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Question Paper Code : 51645

B.E/B.Tech. DEGREE EXAMINATION, MAY/JUNE 2016

Second Semester

Civil Engineering

GE 2151 / 10133 EE 206/EE 1153/EE 26/080280011 – BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

(Common to all Branches)

(Regulations 2008/2010)

Time : Three Hours **Maximum : 100 Marks**

Answer ALL questions.

PART – A (10 × 2 = 20 Marks)

1. Two resistances of 4 Ω and 6 Ω are connected in parallel across 10 V battery. Determine the current through 6 Ω resistance.

2. Define RMS value.

3. Define voltage regulation of a transformer.

4. Why is starter necessary for a dc motor ?

5. Compare PN junction diode and Zener diode.

6. What is effect of saturation of a transistor ?

7. Define Flip-Flop.

8. What are the different sources of errors in DAC ?

9. As related to amplitude modulation, what is overmodulation, undermodulation and 100% modulation ?

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

PART – B (5 × 16 = 80 Marks)

11. (a) (i) Explain the working of Single-Phase Energy Meter with necessary diagram. **(8)**

(ii) Calculate the

(1) Form Factor and

(2) Peak Factor of a full wave rectified sine wave. **(8)**

OR

(b) (i) Explain the operation of attraction type of M.I instrument. **(8)**

(ii) Explain the working of Dynamometer type wattmeter with necessary diagram. **(8)**

12. (a) Explain the construction and working principle of DC generator with neat diagram. **(16)**

OR

(b) Explain the working principle of various types of Single Phase (1ϕ) Induction Motor with neat diagram. **(16)**

13. (a) (i) With neat diagrams, explain how a voltage regulator circuit regulates the output voltage under the following conditions :

(1) Load resistance increases **(4)**

(2) Input voltage decrease **(4)**

(ii) (1) Using the two diode analogy, explain why the base-emitter junction has to be forward biased to provide collector current.

(2) Sketch a common emitter amplifier circuit with an NPN transistor. **(8)**

OR

(b) (i) (1) Explain the avalanche effect that accounts for the reverse breakdown voltage (PIV) of a diode. (4)

(2) What is the effect on capacitance of a PN junction diode as forward and reverse bias are applied ? (4)

(ii) (1) Explain the amplifying action of a transistor. (6)

(2) In a CE, I_B changes from 100 μA to 150 μA which causes a change in I_C from 5 mA to 7.5 mA. If V_{CE} is held constant at 10 V, find β_{ac} (h_{fe}). (2)

(16)

14. (a) Write short notes on :

(i) RS flip-flop

(ii) D flip-flop

(iii) JK flip-flop

(iv) T flip-flop

OR

(b) With necessary diagrams, explain the functioning of any one type of ADC and DAC. (16)

15. (a) Why modulation is necessary ? Write in detail about frequency modulation.

OR

(b) Discuss the usage of satellite for long distance communication with a neat block diagram of basic satellite transponder.
