

**SUBJECT CODE:-85**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**S.E.( I&CE/IE) Examination Nov/Dec 2015**  
**Electrical Machines**  
**(Revised)**

[Time: Three Hours]

[Max. Marks: 80]

“Please check whether you have got the right question paper.”

- N.B i) Q.No.1 and Q.No.6 are compulsory.  
 ii) Attempt any two questions from the remaining four questions in each section.  
 iii) Figure to the right indicate full marks  
 iv) Assume suitable data wherever necessary.

**Section-A**

- Q1. Attempt any Five 10
- a. How is emf induced dynamically
  - b. What is self- excited d.c. machine
  - c. Enlist applications of 1 $\phi$  IM
  - d. The series field winding has low resistance but shunt field winding has high resistance, why?
  - e. List out factors on which speed of DC motor depends.
  - f. Why armature core in d.c. machine is constructed with laminated steel sheets instead of solid sheet?
  - g. What is function of no voltage release coil in starter.
  - h. Why an induction motor is called as rotating transformer
- Q.2 a) Derive e.m.f. equation of D.C generator 07
- b) Discuss characteristics of DC shunt motor in detail 08
- Q.3 a) State various methods of speed control of 3 phase induction motor explain any one in detail 07
- b) An 8-Pole generator has 500 armature conductor & has a useful flux per pole of 0.065wb.What will be the e.m.f. generated if it is lap connected and runs at 1000 rpm? 08
- What must be the speed at which it is to be driven to produce the same e.m.f if it is wave wound?
- Q.4 a) Explain operation of single phase Induction motor using Double revolving field theory 08
- b) A 3 phase and a 6 pole, 50 Hz induction motor has a slip of 1% at no load & 3% at full load 07
- Determine: i) Synchronous speed    ii)No load speed
- Q.5 a) Write short note on 15
- a) Single phase circuit vs Polyphase circuit
  - b) Flemings left hand rule
  - c) Auto- transformer starter

**Section-B**

- Q.6) Attempt any Five 10
- a. What are classification of synchronous machines?
  - b. What could be the reason if 3  $\phi$  induction motor fails to start

- c. Define term repeatability
  - d. Enlist various types of error
  - e. Draw the diagram of moving iron type ammeter.
  - f. What is controlling torque?
  - g. Enlist various methods to achieve the controlling torque
  - h. State any two disadvantages of moving coil instruments.
- Q.7 a) Enlist various methods for starting synchronous motor and explain any one in detail. 08
- b) What is meant by hunting in synchronous motor? What is done to minimize it? 07
- Q.8 a) With neat diagram explain the working of CT Transformer 08
- b) Draw and Explain D'Arsonval's Galvanometer working principle 07
- Q.9 a) Explain with neat diagram the construction and working of a repulsion type moving iron instrument with its relative advantage, disadvantage and limitation 08
- b) Name various records charts commonly used in process industry. Explain working of strip chart recorder in detail with neat diagram 07
- Q.10 Write short notes on: 15
- a. Methods to obtain damping torque
  - b. Methods of measurement.
  - c. Accuracy vs Precision.