Reg. No. : | | | | | | | | | | | | |

Question Paper Code : X 60640

B.E./B.Tech. DEGREE EXAMINATIONS, NOV./DEC. 2020
Second Semester
Civil Engineering
GE 2151/EE 1153/10133 EE 206/080280011/EE 26 – BASIC ELECTRICAL AND ELECTRONICS ENGINEERING
(Common to all Branches)
(Regulations 2008/2010)
(Also Common to 10133EE206 for B.E.(Part-Time) First Semester-Mechanical Engineering-Regulations 2010)

Time : Three Hours | Maximum : 100 Marks

Answer ALL questions.

PART – A **(10×2=20 Marks)**

1. Define R.M.S. value of an alternating quantity.

2. Name the essential torques required for the proper operation of indicating instrument.

3. A dc shunt generator supplies a load of 10 kW at 220 V through feeders of resistance 0.1 Ω. The resistance of armature and shunt field windings is 0.05 Ω and 100 Ω respectively. Calculate the terminal voltage.

4. In a single phase transformer, N_P = 350 turns, N_S = 1050 turns, E_P = 400 V. Find E_S.

5. Give the applications of Zener Diode.

6. What are the different modes of transistor operation ?

7. Define Flip flop. What are the different types of flip-flop.

8. Mention the types of Analog to Digital converter.

9. As related to amplitude modulation, what is over modulation, under modulation and 100% modulation ?

10. Why are digital signals said to be noise immune ?

PART – B **(5×16=80 Marks)**

11. a) Using Mesh Analysis, find the current through various branches in the circuit of figure 11 a. **(16)**

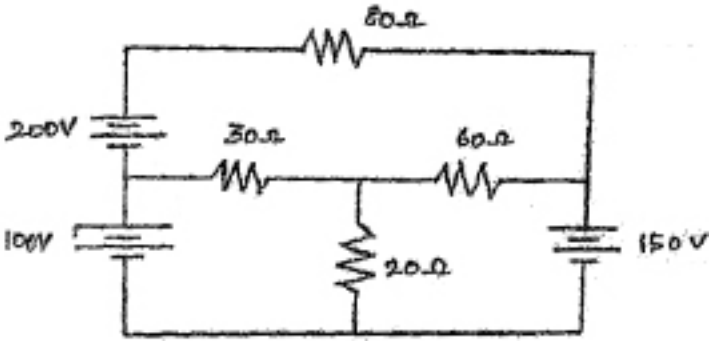

Figure : 11 (a)

(OR)

b) Derive the expression for phase angle in the R-L series circuit R-C series circuit and R-L-C series circuit. **(16)**

12. a) A 220-V D.C. series motor runs at 700 rpm when operating at its full-load current of 20 A. The motor resistance is 0.5 Ω and the magnetic circuit may be assumed unsaturated what will be the speed if :

i) Load torque is increased by 44% ?

ii) Motor current is 10 A.

iii) Explain the operation and Principle of a DC motor.

(OR)

b) Explain the construction of single phase transformer.

13. a) Describe the working of a PN junction diode with neat diagrams. Also explain its V-I Characteristics. **(16)**

(OR)

b) Explain the working of the CB configuration of a BJT. **(16)**

14. a) i) 1) Reduce the following expressions using Boolean algebra postulates :

→ a'b'c' + a'b'c + ab'c' + abc

→ [(A + B)' + C']' **(4)**

2) Realise the given expression using only NAND gates and inverters : xyz + x'y'z'. **(4)**

ii) Design a full adder, construct the truth table, simplify the output equations and draw the logic diagram. **(8)**

(OR)

b) i) 1) Draw the logic diagram for a four bit parallel input parallel output register. Indicate inputs, outputs and a negative edge trigerred clock. **(4)**

2) Draw a simple ring counter and briefly describe its counting action. **(4)**

ii) 1) Give a brief explanation of an A/D conversion and the need for the A/D conversions. **(4)**

2) Convert 95.0625_{10} to binary. **(4)**

15. a) i) Draw a typical television video signal. Explain how this is converted to an image on a TV screen. **(6)**

ii) What is the need for modulation ? Explain the principles behind amplitude modulation and frequency modulation. Compare and contrast the two types of modulation. **(10)**

(OR)

b) i) With neat diagrams explain any one method of amplitude modulation and its corresponding demodulation. **(8)**

ii) Write short notes on the following modes of communication :

1) Microwave **(4)**

2) Optical fiber. **(4)**
