



R18 Regulation

Subject code:2E5BA

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech V Semester Supplementary Examinations, December 2024

ELECTRICAL MACHINE DESIGN (EEE)

Maximum Marks: 70

Date:03.01.2025

Duration: 3 hours

- Note:
- 1.This question paper contains two parts A and B.
 2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
 3. Part B consists of 5 Units. Answer any one full question from each unit which carries 10M.
 4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks (10X2M=20) Marks)		CO	Bloom Tx
1	Define Space Factor.	1	L1
2	Define real flux density.	1	L1
3	Distinguish between cylindrical pole and salient pole construction.	2	L1
4	In Slip ring Induction M/ C copper end rings are not provided on rotor what will happen?	2	L1
5	Define magnetic specific loading	3	L1
6	Define electric specific	3	L1
7	What is leakage reactance?	4	L1
8	Write out put equation of synchronous machine.	4	L1
9	What is the L/t value for good p.f of electrical machine design	5	L1
10	Write two advantages of high specific electrical loading.	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)		CO	Bloom Tx
11	Estimate the main dimensions, air.gap length, staor slots, Stator turns/phase and cross sectional area of stator and rotor conductors for 3-phase, 15 HP, 400V ,6 pole, 50 Hz, 975rpm, indution motos.The motor is suitable for delta starting Average flux density is 0.45 Wb/square metre, ac =2000 amp.cond/m ,L/t =0.85,2= 0:9, pf=0.85 [10M]	1	L2
OR			
12	a) Explain choice of specific loadings in induction machine. [5M] b) How do select the airgap length while designing induction machine. [5M]	1	L2
13	Explain the cooling methods of transformer and design the cooling tank of transformer. [10M]	2	L2
OR			
14	Design the core type of transformer [10M]	2	L2

15	a) Design cage rotor for 40 hp ,3 phase, 400v,50Hz ,6 pole delta connected induction machine having full load efficiency of 87%,take D=33cm and L=17cm,stator slots =54,conductor/slot=14.assume suitable missing data. [10M]	3	L2
	OR		
16	a) How the choice of specific loadings effect the designing of synchronous machine. [5M] b) Explain about synchronous machines briefly. [5M]	3	L2
17	a) Define short circuit ratio.obtain the relation between SCR and synchronous impedance. [5M] b) Which type rotor slots used in synchronous machine and justify it.[5M]	4	L2
	OR		
18	a) what are the properties of conducting materials. [5M] b) list the properties of insulating materials. [5M]	4	L2
19	a) List The advantages and disadvantages of CAAD. [5M] b) Draw flowchart for designing of electrical machine. [5M]	5	L2
	OR		
20	a) List the advantages of high specific electrical loading. [5M] b) Disadvantages high magnetic specific loadings. [5M]	5	L2