WBMSC
SAE
Previous Year Paper
(Electrical)
09 Nov, 2025

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WBMSC/web/29 /Direct **Dated the Kolkata 14th November, 2025**

NOTIFICATION

DISPLAY OF PROVISIONAL ANSWER KEYS TO THE QUESTIONS FOR WRITTEN EXAMINATION FOR RECRUITMENT TO THE POST OF SUB-ASSISTANT ENGINEER (ELECTRICAL) (ADVT. NO. 07 OF 2025) UNDER KMC HELD ON 09/11/2025 (SUNDAY). [QUESTION BOOKLET CODE: SEKM (Annexed herewith)]

The provisional Answer Keys to the Questions for written examination for recruitment to the post of Sub-Assistant Engineer (Electrical) under Kolkata Municipal Corporation (Advt. No. 07 of 2025) are hereby published for information to the candidates.

The candidates are requested to visit the website and upload their claims and objections, if any, on the Answer Key-options uploaded as follows, in their opinions. The candidates are required to submit the correct answers, if at variance with the provisional Answer Keys as follows in their opinions, indicating Test / Question Booklet code, Question Booklet number, Roll No. etc., specific for each particular candidate, along with scanned copies of the front page of Question Booklet and the concerned page(s) of the Question Booklet between 17th November, 2025 and 23rd November, 2025 by accessing the link provided at www.mscwb.org. No claims for correction of Answer Key will be entertained beyond the specified period as mentioned above.

The claims and objections will not be entertained through any other medium.

Answer Keys to Booklet Code - SEKM

Q. No.	Answer Option	Q. No.	Answer Option	Q. No.	Answer Option	Q. No.	Answer Option
1	A	26	B	51	A	76	A
2	A	27	C	52	B	77	B
3	D	28	C	53	D	78	C
4	B	29	A	54	C	79	A
5	B	30	C	55	D	80	A
6	D	31	D	56	A	81	A
7	C	32	C	57	C	82	D
8	D	33	B	58	A	83	A
9	A	34	B	59	C	84	C
10	C	35	C	60	B	85	D
11	D	36	D	61	A	86	A
12	C	37	D	62	C	87	C
13	A	38	C	63	A	88	B
14	B	39	B	64	A	89	B
15	C	40	C	65	B	90	A
16	C	41	D	66	A	91	A
17	A	42	A	67	C	92	C
18	C	43	D	68	D	93	B
19	D	44	C	69	C	94	A
20	C	45	D	70	B	95	D
21	D	46	C	71	C	96	C
22	B	47	C	72	B	97	C
23	B	48	B	73	B	98	B
24	C	49	D	74	D	99	B
25	D	50	C	75	A	100	A

Annexure: As mentioned.

14/11/25

Deputy Secretary, WBMSC
Deputy Secretary
West Bengal Municipal Service Commission
149, A.J.C. Bose Road, Kolkata-700014

1. Three resistances each of R ohms are connected in delta. Its equivalent star will comprise three resistances each of value

(A) R/3 ohm
(B) R/2 ohm
(C) 2R ohm
(D) 3R ohm

2. The principle of statically induced emf is utilized in

(A) Transformer
(B) Generator
(C) Motor
(D) Battery

3. Two coils have inductances of 4 mH and 9 mH and coefficient of coupling of 0.5. If the two coils are connected in series aiding, the net inductance will be

(A) 5 mH
(B) 13 mH
(C) 16 mH
(D) 19 mH

4. In a series RLC circuit, if the frequency of the source is below the resonance frequency, then

(A) the circuit is inductive.
(B) the circuit is capacitive.
(C) the circuit is resistive.
(D) None of the above

5. Hysteresis loss can be reduced by

(A) laminating the magnetic circuit.
(B) using the material of narrow hysteresis loop.
(C) Both (A) and (B)
(D) None of the above

6. For reversing the direction of rotation of a DC motor,

(A) only the field flux need to be weakened.
(B) only the armature flux need to be weakened.
(C) the connections of both the armature and field windings are required to be reversed.
(D) the connections of either the armature or field winding are required to be reversed.

7. In a DC series motor, the torque developed is 20 Nm at a current of 10A. If the current is doubled, the torque developed becomes

(A) 10 Nm
(B) 40 Nm
(C) 80 Nm
(D) 160 Nm

8. The speed of a 50 Hz, three-phase induction motor under full load condition is 720 RPM. The number of pole in the motor is

(A) 2
(B) 4
(C) 6
(D) 8

9. A 4-pole, 1200 RPM Alternator will generate an emf at a frequency of

(A) 40 Hz
(B) 50 Hz
(C) 60 Hz
(D) None of the above

10. A lagging power factor can be improved by connecting

(A) an inductor in parallel with load.
(B) a resistor in parallel with load.
(C) a capacitor in parallel with load.
(D) None of the above

11. A 3-Phase, 4-Wire system is commonly used for

(A) primary transmission.
(B) secondary transmission.
(C) primary distribution.
(D) secondary distribution.

12. Guy wire is employed for

(A) providing protection against surges.
(B) providing emergency earth route.
(C) supporting the pole.
(D) All of the above

13. Sheaths are used in underground cables to

(A) prevent ingress of moisture.
(B) provide proper insulation.
(C) provide mechanical strength.
(D) None of the above

14. Minimum oil circuit breakers use oil for

(A) insulation only.
(B) arc quenching only.
(C) cooling only.
(D) lubrication only.

15. The thermal relays are used for protection of motors against over-current owing to

(A) short-circuit.
(B) earth fault.
(C) heavy loads.
(D) All of the above

16. Breakdown test of the transformer oil is carried out

(A) to check the presence of moisture in the insulating oil.
(B) to check organic and inorganic matter present in the insulating oil.
(C) to check the dielectric strength of the insulating oil.
(D) All of the above

17. Joints used in joining overhead line conductors are

(A) Britannia joint.
(B) Married joint.
(C) Tee joint.
(D) All of the above

18. Armouring is provided to protect the underground cable from

(A) the entry of moisture.
(B) rusting of strands.
(C) mechanical injury.
(D) None of the above

19. The advantage of preventive maintenance—

(A) It increases the life of the machine.
(B) It reduces the breakdown to minimum.
(C) Less standby equipment is needed.
(D) All of the above

20. The main function of an economizer of a boiler plant is to

(A) increase steam production.
(B) increase steam pressure.
(C) reduce fuel consumption.
(D) increase life of boiler.

21. In which part of the thermal power plant, the steam pressure is less than that of atmosphere?

(A) Boiler
(B) Turbine
(C) Superheater
(D) Condenser

22. In a dynamometer wattmeter, the moving coil is the

(A) current coil.
(B) potential coil.
(C) current or potential coil.
(D) None of the above

23. To measure a.c. as well as d.c. power, we use

(A) induction wattmeter.
(B) dynamometer wattmeter.
(C) Both (A) and (B)
(D) None of the above

24. When heat is applied to the junction of two dissimilar metals, an emf is generated across the cold ends. The effect is known as

(A) Hall effect.
(B) Peltier effect.
(C) Seebeck effect.
(D) Thomson effect.

25. In a wind turbine, the power in the wind is directly proportional to

(A) velocity.
(B) square root of velocity.
(C) square of velocity.
(D) cube of velocity.

26. The triac is equivalent to

(A) two SCRs connected in parallel.
(B) two SCRs connected in anti-parallel.
(C) one SCR, one diode connected in parallel.
(D) one SCR, one diode connected in anti-parallel.

27. The decimal equivalent of the binary number 10111 is

(A) 19
(B) 21
(C) 23
(D) None of the above

28. A leak transformer is used in

(A) fluorescent lamp.
(B) high wattage GLS lamp.
(C) sodium vapour lamp.
(D) None of the above

29. A stabilizing choke is connected in the fluorescent tube circuit to

(A) provide a voltage impulse at starting and act as a ballast in operating conditions.
(B) avoid radio interference effect in operating conditions.
(C) reduce the flicker in operating conditions.
(D) act as a starter.

30. The luminous flux is measured in

(A) Candela
(B) Lux
(C) Lumen
(D) Candle-meter

31. A slip-ring induction motor is preferred over squirrel cage induction motor for which of the following reasons?

(A) Low starting current

(B) High starting torque

(C) Speed control features

(D) All of the above

32. Solar photovoltaic cell converts solar energy directly into

(A) mechanical energy.

(B) heat energy.

(C) electricity.

(D) chemical energy.

33. Method of testing of earth resistance is

(A) voltmeter and ammeter method.

(B) portable earth tester.

(C) Megger.

(D) All of the above

34. By open-circuit test on a transformer, we obtain the result of

(A) copper losses.

(B) iron losses.

(C) total losses.

(D) None of the above

35. The efficiency of a transformer will be maximum when

(A) leakage reactances of the two windings are equal.

(B) resistances of the two windings are equal.

(C) copper loss is equal to constant loss.

(D) None of the above

36. What should be the value of fusing factor?

(A) Equal to zero

(B) Equal to one

(C) Less than one

(D) More than one

37. The inductance of a transmission line is minimum when

(A) GMD is high.

(B) GMR is low.

(C) both GMD and GMR are high.

(D) GMD is low and GMR is high.

38. The characteristic impedance of a transmission line with series impedance Z ohms per unit length and shunt admittance Y mhos per unit length, is given by

(A) $(Z+Y)^2$

(B) $\sqrt{ZY}$

(C) $\sqrt{Z/Y}$

(D) ZY

39. To obtain the minimum value of stress in cables, the ratio of internal sheath diameter and core diameter should be

(A) 2.13

(B) 2.718

(C) 1.96

(D) 1.5

40. A gas turbine works on

(A) Carnot cycle.

(B) regenerative cycle.

(C) Brayton cycle.

(D) Rankine cycle.

41. For a given base voltage and base volt-amp, the per unit impedance value of an element is X. What will be the per unit impedance value of this element when both the voltage and volt-amp bases are doubled?

(A) $4X$
(B) $2X$
(C) X
(D) $0.5X$

42. Empire tape is

(A) varnished cambric.
(B) impregnated paper.
(C) vulcanised rubber.
(D) enamel insulation.

43. The loop earth wire used shall not be of size less than

(A) 8 SWG
(B) 10 SWG
(C) 16 SWG
(D) 14 SWG or half of the size of the sub-circuit wire.

44. An auto-transformer having a transformation ratio of 0.8 supplies a load of 10 kW. The power transformed inductively from the primary to secondary is

(A) 10 kW
(B) 8 kW
(C) 2 kW
(D) zero

45. A circuit draws a current of I when a single phase ac voltage V is applied to it. If the power factor is cosφ, then the dimensions of VI cosφ would be

(A) $[ML^3T^{-2}]$
(B) $[ML^2T^3]$
(C) $[ML^3T^3]$
(D) $[ML^2T^{-3}]$

46. Isolators used in transmission lines are capable of breaking

(A) fault current.
(B) no current.
(C) charging current.
(D) load current.

47. The primary current in a CT is dictated by

(A) the secondary burden.
(B) the core of the transformer.
(C) the load current.
(D) None of the above

48. The minimum number of wattmeter(s) required to measure 3-phase, 3-wire balanced or unbalanced power is

(A) 1
(B) 2
(C) 3
(D) 4

49. If an energy meter disc makes 10 revolutions in 100 seconds when a load of 450 W is connected to it, then the meter constant (in rev/kWh) is

(A) 1000
(B) 500
(C) 1600
(D) 800

50. The magnitude of force acting on a current carrying conductor placed in a magnetic field is independent of

(A) flux density.
(B) length of conductor.
(C) cross-sectional area of conductor.
(D) current flowing through the conductor.

51. In a bridge ac to dc converter using P-N diodes, if the input voltage is $V\sin \omega t$, what is the peak inverse voltage across any diode?

(A) V
(B) $2\,V$
(C) $V/2$
(D) $V/\sqrt{2}$

52. For an SCR, dv/dt protection is achieved through the use of

(A) R-L in series with SCR.
(B) R-C across SCR.
(C) L in series with SCR.
(D) R-C in series with SCR.

53. In the toggle mode, a JK flip-flop has

(A) J = 0, K = 0
(B) J = 0, K = 1
(C) J = 1, K = 0
(D) J = 1, K = 1

54. The insulation resistance of a cable of length 10 km is 1 MΩ. For a length of 100 km of same cable, the insulation resistance will be

(A) 1 MΩ
(B) 10 MΩ
(C) 0.1 MΩ
(D) 0.01 MΩ

55. A thermal generating station has an installed capacity of 15 MW and supplies a daily load of 10 MW for 12 hours and 5 MW of remaining for 12 hours. The plant capacity factor for this station is

(A) 1
(B) 0.75
(C) 0.67
(D) 0.5

56. An air gap is usually inserted in magnetic circuits so as to

(A) prevent saturation.
(B) increase in mmf.
(C) increase in flux.
(D) increase in inductance.

57. In double cage induction motor, inner cage has

(A) high resistance and high leakage reactance.
(B) high resistance and low leakage reactance.
(C) low resistance and high leakage reactance.
(D) low resistance and low leakage reactance.

58. The rms value of the voltage $u(t) = 3 + 4\cos(3t)$ is

(A) $\sqrt{17}$ V
(B) 5 V
(C) 7 V
(D) $3 + 2\sqrt{2}$ V

59. In a purely resistive circuit, the average power P_{av} is _____ the peak power P_{max}.

(A) double
(B) one-fourth of
(C) one-half of
(D) equal to

60. An ac source of 200 V rms supplies active power of 600 W and reactive power of 800 VAR. The rms current drawn from the source is

(A) 10 A
(B) 5 A
(C) 3.75 A
(D) 2.5 A

61. A 3-phase, delta-connected symmetrical load consumes *P* watts of power from a balanced supply. If the same load is connected in star to the same supply, then what is the power consumption?

(A) *P*/3
(B) *P*
(C) $\sqrt{3}\,P$
(D) 3 *P*

62. Three parallel resistive branches are connected across a dc supply. What will be the ratio of the branch currents $I_1 : I_2 : I_3$ if the branch resistances are in the ratio $R_1 : R_2 : R_3 :: 2 : 4 : 6$?

(A) 3 : 2 : 6
(B) 2 : 4 : 6
(C) 6 : 3 : 2
(D) 6 : 2 : 4

63. What is the frequency of rotor current of a 50 Hz induction motor operating at 2% slip?

(A) 1 Hz
(B) 100 Hz
(C) 2 Hz
(D) 50 Hz

64. For high starting torque, the most suitable 3-phase induction motor is

(A) slip-ring.
(B) squirrel cage.
(C) double cage.
(D) deep bar squirrel cage.

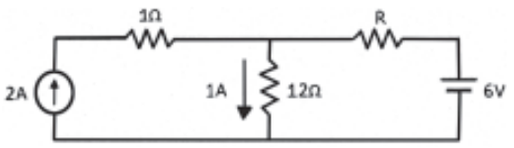
65. One unit of electricity is equivalent to _____ kcal heat units.

(A) 800
(B) 860
(C) 400
(D) 746

66. The cheapest system of internal wiring is

(A) Cleat
(B) CTS or TRS
(C) Conduit
(D) Casing-capping

67. If the 12 Ω resistor draws a current of 1 A in the following circuit, the value of the resistor *R* is



(A) 4 Ω
(B) 8 Ω
(C) 6 Ω
(D) 18 Ω

68. A 'superconductor' may be used for generating

(A) voltage
(B) pressure
(C) temperature
(D) magnetic field

69. The charging reactance of 100 km length of a line is 1500 Ω. What will be the charging reactance for 200 km length of the line?

(A) 1500 Ω
(B) 3000 Ω
(C) 750 Ω
(D) 600 Ω

70. If the output of a rectifier is pure DC, then the ripple factor will be _____.

(A) 1
(B) 0
(C) 1.414
(D) 1.21

71. In Lap winding, the number of brushes is equal to _____.

(A) two
(B) number of pole pairs
(C) number of poles
(D) double the number of poles

72. Leakage flux in an induction motor is the

(A) flux that leaks through the machine.
(B) flux that links the stator winding or the rotor winding but not both.
(C) flux that links both stator and rotor windings.
(D) flux that links none of the windings.

73. A 3 phase, 50 Hz, 6-pole induction motor runs at 960 rpm. The stator copper loss, core loss and the rotational loss of the motor can be neglected. The percentage efficiency of the motor is

(A) 94
(B) 96
(C) 98
(D) 92

74. If a transformer primary is energized from a square wave voltage source, then its output voltage will be

(A) zero
(B) triangular wave
(C) sine wave
(D) pulsed wave

75. W_1 and W_2 are the readings of two wattmeters used to measure the power of an unbalanced three-phase load. The active power drawn by the load is

(A) $W_1 + W_2$
(B) $W_1 - W_2$
(C) $\sqrt{3}(W_1 - W_2)$
(D) $\sqrt{3}(W_1 + W_2)$

76. In the Fleming's left-hand rule, thumb points towards the direction of

(A) force on the conductor.
(B) magnetic field.
(C) current flow.
(D) induced electric field.

77. An electrolytic capacitor can be used for

(A) AC only.
(B) DC only.
(C) Both (A) and (B)
(D) None of the above

78. For household wiring and small units, which of the following should be used for safety measure

(A) MCCB
(B) ACB
(C) MCB
(D) OCB

79. The smallest change which a sensor can detect is _____.

(A) Resolution
(B) Accuracy
(C) Precision
(D) Scale

80. 2N2222 component is a

(A) Transistor
(B) Diode
(C) Resistor
(D) Solar cell

81. In a hydroplant, the measured discharge is 200 m^3/s and head of the water is 100 m. If the efficiency of the combined turbine-alternator set is 85%, find the electrical power developed.

(A) 166.77 MW
(B) 66.72 MW
(C) 667.82 MW
(D) 176.52 MW

82. Which of the following equipments is used to limit the short-circuit level in a substation?

(A) Isolator
(B) Lightning switch
(C) Coupling capacitor
(D) Series reactor

83. What is the full form of RTD?

(A) Resistance Temperature Detector
(B) Resistive Temperature Diode
(C) Resistive Time Damper
(D) Ratio of Time Difference

84. Which generator would you prefer for feeding long DC transmission lines?

(A) Series generator
(B) Shunt generator
(C) Over compound generator
(D) Flat compound generator

85. How many address lines will be there in a 4K memory?

(A) 10
(B) 8
(C) 11
(D) 12

86. With rise in temperature, the resistance of pure metal

(A) increases.
(B) decreases.
(C) first increases and then decreases.
(D) remains unaltered.

87. In a 3-phase, 50 Hz, fully controlled converter, what will be the ripple frequency of the output voltage waveform?

(A) 50 Hz
(B) 100 Hz
(C) 300 Hz
(D) 8.33 Hz

88. What is electricity tariff?

(A) The rate at which electrical energy is generated at the plant
(B) The rate at which electrical energy is sold to the consumers
(C) Both (A) and (B)
(D) None of the above

89. The charging current in a transmission line

(A) lags the voltage by 90°.
(B) leads the voltage by 90°.
(C) leads the voltage by 180°.
(D) lags the voltage by 180°.

90. Which value of flux is involved in the emf equation of a transformer?

(A) Peak value
(B) R.M.S. value
(C) Instantaneous value
(D) Average value

91. If the maximum demand of a consumer is 2kW and the corresponding daily energy consumption is 30 units, what is the load factor?

(A) 62.5%
(B) 6.67%
(C) 15%
(D) 48%

92. The secondary winding of a CT is opened while current is flowing in its primary, then

(A) there will be high current in primary.
(B) the transformer will burn out immediately.
(C) there will be very high secondary voltage.
(D) nothing will happen.

93. In a Pressurized Water Reactor (PWR),

(A) the coolant water is pressurized to work as moderator.

(B) the coolant water is pressurized to prevent boiling of water in the core.

(C) the coolant water boils in the core of the reactor.

(D) None of the above

94. Water hammer effect occurs in the _____.

(A) Penstock

(B) Surge tank

(C) Draft tube

(D) Turbine casing

95. A moving coil instrument having a resistance of 10 Ω, gives a full-scale deflection when the current is 10 mA. What should be the value of the series resistance, so that it can be used as a voltmeter for measuring potential difference up to 100 volts?

(A) 9 Ω

(B) 99 Ω

(C) 990 Ω

(D) 9990 Ω

96. For an ideal non-inverting operational amplifier,

(A) input and output resistances are infinite.

(B) input resistance is zero and output resistance is infinite.

(C) input resistance is infinite and output resistance is zero.

(D) input and output resistances are zero.

97. Energy stored by a coil is doubled when its current is increased by _____.

(A) 25%

(B) 100%

(C) 41.4%

(D) 50%

98. The direction of rotation of a 3 phase induction motor is clockwise when it is supplied with a 3 phase sinusoidal voltage having phase sequence U-V-W. For counter clockwise rotation of the same motor, the phase sequence should be

(A) V-W-U

(B) U-W-V

(C) W-U-V

(D) Either (A) or (C)

99. Pole mounted substations are used for _____ distribution.

(A) primary

(B) secondary

(C) Both (A) and (B)

(D) None of the above

100. For operation of a fluorescent lamp on DC supply, the additional element needs to be incorporated in the lamp circuit is a/an

(A) Resistor

(B) Transformer

(C) Inductor

(D) All of the above

Space for Rough Work