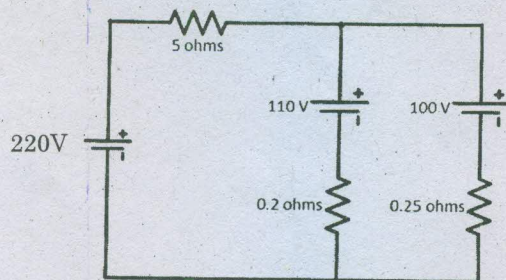




PART B — (5 × 16 = 80 marks)

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



- (ii) A coil takes a current of 6A when connected to a 24 V d.c supply. To obtain the same current with a 50Hz a.c. supply, the voltage required is 30 V. 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 D.C. 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 the CE transistor configuration, draw the circuit and explain the input and output characteristics. (16)
14. (a) (i) Prove the Boolean identity  $AB + A\bar{B} + \bar{A}B = A + B$ . (4)  
 (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  
 (i) Microwave communication. (8)  
 (ii) FAX. (8)
- Or
- (b) Draw the block diagram and explain the fiber optic communication. Mention its applications. (12 + 4)