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Reg. No. : | | | | | | | | | | |

Question Paper Code: 54326

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2018

Fourth Semester

Electronics and Communication Engineering

15UEE426- PRINCIPLE OF ELECTRICAL MACHINES

(Regulation 2015)

Duration: Three hours | Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. Choose the type of DC generator used in arc welding process is--------- CO1- R

   (a) Series generator (b) Shunt generator

   (c) cumulatively compound generator (d) Differential Compound Motor

2. The flux is minimum in the _____of motor. CO1- R

   (a) Under the leading pole tip (b) Under the trailing pole tip

   (c) Pole core (d) Under the interpole

3. The inductive reactance of a transformer depends on CO2- R

   (a) Magnetic flux (b) Leakage flux

   (c) Magneto motive force (d) Electro motive force

4. A transformer transfers _____. CO2- R

   (a) Frequency (b) Voltage (c) Power (d) Voltage and Current

5. The slip speed of an induction motor does not depend on _____ CO3- R

   (a) Rotor speed (b) **S**ynchronous speed

   (c) Shaft torque (d) Core component loss

6. Three Phase Induction motor always run at ---------- CO3- R

   (a) Synchronous Speed (b) > Synchronous Speed

   (c) < Synchronous Speed (d) None

7. Salient pole alternator has_____. CO4- R

(a) Low and medium speed (b) High speed

(c) Large diameter and short axial (d) Both A & C

8. The maximum power developed in the synchronous motor will depend on CO4- R

(a) Rotor excitation only

(b) Maximum value of coupling angle

(c) Supply voltage only

(d) Rotor excitation supply voltage and maximum value of coupling angle

9. A capacitor start single phase induction motor will usually have a power factor of CO5- R

(a) Unity (b) 0.8 Leading (c) 0.6 Leading (d) 0.6 Lagging

10. A universal motor operates on CO5- R

(a) Constant speed and varying load (b) Constant load and varying speed

(c) Approximately constant speed and load (d) Synchronous speed with varying load.

PART – B (5 x 2= 10 Marks)

11. What is the function of no-voltage release coil in D.C. motor starter? CO1- R

12. Define regulation and efficiency of transformer. . CO2- U

13. Define slip. CO3- U

14. Define voltage regulation of an Alternator. CO4- R

15. Identify the application of Brush less DC motor.. CO5- R

PART – C (5 x 16= 80Marks)

16. (a) (i) With a neat sketch explain the principle and operation of a DC generator. CO1- U (8)

(ii) Draw and explain the internal and external characteristics of a DC shunt and series generators. CO1- U (8)

Or

(b) (i) Explain with neat diagram, the working of three point starter for a DC motor CO1- Ana (10)

(ii) Develop the torque equation of a DC motor. CO1- App (6)

17. (a) Identify the equivalent circuit parameters by using the open circuit test and short circuit test on transformer.. CO2- U (16)

Or

	(b)	(i) Draw and explain the approximate equivalent circuit of a Transformer referred to primary.	CO2-U	(12)
		(ii) What are the possible connection for 3φ transformer.	CO2-U	(4)
18.	(a)	Explain the construction and principle of operation of three phase induction motor. Distinguish between squirrel cage rotor and slip ring rotor.	CO3-U	(16)
		Or		
	(b)	Why starters are necessary for starting three phase induction motor? Discuss the operation of Star Delta starter in submersible pump application.	CO3- App	(16)
19.	(a)	With a neat sketch explain the principle and operation of a Synchronous motor.	CO4-U	(16)
		Or		
	(b)	(i) Examine the V curve and Inverted V curve of synchronous Motor.	CO4 -App	(10)
		(ii) Identify the different torque of Synchronous motor.	CO4- Ana	(6)
20.	(a)	Explain the construction and working principle of Switched Reluctance Motor.	CO5-U	(16)
		Or		
	(b)	Why are stepper motors most popular control motors? Explain the construction and principle of operation of permanent magnet stepper motor.	CO5- Ana	(16)