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B.E. III Semester Examination

BE-III/12(A)

228302

**INFORMATION TECHNOLOGY
ENGINEERING**

Course No. ECE-313

(Basic Electronics)

Time Allowed- 3Hours

Maximum Marks-100

Note : Attempt any **five** questions by selecting at least **one** question from each section. All questions carry **equal** marks.

Section -A

1. a) Discuss the behavior P-N junction under forward and reverse biasing. (10)
- b) Define the transition capacitance of a P-N junction. Also show that a PN junction Diode can be used as a switch. (10)
2. a) Explain construction, operation and characteristics of schotky diode. (10)
- b) Derive an expression for the efficiency of full wave bridge rectifier. (10)

Section - B

3. a) Sketch a family of common collector output characteristics for a transistor. Clearly indicate the cut-off, saturation and active regions. (10)

(2)

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- b) Define α , β and of a bipolar junction transistor and derive the relationship between them. (10)
4. a) Define stability factor. Explain with circuit diagram of potential divider method of biasing in transistor. (10)
- b) Explain the following terms: (10)
- i) Thermal runaway
 - ii) Bias compensation
 - iii) Load line
 - iv) Biasing

Section - C

5. a) What is meant by JFET? How it is different from BJT? (10)
- b) Draw and explain the working of the n-channel FET. (10)
6. a) Draw labeled diagram showing constructional features of N-channel MOSFET. Also, explain principle and working of N-channel MOSFET in brief. (10)
- b) What is the need of small signal model for FET? Explain it by taking an appropriate example. (10)

Section -D

7. Write the characteristics of an inverting OP-AMP. Also, show that OP-AMP can be used as comparator and voltage limiter. (20)
8. Explain the working of OP-AMPs
- i) Clipper (10)
 - ii) Clamper (10)