CBSE Class 12 Electrical Technology 2018 - Set 311 - Compartment

Question Paper

Conducted by the Central Board of Secondary Education (CBSE)

Time Allowed: 2 Hours **Maximum Marks: 40**

General Instructions

(i) The paper has four sections: A, B, C and D.
(ii) Section A (Question 1): Attempt any eleven subquestions, carrying 1 mark each.
(iii) Section B (Question 2): Attempt any five subquestions, carrying 2 marks each.
(iv) Section C (Question 3): Attempt any three subquestions, carrying 3 marks each.
(v) Section D (Question 4): Attempt any two subquestions, carrying 5 marks each.

Section A

1. Attempt any eleven questions :

1(a). In a transformer following winding has got more cross sectional area :

(A) Primary winding
(B) Secondary winding
(C) High voltage winding
(D) Low voltage winding

1(b). Efficiency of a power transformer is of the order of

(A) 50%
(B) 75%
(C) 98%
(D) 100%

1(c). Main function of a transformer is

(A) To increase or decrease the d.c. voltage.
(B) To increase or decrease the a.c. voltage.
(C) To increase or decrease the frequency of a.c. voltage.
(D) To convert a.c to d.c. and vice-verse.

1(d). Iron core of power transformer is laminated

(A) To reduce Hysteresis loss
(B) To reduce Eddy current losses
(C) To reduce copper losses
(D) Due to (i) and (ii) mentioned above.

1(e). In Ward Leonard method of speed control in d.c. motor change in speed of motor is obtained by the

(A) Change in field excitation of d.c. motor
(B) Change in armature current in the d.c. motor.
(C) Change in armature voltage in the d.c. motor.
(D) Change in supply voltage.

1(f). A d.c. motor is to drive a load which is almost nil for certain part of load cycle and peak value for short duration, we will select the

(A) Shunt motor
(B) Series motor
(C) Compound motor
(D) Separately Excited motor

1(g). On a small load if the field circuit of a d.c. shunt motor gets opened, then

(A) The motor will pickup very high speed.
(B) The motor will slow down.
(C) The motor will stop.
(D) The motor will run normally.

1(h). In rush current to motor at starting is reduced mainly

(A) to save motor from thermal damage.
(B) to avoid starting shock to the rotor of the motor.
(C) to avoid voltage drop in line.
(D) due to none of above.

1(i). Insertion of resistance in the rotor of an induction motor

(A) increases the pull out torque.
(B) increases the starting torque.
(C) increases the load torque.
(D) None of above.

1(j). The ratio of starting current of an induction motor with star delta starter to direct online starting will be

(A) $1/\sqrt{3}$
(B) $1/3$
(C) 3
(D) $\sqrt{3}$

1(k). Torque of a single phase induction motor at synchronous speed is

(A) Zero
(B) Positive
(C) Negative
(D) Multiple

1(l). Following motor will operate at high p.f. :

(A) Capacitor start motor
(B) Capacitor run motor
(C) Split phase motor
(D) Shaded pole motor

1(m). Speed torque characteristic of a repulsion induction motor is similar to that of a d.c. :

(A) Series motor
(B) Shunt motor
(C) Compound motor
(D) Separately excited motor

1(n). An alloy of 60% lead and 40% tin in called as

(A) Hard solder
(B) Soft solder
(C) Bronze
(D) None of above

1(o). Soldering at high temperature with brass as solder is known as

(A) Welding
(B) Brazing
(C) Electroplating
(D) None of the above

Section B

2. Attempt any five questions :

2(a). Write the methods of cooling of transformers.

2(b). Describe the constructions of 1-phase transformer.

2(c). What is use of brushes in d.c. motor ?

2(d). What are various applications of d.c. compound motor ?

2(e). What is the principle of working of 3-phase Induction motor ?

2(f). How the testing of 3-phase induction motor is done ?

2(g). What are the various applications of 1-phase series motor ?

2(h). What is the function of flux in soldering ?

Section C

3. Attempt any three questions.

3(a). What is the difference between ordinary transformer and auto transformer ? Explain with the help of neat sketches.

3(b). What is meant by voltage and current transformer ? Explain their uses with sketches.

3(c). How installation of a d.c. motor is done ?

3(d). If a d.c. motor does not start, what procedure is adopted to locate the fault ?

3(e). How does a capacitor helps in starting a single phase induction motor ?

Section D

4. Attempt any two questions :

4(a). With the help of neat sketches, explain the construction of a d.c. shunt motor.

4(b). What are various methods of speed control of d.c. shunt motors ? Explain any one method with sketch.

4(c). What is universal motor ? Describe its various applications.

4(d). What are various methods of speed control of 1-phase induction motor ? Describe any one method in detail.

- End of Question Paper -