

No. of Printed Pages : 4

Roll No.

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**Sem. - 4th**

**Branch : Electrical Engg.**

**Subject : Electrical Machines-I**

Time : 3 Hrs.

M.M. : 100

### SECTION-A

**Note:** Multiple Choice Questions. All questions are Compulsory. (10x1=10)

Q.1 The angle between stator field and rotor field is known as (CO-1)

- a. Power Factor
- b. torque Angle
- c. Both A & B
- d. None of the above

Q.2 Armature core of DC machine is made of (CO-1,2)

- a. Silicon steel
- b. Brass
- c. Cast Iron
- d. Carbon

Q.3 Which of the following motor runs at variable speed. (CO-4)

- a. DC shunt motor
- b. DC Series Motor
- c. Both A & B
- d. None of the above

Q.4 Core of a transformer is made up of silicon steel (CO-5,6,7)

- a. To reduce eddy current losses
- b. To reduce copper losses
- c. To reduce hysteresis losses
- d. None of the above

(1)

180941/170941/  
120941/30941

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Q.5 The Shaft of DC Motor is made of (CO-1)

- a. Silicon Steel
- b. Brass
- c. Mild Steel
- d. Cast Iron

Q.6 The rating of transformer is in (CO-5,9)

- a. KW
- b. KVA
- c. KVAR
- d. None of the above

Q.7 In a step-down transformer the transformation ratio is (CO-5)

- a. Unity
- b. Less than unity
- c. More than unity
- d. None of the above

Q.8 Which of the following electrical machine has the high efficiency. (CO-5,9)

- a. D C motor
- b. D. C. Generator
- c. Transformer
- d. All of the above

Q.9 Electrical machine which converts electrical energy into mechanical energy is known as (CO-2)

- a. electrical generator
- b. Electrical motor
- c. Transformer
- d. All of the above

Q.10 In a transformer which of the following change? (CO-9,5,6)

- a. Voltage
- b. Power
- c. Frequency
- d. All of the above

### SECTION-B

**Note:** Objective type Questions. All Questions are compulsory. (10x1=10)

Q.11 A 6 pole wave wound d.c. motor will have \_\_\_\_\_ parallel paths. (CO-2)

(2)

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120941/30941

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- Q.12 Fleming's left-hand rule is used to determine the direction of force in an electrical machine. True/False (CO-2)
- Q.13 The Brushes of a d.c. generator is made up of \_\_\_\_\_. (CO-1)
- Q.14 The commutator segment of DC machine are made up of \_\_\_\_\_ material. (CO-1,2)
- Q.15 \_\_\_\_\_ transformer has no losses. (CO-5)
- Q.16 Transformer works on the principle of \_\_\_\_\_. (CO-5, 6, 9)
- Q.17 The efficiency of a D.C. Generator will be maximum when Variable losses = \_\_\_\_\_. (CO-5)
- Q.18 Write any one application of DC Series motor. (CO-4)
- Q.19 Short circuit test is usually performed to determine \_\_\_\_\_ losses in a Transformer. (CO-7)
- Q.20 \_\_\_\_\_ oil is used in a 3-Phase transformer. (CO-9)

### SECTION-C

**Note:** Short Answer type Question. Attempt any twelve questions out of fifteen Questions. (12x5=60)

- Q.21 State the Faraday's law of electromagnetic Induction. <https://www.hsbteonline.com> (CO-1, 5)
- Q.22 Explain the working principle of a D.C. Motor. (CO-2)
- Q.23 Write down the conditions for parallel operation of 3 phase transformers. (CO-8, 9)
- Q.24 Mention the function overload release coil used in a 3 point starter. (CO-2)
- Q.25 Define auto transformer and write its applications. (CO-6)

(3)

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120941/30941

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- Q.26 Explain the various types of losses occur in a d.c. motor. (CO-2)
- Q.27 Can a transformer work on d c supply? Discuss. (CO-5)
- Q.28 Differentiate between a generator and motor. (CO-1, 2)
- Q.29 Write a short note on Tap Changer. (CO-9)
- Q.30 Define efficiency of a transformer and find condition for obtaining maximum efficiency. (CO-7)
- Q.31 Differentiate between power transformer and distribution transformer. (CO-8, 9)
- Q.32 Drive the e.m.f. equation of a transformer. (CO-5)
- Q.33 Describe the flux control method of speed control of d.c. series motor. (CO-3)
- Q.34 Explain the function of conservator in a 3 phase transformer. (CO-9)
- Q.35 Draw a phasor diagram of 1-phase transformer for inductive load. (CO-6)

### SECTION-D

**Note:** Long Answer Type Questions. Attempt any Two Questions out of three Questions. (2x10=20)

- Q.36 Explain and draw the various characteristics of a d.c. shunt motor. (CO-2)
- Q.37 Explain the construction, Principle and working of 1-phase transformer with neat sketch. (CO-5)
- Q.38 Draw and Explain various connections of a 3-Phase transformer. (CO-8)

**Note :** Course Outcome (CO) mentioned in the question paper is for official purpose only.

(5360)

(4)

180941/170941/  
120941/30941

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