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**Question Paper Code : 31419**

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2013.

Third Semester

Electronics and Instrumentation Engineering

EI 2203/EI 35 EC 1209/10133 EE 305/080300002 — ELECTRONIC DEVICES AND CIRCUITS

(Common to Instrumentation and Control Engineering)

(Regulation 2008/2010)

(Common to PTEI 2203 – Electronic Devices and Circuits for B.E. (Part-Time)  
Second Semester – Electronics and Instrumentation Engineering –  
Regulation 2009)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. The transition capacitance of an abrupt junction diode is 20 pF at 5 V. Compute the value of decrease in capacitance for a 1 V increase in the bias.
2. Define thermal runaway.
3. Define pinch-off voltage.
4. What are the applications of TRIAC?
5. What is bias compensation?
6. List the advantages of class-A amplifiers?
7. What is Barkhausen criterion?
8. What are the types of feedback oscillators?
9. List the important characteristics of a voltage regulator.
10. What is a Schmitt trigger?

PART B — (5 × 16 = 80 marks)

11. (a) Explain the working principle of tunnel diode and also discuss the types of tunnel diode parameters to be considered in tunnel diode applications. (16)

Or

- (b) (i) Explain the working of transistor as an amplifier. (8)
- (ii) Derive the stability factor for a base bias circuit. (8)

12. (a) Explain the structure, working and characteristics of N channel Enhancement type MOSFET. (16)

Or

- (b) (i) Explain the working of SCR in two transistor model. (8)  
(ii) Explain the construction and working of UJT. (8)
13. (a) (i) Draw the AC equivalent circuit of RC coupled amplifier circuit and discuss its frequency response characteristic. (8)  
(ii) Compare CB, CE and CC amplifiers. (8)

Or

- (b) Prove that the maximum efficiency of class B amplifier is 78.5% and that of Class A type is 50%. (16)
14. (a) (i) Discuss in detail the characteristics of current shunt feedback amplifier. (8)  
(ii) Explain the concept involved in crystal oscillator with its characteristics. (8)

Or

- (b) Explain the working of Wein bridge oscillator with neat diagram. Also derive the expression for oscillator frequency. (16)
15. (a) Explain the working and waveforms of Monostable Multivibrator. (16)

Or

- (b) (i) Draw the block diagram of switched mode power supply and explain the operation. (8)  
(ii) A diode whose internal resistance is 20 ohms is to supply power to a load from a 110 V (RMS) source of supply. Calculate
- (1) Peak load current
  - (2) DC load current
  - (3) AC load current
  - (4) DC diode voltage
  - (5) Total input power to the circuit
  - (6) % regulation from no load to the given load. (8)