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Total No. of Pages : 02

Total No. of Questions : 09

B.Tech. (EE) (Sem.-3)
ELECTRONIC DEVICES AND CIRCUITS
Subject Code : EE-207
Paper ID : [A0405]

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A**1. Write briefly :**

- (a) What is meant by Fermi level in semiconductor?
- (b) Define acceptor and show the donor and acceptor levels on the band diagram of P type material.
- (c) Explain why a PN junction possesses capacitance.
- (d) Prove that the ripple factor of a full wave rectifier is 0.482.
- (e) Draw the circuit diagram of AND gate by using diodes and briefly describe working.
- (f) Explain the function of base in the operation of BJT.
- (g) Derive the relation between α and β of a transistor.
- (h) Define pinch off voltage in JFET.
- (i) What is offset voltage and current in OP-AMP?
- (j) Calculate the gain of a negative feedback amplifier with an internal gain (A) is 50 and feedback factor (β) is 0.1.

SECTION-B

2. Explain the difference between silicon and germanium semiconductor using energy band diagram.

3. Explain the construction and working of photo diode.
4. Draw a PNP transistor in CE configuration and find dynamic output resistance and dc current gain.
5. Calculate the operating point values of current " I_{CQ} " and voltage " V_{CEQ} " in the given circuit when the current gain β for the transistor is 100.

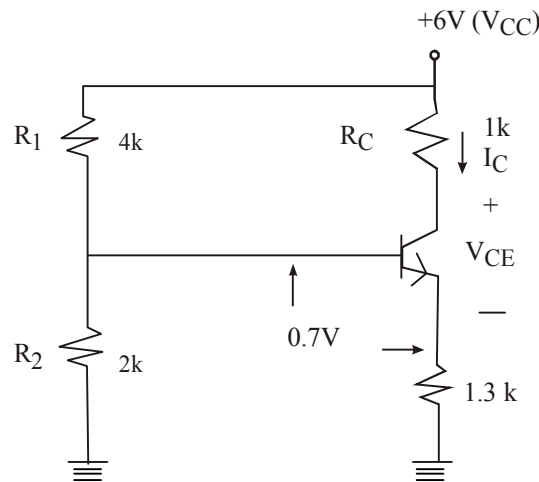


Fig. 1

6. Draw the block representation of the four types of negative feedback and which one of these types is employed to get greater output impedance.

SECTION-C

7. Draw the various types of biasing circuits and explain emitter bias circuit using expressions.
8. Find I_{rms} , ripple factor, rectification efficiency and output DC voltage in half wave rectifier.
9. Explain any two with necessary diagrams;

I. FET.

II. Differential amplifier.

III. Negative and positive clamper.