

Code No: 124AB

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.Tech II Year IISemester Examinations, August/September - 2022

ELECTRICAL MACHINES – II  
(Electrical and Electronics Engineering)

Time: 3 Hours

Max.Marks:75

Answer any five questions  
All questions carry equal marks

---

- 1.a) What is a transformer and derive transformer EMF equation?  
b) The no load current of a transformer is 4 A at 0.25 p.f when supplied at 250V, 50HZ. The number of turns on the primary winding is 200. Calculate  
i) R.M.S value of the flux in the core  
ii) Core loss  
iii) Magnetizing current. [8+7]
- 2.a) With the help of phasor diagram, explain the operation of single-phase transformer on No-load.  
b) Explain the effect of variation of supply voltage and frequency on iron losses. [8+7]
- 3.a) With neat circuit diagram, explain the procedure of conducting sumpner's test on single phase transformers.  
b) Explain the parallel operation of two single phase transformers with unequal voltage ratios. [8+7]
- 4.a) In OC and SC tests of a transformer, explain why the wattmeter in OC test reads core losses and wattmeter in SC test reads copper losses?  
b) Describe the experimental test procedure to separate the core losses of a transformer. [7+8]
- 5.a) What is auto-transformer? Compare auto-transformer with two winding transformers.  
b) Explain star/delta and delta/star connections used in a 3-phase connection of transformers. Also, state their advantages and disadvantages. [7+8]
- 6.a) Explain open-delta operation of 3- $\phi$  transformer with necessary circuit diagrams.  
b) Discuss the ON load and OFF load tap changing transformers. [7+8]
- 7.a) Explain the torque-slip characteristics of 3- $\phi$  IM.  
b) A 3-phase induction motor is wound for 4 poles and is supplied from 50 Hz system. Calculate  
i) The synchronous speed  
ii) The speed of the motor when slip is 4% and  
iii) The rotor current frequency when the motor runs at 600 rpm. [8+7]
- 8.a) Explain the procedure for conducting No load test on three phase induction motor.  
b) Discuss the working of Induction generator. Mention its advantages and disadvantages. [8+7]

---oo0oo---