Code No: 133AN

**R16**

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**

**B.Tech II Year I Semester Examinations, November/December - 2017**

**ELECTRICAL TECHNOLOGY**

**(Electronics and Communication Engineering)**

**Time: 3 Hours** **Max. Marks: 75**

**Note:** This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit.
Each question carries 10 marks and may have a, b, c as sub questions.

**PART- A**

**(25 Marks)**

1.a) What is critical field resistance and critical speed of a d.c generator? [2]
b) Write the expressions for core losses and remedial measures to reduce them in a dc machine. [3]
c) What is the principle of operation of single phase transformer? [2]
d) Derive the condition for maximum efficiency of a 1-phase transformer. [3]
e) Define slip. [2]
f) Define crawling and cogging. [3]
g) Write the EMF equation of Alternator. [2]
h) Define Distribution and Coil span factors. [3]
i) What is the difference between Moving Coil and Moving iron Instruments? [2]
j) What are the applications of stepper motor? [3]

**PART-B**

**(50 Marks)**

2.a) Derive emf equation of dc generator.
b) Explain Magnetization and load characteristics of DC generators. [5+5]

**OR**

3. Discuss the various methods of speed control of a D.C motor. [10]

4.a) Derive an emf equation of a single phase transformer.
b) Explain about hysteresis and eddy current losses occur in a transformer. [5+5]

**OR**

5. A 10kVA, 1-phase, 50Hz, 500/250V transformer gave following test results:
OC test (LV) side: 250V, 3.0A, 200W
SC test (HV) side: 25V, 20A, 300W
Calculate efficiency and regulation at full-load, 0.8 p.f lagging. [10]

6.a) Explain Principle of operation of three-phase induction motors.
b) Distinguish the difference between squirrel cage and slip ring induction motor. [5+5]

**OR**

7. Explain different starting methods of 3-phase induction motor. [10]

8.a) Draw the phasor diagram of the synchronous generator on load. Explain the meaning synchronous reactance.

b) Explain constructional features of alternator. [5+5]

**OR**

9.a) Explain the Principle of operation of alternator.

b) Write short notes on SC,OC tests on alternator. [5+5]

10.a) Explain the construction and operation of an a.c. tachometer.

b) How the shaded pole motor works explain in detail? [5+5]

**OR**

11.a) Explain construction and working of moving coil instruments.

b) What are the applications of synchro? [5+5]

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