C.U.SHAH UNIVERSITY
Summer Examination-2019

Subject Name: Testing and Commissioning of Electrical Machines

Subject Code: 4TE06TCM1   **Branch: B.Tech (Electrical)**

Semester: 6   **Date: 29/04/2019**   **Time: 10:30 To 01:30**   **Marks: 70**

Instructions:
  (1) Use of Programmable calculator & any other electronic instrument is prohibited.
  (2) Instructions written on main answer book are strictly to be obeyed.
  (3) Draw neat diagrams and figures (if necessary) at right places.
  (4) Assume suitable data if needed.

Q-1   **Attempt the following questions:**   **(14)**

  a) Define the term: Short circuit ratio.
  b) Define the term: Derating factor
  c) Earth wire or ground wire is made of _____ material. (Fill the blank).
  d) Swinburne's test can be performed at
       (a) any load   (b) only no load
       (c) only half load   (d) any of the above
  e) A transformer oil must be free from
       (a) sludge   (b) odour
       (c) gases   (d) moisture
  f) Efficiency of a power transformer is of the order of
       (a) 100 per cent
       (b) 98 per cent
       (c) 50 per cent
       (d) 25 per cent
  g) The excessive temperature rise in the transformer causes maximum damage to_____.
       (a)Winding Insulation   (b)Bushings
       (c) Core bolt   (d)Core laminations
  h) Zero power factor method of an alternator is used to find its
       (a) field resistance
       (b) armature resistance
       (c) efficiency
       (d) Voltage regulation.
  i) Breaking capacity of a circuit breaker is usually expressed in terms of_____.
       (a) Amperes   (b)MVA
       (c)Volts   (d)MW
  j) The usual test to determine the efficiency of traction motor is _____ test
       (a) field's   (b) retardation

(c) Hopkinson's   (d) Swinburne

k) In electric motor in which both rotor and stator field rotates with same speed is called _____ motor
(a) charge   (b) dc
(c) synchronous   (d) universal

l) The efficiency of a 3-phase induction motor is approximately proportional to
(a) $(1 - s)$ (b) s
(c) N   (d) Ns

m) For which among the following the current ratings are not required?
(a) Circuit breakers   (b) Relays
(c) Isolators   (d) Load break switch

n) The dielectric strength of transformer oil is excepted to be
(a) 11 kV   (b)33 kV
(c)100 kV   (d) 330 kV

Attempt any four questions from Q-2 to Q-8

Q-2	**Attempt all questions**	**(14)**
(a)	Explain the tan delta test on transformer.	**(07)**
(b)	Explain the significance of the load losses (short-circuit losses) of power transformers and the method of short-circuit test for loss measurement.	**(07)**
Q-3	**Attempt all questions**	**(14)**
(a)	Explain Hopkinson's test for determination of efficiency of DC shunt machine.	**(07)**
(b)	Explain commissioning steps for DC machine.	**(07)**
Q-4	**Attempt all questions**	**(14)**
(a)	What is polarisation index? What is its significance?	**(07)**
(b)	Explain the classification of various tests performed on induction motor.	**(07)**
Q-5	**Attempt all questions**	**(14)**
(a)	Explain open circuit test and short circuit test on synchronous machine.	**(07)**
(b)	Explain field test on two identical dc series machines.	**(07)**
Q-6	**Attempt all questions**	**(14)**
(a)	Explain temperature rise test on bus bar.	**(07)**
(b)	Explain process of measuring earth resistance.	**(07)**
Q-7	**Attempt all questions**	**(14)**
(a)	State the characteristics of transformer oil. Explain the testing of transformer oil.	**(07)**
(b)	Explain drying out process of synchronous machine.	**(07)**
Q-8	**Attempt all questions**	**(14)**
(a)	Explain Murray loop test and warley loop test.	**(07)**
(b)	Explain testing and commissioning of lightning arrestor.	**(07)**