

Reg. No. :

--	--	--	--	--	--	--	--	--	--

**Question Paper Code: 41332**

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2016

Third Semester

Electrical and Electronics Engineering

14UEE302 - DC MACHINES AND TRANSFORMERS

(Regulation 2014)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. Electromotive force is provided by
  - (a) Resistance
  - (b) A conducting path
  - (c) An electric current
  - (d) An electrical supply source
2. The magnetization and applied field in ferromagnetic materials are related
  - (a) Sinusoidally
  - (b) Non linearly
  - (c) Linearly
  - (d) parabolically
3. In 8 - pole wave connected motor armature, the number of parallel paths are
  - (a) 8
  - (b) 4
  - (c) 2
  - (d) 1
4. If the flux per pole of a shunt-wound DC generator is halved, the generated e.m.f. at constant speed
  - (a) is doubled
  - (b) is halved
  - (c) remains the same
  - (d) None of these
5. The speed of a dc motor can be controlled by varying
  - (a) Its flux per pole
  - (b) Resistance of armature circuit
  - (c) Applied voltage
  - (d) All the above

6. The DC series motor should always be started with load because
  - (a) At no load, it will rotate at dangerously high speed
  - (b) It will fail to start
  - (c) It will not develop high starting torque
  - (d) All are true
  
7. During open circuit test of a transformer
  - (a) Primary is supplied rated voltage
  - (b) Primary is supplied full load current
  - (c) Primary is supplied current at reduced voltage
  - (d) Primary is supplied rated kVA
  
8. Which of the following does not change in a transformer?
  - (a) Current
  - (b) Voltage
  - (c) Frequency
  - (d) All the above
  
9. The main disadvantage of Hopkinson's test for finding efficiency of shunt dc motors is that it
  - (a) Requires full load power
  - (b) Ignores any change in iron loss
  - (c) Needs one motor and one generator
  - (d) Requires two identical shunt machines
  
10. The open circuit test is carried out in a transformer to find the
  - (a) Cu loss
  - (b) Core loss
  - (c) Total loss
  - (d) Insulation resistance

PART - B (5 x 2 = 10 Marks)

11. What is hysteresis loss and how can this loss be minimized?
12. What is armature reaction in DC machine?
13. Why is DC series motor called variable speed motor?
14. Why transformers are rated in kVA?
15. Explain why Swinburne's test cannot be performed on DC series motor.

PART - C (5 x 16 = 80 Marks)

16. (a) Explain (i) dynamically induced emf (ii) statically induced emf. (16)

Or

(b) Find an expression for the magnetic force developed in a doubly excited magnetic system. (16)

17. (a) (i) Derive the e.m.f. equation for dc generator. (8)

(ii) What are the different methods of excitation? (8)

Or

(b) Explain the process of commutation and the methods to improve the commutations. (16)

18. (a) Write the types of electric braking in dc series motor and draw its characteristics waveforms? (16)

Or

(b) Discuss the various methods of the speed control of DC motors? (16)

19. (a) Explain with neat diagram the parallel operation of two transformers and load sharing of each transformer. (16)

Or

(b) Explain in brief about the construction and working principle of a transformer? (16)

20. (a) Explain any two methods of testing of DC machines. (16)

Or

(b) Explain the operation of OC and SC test on single phase transformer. (16)

