CHB JE (Electrical)

Previous Year Paper

29 Jan 2023

CHANDIGARH HOUSING BOARD
POST: JE (ELECTRICAL)
Question Booklet & Answer Key
29.01.2023 (EVENING)

1. Choose the correct antonym for the given underlined word from the options that follow:-
Wane
A) Enlarge B) Decrease C) Offensive D) Rough

2. Choose the correct synonym for the given underlined word from the options that follow:-
Unwonted
A) Normal B) Common C) Uncommon D) Unaided

3. Identify the error in the underlined parts of the sentence and mark the correct option:
One of the most interesting feature (A) of travel in Himachal Pradesh is (B)
the large number of lodges (C) provided by the state government. (D)

4. Choose the correct preposition to be filled in the blank from the options that follow:-
Subsequent _____ the meeting, he wrote a letter to The Tribune.
A) in B) to C) with D) at

5. Choose the correct meaning of the given underlined idiom from the options that follow:-
To keep the wolf from the door.
A) To save one's family from the wolf B) To be a lover of animals
C) To confuse others D) To manage to buy enough food for oneself and one's family

6. Where did Lokmanya Tilak first say "Swaraj is my birthright, and I shall have it"?
A) Bombay B) Belgaum C) Kolkata D) Karachi

7. Which one of the following clouds is a rain-bearing cloud?
A) Cumulus Cloud B) Stratus Cloud C) Cirrus Cloud D) Nimbus Cloud

8. What is the height of The Statue of Unity?
A) 142 mt B) 162 mt C) 182 mt D) 192 mt

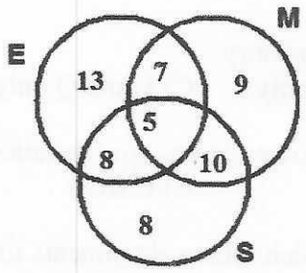
9. Which of the following is the eastern most island of India?
A) Munroe Island B) Barren Island C) Divar Island D) Agatti Island

10. Which initiative was launched by GoI in May 2020 to boost multi-mode access to education?
A) e-Vidya B) e-SwayamPrabha C) e-KUMBH D) e-DIKSHA

11. B, C, D, E, F, G, H and J are sitting around a circle facing the Centre. B is an immediate neighbour of F and C. E is second to the left of F. G is second to the right of C. D is not an immediate neighbour of G. There are two persons between C and J. What is J's position with respect to B?
A) 4^{th} to the right B) 4^{th} to the left C) Both A) and B) D) Neither A) nor B)

12. Find the wrong number in the given series?
5, 7.5, 11.25, 17.5, 29.75, 50, 91.25
A) 29.75 B) 17.5 C) 7.5 D) 91.25

13. 120 candidates appeared for examination in three subjects namely, English(E), Maths(M) and Science (S). The number of candidates who failed in E, M and S are shown in the diagram given below:



Find the candidates who failed in atleast one subject as a percentage of the candidates who failed in atmost 2 subjects.

A) 50% B) 52% C) 45.83% D) None of the above

14. From amongst 6 boys A, B, C, D, E and F and five girls P, Q, R, S and T, a team of six is to be selected under the following conditions:
A and D have to be together; C cannot go with S; S and T have to be together; B cannot be teamed with E; D cannot go with P; B and R have to be together; C and Q have to be together .
If four members including E have to be boys, the members other than E are:

A) ABCQR B) ACDSQ C) BCFQR D) ADFST

15. If A + B means A is the sister of B; A − B means A is the father of B; A × B means A is the brother of B; and A ÷ B means A is the mother of B.
Which of the following shows that C is the maternal grandfather of F?

A) C + D − E ÷ F B) C− D ÷ E × F C) C × D + E − F D) C × D − E + F

16. There are three fractions. When the largest fraction is divided by the smallest fraction, the result 3/5 is greater than the middle fraction by 1/3. If the sum of the three fractions is $3\frac{2}{5}$ then what will be the difference between the largest and the middle fraction?

A) 142/13 B) 109/120 C) 69/25 D) 49/40

17. X and Y are partners in a business. X contributes 1/4 of the capital for 15 months and Y received 2/3 of the profit. How long Y's money was used?

A) 10 months B) 9 months C) 11 months D) 7 months

18. The angle of elevation of a jet fighter from a point P on the ground is 60^0. After 5 seconds of flight, the angle of elevation changes to 45^0. If the jet is flying at a height of 3000 metre, then the speed of the jet in m/s, is

A) $1000(3-\sqrt{3})$ B) $200(3-\sqrt{3})$ C) $1000\sqrt{3}$ D) 600

19. Water flows into a tank 100 metre by 150 metre through a rectangular pipe 1.5 metre × 1.25 metre at a speed of 20 km/hr. In what time will the water rise by 2 metre?

A) 96 minutes B) 50 minutes C) 48 minutes D) 75minutes

20. A man borrows ₹5100 to be paid back with compound interest at the rate of 4% per annum by the end of 2 years in two equal yearly installments. How much will each installment be?

A) ₹2704 B) ₹2800 C) ₹3000 D) ₹2500

21. In computer networking, what does TCP/IP stand for?
A) Transmission Control Protocol/ Internet Protocol
B) Transport Capture Protocol/ Inside Packet
C) Transmission Control Protocol/ Internet Packet
D) Telecommunications Connection Protocol/ Internet Partitions

22. Which of the following statement(s) is/are TRUE about computer memory?
P: ROM is 'volatile' memory.
Q: RAM is 'volatile' memory.
R: Secondary Memory is 'volatile' memory.
A) P only B) Q only C) P and Q only D) P and R only

23. The _____ chip, which uses battery power, stores configuration information about the computer.
A) BIOS B) POST C) CMOS D) RAM

24. Adobe developed _____, which allows documents to be transmitted and stored without loss of formatting.
A) defragmentation B) assembler document format
C) filtering format D) portable document format

25. While sending an e-mail, to differentiate among To: Cc: and Bcc: fields, which one of the following statements is true?
A) Recipients in the To: field can see the email addresses that are in the Bcc: and Cc: fields.
B) Recipients in the Cc: field can see the email addresses that are in the To: and Bcc: fields.
C) Recipients in the Bcc: field can see the email addresses that are in the To: and Cc: fields.
D) Only the recipients in the Cc: field can see the other email addresses in the Bcc: field.

26. The electric current is due to flow of
A) Positive charges B) Negative charges
C) Both positive and negative charges D) Neutral particles only

27. The current in a circuit having constant resistance is tripled. The power increases by
A) 1/9 times B) 3 times C) 9 times D) 1/3 times

28. The resistance of human body is around
A) 200 ohms B) 10 ohms C) 1000 ohms D) 25 ohms

29. When cells are arranged in parallel
A) The current capacity increases B) The current capacity decreases
C) The emf increases D) The emf decreases

30. The smallest resistance obtained by connecting 50 resistances of $\frac{1}{4}$ ohm each is
A) 50/4 ohms B) 4/50 ohms C) 200 ohms D) 1/200 ohms

31. The emf of a cell depends upon
A) Internal resistance B) External resistance
C) Electrolyte and electrodes of cell D) None of these

32. An ordinary dry cell can deliver a current of about
A) 3A B) 2A C) 1/8A D) None of these

33. The superposition theorem is used when the circuit contains
A) Single voltage source B) Number of voltage sources
C) Passive elements only D) None of these

34. A passive element in a circuit is one which
A) Supplies energy B) Receives energy C) Both (A) and (B) D) Neither (A) nor (B)

35. What is the efficiency of the circuit when maximum power is delivered to the load
A) 40 B) 50 C) 70 D) 80

36. If the current in an electric bulb drops by 2%, the power decreases by
A) 2% B) 4% C) 1% D) 16%

37. An electric fan and a heater are marked as 100W, 220V and 1000W, 220V respectively. The resistance of the heater is
A) Zero B) Greater than that of fan C) Less than that of fan D) Equal to that of fan

38. What is the maximum safe current flow in a 47ohms, 2W resistor
A) 0.42A B) 0.21A C) 0.63A D) 0.88A

39. The dielectrics used in high voltage transformers is
A) Mica B) Paraffin C) Porcelain D) Oiled paper

40. Electric lines of force about a negative point charge are
A) Circular clockwise B) Radial outward C) Circular anticlockwise D) Radial inward

41. An electron is accelerated through 1V. The velocity of electron is about
A) 3×10^8 m/s B) 6×10^4 m/s C) 2.8×10^6 m/s D) 6×10^5 m/s

42. What is the effect on a soap bubble when some charge is given to it?
A) Its size decreases B) Its size increases C) No effect on size D) Bubble collapses

43. The capacitance of earth assuming it to be a spherical conductor of radius 6400 km is
A) 725μF B) 616μF C) 1315μF D) 711μF

44. You are given four capacitors, each of capacitance 12μF. How would you connect the given capacitors to obtain a capacitance of 9μF
A) All in series B) All in parallel
C) in parallel and 1 in series D) in parallel and other two in series

45. When the total charge in a capacitor is doubled, the energy stored is
A) Remains same B) Is halved C) Is doubled D) Is quadrupled

46. Magnetic field is caused by
A) Stationary charge B) A moving positive charge
C) A moving negative charge D) Moving both positive and negative charges

47. Which of the following is likely to have larger resistance
A) A moving coil galvanometer B) An ammeter of range 1A
C) A copper wire of length 1m and diameter 3mm D) A voltmeter of range 10V

48. Hysteresis loss can be reduced by
A) Laminating the magnetic circuit B) Using material of narrow hysteresis loop
C) Increasing mmf of the circuit D) Setting up constant flux

49. Three equal resistances are connected in star. If this star is converted into equivalent delta, then
A) the resistance of the delta network will be smaller than that of the star network
B) the resistance of both the network will be equal
C) the resistance of the delta network will be larger than that of the star network
D) none of the above

50. When the frequency of applied voltage in a series RC circuit increases, what happens to the capacitive reactance?
A) Decreases B) Remains the same C) Increases D) Becomes zero

51. In a certain series RLC circuit, $V_R = 24$ V, $V_L = 15$ V, $V_C = 45$ V, what is the source voltage?
A) 38.42 V B) 45 V C) 15 V D) 24 V

52. W_1 and W_2 are the readings of two wattmeter used to measure power of a three phase balanced load. The reactive power drawn by the load is
A) $W_1 + W_2$ B) $W_1 - W_2$ C) $\sqrt{3}(W_1 - W_2)$ D) $\sqrt{3}(W_1 + W_2)$

53. Interpoles are provided in dc machines to
A) neutralize the cross magnetizing component of armature reaction
B) neutralize the demagnetizing component of armature reaction
C) reduce iron loss
D) reduce copper loss

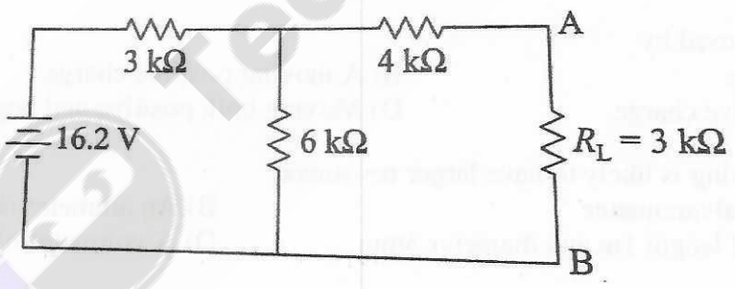
54. A 200 V dc machine has an armature resistance of 0.5. If the full load armature current is 30 A. The induced emf when the machine run (i) as a generator and (ii) as a motor will be
A) 230 V, 170 V B) 225 V, 175 V C) 185 V, 215 V D) 215 V, 185 V

55. What is the condition to obtain the maximum starting torque?
A) $r^2 = x^2$ B) $2r^2 = x^2$ C) $r^2 = 3x^2$ D) $r^2 = 4x^2$

56. Calculate the value of resistance R for the following cases:
i) A Voltmeter V of 2000 Ω resistance connected across R reads 200 V, while the total current supplied to V and R is 0.5 A.
ii) A voltage of 10 V is applied to R in series with an ammeter A of 0.1 Ω resistance, while A reads 50 A.
A) 400 Ω, 0.2Ω B) 500 Ω, 0.1 Ω C) 300 Ω, 0.3 Ω D) 500 Ω, 0.2 Ω

57. An alternating current of frequency 50 Hz and maximum value of 100 A is given as
A) I = 100sin639t B) I = 141.4sin157t C) I = 141.4sin314t D) I = 100sin314t

58. For the circuit given below, obtain R_N of the equivalent Norton circuit between terminals AB and find the load current I_L



A) $R_N = 5$ kΩ, $I_L = 1.2$ mA B) $R_N = 6$ kΩ, $I_L = 1.2$ mA
C) $R_N = 4$ kΩ, $I_L = 1.5$ mA D) $R_N = 4$ kΩ, $I_L = 1.2$ mA

59. In a thyristor, the forward break over voltage
A) is constant B) may be constant or may depend on gate current
C) decreases as gate current is increased D) Increases as gate current is increased

60. The condition for under damped oscillations in a series RLC circuit is
A) $R < L/C$ B) $R^2 < 4L/C$ C) $R^2 < 2L/C$ D) $R < \sqrt{L/C}$

61. A 3 phase, 6 pole induction machine having 50 Hz frequency running at 920 rpm. Find the output frequency at the rotor?
A) 4 Hz B) 2 Hz C) 6 Hz D) 8 Hz

62. For a 500 Hz frequency excitation, a 50 km short power line will be modeled as
A) Short line B) Medium line C) Long line D) Data insufficient

63. Bundled conductors are mainly used in High voltage overhead transmission lines to
A) reduce transmission line losses B) increase mechanical strength of the line
C) reduce corona D) reduce sag

64. For a fixed value of complex power flow in a transmission line having a sending end voltage V, the real power loss will be proportional to
A) V B) V^2 C) $1/V^2$ D) 1/V

65. Series capacitive compensation in EHV transmission lines is used to
A) Reduce the line leading B) Improve the stability of the system
C) Reduce the voltage profile D) Improve the protection of line

66. When transformer primary is fed from a.c. source, its core heats up due to
A) Permeability of core B) Reluctance of core C) Ferromagnetism D) Hysteresis loss

67. A 100mH coil carries a current of 1A. Energy stored in the magnetic field is
A) 1 J B) 0.05 J C) 1.5 J D) 2.5 J

68. A car battery has 6 cells in series. What should be the approximate charging voltage?
A) 10 V B) 12 V C) 100 V D) 15 V

69. The frequency of d.c. in India is
A) 50 Hz B) 30 Hz C) 60 Hz D) Zero

70. The purpose of choke in a fluorescent tube is
A) To decrease the current B) To increase the current
C) To decrease the voltage momentarily D) To increase the voltage momentarily

71. The reactance of 1F capacitance when connected to a d.c. circuit is
A) Infinite B) Zero C) 1 ohms D) 0.5 ohms

72. The angular velocity of a sinusoidal voltage is 628 radians/second. Find the frequency
A) 50 Hz B) 25 Hz C) 1000 Hz D) 100 Hz

73. For most efficient use of power distribution equipment, the power factor should be
A) 1 B) 0.707 C) 0.62 D) 0.85

74. If the wattmeter is normally phased and it indicates reverse reading, the current and voltage are
A) More than 90^o out of phase B) Less than 90^o out of phase
C) Insufficient data D) Equal

75. Out of the following the most accurate measurement of unknown resistance will be by
A) Potentiometer B) Ohmmeter C) Voltmeter and ammeter D) Wheatstone bridge

76. In florescent tubes, the outer glass tube is internally coated with
A) Quartz B) Paint C) Telcom powder D) Phosphor

77. Fuse is always connected in
A) Neutral B) Earth C) Phase D) Any of the above

78. The basic purpose of earthing is that
A) It avoids faults B) It allows the current to flow in the circuit
C) It protects the operator from electric shock D) It stops current to flow in the circuit

79. The cheaper internal wiring system is
A) Cleat wiring B) Casing-caping wiring C) C.T.S. wiring D) Conduit wiring

80. When more than one equipment is to be earthed
A) Parallel connections should invariably be used
B) Series connections should invariably be used
C) Either A) or B)
D) Neither A) nor B)

81. Energy meter is
A) An indicating instrument
B) An integrating instrument
C) A recording instrument
D) An absolute instrument

82. The internal resistance of voltmeter is
A) Zero B) Very small C) Very high D) Infinite

83. The wattmeter
A) Has three connections two of which are used at a time
B) Can measure d.c. but not a.c. power
C) Has voltage and current coils to measure the real power
D) Only measures apparent

84. How many coils are required in meggar
A) One B) Two C) Three D) Four

85. Creeping is the phenomena which occurs in
A) Ammeter B) Voltmeter C) Energy meter D) Wattmeter

86. When a three-phase supply is given to the three-phase wound stator of a synchronous or induction machine, a resultant field of magnitude 1.5 $\emptyset_m$ is set up which rotates in
A) Clockwise direction
B) Anticlockwise direction
C) The direction as per the sequence in which supply is given
D) Other than A), B), C)

87. The stator winding of an induction motor can be designed for
A) Any number of poles
B) Any even number of poles
C) Any odd number of poles
D) Only for four poles

88. There is no electrical connection between stator and rotor, still power is transferred from stator to rotor through
A) Magnetic flux B) Air C) Water D) Magnet

89. Under running condition, the rotor reactance is directly proportional to
A) Induced e.m.f B) Rotor current C) Slip D) Supply voltage

90. The function of a starter is
A) To start the motor
B) To start and stop the motor
C) To limit the starting current
D) To limit the applied voltage

91. In a single phase induction motor at start, the two revolving fields produce
A) Unequal torques in the rotor conductors
B) No torque in the rotor conductors
C) Equal and opposite torque in the rotor conductors
D) Equal torques in the same direction in the rotor conductors

92. Transformer core is laminated
A) Because it is difficult to fabricate solid core
B) Because laminated core provides high flux density
C) To avoid eddy current losses
D) To avoid hysteresis loss

93. The use of higher flux density in the transformer design
A) Reduce the weight per kVA
B) Increase the weight per kVA
C) Has no relation with the weight of transformer
D) Increase the weight per kW

94. A 4:1 step up transformer has 150 volts across the primary and 600 ohm resistance across the secondary. Assuming 100% efficiency the primary current equals
A) 1/4 A
B) 400 mA
C) 4 A
D) 1 A

95. A transformer with output of 250kVA at 3000 V, has 600 turns on its primary and 60 turns on secondary winding. What will be the voltage on the primary side.
A) 300 V
B) 30000 V
C) 30 V
D) 3×10^5 V

96. The condition for maximum efficiency of a transformer is that
A) Copper losses are half to that of iron losses
B) Copper losses are square of the iron losses
C) Copper losses are equal to iron losses
D) Copper losses are zero

97. It is preferable to start d.c. series motor with some mechanical load because
A) It may develop excessive speed otherwise and get damaged
B) It will not run at no load
C) A little load will act as a starter to the motor
D) None of the above

98. The speed of a d.c. motor can be varied
A) By varying the field current only
B) By varying armature resistance only
C) By varying supply voltage only
D) All of the above

99. In a balanced three phase start connected system, the phase difference between phase voltages and their respective line voltages are
A) 30^o
B) 120^o
C) 60^o
D) 45^o

100. The power dissipated in the pure capacitance of an R-C series circuit will be
A) Zero
B) Small
C) Higher than dissipated in resistance
D) Equal to dissipated in resistance

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Chandigarh Housing Board
Post: JE Electrical
Answer Key (A-Series) : 29.01.2023 (Evening)

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