**E.G.S PILLAY ENGINEERING COLLEGE, NAGAPATTINAM**

**DEPARTMENT OF CIVIL AND MECHANICAL ENGINEERING**

**CYCLE TEST- I**

**Sub Code & Name :** GE6252 & Basic Electrical and Electronics Engg. **Date :**

**Year & Semester :** I & II **Max.Marks :** 100

**Staff Name :** V.Mohan, K.Nandakumar, S.Sivamani. **Time :** 9 am -11.30 am

**ANSWER AL THE QUESTIONS**

 **PART A** 10 X 2 = 20 Marks

1. Compare series and parallel circuits.
2. What are the different torques acts upon the moving system of the instrument for good operation?
3. Define form factor.
4. Compare moving coil and moving iron instruments.
5. Define inductance.
6. Define apparent power and reactive power
7. State Fleming’s Right hand rule.
8. What is the use of commutator?
9. Give the emf equation of dc generator.
10. Classify DC generators.

 **PART-B** 16 X 5 = 80 Marks

11. a (i) For the circuit shown below, find the current through each of the three resistors. (8)



 (ii) A coil of resistance 5.94 ohm and inductance of 0.35 H is connected in series with a capacitance of 35 microfarad across a 200 V, 50 Hz supply. Find the impedance (Z), Current and the phase difference between voltage and current. (8)

**(OR)**

11. b(i) With a neat diagram explain the construction and principle of operation of a moving iron attraction type instruments. (10) .

 (ii) Three inductive coils, each with a resistance of 15 ohm and an inductance of 0.03 H are connected in star to a three phase 400V, 50 Hz supply. Calculate the phase current, line current and power absorbed. (6)

12.a (i) A series R-C circuit with R = 20 ohm and C = 127 micro farad has 160 V, 50 Hz supply connected to it. Find the impedance, current and power factor. (6)

(ii) Explain the construction and operation of dynamometer type wattmeter with required diagram. (10)

**(OR)**

12.b(i) Determine the line current, power factor and total power when a 3 phase 400 V supply is given to a balanced load of impedance (8+j6) ohm in each branch is connected in star. (8)

 (ii) With neat diagram , explain the construction and operation of an induction type energy meter (8)

13.a ) Derive the expression for phase angle in the R-L, R-C and R-L-C series circuits. (16)

**(OR)**

13. b) Using mesh analysis, find the current through various branches in the circuit. (16)

14.a (i) With neat sketches explain the construction and the working principle of DC generator. Also derive the EMF equation. (8)

 (ii) A short shunt cumulative compound DC generator supplies 48 KW at 240V.The shunt field, series field and armature resistances are 120, 0.015 and 0.03 ohms respectively. Calculate the induced EMF and the load resistance. (8)

**(OR)**

14.b) (i) Explain the construction and operation of PMMC instrument. (10)

 (ii) A resistance 12 ohm, an inductance of 0.15 H and a capacitor of 100 microfarad are connected in series across a 100 V, 50 Hz Supply. Calculate the current, the phase difference between current and the supply voltage and power consumed. (6)

15.a) (i) Briefly explain the construction and principle of operation of DC motor. (10)

 (ii) An 8-pole lap wound generator has 960 conductors, a flux of 40 mwb and a speed of 400 rpm. Calculate the emf generated on open circuit. If the same armature is wave wound, at what speed must it be driven to generate 400 volts? (6)

**(OR)**

15.b) A 230 V, 50 Hz ac supply is applied to a coil of 0.06 H inductance and 2.5 ohm resistance connected in series with a 6.8 micro farad capacitor. Calculate (i) Impedance (ii) Current (iii) Phase angle between voltage and current (iv) Power factor (v)Active, reactive and apparent power consumed by the circuit (vi) Voltage across inductor and capacitor. (16)