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## **Question Paper Code: 44326**

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2020

Fourth Semester

Electronics and Instrumentation Engineering

## 14UEE426 - PRINCIPLES OF ELECTRICAL MACHINES

(Regulation 2014)

Duration: 1.15 hrs

Maximum: 30 Marks

PART A -  $(6 \times 1 = 6 \text{ Marks})$ 

## (Answer any six of the following questions)

1. The relative permeability of a ferromagnetic material is

- (a) less than one(b) more than one(c) more than 10(d) more than 100 or 1000
- 2. The material for brushes is generally

(a) mica	(b) copper	(c) carbon	(d) cast iron
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3. The all day efficiency of a transformer depends primarily on

(a) its copper loss	(b) the amount of load		
(c) the duration of load	(d) both amount and duration of load		

4. A step up transformer increases

(a) Voltage	(b) Current	(c) Power	(d) Frequency
(u) vonage			(a) I requeriej

- 5. \_\_\_\_\_ is called Slip speed.
  - (a) Difference of synchronous speed and rotor speed
  - (b) Sum of synchronous and rotor speeds
  - (c) Half of the sum of synchronous and rotor speeds
  - (d) None of these

- 6. The frequency of the rotor current in a  $3\Phi$ , 4pole, 50Hz induction motor at full load speed is about
  - (a) 50 Hz (b) 20 Hz (c) 2 Hz (d) Zero
- 7. The purpose of starting winding in a single phase induction motor is to \_\_\_\_\_
  - (a) reduce losses
  - (b) limit temperature rise of the machine
  - (c) produce rotating flux in conjunction with main winding
  - (d) increase the efficiency
- 8. A capacitor start, capacitor run single phase induction motor is basically a
  - (a) ac series motor (b) dc series motor
  - (c) 2 phase induction motor (d) 3 phase induction motor
- 9. Salient poles are generally used on
  - (a) high speed prime movers only
  - (b) medium speed prime movers only
  - (c) low speed prime movers only
  - (d) low and medium speed prime movers
- 10. A hysteresis motor
  - (a) Is not a self-starting motor (b) Is a constant speed motor
  - (c) Needs DC excitation (d) Cannot be run in reverse speed

PART - B (3 x 8 = 24 Marks)

## (Answer any three of the following questions)

- 11. Enumerate all the parts of a DC machine with the aid of neat sketch and explain the principle of operation of DC generator. (8)
- 12. Analyze the equivalent circuit of a single phase transformer with the phasor diagrams for loaded conditions. (8)
- 13. Illustrate the construction of squirrel cage induction motor. (8)
- 14. Describe the construction and principle of slow speed operation generator with neat diagram. (8)
- 15. Explain any two types of single phase induction motors. (8)