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**4th Sem / Elect, GE, Power Station Engg, Elect & Eltx.  
Engg. Fire Tech & Safety  
Subject:- Electrical Machines - I**

Time : 3Hrs. 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 (CO1)

- a) power factor b) Torque angle
- c) both A & B d) None of the above

Q.2 The rating of Transformer is in (CO1)

- a) KW b) KVAR
- c) KVA

Q.3 Which of the following motor runs at constant speed (CO4)

- a) DC shunt motor b) DC series motor
- c) Both A & B d) None of the above

Q.4 Core of a transformer is laminated (CO5)

- a) To reduce hysteresis losses
- b) To reduce copper losses
- c) To reduce eddy current losses
- d) none of the above

Q.5 The brushes of DC Machine is made of (CO2)

- a) silicon steel b) Brass

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c) Mica d) Carbon  
Q.6 Yoke of DC Generator is made of \_\_\_\_\_ (CO2)

- a) silicon steel b) Brass
- c) Cast Iron d) none of the above

Q.7 Which of the following is not a part of transformer (CO9)

- a) Conservator b) Breather
- c) Buchholz relay d) commutator

Q.8 Which types of transformer connection is preferred in case of distribution transformers? (CO8)

- a) Star/Star b) Delta/Delta
- c) Star/Delta d) Delta/Star

Q.9 Electrical machine which converts electrical energy into mechanical energy is known as (CO1)

- a) electrical generator b) electrical motor
- c) transformer d) all of the above

Q.10 In a transformer which of the following does not change ? (CO5)

- a) Voltage b) Current
- 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 (CO2)

Q.12 Fleming's left-hand rule is used to determine the direction of induced emf. (True/False) (CO1)

Q.13 Define Armature reaction? (CO1)

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- Q.14 The commutator segment of DC generator are made up of \_\_\_\_\_ material. (CO1)
- Q.15 State Lenz's law. (CO2)
- Q.16 Transformer works on the principle of \_\_\_\_\_. (CO5)
- Q.17 The efficiency of a D.C. Machine will be maximum when Variable losses= (CO2)
- Q.18 Write any one application of DC Series motor (CO4)
- Q.19 Short circuit test is usually performed to determine \_\_\_\_\_ losses in a Transformer. (CO7)
- Q.20 Write the name of the switch used in the Buchholz relay. (CO9)

### **SECTION-C**

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

- Q.21 State the Faraday's law of electromagnetic induction (CO1,2,5,6)
- Q.22 Explain the working principle of a D C Generator. Explain the working principle of a 1-phase transformer. (CO5,6)
- Q.23 Write down the conditions for parallel operation of a 3-phase transformer. (CO8,9)
- Q.24 Draw and explain the torque vs speed characteristics of a d.c. series motor. (CO2)
- Q.25 Write a short note on an auto transformer and its applications. (CO6)
- Q.26 Explain the various types of losses occur in a Transformer. (CO2)

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- Q.27 Can a transformer work on D C supply? Explain. X discuss, why a d.c. series motor cannot work on no-load. (CO2)
- Q.28 Differentiate between a generator and motor. (CO1,2)
- Q.29 Discuss the function of the breather in the transformer. (CO9)
- Q.30 Derive the condition for maximum efficiency of a transformer. (CO5)
- Q.31 Differentiate between power transformer and distribution transformer. (CO8,9)
- Q.32 Discuss the significance of back emf in D C motor. Xdrive the e.m.f. equation of a d.c generator. (CO1)
- Q.33 Describe the armature control method of speed control of d.c. shunt motor. (CO3)
- Q.34 Explain in brief about Tap changer. (CO9)
- Q.35 Draw the phasor diagram of 1-phase transformer for inductive load. (CO5)

### **SECTION-D**

**Note:** Long answer type questions. Attempt any two questions out of three questions. (2x10=20)

- Q.36 Explain the construction, principle and working of a d.c. motor with neat diagram. (CO2)
- Q.37 Define voltage regulation. Drive the expression to find the no-load secondary terminal voltage of a 1-phase transformer for a Resistive load. (CO7)
- Q.38 Draw and Explain various connections of a 3-phase transformer. (CO9)

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