

CBSE Class 12 Electrical Technology 2025 - Set 343



Question Paper

Conducted by the Central Board of Secondary Education (CBSE)

Time Allowed: 3 Hours

Maximum Marks: 60

General Instructions

- (i) Please read the instructions carefully.
- (ii) This question paper consists of 24 questions in two Sections : Section A and Section B.
- (iii) Section A has Objective type questions whereas Section B contains Subjective type questions.
- (iv) Out of the given $(6 + 18) = 24$ questions, a candidate has to answer $(6 + 11) = 17$ questions in the allotted (maximum) time of 3 hours.
- (v) All questions of a particular section must be attempted in the correct order.
- (vi) Section A : Objective Type Questions (30 marks) : (a) This section has 6 questions. (b) There is no negative marking. (c) Do as per the instructions given. (d) Marks allotted are mentioned against each question/part.
- (vii) Section B : Subjective Type Questions (30 marks) : (a) This section has 18 questions. (b) A candidate has to do 11 questions. (c) Do as per the instructions given. (d) Marks allotted are mentioned against each question/part.

Section A

1. Answer any 4 out of the given 6 questions on Employability Skills. $4 \times 1 = 4$

1(i). What is an adjective ?

1(ii). The type of personality disorder characterized by extreme professionalism, order and neatness is called _____.

1(iii). Ram has feelings of emptiness and abandonment. Name the type of personality disorder he has.

1(iv). Write the shortcut key which is used for 'Select all' option.

1(v). Write any two roles/functions of an entrepreneur.

1(vi). Write the full form of RWHS.

2. Answer any 5 out of the given 7 questions. $5 \times 1 = 5$

2(i). One BHP is equal to :

- | | |
|---------------|---------------|
| (A) 726 watts | (B) 736 watts |
| (C) 746 watts | (D) 756 watts |

2(ii). How many contactors does a star-delta motor starter require ?

- | | |
|----------|-----------|
| (A) Two | (B) Three |
| (C) Four | (D) Five |

2(iii). The peak energy stored in an RLC circuit divided by the average energy dissipated in circuit per radian at resonance is called :

- | | |
|------------------------|----------------------|
| (A) Dissipation factor | (B) Power factor |
| (C) Q-factor | (D) Impedance factor |

2(iv). The shape of a rotor is :

- | | |
|-----------------|-----------------|
| (A) Square | (B) Cubic |
| (C) Rectangular | (D) Cylindrical |

2(v). What does I_a indicate in the voltage equation of DC motor ?

$$V = E_b + I_a R_a$$

- | | |
|----------------------|-------------------------|
| (A) Input voltage | (B) Back emf |
| (C) Armature current | (D) Armature resistance |

2(vi). Continuity of electrical circuit is checked by _____.

- | | |
|---------------|---------------|
| (A) Ammeter | (B) Voltmeter |
| (C) Ohm meter | (D) Megger |

2(vii). Which type of motor is used in room coolers ?

- | | |
|--|-----------------------|
| (A) Universal motor | (B) Shaded pole motor |
| (C) Capacitor start or capacitor run motor | (D) Repulsion motor |

3. Answer any 6 out of the given 7 questions.
 $6 \times 1 = 6$

3(i). Name any two types of single phase induction motors.

3(ii). What is the use of induction-type energy meters ?

3(iii). Define frequency.

3(iv). The upper bowl of electric mixer is made of which material ?

3(v). What is the full form of ONAN ?

3(vi). What do you mean by squirrel cage induction motor ?

3(vii). How will you perform earth fault test ?

4. Answer any 5 out of the given 6 questions.
 $5 \times 1 = 5$

Write True/False :

4(i). Manual handling causes over a third of all workplace injuries.

(A) True (B) False

4(ii). Maintenance cost of slip ring motor is less as compared to squirrel cage motor.

(A) True (B) False

4(iii). Always place transformer in a dry area.

(A) True (B) False

4(iv). The core of electromagnet is made up of soft iron or silicon steel lamination.

(A) True (B) False

4(v). Three-phase induction motors are used for domestic purposes.

(A) True (B) False

4(vi). DC series motor is used when high starting torque is required.

(A) True (B) False

5. Answer any 5 out of the given 6 questions.
 $5 \times 1 = 5$

Fill in the blanks with the correct alternative given in brackets :

5(i). _____ fitting of the heating element in the Geyser is preferred.

(A) Horizontal (B) Vertical

5(ii). Shaded pole motors are made between _____.

(A) 1/25 HP to 1/6 HP (B) 3 HP to 10 HP

5(iii). Speed and torque characteristic of DC motor is known as _____ characteristic.

- (A) Electrical (B) Mechanical
-

5(iv). In digital multimeter, black lead is considered as _____ connection of circuit.

- (A) Negative (B) Positive
-

5(v). Three-phase induction motor runs at constant speed from _____.

- (A) No load to full load (B) Medium load to high load
-

5(vi). When using electricity in a damp location _____ must be used.

- (A) Insulation fault indicator (B) Ground fault circuit interrupter
-

6. Answer any 5 out of the given 6 questions.
 $5 \times 1 = 5$

6(i). The electrolytic capacitor used in a capacitor start motor is a short duty type and guaranteed for _____ operations per hour.

- (A) 10 (B) 15
(C) 20 (D) 25
-

6(ii). Universal motor is used in _____.

- (A) Hair dryer (B) Room cooler
(C) Lathe machine (D) Refrigerator
-

6(iii). The losses in an ideal transformer will be :

- (A) Zero (B) Maximum
(C) Minimum (D) Negative
-

6(iv). What is CPR in first aid ?

- (A) Care Personal Resident (B) Cardiopulmonary Resident
(C) Cardiopulmonary Resuscitation (D) Cardio Pulse Resuscitation
-

6(v). The advantage of three-phase induction motor is :

- (A) High price (B) Easy to maintain
(C) Low efficiency (D) Bad power factor
-

6(vi). What is the function of Diode in a digital multimeter ?

- (A) To measure frequency (B) To store electrical charge
(C) To control direction of flow of current (D) To measure amount of AC voltage
-

Section B

Answer any 3 out of the given 5 questions on Employability Skills. Answer each question in 20 – 30 words. $3 \times 2 = 6$

7. List out any four steps of Active listening.
8. Self-motivation is significant in building one's personality. Comment.
9. Write down the steps for entering a text box in the slide.
10. What are the barriers faced by an individual in becoming an effective entrepreneur ?
11. Briefly explain the importance of green jobs in different sectors of the economy.

Answer any 3 out of the given 5 questions in 20 – 30 words each. $3 \times 2 = 6$

12. Explain the characteristics and applications of DC compound motor.
13. What are the possible faults in electric mixer ? How are they removed ?
14. Write the safety measure precautions of a transformer from the operational point of view.
15. Write the main components of immersion heater.
16. Draw a diagram showing resistance in an AC circuit and the voltage and current waveform.

Answer any 2 out of the given 3 questions in 30 – 50 words each. $2 \times 3 = 6$

17. With the help of diagram, explain basic construction and working principle of a transformer.

18. With the help of a diagram, explain the working of a universal motor.

19. Why is starter necessary in DC motor ? Explain its working in brief.

Answer any 3 out of the given 5 questions in 50 – 80 words each. $3 \times 4 = 12$

20. What are the advantages and disadvantages of Dynamometer wattmeter ? Write the different types of Dynamometer wattmeters.

21. With the help of diagram, explain the working principle of capacitor start motor.

22. What can we do to help prevent manual handling injuries in the workplace ?

23. Explain the construction and working principle of a room cooler. Draw a diagram of internal structure of a room cooler.

24. Explain the working principle of three-phase induction motor with its advantages.

- End of Question Paper -