CBSE Class 12 Electrical Technology 2017 - Set 311

Question Paper

Conducted by the Central Board of Secondary Education (CBSE)

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

General Instructions

(i) Attempt all questions, following the choices within each question.

(ii) Section A: Question 1 contains ten subquestions; attempt any seven.

(iii) Marks allotted are indicated in the question paper.

Section A

Attempt all questions.

1. Attempt any seven questions :

1(a). No load current of a transformer has

(A) small magnitude with high p.f.
(B) small magnitude and low p.f.
(C) high magnitude and low p.f.
(D) high magnitude and high p.f.

1(b). Losses which do not occur in transformers but occur in rotating electrical machines are

(A) hysteresis and eddy current losses
(B) friction and windage losses
(C) copper losses
(D) magnetic losses

1(c). In the case of a d.c. motor, mechanical losses are primarily due to

(A) voltage
(B) current
(C) speed
(D) None of the above

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

(A) zero
(B) positive
(C) negative
(D) multiple

1(e). In a d.c. motor working in a moist atomosphere there will be more wear of carbon brushes and commutator at

(A) positive terminal
(B) negative terminal
(C) both positive and negative terminals
(D) None of the above

1(f). Which motor is generally used for domestic washing machines ?

(A) Split-phase motor
(B) Three-phase induction motor
(C) Reluctance motor
(D) Capacitor start capacitor run motor

1(g). Shaded pole motor does not possess

(A) commutator
(B) centrifugal switch
(C) capacitor
(D) All of the above

1(h). Torque developed by a single-phase induction motor while running is

(A) uniform
(B) pulsating
(C) nil
(D) None of the above

1(i). Soft solder is an alloy of

(A) Lead and Tin
(B) Carbon and Tin
(C) Copper and Lead
(D) Lead and Steel

1(j). As compared to solder, the melting temperature of the flux should be

(A) more
(B) less
(C) same
(D) any temperature

Section B

2(a). What is meant by step-up and step-down transformers ? What is transformation ratio ?

2(b). Explain why a transformer cannot work on d.c. supply.

2(c). Why is a d.c. series motor not started without load ?

OR

2(c). What are the various applications of a d.c. series motor ?

2(d). What are the various types of three-phase induction motors ?

2(e). What is the difference between D.O.L. and star delta starter ?

OR

2(e). Explain the construction of a star delta starter.

2(f). How many windings does a single-phase induction motor have ? Why cannot this motor self-start ?

OR

2(f). What are the various applications of universal motor ?

2(g). What are the various types of solders ?

Section C

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

OR

3(a). Why cannot we use water for cooling of transformers ? Explain.

3(b). With the help of a neat sketch, explain the armature control method of speed control of a d.c. shunt motor.

OR

3(b). With the help of a neat sketch, explain the field control method of speed control of a d.c. shunt motor.

3(c). What are the various methods of speed control of single-phase a.c. motors ? Explain them in brief.

Section D

4(a). Describe with the help of a neat sketch, the construction of a d.c. series motor.

OR

4(a). Draw the speed-torque characteristic of a d.c. shunt motor and explain its use.

4(a). With the help of a neat sketch, explain the working of a three-point starter used in a d.c. motor.

4(b). How is rotating magnetic field produced in a single-phase induction motor ?

OR

4(b). With the help of a sketch, explain the working of a shaded pole motor. Write its uses.

- End of Question Paper -