Voltage for an E-MOSFET.
(f) Define transconductance of JFET.
(g) Explain the concept of Virtual ground in an OPAMP.
(h) Draw the structure of Integrator using OP-AMP.
(i) What are the applications of CRO?
(j) For what purpose, digital multimeter are used?

SECTION B

2. Attempt any *three* of the following: **10 x 3 = 30**

(a) Draw & explain the V-I characteristic of a P-N junction diode. Also describe the effect of Temperature on the V-I characteristic of a P-N junction diode.
(b) Explain principle of operation and construction of Varacter diode. Draw its V-I characteristic.
(c) With help of a well labeled diagram, discuss input and output characteristics of a bipolar junction transistor in common base configuration. Also indicate all the regions of operation
(d) Explain unity gain OPAMP. With suitable circuit diagram obtain the expression for integrator and differentiator OPAMP.
(e) Draw and explain the block diagram of Ramp type digital voltmeter. Also draw related voltage to time conversion waveforms

SECTION C

3. Attempt any *one* part of the following: **10 x 1 = 10**

(a) Explain how a barrier potential is developed at the P-N junction
(b) Draw and explain the circuit diagram for negative and positive clamper circuits with input and output waveforms.

4. Attempt any *one* part of the following: **10 x 1 = 10**

(a) Explain principle of operation and construction of Tunnel diode. Draw its V-I characteristic.
(b) Draw the circuit and discuss the working of full wave bridge rectifier with suitable input -output waveforms. What is PIV of bridge rectifier?

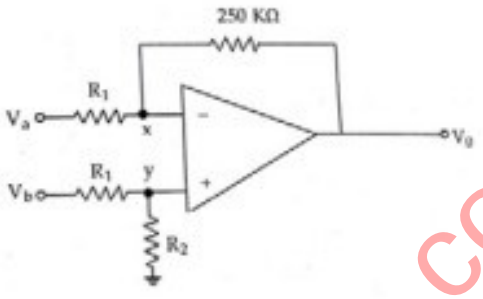
5. Attempt any *one* part of the following: 10 x 1 = 10

(a) Draw the circuit of transistor in the CE configuration. Sketch the output characteristic. Indicate the Active, saturation region and cut-off region. Explain each region in detail.

(b) Draw and explain the construction and working of p-channel depletion type MOSFET. Also draw the characteristics of p-channel depletion type MOSFET.

6. Attempt any *one* part of the following: 10 x 1 = 10

(a) For the op-amp shown in figure , find the values of R_1 and R_2 for the output to be $V_0 = -5V_a + 3V_b$



(b) Explain the non-inverting summing amplifier with circuit diagram.

7. Attempt any *one* part of the following: 10 x 1 = 10

(a) Describe the operation of CRT with neat block diagram. How unknown frequency is measured using CRO?

(b) Compare DSO with analog oscilloscope.