



SETHU INSTITUTE OF TECHNOLOGY, KARIAPATTI
(An Autonomous Institution, Affiliated to Anna University, Chennai)

Regulation – 2015

PERIODICAL TEST - I

ELECTRICAL AND ELECTRONICS ENGINEERING

15UEE504 – ELECTRICAL MACHINE DESIGN

PART -- A (16*1=16 Questions)

UNIT- I

1.	The average flux density of ac dc machine. if the max flux density is 0.72 and field form factor is 0.66 is	(CO1)	(U)
	a)0.47 b) 0.8 c) 1 d)0.4		
2.	For a square pole	(CO1)	(R)
	a)L=1 b) L=b c) L= D d)L=0.8		
3.	For motors	(CO1)	(R)
	a) Pa= P b) Pa = P/η c) Pa = P/Po d) Pa= ηP		
4.	For generators	(CO1)	(R)
	a) Pa= P b) Pa = P/η c) Pa = P/Po d) Pa= ηP		
5.	Unit for specific electric loading	(CO1)	(R)
	a) ampere-conductors b) ampere-conductors /m c) ampere/m d) ampere		
6.	Unit for specific magnetic loading	(CO1)	(R)
	a) ampere-conductors b) Tesla c) weber /m d)weber		
7.	The unit of Output Coefficient is	(CO1)	(R)
	a)KW b)KW/m ³ c)KW/m ³ -rps d) KW/rps		
8.	The main dimensions are	(CO1)	(R)
	a) L, lg b) lg, D c) D,L d) lg,ℓ		
9.	The active part of a machine is	(CO1)	(R)
	a) core & winding b) air-gap c) slots d)poles		
10.	DC generator is rated in	(CO1)	(R)
	a)KVA b) KW c) HP d) KVAR		
11.	Value of stacking factor is	(CO1)	(R)
	a) 1 b) 0.9 c) 0.5 d)0.8		
12.	The pole pitch for machine with D= 0.1925m and p= 4 is	(CO1)	(U)
	a)0.85 b) 0.15 c) 0.35 d)0.25		
13.	Value of length of the pole to pole pitch ratio is	(CO1)	(U)
	a)1 b) 0.7 - 0.9 c) 0.5 – 0.6 d)0.64 to 0.72		
14.	IS 1180-1989 is the Indian standard specifications for	(CO1)	(R)
	a) DC Motor b)DC Generator c) induction Motor d) Transformers		
15.	IS 325-1966 is the Indian standard specifications for	(CO1)	(R)
	a) DC Motor b)DC Generator c) induction Motor d) Transformers		

PART -- B (12 x 2 Questions)					
UNIT- I					
16.		List the types of electrical engineering materials?	(CO1)	(R)	
17.		Identify the electrical properties of insulating materials?	(CO1)	(Ap)	
18.		Classify insulating materials based on their thermal Stability	(CO1)	(U)	
19.		Classify the different types of duties of a machine	(CO1)	(U)	
20.		Define continuous rating	(CO1)	(R)	
21.		Define short time rating.	(CO1)	(R)	
22.		Define duty factor.	(CO1)	(R)	
23.		Explain intermittent rating.	(CO1)	(U)	
24.		Identify the major considerations to evolve a good design of electrical machine?	(CO1)	(Ap)	
25.		List the standard specifications for transformer.	(CO1)	(R)	
26.		Identify the guiding factors for the selection of number of poles.	(CO1)	(Ap)	
27.		Explain Specific Magnetic Loading	(CO1)	(U)	
PART -- C (5 x 16 = 80 Marks)					
UNIT - I					
28.	(a)	Explain various duties and ratings of electrical machine drive	(CO1)	(U)	(16)
OR					
	(b)	State and explain various classes of insulating material, employed in electrical machines according to thermal limits	(CO1)	(U)	(16)
29.	(a)	State and explain the general factors that influence the choice of specific electrical and magnetic loading	(CO1)	(U)	(16)
OR					
	(b)	Name the various conducting material and where it is exactly used in electrical machines. Also Illustrate the properties of a material for to be a good conducting material	(CO1)	(U)	(16)
30.	(a)	Explain the method of measurement of temperature rise in various parts of electrical machine	(CO1)	(U)	(16)
OR					
	(b)	Explain in detail the factors affecting the choice of specific	(CO1)	(U)	(16)

		electric and magnetic loading in rotating machines.			
31.	(a)	Develop an expression for the heating and cooling curve in electrical machines.	(CO1)	(Ap)	(16)
OR					
	(b) (i)	The diameter and length of a 500 Kw, 500 v , 455 rpm , 6 pole dc generator are 84 cm and 35 cm respectively. I f it is lap wound with 660 conductors. Estimate the specific electric and magnetic loading	(CO1)	(Ap)	(8)
	(b) (ii)	Identify the factors affecting the choice of specific magnetic loading in rotating machines.	(CO1)	(Ap)	(8)

Question Number	CO Mapping(Indicate the course outcome achieved by the Question	Marks	Percentage
1-31	CO1 - Discuss the factors influencing the design of electrical machines (Understanding)	50	100%

