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Total No. of Questions : 09]

[Total No. of Pages : 02

Paper ID [EC201]

(Please fill this Paper ID in OMR Sheet)

B.Tech. (Sem. - 3rd)

ELECTRONIC CIRCUITS & DEVICES (EC - 201)

Time : 03 Hours

Maximum Marks : 60

Instruction to Candidates:

- 1) Section - A is **Compulsory**.
- 2) Attempt any **Four** questions from Section - B.
- 3) Attempt any **Two** questions from Section - C.

Section - A

Q1)

(10 × 2 = 20)

- a) Discuss the behavior of p-n junction diode under forward and reverse biased conditions.
- b) Draw circuit diagram for CC & CE configuration of transistor. Which is having higher gain and why.
- c) State advantages of JFET over BJT.
- d) What is operating point? Why is it necessary to stabilize operating point of a transistor amplifier.
- e) What do you understand by class A, B and C power amplifiers.
- f) Draw the block diagram of a multistage amplifier having n-stages. Write expression for its gain (A).
- g) State advantages of -ve feedback in amplifiers.
- h) What is an oscillator. What are the essential components of feed back LC oscillator.
- i) Differentiate between photo diodes & photo-transistor.
- j) Define term junction capacitance. Name different type of capacitances a diode posses.

Section - B

(4 × 5 = 20)

- Q2) Define stability factor. Explain with circuit diagram of potential divider method of biasing in amplifiers.
- Q3) Draw the circuit diagram of a push-pull amplifier . Explain its operation. Discuss advantages and disadvantages.
- Q4) What do you mean by coupling of two amplifier stages. Explain with requisite circuit diagrams the resistance- capacitance coupling scheme.
- Q5) Draw the block diagram of negative feed back amplifier. Derive an expression for the voltage gains of an amplifier of gain (A) when subjected to negative feedback (B).
- Q6) Explain the principal of working of transistor Hartely oscillator. Draw circuit diagram and briefly function of each component.

Section - C

(2 × 10 = 20)

- Q7) Define h-parameters. Derive expression for
- Voltage gain.
 - Current gain
 - Input resistance
 - Output resistance of CE amplifiers using h-parameters.
- Q8) (a) Draw labelled diagram showing constructional features of N-channel MOSFET. Explain principle and working of N- channel MOSFET in briefly explain.
- (b) Distortion in amplifier circuits.
- Q9) Write short notes on two of the following:-
- Thermal runaway.
 - PIN Diodes.
 - Effect of -ve feed back on output resistance of an amplifier.