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Total No. of Questions : 09] [Total No. of Pages : 02

MAY-08

~~Dec-07~~

Paper ID [EC201]

(Please fill this Paper ID in OMR Sheet)

B.Tech. (Sem. - 3rd)

ELECTRONIC DEVICES & CIRCUITS (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) State differences between LED and photo diodes.
b) Give reasons why common emitter (CE) configuration is widely used in amplifier circuits.
c) State advantages of FET over BJT.
d) What do you understand by transistor Biasing? Why is it necessary to bias a transistor?
e) Draw circuit diagram of a practical amplifier with transistor in common base configuration.
f) Compare three configuration CB, CC and CE in terms their of output resistances.
g) Define term Thermal Runway.
h) What do you understand by terms Channel & Drain in JFET.
i) Explain why an ordinary transistor is called Bipolar.
j) In a semiconductor diode p-side is grounded and n-side is applied a potential of -3 volts will the diode conduct or not. Explain.

Section - B

(4 × 5 = 20)

Q2) What do you understand by coupling capacitor in amplifiers. Explain how it affects the operation of an amplifier. Draw required diagrams also.

Q3) Define stability factor. Explain the self-bias circuit with diagrams and derive expression for stability factor.

Q4) What is the necessity of having filters in power supplies. Explain with diagrams how RL-filter improves the output of a rectifiers.

Q5) Define hybrid parameters. Derive equations for current gain and voltage gain of a CE amplifier using h-parameters.

Q6) Draw diagram showing constructional details of N-channel MOSFET. Explain the operation of N-channel MOSFET in depletion mode.

Section - C

(2 × 10 = 20)

Q7) (a) Draw the circuit diagram of a full wave rectifier using Bridge connection. Explain its working and derive expressions for the RMS value and average value of current.

(b) Explain in detail with diagram that how voltage applied at gate of FET controls the flow of carrier through channel.

Q8) (a) Draw the input and output characteristic curves of a CB-configuration for a transistor. Explain the shape of curves. Clearly indicate cut off, active and saturation regions.

(b) What do you understand by UJT. Explain its operation.

Q9) Write short notes on two of the following:-

(a) Bias compensation Techniques.

(b) Emitter Follower.

(c) LCD.