

SE Electrical IV CBSGS Q.P. Code : 16505

25.5.17

[ Marks:80]

[Time: Three Hours]

Please check whether you have got the right question paper.

- N.B: 1. Question no 1 is compulsory.  
 2. Attempt any THREE from the remaining questions.  
 3. Figures to right indicate full marks.

- Q. 1 Attempt any four questions. (05)
- a) Explain the use commutator in DC motor and generator. (05)
- b) Explain, how the core flux- set up in transformer is maintain constant from no load to full load. (05)
- c) What are the drawbacks of three point starter compare to four" point starter. (05)
- d) What is the condition at which transformer will have maximum efficiency. (05)
- e) Justify the sentence that we obtain Iron loss from OC test and copper loss from SC test. (05)
- Q. 2 a) Derive the expression for torque developed in singly excited magnetic field. (10)
- b) What is commutation and explain the process of commutation in DC generator. Also mention the methods to improve the commutation process. (10)
- Q. 3 a) With the help of phasor diagram, derive the equation to obtain approximate voltage regulation in single phase transformer. (10)
- b) A DC shunt motor connected across 440v supply, takes an armature current of 20 A and run at 500 RPM. The armature resistance is 0.6 ohms. If the magnitude of flux is reduced by 30 % and torque developed by armature increases by 40 %, what is the speed of motor. (10)
- Q. 4 a) Derive the expression to obtained  $ATd/pole$  and  $A7'c/pole$  in case of armature reaction. (10)
- b) A 100 kW, 460 V DC shunt generator was run as motor on no load at it rated voltage and, speed. The total current taken was 9.8 A, including shunt current of 2.7 A. The resistance of armature circuit is 0.11 ohms: Calculate the efficiency at full load and half load. (10)
- Q. 5 a) Derive an expression for copper saving in auto transformer. (10)
- b) Two single phase transformers which have the same turns ration are connected in parallel and supply a total load of 800 kW at 0.8 p.f. lagging. The rating are as follows. (10)

	Rating	p.u resistances	p.u reactances
Transformer A	400KVA	0.02	0.04
Transformer B	600 KVA	0.01	0.05

Determine the power output and power factor of each transformer.

(10)

- Q. 6 Write short notes on
- i) Sumpner's Test on single phase transformer.
- ii) Electrical braking methods for separately excited DC motor.