

Assignment No. 3

Subj: Electronic ckt and Devices.

Class: BESE 15(A & B)

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To be submitted by

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Question No. 1:

a. Derive Q-point expressions for the following transistor biasing. Assume NPN transistor type.

- Emitter Bias
- Collector Feed Back Bias
- Base Bias

b. Find Q-point and maximum peak value of base current for the active region of an NPN transistor with following ckt elements and parameters.

$$\beta_{DC} = 300$$

$$V_{BB} = 10V$$

$$R_B = 47 \text{ k}\Omega$$

$$V_{CC} = 20V$$

$$R_E = 330 \Omega$$

Also sketch load line.

Question No-2 :

- a. Draw Transistor AC equivalent model using r -parameter
- b. Establish the relationship of h -parameter and r -parameters for α_{ac} and β_{ac}
- c. What is the effect of emitter Bypass capacitor on voltage gain in CE configuration. Give example.
- d. Prove with the help of example that voltage gain (A_v) without bypass capacitor in CE configuration is adversely effected.

Question no. 3

- a. Explain the operation of n-channel basic E-MOSFET.
- b. Draw an - n-channel JFET transfer characteristic curve from JFET drain characteristic curve.
- c. What are the types of MOSFET discussed in the class and draw symbol for each type.

• The end •