

B.E. / B.Tech. (Full Time) DEGREE END SEMESTER EXAMINATION, APRIL/MAY 2011
 Common to Mech, Manuf, Industrial and Printing
 SECOND SEMESTER
EE 192 – ELECTRICAL ENGINEERING
 (REGULATIONS 2004)

13

Duration: 3 hrs.

Max. Marks : 100

- Instructions:
1. Answer all questions in Part A
 2. Question 11 is compulsory.

Answer ALL Questions

Part-A (10 x 2=20 Marks)

1. Define Ohm's Law
2. Define Kirchoff's Current Law
3. A four-pole generator, having wave wound armature windings has 51 slots, each slot containing 20 conductors. What will be the voltage generated in the machine when driven at 1500 rpm assuming the flux per pole to be 7.0 mWb.
4. Define slip of an Induction Motor.
5. State the difference between Core and Shell type transformers.
6. What are Multi-range meters?
7. State the difference between Moving Iron (MI) & Moving Coil (MC) Instruments.
8. What is a bilateral circuit?
9. Define Back emf.
10. A slip-ring induction motor runs at 290 r.p.m. at full load, when connected to 50 Hz supply. Determine the number of poles and slip.

Part-B (5 x 16=80 Marks)

11. For the circuit shown in Figure 11. Determine the currents I_1, I_2 and I_3 and voltage V_3 . Use Nodal Method. (16)

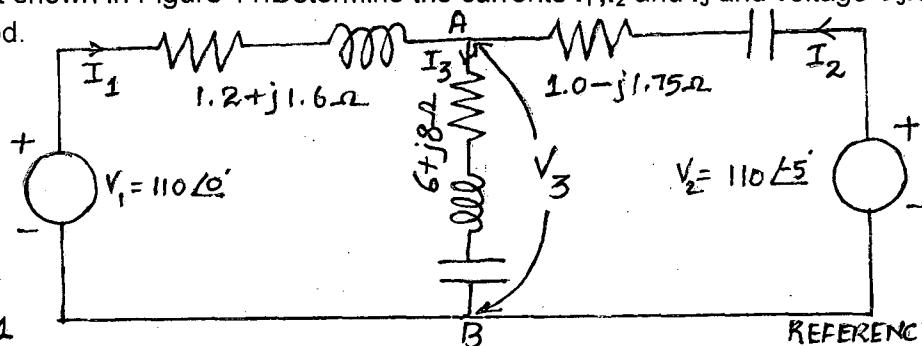


FIG. 11

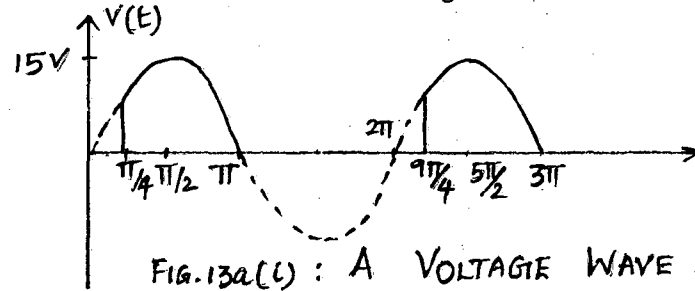
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12. a. Explain the construction and working principle of D.C generator with neat diagram. (16)

(or)

12. b. The armature winding of a 200V, 4 pole, series motor is lap-connected. There are 280 slots and each slot has 4 conductors. The current is 45A and the flux per pole is 18 mWb. The field resistance is 0.3Ω ; the armature resistance is 0.5Ω and the iron and friction losses sum up to 800W. The pulley diameter is 0.41m. Find the pull in Newton at the rim of the pulley. (16)

13. a.(i) The output voltage of an electronic device is as given in Figure 13.a.(i). Determine the average value and the R.M.S value of the voltage. (8)



13. a.(ii) The delta connected load having impedance of $(6+j8)$ ohm in each phase is supplied from a balanced three phase source of 110 V, 50 Hz. Find the phase and line currents of the load. (8)

(or)

13. b. The input power to a three-phase motor was measured by two-wattmeter method. The readings of two wattmeter are 5.2 kW and -1.7 kW and the line voltage is 415V. Calculate the total active power, power factor and the line current. (16)

14.a. Explain the working principle and construction of an Induction Motor (16)

(or)

14.b. Explain the basic principle and working of a Transformer. Also derive its emf equation. (16)

15.a. Explain the working of Megger with a neat diagram (16)

(or)

15.b. Explain the working of Dynamometer type wattmeter (16)