

CBSE Class 12 Electrical Technology 2023 - Set 343 - Compartment



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). You can use the given icon on the _____ to align the text.

- | | |
|--------------|--------------|
| (A) Tool bar | (B) Spread |
| (C) Sheet | (D) Bar code |

1(ii). Where is title bar located in an application ?

1(iii). _____ is defined as the drive required to engage in goal-oriented behaviour.

- | | |
|-------------------|----------------------|
| (A) Motivation | (B) Self-realization |
| (C) Communication | (D) Paranoid |

1(iv). What do you mean by narcissistic ?

1(v). Define “persistence” associated to an entrepreneur.

1(vi). _____ is a company that is in the first stage of its operation.

- | | |
|----------------|--------------|
| (A) Enterprise | (B) Business |
| (C) StartUp | (D) Industry |

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

2(i). The speed of DC shunt motor can be increased by :

- | | |
|----------------------|--------------------------|
| (A) Armature control | (B) Field control |
| (C) Voltage control | (D) Change in connection |

2(ii). In normal conditions, which motor can run at 5000 rpm ?

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

2(iii). If the slip of rotor is doubled, the value of rotor reactance per phase will be :

- | | |
|----------------|---------------|
| (A) half | (B) double |
| (C) four times | (D) no change |

2(iv). AC series motor as compared to DC series motor does not have :

- | | |
|------------------------|---------------------|
| (A) less air gap | (B) less field turn |
| (C) more armature turn | (D) high efficiency |

2(v). Continuity of an electric circuit is checked by :

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

2(vi). DC motor is easily identified by its :

- | | |
|---------------|----------------|
| (A) Armature | (B) Commutator |
| (C) Slip ring | (D) Winding |

2(vii). What is the general voltage in houses ?

- | | |
|-----------|-------------|
| (A) 110 V | (B) 230 V |
| (C) 440 V | (D) 11000 V |

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

3(i). Define time period.

3(ii). What do you mean by rotor ?

3(iii). How is the starting torque of an induction motor improved ?

3(iv). How is safety ensured ?

3(v). Name any two parts of a transformer.

3(vi). How is the direction of torque determined in motors ?

3(vii). What do you mean by a starter ?

4. Answer any 5 out of the given 6 questions.
(Write True/False.) $5 \times 1 = 5$

4(i). Rotor of an induction motor always runs at synchronous speed.

(A) True (B) False

4(ii). The Eddy current losses can be less if laminations are thinner.

(A) True (B) False

4(iii). The back emf is $E_b = V - I_a R_a$.

(A) True (B) False

4(iv). A person can be removed from electrical contact by pulling his arm.

(A) True (B) False

4(v). The motor can run only in one direction.

(A) True (B) False

4(vi). We can use ammeter as a voltmeter.

(A) True (B) False

5. Answer any 5 out of the given 6 questions.
(Fill in the blanks with the correct alternative given in brackets.) $5 \times 1 = 5$

5(i). Silica gel becomes _____ after absorbing moisture.

(A) Blue (B) Brown

5(ii). Transformers are rated in _____.

(A) kWh (B) kVA

5(iii). Use _____ in case of electric fire.

(A) Carbon powder (B) Dry sand

5(iv). Lowest voltage to feel an electric shock is _____.

(A) 30 V (B) 110 V

5(v). _____ supply is used in megger.

(A) AC (B) DC

5(vi). _____ is the other name of self-contained heater.

(A) Electric geyser (B) Immersion rod

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

6(i). What is the full form of RMS ?

(A) Root Mean Square (B) Root Minimum Square
(C) Root Mean Sine (D) Root Maximum Square

6(ii). The squirrel cage rotor slots are generally :

(A) Closed type (B) Open type
(C) Semi-closed type (D) Semi-open type

6(iii). Which method of cooling is used for low rating transformer ?

(A) AN (B) ONAF
(C) OFAF (D) OFAN

6(iv). A moving coil voltmeter scale is :

(A) increasing (B) decreasing
(C) zero (D) linear

6(v). All moving iron type instruments measure :

(A) Maximum value of AC (B) Average value of AC
(C) RMS value of AC (D) Instantaneous value of AC

6(vi). Which motor is generally used for electric shavers ?

(A) Shaded pole motor (B) Universal motor
(C) DC motor (D) Three-phase induction motor

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. Write any two advantages of a spreadsheet.

8. Give any two characteristics of entrepreneurship.

9. What makes an entrepreneur successful ?

10. Mention four sources of motivation and inspiration.

11. What do you understand by personality ?

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

12. Write the advantages of AC over DC.

13. Explain in brief the working of current transformer.

14. Write the common faults and their rectifications in a DC shunt motor.

15. Write the working and use of a thermostat.

16. In case of electric shock, what precautions would you observe ?

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

17. Why is cooling of transformer necessary ? How will you do it ?

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

19. Show the internal structure of a room cooler. Write the possible faults also.

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

20. Explain the working of digital multimeter with diagram.

21. Write various problems, their causes and remedies of three-phase induction motor.

22. Explain the construction and working of electric mixer with diagram.

23. Explain the working of shaded pole motor with diagram.

24. What precautions should we take while handling and lifting heavy loads manually ?

- End of Question Paper -