

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)
BSc DEGREE EXAMINATION DECEMBER 2019
(Fifth Semester)

Branch - PHYSICS

CORE ELECTIVE -1: SEMICONDUCTOR ELECTRONICS

Time : Three Hours

Maximum : 75 Marks

SECTION-A (20 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(10 x 2 = 20)

- 1 What are Semiconductors?
- 2 Name the majority and minority charge carriers of P,N type semiconductors.
- 3 Name the three different common connections from transistors.
- 4 Classify the power amplifiers.
- 5 Name the two different feedback systems.
- 6 Draw an electronic symbol of Op-Amp and mention the terminals.
- 7 What are Oscillators?
- 8 Define Modulation.
- 9 Define Switching transistor.
- 10 What is clipping circuit?

SECTION - B (25 Marks!)

Answer ALL Questions

ALL Questions Carry EQUAL Marks (5 x 5 = 25)

- 11 a Explain the formation of P-type semi-conductors.
OR
b Discuss about the semiconductor diode with neat diagram.
- 12 a Discuss the relation between β and α when a transistor is in common emitter connection.
OR
b Discuss about the frequency response of the RC coupled amplifiers.
- 13 a Discuss about the principle of negative voltage feedback in amplifiers with necessary diagram.
OR
b Construct a subtractor using Op-Amp and explain its function.
- 14 a Construct a tuned oscillator and explain the functions of the oscillator.
OR
b Discuss about an amplitude modulation.
- 15 a Construct a circuit for output characteristics of JFET and explain the function.
OR
b What is clamper circuit? Give the theory of positive clamper circuit.

SECTION ~ C (30 Marks)

Answer any THREE Questions

ALL Questions Carry EQUAL Marks (3 x 10 = 30)

- 16 Describe the various types of filter circuits with necessary diagrams.
- 17 Construct a suitable circuit for push-pull amplifier and explain its operation.
- 18 Give the principle of negative current feedback and explain the effects of negative current feedback.
- 19 Construct the transistor crystal oscillator and mention its advantages and disadvantages.
- 20 Describe the construction and function of bi-stable multi-vibrator with necessary circuit diagram .