Roll No. .....

(07/22-II)

5178

B.Sc. EXAMINATION

(Second Semester)

PHYSICS

Paper II (PH-202)

Semiconductor Devices

Time : Three Hours *Maximum Marks :* 40

Note : Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. 1 is compulsory. All questions carry equal marks.

(Compulsory Question)

1. (a) Which diode works as a voltage regulator ? What is the principle of working of LED's ? 2

   (b) Out of three configurations of transistor which one is better in context to application in electronic equipments ? 2

(c) What do you mean by feedback in context to amplifiers ? What are the benefits of negative feedback ? 2

(d) What are harmonic and feedback oscillators ? 2

Unit I

2. (a) How energy bands are formed in solids ? Explain the working and construction of P-N Junction Diode. 4

(b) Discuss the working of R.C. filter circuit with appropriate diagram. 4

3. (a) Explain the Hall effect. Give its applications. 5

(b) Discuss the working of P-N junction as full wave rectifiers. 3

Unit II

4. (a) Discuss any one method of transistor biasing and stabilization. 4

(b) Discuss the working and construction of NPN transistor. 4

5. (a) Draw a suitable diagram to discuss the working of common emitter transitor. 4

(b) Write the constants of transistors and discuss their relation. 4

Unit III

6. (a) Discuss the working of resistance-capacitance coupled amplifier. 4

(b) Explain the working of common emitter amplifier. 4

7. (a) An amplifier has a voltage gain of – 400 and it is reduced up to – 200 on applying negative feedback. Obtain the feedback ratio (β). 4

(b) How the non-linear distortion and noise can be reduced in the output of an amplifier ? 4

Unit IV

8. (a) The tuned collector oscillator in a radio receiver has a coil of inductance 20 μH with a capacitor of capacity 100 pF. Calculate the frequency of the oscillator. 4

   (b) Discuss the construction and working of the Tuned-Collector common emitter oscillator. 4

9. (a) Explain the different requirements of the circuit to act as an Oscillator. 3

   (b) Discuss the construction and working of the Hartley Oscillator. 5