Question Paper Code: 46302

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2020

Sixth Semester

Electrical and Electronics Engineering

14UEE602 - ELECTRICAL MACHINE DESIGN

(Regulation 2014)

Duration: 1:15hrs   Maximum: 30 Marks

PART A - (6 x 1 = 6 Marks)

(Answer any six of the following questions)

1. Sheet steels possessing higher silicon content are called

   (a) Dynamo grade steel   (b) Transformer grade steel
   (c) Cold rolled steel   (d) Stainless steel

2. Magnetic materials with relative permeability slightly less than unity are called

   (a) Diamagnetic materials   (b) Ferromagnetic materials
   (c) Paramagnetic materials   (d) Soft magnetic materials

3. _____ is defined as the ratio of actual length of iron in stacks of assembled core plates to total axial length of the stack.

   (a) Stacking factor   (b) Gap contraction factor
   (c) Field form factor   (d) Space factor

4. _____ is defined as the distance between the starts of two consecutive coils measured in terms of coil sides.

   (a) Back pitch   (b) Front pitch
   (c) Winding pitch   (d) Commutator Pitch

5. Which part of the transformer does not allow the oil to come in contact with the atmospheric air? Also which part of the transformer is used to maintain the oil level?

   (a) Buccholz relay   (b) Conservator
   (c) LV winding   (d) HV winding

6. For designing a transformer with minimum cost the cost of copper must be _____ to cost of iron.

    (a) greater than   (b) less than   (c) equal to   (d) two times

7. Which types of slots are generally used in induction motors?.

    (A) Open type   (B) Semi-closed type (C) Closed type   (D) None of the above.

8. In the design of induction motors, normally the number of slots per pole per phase is taken as

    (A) two   (B) three   (C) Three or more   (D) three or less.

9. Name the winding in Synchronous generator that is used to reduce oscillations and increases stability.

    (a) Running winding   (b) Main winding
    (c) Damper winding   (d) Auxiliary winding

10. What is the range of SCR (Short Circuit Ratio) for turbo alternators?

    (a) 0.5 to 0.7   (b) 0.05 to 0.07
    (c) 0.15 to 0.17   (d) 0.25 to 0.27

PART – B (3 x 8= 24 Marks)

(Answer any three of the following questions)

11.   Describe the classification of insulating materials used for electrical machines. Also discuss the applications of insulating materials.   (8)

12.   Derive the output equation of a DC machine.   (8)

13.   Derive the output equation of single phase transformer in terms of core and window area.   (8)

14.   Distinguish between squirrel cage rotor and slip ring rotor with neat diagrams.   (8)

15.   Write short notes on the design of turbo alternators.   (8)

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