CBSE Class 12 Electrical Technology 2018 - Set 311

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). Which winding in a transformer has more number of turns ?

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

1(b). Primary of a power transformer on no load will draw least current from

(A) a 220 V d.c. supply
(B) a 220 V, 50 Hz, a.c. supply
(C) a 220 V, 25 Hz, a.c. supply
(D) Equally from the above three supplies

1(c). Losses which do not occur in a transformer but do occur in rotating electric machines are

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

1(d). A step-up transformer is required to supply

(A) 60 W, 230 V electric lamp
(B) Electric bell
(C) Neon sign
(D) None of the above

1(e). Speed control by Ward Leonard method gives uniform speed variation

(A) above normal speed only
(B) below normal speed only
(C) in one direction only
(D) in both directions

1(f). Iron losses in a d.c. machine take place in

(A) yoke only
(B) armature core only
(C) yoke and armature
(D) None of the above

1(g). Which d.c. motor has got the maximum self-retrieving property ?

(A) Shunt motor
(B) Series motor
(C) Differentially compounded motor
(D) Cumulatively compounded motor

1(h). The main function of starter in a 3-phase induction motor is

(A) to start the motor
(B) to develop high starting torque
(C) to limit the inrush of current at starting
(D) to bring the motor quickly to full speed

1(i). The star delta starter

(A) reduces starting current but increases starting torque

(B) reduces starting current and starting torque also

(C) increases starting current as well as starting torque also

(D) increases starting current and reduces starting torque

1(j). Torque developed by an induction motor is

(A) inversely proportional to voltage

(B) directly proportional to voltage

(C) directly proportional to the square of voltage

(D) inversely proportional to the square of voltage

1(k). Torque developed by a single-phase induction motor at starting is

(A) Uniform

(B) Pulsating

(C) None of the two

(D) Nil

1(l). Starting capacitor of a F.H.P. single-phase motor will have a capacitance of about

(A) 12 μF

(B) 40 μF

(C) 300 μF

(D) 1000 μF

1(m). Short-circuit is used in

(A) repulsion motor

(B) repulsion start induction run motor

(C) repulsion induction motor

(D) None of the above

1(n). The bit of a soldering iron is made of

(A) Aluminium

(B) Manganin

(C) Copper

(D) None of the above

1(o). The melting point of soft solder will be

(A) below 100°C

(B) between 190°C and 250°C

(C) 600°C

(D) None of the above

Section B

2. Attempt any five questions :

2(a). What are the various applications of voltage and current transformers ?

2(b). Write the names of various types of single-phase transformers on the basis of their construction.

2(c). What is the function of poles in d.c. motors ?

2(d). What are the various applications of d.c. shunt motors ?

2(e). Name the various starters used to start three-phase induction motors.

2(f). Describe the construction of starters used to start a three-phase slip-ring induction motor.

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

2(h). What are the various techniques used for soldering ?

Section C

3. Attempt any three questions :

3(a). What is the principle of operation of a transformer ?

3(b). What are the various methods adopted for cooling of transformers ? Write in short.

3(c). What are the various types of windings used in d.c. motors ? Explain their differences.

3(d). Draw a neat sketch of a 3-point starter used for starting a d.c. motor and label its parts.

3(e). What is repulsion start single-phase motor ? What are its applications ?

Section D

4. Attempt any two questions :

4(a). What is back e.m.f. in a d.c. motor ? Explain its importance.

4(b). Explain with a neat sketch, the speed – torque characteristic of a d.c. series motor and mention its applications.

4(c). What are the various faults which may occur in a single-phase motor ? What are their remedies ?

4(d). Write the names of various types of fractional horse power (F.H.P) motors and mention their applications.

- End of Question Paper -