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Question Paper Code : 33367

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

Third Semester

Electrical and Electronics Engineering

EC 1211 — ELECTRONIC DEVICES

**(Common to Second/Third Semester Electronics and Instrumentation Engineering
and Instrumentation and Control Engineering)**

(Regulation 2004/2007)

**(Common to B.E. (Part-Time) Second Semester, Electrical and Electronics
Engineering, Regulation 2005)**

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is meant by depletion layer?
2. Give the diode current equation.
3. What is early effect?
4. What is an emitter follower circuit?
5. 'FET acts as a Voltage Variable Resistor'— Justify.
6. What are the various regions present in the drain characteristics of JFET?
7. Give some examples for opto electronic devices?
8. What is the principle of photo diode?
9. Define the term holding current.
10. What is the salient features of varactor diode?

PART B — (5 × 16 = 80 marks)

11. (a) Explain the theory behind the formation of PN junction. Also emphasis on how it acts as a diode. (16)

Or

- (b) With a neat diagram, explain the working and characteristics of PN diode. What are the various parameters derives from the VI diode characteristics. (16)

12. (a) Give a clear picture on the construction, working and characteristics of NPN transistor connected in a common base configuration. (16)

Or

- (b) (i) Derive the analytical expressions for transistor currents in terms of current gain factors α , β and γ . (10)

- (ii) What are power transistors? Give its significance. (6)

13. (a) With a neat sketch, explain the construction, working and characteristics of unijunction transistor. (16)

Or

- (b) Give the theory, construction details, working and characteristics of JFET. Give the necessary diagrams. Also specify the importance of pinch off condition. (16)

14. (a) Give a detailed note on the construction and characteristics and application of

- (i) LED (8)

- (ii) LCD. (8)

Or

- (b) Evaluate on the theory and working principle of the following :

- (i) Opto couplers (8)

- (ii) Laser diodes. (8)

15. (a) With necessary diagrams, explain the peculiar features of thyristor devices. Explain any one thyristor device in detail focusing on its construction details, working, characteristics and application. (16)

Or

- (b) What is a tunnel diode. How is it different from the other diodes. Explain the construction, working of the device under different biasing conditions. (16)