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Question Paper Code: 71943

B.E./ B.Tech. DEGREE EXAMINATION, APRIL/MAY 2017

Second Semester

Mechanical Engineering

GE 6252 – BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

(Common to Mechanical Engineering (Sandwich), Aeronautical Engineering, Agriculture Engineering, Automobile Engineering, Civil Engineering, Environmental Engineering, Industrial Engineering and Management, Manufacturing Engineering, Marine Engineering, Materials Science and Engineering, Mechanical and Automation Engineering, Mechatronics Engineering, Petrochemical Engineering, Production Engineering, Robotics and Automation Engineering, Chemical Engineering, Chemical and Electrochemical Engineering, Fashion Technology, Food Technology, Handloom and Textile Technology, Petrochemical Technology, Petroleum Engineering, Plastic Technology, Polymer Technology, Textile Chemistry, Textile Technology, Textile Technology(Fashion Technology))

(Regulation 2013)

Time: Three Hours

Maximum : 100 Marks

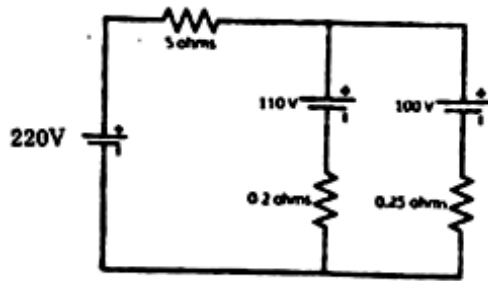
Answer ALL Questions.

PART A – (10 x 2 = 20 marks)

1. State Kirchoff's Laws.
2. Define power factor.
3. Mention few applications of DC Generator.
4. Why single phase induction motor is non-self starting?
5. What do you mean by biasing?
6. Define α and β
7. State De Morgan's theorem.
8. Convert $(777)_8$ to decimal.
9. List out the limitations of amplitude modulation.
10. What is the function of a satellite transponder?

PART B – (5 x 16 =80 marks)

11. (a) (i) For the circuit given below, calculate the magnitude and direction of current in each battery and the total current taken from the 220V supply mains. (12)



(ii) A coil takes a current of 6A when connected to a 24V DC supply. To obtain the same current with a 50 Hz AC supply. The voltage required is 30V. Calculate

- (1) the inductance of the coil
- (2) the power factor of the coil (4)

(OR)

(b) Explain the construction and working of Dynamometer type watt meter. Mention its merits and demerits. (12+4)

12. (a) (i) With a neat diagram explain the construction and working of a DC generator. (12)
 (ii) Derive the EMF equation. (4)

(OR)

(b) Explain the construction and working of single phase transformer. (16)

13. (a) (i) Explain the working of PN junction diode and mention its applications. (8)
 (ii) Draw the circuit diagram for full wave rectifier and explain its working. (8)

(OR)

(b) For CE transistor configuration, draw the circuit & explain the input and output characteristics. (16)

14. (a) (i) Prove the Boolean identity (4)

$$AB + A\bar{B} + \bar{A}B = A + B$$

- (ii) Explain the working of JK and D flip flops. (12)

(OR)

(b) With a neat diagram explain the working of 4 bit binary ripple counter. (16)

15. (a) Short notes on (8)
 (i) Microwave communication (8)
 (ii) FAX (8)

(OR)

(b) Draw the block diagram & explain the fiber optic communication. Mention its applications. (12+4)