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Question Paper Code: 53030

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2017

Third Semester

Electronics and Instrumentation Engineering

15UEE326 - ELECTRICAL TECHNOLOGY

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. The material for commutator brushes is generally made of

   (a) Mica (b) Copper (c) Cast iron (d) Carbon

2. Brushes in a D.C Machine are usually made of

   (a) Carbon (b) Copper (c) Aluminium (d) Silver

3. A Constant Flux Machine can also be called as

   (a) Transformer (b) Alternator (c) Motor (d) Generator

4. In a DC motor, unidirectional torque is produced with the help of

   (a) brushes (b) commutator (c) end-plates (d) both (a) & (b)

5. The starting torque of a simple squirrel-cage motor is

   (a) low (b) increases as rotor current rises
   (c) decreases as rotor current rises (d) high

6. Rotor resistance starter is used in

   (a) Squirrel Cage Induction Motor (b) Slip Ring Induction Motor
   (c) DC Series Motor (d) DC Compound Motor

7. If the field of a synchronous motor is under excited the power factor will be

(a) lagging (b) leading (c) unity (d) more than unity

8. Motor which is not capable of self starting is

(a) Series Motor (b) Shunt Motor
(c) Three Phase Induction Motor (d) Synchronous Motor

9. Universal Motor can operate with

(a) AC Supply only (b) AC as well as DC Supply
(c) DC Supply only (d) High frequency AC supply

10. The starting torque of a capacitor start motor is

(a) zero (b) low
(c) same as rated torque (d) more than rated torque

PART - B (5 x 2 = 10 Marks)

11. What is the function of commutator and brushes in a D.C Machine?

12. Define voltage regulation of transformer.

13. Define slip in an Induction Motor.

14. What is meant by hunting?

15. What is the need for centrifugal switch in a Capacitor Start Motor?

PART - C (5 x 16 = 80 Marks)

16. (a) Derive the emf equation of a D.C Generator and list the factors affecting the generated voltage and terminal voltage. (16)

Or

(b) Explain the constructional details and principle of DC generator. (16)

17. (a) Explain in detail about phasor diagram of single phase transformer on resistive, inductive and capacitive load conditions. (16)

Or

(b) Explain how equivalent circuit parameters of a transformer are obtained by conducting Open Circuit and Short Circuit tests. (16)

18. (a) Explain in detail about equivalent circuit of three phase induction motor. (16)

Or

(b) Explain about any two starters used for a Squirrel Cage Induction Motor. (16)

19. (a) Explain the principle of operation and constructional details of alternators with neat sketch. (16)

Or

(b) Draw and explain V curves of an alternator for different loads. (16)

20. (a) Explain the operation and characteristics of single phase capacitor start capacitor run motors. State its applications. (16)

Or

(b) What is Stepper Motor? In which type of application, it is used? Explain the working of any one type of Stepper Motor. (16)
