Roll No. ☐☐☐☐☐☐☐☐☐☐☐☐        Total No. of Pages : 02

Total No. of Questions : 18

B.Tech. (EE) PT    (Sem.–1)
# TRANSFORMER AND DIRECT CURRENT MACHINE
### Subject Code : BTEE-302
### M.Code : 70972

Time : 3 Hrs.        Max. Marks : 60

**INSTRUCTIONS TO CANDIDATES :**
1.    **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2.    **SECTION - B & C. have FOUR questions each.**
3.    **Attempt any FIVE questions from SECTION B & C carrying EIGHT marks each.**
4.    **Select atleast TWO questions from SECTION - B & C.**

### SECTION-A

**Write briefly :**

1.    What do you mean by efficiency? Explain.

2.    List the advantages when two or more transformers are connected in parallel than one large unit.

3.    Why open loop test is performed in a single-phase transformer?

4.    In a three-phase transformer list the advantages and disadvantages of star-star connections

5.    Draw the equivalent circuit and phasor diagram of an auto transformer.

6.    List the various advantage(s) of three phase transformers.

7.    What do you mean by armature reaction? Discuss.

8.    What is a starter? Explain its significance.

9.    What is the need of compensating winding? Explain.

10.    Explain the importance of flux density.

## SECTION-B

11. Explain the working principle of a transformer and derive the emf equation of a single-phase transformer.

12. Discuss the principle of operation of an auto transformer. Also compare it with two winding transformer.

13. A 450kW, 400V, 8-pole, lap wound DC generator has 768 armature conductors. If the brushes are given a lead of 6 electrical degrees, calculate the number of demagnetising and cross magnetising ampere turns per pole at full load. Shunt field current may be neglected.

14. Explain the Scott connection of transformers for three phase to two phase conversion.

## SECTION-C

15. Name the various methods of electric braking of DC motors and discuss any one of them in detail.

16. A 3-phase step down transformer is connected to 6.6kV supply mains and takes 80A. Calculate its secondary line voltage and line current for the following connections if the ratio of turns per phase is 16.

    a) Star- Star

    b) Star-Delta

    c) Delta-Star

17. a) Explain the construction and working principle of a D.C. machines.

    b) Explain the short circuit test of single-phase transformer.

18. Explain the following :

    a) Any method of improving commutation.

    b) Armature resistance control for speed control of DC motor.

**NOTE : Disclosure of Identity by writing Mobile No. or Marking of passing request on any paper of Answer Sheet will lead to UMC against the Student.**