**S.No. 3217** **P 8 PY 3**

**(For candidates admitted from 2008 - 2015 Batch)**

**M.Sc. DEGREE EXAMINATION, NOVEMBER 2022.**

**PHYSICS**

**ELECTRONICS**

**Time: Three hours** **Maximum: 75 marks**

**PART A — (10 × 2 = 20)**
**Answer ALL questions.**

1. Write continuity equation.

2. What is Gunn diode?

3. Describe p-channel MOSFET.

4. Sketch the circuit for relaxation oscillator.

5. Construct voltage follower using op-amp.

6. Draw a circuit for current to voltage conversion.

7. Write about sample and hold circuit.

8. Describe phase locked loops.

9. Define etching.

10. What is charge coupled device?

**PART B — (5 × 5 = 25)**
**Answer ALL questions, choosing either 'a' or 'b'**

11. a) Explain the application of the continuity equation for PN junction in forward bias.
(OR)
b) Obtain Einstein equation and explain.

12. a) Describe the operation of enhancement type MOSFET.
(OR)
b) Explain the characteristics of SCR.

13. a) Construct inverting and non-inverting amplifier and explain.
(OR)
b) Explain differential and integrating circuit with diagram.

14. a) Construct Wein bridge oscillator and explain its operation.

(OR)

b) Describe the operation of counter type analog to digital converter.

15. a) Explain the fabrication of monolithic transistors.

(OR)

b) Discuss about astable operation using IC 555 timer.

**PART C — (3 × 10 = 30)**
**Answer any THREE Questions**

16. Discuss about the following diodes (i) Varactor diode (ii) Photo diode.

17. Explain structure, working and V-I characteristics of JFET.

18. Construct a circuit for simultaneous differential equations.

19. Explain the construction and operation of saw-tooth wave and square wave generator.

20. Explain the fabrication monolithic IC for a circuit layout.

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