KUMARAGURU
college of technology
character is life

Register Number:…….

B.E DEGREE EXAMINATIONS: NOV/DEC 2014

(Regulation 2013)

Third Semester

ELECTRONICS AND COMMUNICATION ENGINEERING

U13EET312**: Electrical Machines**

Time: Three Hours	**Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1.	In traction applications which of the following DC motor can be used			
	a)	Cumulative compound motor	b)	Series motor
	c)	Shunt motor	d)	Differential compound motor
2.	Brushes of the DC machines made up of…….. material			
3.	The two windings of a transformer are			
	a)	Conductivity linked	b)	Inductively linked
	c)	Electrically linked	d)	Not linked
4.	Normally the transformer's rating is mentioned in……..			
5.	Slip rings are usually made of			
	a)	copper	b)	carbon
	c)	phosphor bronze	d)	aluminium.
6.	A 3 –phase 440V, 50Hz induction motor has 4% slip. The frequency of rotor e.m.f. will be …… Hz			
7.	The speed of a 4-pole 60 Hz synchronous machine will be			
	a)	1800 r.p.m..	b)	2400 r.p.m.
	c)	3000 r.p.m	d)	3600 r.p.m.
8.	…….. motor is used for power factor improvement application			

9.	A universal motor can run on				
	a)	A.C.only	b)	+ D.C. only	
	c)	either A.C. or D.C.	d)	- D.C. only	
10.	…….. Motors are preferred for tape recorders.				
PART B (10 x 2 = 20 Marks) **(Not more than 40 words)**					
11.	Draw the speed torque characteristics of a series motor				
12.	Sketch the compound type DC generator				
13.	What is an auto transformer?				
14.	Express the emf equation of a transformer				
15.	Define synchronous speed				
16.	List the types of single phase induction motor				
17.	Mention the applications of synchronous motor				
18.	Draw V and Inverted V curve				
19.	Define step angle				
20.	List the advantages of brushless DC motor				
PART C (5 x 14 = 70 Marks) **(Not more than 400 words)** **Q.No. 21 is Compulsory**					
21.			Identify the various types of starting methods used in 3Ø induction motor. Also describe the working principle of star delta starter with the diagram		(4+10)
22.	a)	i)	Draw and explain the internal and external characteristics of the DC series generator in detail		(8)
		ii)	Explain the working principle of 3 point starter with neat sketch		(6)
(OR)					
	b)	i)	Describe the construction and working principle of DC motor		(8)

		ii)	Derive the torque equation of DC motor	(6)
23.	a)	i)	Analyze the importance of Sumpner's test in a transformer in detail	(8)
		ii)	Obtain the emf equation of a transformer	(6)
			(OR)	
	b)	i)	Develop the equivalent circuit of a single phase transformer	(10)
		ii)	Outline the short notes on Current Transformer	(4)
24.	a)		Explain any two starting methods of synchronous motor with necessary diagram	(14)
			(OR)	
	b)	i)	Enlist the features of rotating field type alternator with neat sketch	(8)
		ii)	Illustrate the working principle of synchronous motor	(6)
25.	a)		Discuss the following in detail i) Hysteresis motor ii) Switched reluctance motor	(14)
			(OR)	
	b)		What is a stepper motor? With neat diagram explain the working principle of permanent magnet type stepper motor	(14)

****