

- N.B. :** (1) Question No. 1 is compulsory.  
 (2) Attempt any four out of remaining questions.  
 (3) Assume suitable data, if required.  
 (4) Figures to the right indicate full marks.

1. Attempt any four :- 20
- Explain armature reaction in D.C. Generator.
  - Explain necessity of starter for D.C. motor.
  - Why 1- $\phi$  induction motor is not self starting? And how it is self started?
  - Explain voltage regulation of an alternator.
  - Explain different types of filters.
2. (a) Explain 'Critical Resistance' and 'Voltage build up' of D.C. Shunt Generator. 10  
 (b) Explain the constructional details and working of D.C. motor. 10
3. (a) Explain the nature of rotating magnetic field in 3- $\phi$  induction motor. State various industrial applications of 3- $\phi$  induction motor. 10  
 (b) A 100 kW, 3.3 KV, 50 Hz, 3- $\phi$ , star-connected induction motor has a synchronous speed of 500 r.p.m. The full load slip is 1.8 % and full load power factor 0.85. Stator copper loss is 2440 watt and Iron loss is 3500 watt. Rotational losses = 1200 watt. Calculate - 10
- the rotor copper loss
  - the line current
  - the full load efficiency.
4. (a) Explain the method of starting for synchronous motor. 5  
 (b) Explain 'V-curves' for synchronous motor. 5  
 (c) Derive the equation for induced emf in alternator. 10
5. (a) Explain the constructional details and working of 1- $\phi$  shaded pole induction motor. 10  
 (b) Explain induction heating and dielectric heating. 10
6. Write a short notes on :- 20
- C.T. and P.T.
  - Relays and Circuit Breakers
  - V-I characteristics of SCR
  - Logic gates.
7. (a) With the help of block diagram, explain the working of CRO. Name the different controls on the front panel of CRO. Give some applications of CRO. 10  
 (b) Draw and explain the internal architecture of 8085 microprocessor. 10