B 2157

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2007.

Second Semester

Mechanical Engineering

EC 152 — ELECTRONICS ENGINEERING

(Common to Metallurgical Engineering/Chemical Engineering/Industrial Bio–Technology/Leather Technology/Polymer Technology/Textile Chemistry/Textile Technology/Fashion Technology)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — ($10 \times 2 = 20$ marks)

1. What are the types of solids based on energyband theory? Give examples for each.

2. What is a Zener diode?

3. Why is biasing circuit required for the transistor?

4. What are tuned amplifiers?

5. Write the relation among JFET parameters.

6. What do you mean by feedback? What are it's types?

7. What is a sinusoidal oscillator?

8. What is an integrated circuit?

9. Represent the decimal number 139_{10} into a binary number.

10. Mention the types of Digital to Analog converters.

PART B — (5 × 16 = 80 marks)

11. (a) Explain briefly with neat diagrams about extrinsic semi conductor and it's types. (16)

Or

(b) (i) Explain the V–I characteristics of P–n junction diode with neat diagram. (8)

(ii) Describe a half–wave rectifier using a crystal diode. (8)

12. (a) Draw and explain about NPN transistor–CE configuration and describe the static input and output characteristics with various operating regions. (16)

Or

(b) (i) Define and explain the following terms as applied to power amplifiers : collector efficiency, distortion, power dissipation capability. (6)

(ii) Explain the operation of class A power amplifier with neat diagrams. (10)

13. (a) (i) Explain the construction and working of JFET with neat diagram. (10)

(ii) What is the difference between a JFET and a bipolar transistor? Draw the symbols. (6)

Or

(b) Write a detailed notes on

(i) SCR (8)

(ii) Diac. (8)

14. (a) With a neat diagrams, explain the action of Hartley and Colpitt's oscillators. Also obtain the expression for feedback fraction. (16)

Or

(b) (i) With a neat sketch, explain the working of monostable multivibrator. (10)

(ii) Draw an integrator circuit using OP–AMP and obtain an expression for the output voltage. (6)

15. (a) Write detailed notes on

(i) Full–adder (8)

(ii) RS Flip–flop. (8)

Or

(b) Discuss briefly about

(i) Shift–register (8)

(ii) Digital to Analog converter. (8)