

Reg. No. :

Question Paper Code : 20461

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2022.

Third Semester

Electronics and Communication Engineering

EC 8351 – ELECTRONIC CIRCUITS – I

(Common to : Electronics and Telecommunication Engineering)

(Regulations 2017)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is meant by DC and AC load line?
2. Define Thermal runaway.
3. List out the important characteristics of common emitter amplifier.
4. How are amplifiers classified according to the transistor configuration?
5. Define Miller effect in input capacitance.
6. Which configuration of amplifier is called as voltage follower? Why?
7. Mention the reasons for decrease the gain at lower and higher frequencies.
8. Why N-channel FET's have a better response than P-channel FET's?
9. Write down the ripple factor and efficiency of the full-wave and half wave rectifier circuits.
10. What are the components of a power supply?

PART B — (5 × 13 = 65 marks)

11. (a) Discuss various bias compensation techniques with neat circuit diagrams.

Or

- (b) (i) Explain about the fixed bias configuration for JFET with DC analysis. (7)
- (ii) For the circuit shown in figure below with $I_C = 2mA, \beta = 100$, Calculate R_E, V_{EC} and stability factor. (6)

12. (a) Obtain the gain, input impedance and output impedance of single stage BJT amplifier using mid band analysis.

Or

- (b) With the help circuit diagram describe the common mode working of a differential amplifier using BJT's and Derive the DC analysis of differential amplifier.

13. (a) Analyze the CS amplifier circuit with its characteristics.

Or

- (b) Determine the small-signal voltage gain and input and output resistance of a common source amplifier with the parameters $V_{DD} = 10V, R_1 = 70.9k\Omega, R_2 = 29.1k\Omega$, and $R_D = 5k\Omega$ and the transistor parameters are $V_{TN} = 1.5V, K_n = 0.5mA/V$, and $\lambda = 0.01V$. Assume $R_s = 4k\Omega$.

14. (a) Illustrate the Frequency response of an Amplifier.

Or

- (b) Discuss the Low-Frequency analysis of a Common-Source MOSFET Amplifier.

15. (a) Describe the Functional block diagram of SMPS.

Or

- (b) With neat sketch, explain the Full wave power supply with its Waveform.

PART C — (1 × 15 = 15 marks)

16. (a) Elucidate and compare the following Techniques

- (i) Darlington Amplifier
(ii) Cascade Amplifier
(iii) Cascode Amplifier

Or

- (b) Express the High frequency analysis of MOSFET CS amplifier.