

**November – December 2019**  
**M. Sc. Ist Semester Examination**

**PHYSICS**  
**PAPER IV : ELECTRONIC DEVICES**

Time 3 Hours]

[Max. Marks : Regular 85 / Private 100  
[Min. Marks : Regular 28 / Private 33

**Note :** This question paper is meant for all Regular and Private students. Answer all five questions. All questions carry equal marks. The blind candidates will be given 60 minutes extra time.

1. (a) Explain construction and characteristics of JFET. What is pinch off voltage in JFET.  
(b) Explain two Applications of JFET.

OR

- (a) What is Gunn effect ? Explain characteristics and applications of Gunn Diode.  
(b) What is tunnel effect ? Explain working of tunnel diode with the help of Energy Level Diagram.

2. Describe working principle and construction of semiconductor laser.

OR

Explain working of Solar Cell. Define solar cell efficiency, describe experimental method to calculate it.

3. (a) Explain CMOS and NMOS memories. Discuss their advantages and disadvantages.  
(b) Write short note on Optical Storage Devices.

OR

- (a) Explain SRAM and DRAM. Discuss their advantages and disadvantages.  
(b) Write short note on charge coupled devices.

4. (a) Explain magnetostrictive constant and magnetostrictive energy.  
(b) Explain with two examples the piezo electric activator.

OR

- (a) Write short note on magnetostrictive oscillator.  
(b) Explain Electrostrictive effect.

5. Write short note on any three of the following :

- (a) Two applications of MOSFET.  
(b) Radiative and Non-radiative Transitions.  
(c) Operation and characteristics of impact Diode.  
(d) Frequency Spectrum of LED and Diode Laser.  
(e) Ferroelectric Memories.