

B.E./B.TECH. Degree Examination, December 2020

Third Semester

EC16303-Electronic Circuits - I

(Regulation 2016)

Time: Three hours

Maximum :80 Marks

Answer **ALL** questions

PART A - (8 X 2 = 16 marks)

1. Reverse collector saturation current I_{CBO} is _____
 - a) Collector current when emitter current is zero
 - b) Collector current when base current is zero
 - c) Same as reverse saturation current
 - d) Collector current when either emitter or base current is zero
2. In Miller's theorem, K represents
 - a) Total voltage gain
 - b) Internal voltage gain
 - c) Internal current gain
 - d) Internal power gain
3. The n-channel JFET, the pinch off voltage is _____
 - a) not greater than 0
 - b) greater than or equal to 0
 - c) less than or equal to 0
 - d) not less than 0
4. The unwanted characteristics of amplifier output apart from the desired output is collectively termed as _____
 - a) Inefficiency
 - b) Damage
 - c) Fault
 - d) Distortion
5. Illustrate the methods of biasing a JFET.
6. List the general conditions under which common source amplifier would be used.
7. Sketch the expanded hybrid π model of the BJT.
8. Find CMRR of differential amplifier in dB with differential gain 300 and common mode gain of 0.2.

PART B - (4 X16 = 64 marks)

09. (a) Compare the various methods of biasing using BJT in terms of their stability (16) factors.

(OR)

- (b) With neat diagrams, explain any two bias compensation techniques and state its (16) advantages and disadvantages.
10. (a) Examine the circuit diagram for a differential amplifier using BJT's. Describe (16) common mode and differential modes of working.

(OR)

- (b) Analyze the changes in the AC characteristics of a common emitter amplifier with an emitter resistor and an emitter by pass capacitor are incorporated in the design. **(16)**

11. (a) Develop the high frequency equivalent circuit of a MOSFET from its geometry and drive the expression for short circuit current gain of a common source configuration. **(16)**

(OR)

- (b) Derive voltage gain, input and output impedance of common source JFET amplifier with neat diagram and equivalent circuit. **(16)**

12. (a) Discuss the working of centre tapped full wave rectifier with neat diagram. Also derive the expression for the rectification efficiency, ripple factor, transformer utilization factor and peak factor of full wave rectifier. **(16)**

(OR)

- (b) Analyze the working principle of class B AND class C amplifiers. **(16)**