

Date: 26/11/2015.

Exam No. _____

GANPAT UNIVERSITY
B. TECH. SEM-III (EC) REGULAR EXAMINATION, NOV-DEC 2015
2EC301: ELECTRONIC DEVICES AND CIRCUITS

TIME: 3 HRS

TOTAL MARKS: 60

INSTRUCTION:-

1. Attempt all questions.
2. Answers to the two sections must be written in separate answer books.
3. Figures to the right indicate full marks.
4. Assume suitable data, if necessary.

SECTION-I

- Q.1 (A) Explain CB, CE and CC configuration for BJT. (Circuit diagram, input and output characteristics) 5
- (B) For the voltage-divider bias configuration of Fig. 1, determine: 5
- (a) I_{BQ} . (b) I_{CQ} . (c) V_{CEQ} . (d) V_C . (e) V_E . (f) V_B

OR

- Q.1 (A) Explain concept of load line and Q-point for voltage divider bias transistor circuit. Explain the importance of Q-point location with respect to stability and region of operation. 5
- (B) Given that $I_{CQ} = 2$ mA and $V_{CEQ} = 10$ V, determine R_1 and R_C for the network of Fig.2. 5

- Q.2 (A) For the BJT Amplifier, determine cutoff frequencies (f_{Ls} , f_{Lc} , f_{LE}). 4
- (B) Explain Darlington connection. List its advantages. 3
- (C) Define: 1. I_{CBO} 2. β 3. Critical Frequency 3

OR

- Q.2 (A) For the network of loaded BJT amplifier, draw high frequency ac equivalent model and define f_{Hi} , f_{Ho} . 4
- (B) For the collector feedback configuration of Fig. 3, determine: (a) I_B . (b) I_C . (c) V_C . 3
- (C) Explain use of bode plot for amplifier circuit with suitable example. 3
- Q.3 (A) Explain PNP and NPN transistor in detail with necessary figures. 5
- (B) Explain miller effect capacitance with suitable example. Derive formulas for C_{Mi} & C_{Mo} . 5

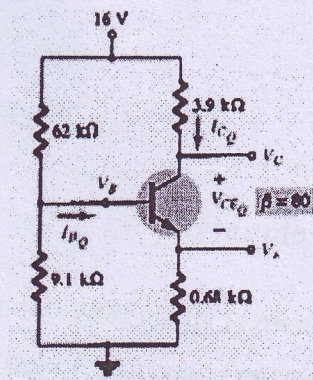


Fig.1

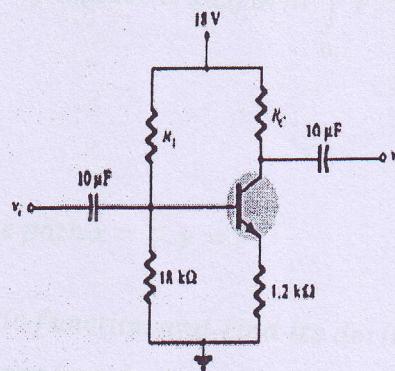


Fig.2

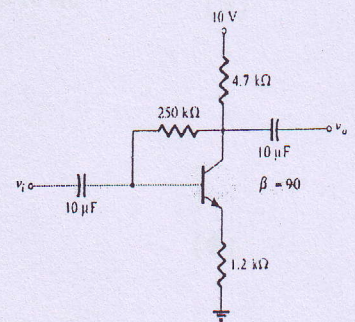


Fig.3

SECTION-II

- 4 (A) Define following term: 4
(i) Extrinsic semiconductor
(ii) Reverse recovery time in PN diode
- (B) Explain half wave rectifier and centre tap full wave rectifier. 6
- OR
- 4 (A) Explain Voltage - Ampere (V-I) characteristic of Diode. 5
(B) Explain positive and negative clippers. 5
- 5 (A) Give the comparison of BJTs and FETs 3
(B) Draw and explain output characteristics curve of JFET. 5
Draw output characteristic and transfer characteristic of n-channel D-MOSFET. 2
- OR
- 5 (A) Draw the construction and symbol of following FETs. 5
(i) n-channel and p-channel FET
(ii) n-channel and p-channel E-MOSFET
- (B) Draw and explain the output characteristics and transfer characteristics of n-channel E-MOSFET. 5
- 6 (A) Draw self-bias configuration of the n-channel JFET. 2
(B) Explain Class A power amplifier. 4
(C) Explain Zener Diode in brief 4

END OF PAPER
