## PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)
### BSc DEGREE EXAMINATION DECEMBER 2018
(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 ( $10 \times 2 = 20$ )

1    What is forbidden energy gap?
2    What are the factors affect the barrier voltage in a junction diode?
3    Write any two disadvantages of base resistor transistor bias method.
4    Define current amplification factor in CB configuration.
5    What do you understand by negative feedback?
6    Which point in Op-Amp circuit called as summing point?
7    Define modulation factor.
8    Write the essential components of a transistor oscillator.
9    What is clipping circuit?
10   Deduce trans conductance in FET.

### SECTION - B (25 Marks)
Answer **ALL** Questions
**ALL** Questions Carry **EQUAL** Marks ( $5 \times 5 = 25$ )

11  a Explain briefly the effect of temperature on semiconductor.
                              OR
    b Mention voltage current characteristics of a PN junction diode.

12  a Analyze DC and AC load line of a transistor CE configuration.
                              OR
    b    Explain the operation of a R-C coupled amplifier.

13 a    Describe the working of emitter follower circuit.
                              OR
    b Give the characteristics of an ideal Op-Amp.

14  a With a neat diagram, explain the action of Hartly oscillator.
                              OR
    b Describe the stages of superhetrodyne radio receiver.

15  a Explain the switching action of a transistor.
                              OR
    b With a neat circuit diagram, explain the working of positive and negative
       clampers.

### SECTION - C (30 Marks)
Answer any **THREE** Questions
**ALL** Questions Carry **EQUAL** Marks (3 x 10 = 30)

16      With a neat circuit diagram, explain the working of full wave bridge
        rectifier and find its efficiency and ripple factor.

17      Discuss the working, frequency response and advantages of a transistor
        coupled amplifier.

18      Explain the advantages of negative feedback in amplifiers.

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