# SUPERINTENDING ENGINEER, ELECTRICAL CIRCLE, UT CHANDIGARH

## Post : Jr. Engg (Electrical)

## Question Booklet & Answer Key

## 21.05.2023 Sunday

**SUPERINTENDING ENGINEER, ELECTRICAL CIRCLE, UT CHANDIGARH**
**Post: Junior Engineer (Electrical)**
**Answer Key: (A Series) 21.5.2023 Sunday (Morning)**

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

**Directions for (Q1 – Q2): Identify the error in the sentences given below:-**

1. A) When the business is ran smoothly
   B) directors are more than happy to pick an experienced insider,
   C) who will continue along the present path
   D) of progress

2. A) She said that she was understanding
   B) his point of view
   C) very well
   D) on this issue

**Directions for (Q3 – Q4): Choose the correct antonym from the given options.**

3. Imperative
   A) Vital B) Remorseless C) Necessary D) Unimportant

4. Convalesce
   A) Visible B) Deteriorate C) Brittle D) Scattered

**Directions for (Q5 – Q6): Choose the correct meaning of the given idioms/ Proverb from the four alternatives:-**

5. *To be a dab hand at something*
   A) To be full of nonsense
   B) To be a coward
   C) To be skilled in a particular area
   D) To be a bad worker

6. *To snap one's fingers at*
   A) To be full of poison
   B) To ridicule others
   C) To treat with contempt
   D) To suffer for one's faults

**Directions for (Q7 – Q8): Mark the correct form of Indirect Speech from the four alternatives:-**

7. Sachin said to Virendra, "Go away"
   A) Sachin would say to Virendra to have gone away.
   B) Sachin told Virendra that if he would go away.
   C) Sachin ordered Virendra to go away.
   D) Sachin requested Virendra that he will go away.

8. Hari Said to me, "We have to win this game."
   A) Hari ordered me that we have to win this game.
   B) Hari told me that they had to win that game.
   C) Hari advised me that we will win that game.
   D) Hari said to me that I have to win this game.

**Directions for (Q9–Q10): Choose the correct synonym for the given word out of the four options:-**

9. Maverick
   A) Materialist B) Spiritualist C) Selfish D) Nonconformist

10. Emollient
    A) Aggravating B) Soothing C) Acidic D) Acerbic

**Directions for (Q11 – Q12): Choose the correct preposition to be filled in the blanks out of the four options:-**

11. We should not be covetous_____ other's riches.
    A) about B) of C) with D) for

12. Arun's behaviour is subversive_____ discipline.
    A) with B) about C) of D) for

13. In a certain code, 'JOURNEY' is written as 'TNISZFO'. How is 'MEDICAL' written in that same code?

A) CDLJMBD B) CDLJDBM C) LDCJMBD D) EFNJMBD

14. The age and height of six children in a class are as follows:

A is taller and older than T but shorter and younger than S. B is taller than C who is not as tall as T. The oldest is the shortest. The youngest would be fourth if the children stood in a line according to their height and one started counting from the tallest. B is younger than R but older than C who is older than S.

Whose Rank in height cannot be positioned definitely?

A) T B) B C) S D) C

15. Eight persons E, F, G, H, I, J, K and L are seated around a square table – two on each side. There are three lady members and they are not seated next to each other. J is between L and F. G is between I and F. H, a lady member, is second to the left of J. F, a male member, is seated opposite to E, a lady member. There is a lady member between F and I.

Who among the following is seated between E & H ?

A) I B) K C) L D) cannot be determined

16. Seven professionals A, B, C, D, E, F and G are practicing their professions in different cities Chennai, Bengaluru, Hyderabad, Mumbai, Ahmedabad, Jaipur and Bhubaneshwar not necessarily in the same order. Each has a different profession Doctor, Engineer, Pharmacist, Lawyer, Counsellor, Professor and Artist not necessarily in the same order.

A is a Pharmacist and practises in Bhubaneshwar. D practises in Bengaluru but is not a Doctor or an Artist. The one who practises in Hyderabad is a Professor. G is a Counsellor and does not practise in Mumbai or Chennai. E is a Lawyer and practises in Ahmedabad. F practises in Chennai but is not an artist. C practises in Mumbai.

Which of the following Combination of Profession and place is correct?

A) Pharmacist - Jaipur B) Engineer - Chennai

C) Doctor – Bengaluru D) Artist – Mumbai

17. Parmod starts from a point towards South and travels 12 m, then he turns towards right and travels 3 m. From here he again turns to right and travels 8 m. At last, he turns to right and travels 6 m. How far he is finally from his starting point and in which direction.

A) 7 m S-E B) 5 m S-E C) 29 m S-E D) 15 m S-W

18. Present ages of Arun and Tanu are in the ratio of 5 : 4 respectively. Three years hence, the ratio of their ages will become 11 : 9 respectively. What is Tanu's present age in years?

A) 22 B) 27 C) 24 D) data inadequate

19. A number series is given and below it in the next line, a number is given followed by (a), (b), (c), (d) and (e). Complete the series starting with the given number, following the pattern of the given series.

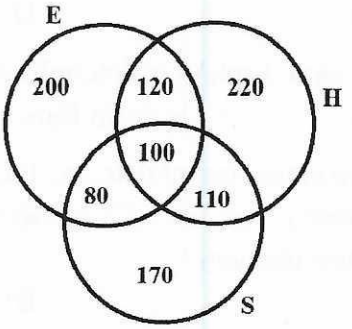
2, 9, 57, 337, 1681

3 (a) (b) (c) (d) (e)

Which number will come in place of (e) ?

A) 32416 B) 4231 C) 13441 D) 6392

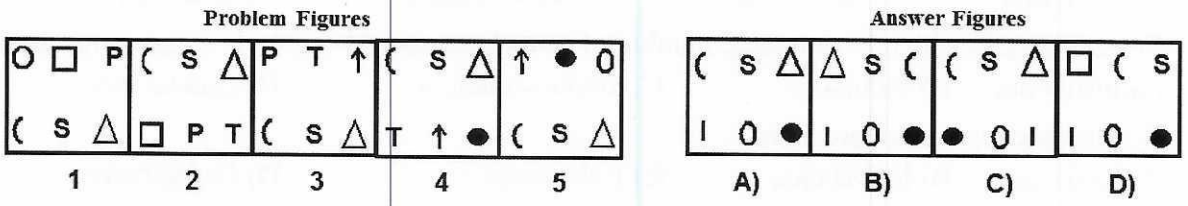
20. A result of a survey of 1100 persons with respect to their knowledge of Hindi (H), English (E) and Sanskrit (S) is given below:



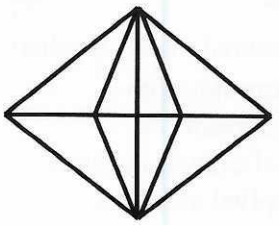

Find the percentage of persons who know at most one language:

A) 81.8 % B) 62.7 % C) 53.6 % D) none of above

21. There are two sets of figures namely the Problem figures containing five figures 1, 2, 3, 4 & 5 and the Answer figures (A), (B), (C) and (D). You have to select one figure from the Answer figures which will continue the same series as given in the Problem figures.




22. How many triangles are there in the following figure?



A) 24 B) 18 C) 20 D) None of the above

23. A cube of 4 cm has been painted on its surfaces in such a way that two opposite surfaces have been painted blue and two adjacent surfaces have been painted red. Two remaining surfaces have been left unpainted. Now the cube is cut into smaller cubes of side 1 cm each: How many cubes will have at least red colour on its surfaces?

A) 20 B) 22 C) 28 D) 32

24. Direction: One statement followed by four conclusions is given. Decide which of the conclusions supports the statement.

Statement: All the students in my class are bright. Manish is not bright.

Conclusions:

A) Some students are not bright.
B) Manish must work hard.
C) Non-bright ones are not students.
D) Manish is not a student of my class.

25. Delivery and storage of e-mail messages to a server is achieved using_____

A) Post Office Protocol (POP)
B) Internet Mail Access Protocol (IMAP)
C) Simple Mail Transfer Protocol (SMTP)
D) Hypertext Transfer Protocol (HTTP)

26. The contents of most forms of RAM are ____, thus making them unsuitable for long term data storage.

A) dynamic B) volatile C) static D) fragmented

27. What is the specialty of WINDOW-NT?
A) Supports multi- processing
B) Supports real – time processing
C) Supports Batch processing
D) Supports LAN and WAN

28. The number of colors a video card displays is determined by its _____.
A) Dot Pitch B) Bit Depth C) Refresh Rate D) Update Rate

29. Which function will you use to enter current date and time in MS-EXCEL worksheet cell?
A) =today() B) =now() C) =time() D) =CurrentTime()

30. Which of the following is fastest memory?
A) Secondary Memory
B) Auxiliary Memory
C) Cache Memory
D) Virtual Memory

31. One commercial unit of energy equals to
A) 500 watt-seconds
B) One watt-hour
C) One Kilowatt-hour
D) Ten Kilowatt-hour

32. The maximum current rating for a 10kΩ, 0.5W resistor is
A) 0.707mA B) 7.07mA C) 14.14mA D) 28.28mA

33. The substances which have a large number of free electrons and offer a low resistance are called
A) Insulators B) Inductors C) Semiconductors D) Conductors

34. Conductance is the reciprocal of
A) Resistance B) Inductance C) Reluctance D) Capacitance

35. A light bulb draws 300mA when the voltage across it is 240V. The resistance of the light bulb is
A) 400 Ω B) 600 Ω C) 800 Ω D) 1000 Ω

36. Two resistors are said to be connected in series when
A) Same current passes in turn through both
B) Both carry the same value of current
C) Total current equals the sum of branch currents
D) Sum of IR drop equals the applied e.m.f

37. Which is the best conductor of electricity
A) Iron B) Silver C) Copper D) Brass

38. Which one of the following does not have a negative temperature co-efficient?
A) Aluminum B) Paper C) Rubber D) Mica

39. In a series circuit with unequal resistances
A) The highest resistance has the most of the current through it
B) The lowest resistance has the highest voltage drop
C) The lowest resistance has the highest current
D) The highest resistance has the highest voltage drop

40. The hot resistance of the bulb's filament is higher than its cold resistance because the temperature co-efficient of the filament is
A) Zero B) Negative C) Positive D) About 2 ohms per degree

41. If the efficiency of a machine is to be high, what should be low?
A) Input power B) Losses C) kWh consumed D) true component of power

42. It becomes more difficult to remove
A) Any electron from the orbit
B) First electron from the orbit
C) Second electron from the orbit
D) Third electron from the orbit

43. When electric current passes through a bucket full of water, lot of bubbling is observed. This suggests the type of supply is
A) A.C. B) D.C. C) Both A.C. and D.C. D) Either A.C. or D.C.

44. A heater is rated at 230 V, 10 kW, A.C. The value 230 V refers to
A) Average voltage B) R.M.S. Voltage C) Peak Voltage D) Mean Voltage

45. Two waves of the same frequency have opposite phase when the phase angle between them is
A) $360^0$ B) $180^0$ C) $90^0$ D) $0^0$

46. Form factor for a sine wave is
A) 1.414 B) 0.707 C) 1.11 D) 0.637

47. For 200 V r.m.s. value triangular wave, the peak voltage will be
A) 200 V B) 222 V C) 282 V D) 346 V

48. Capacitive reactance is more when
A) Capacitance is less and frequency of supply is less
B) Capacitance is less and frequency of supply is more
C) Capacitance is more and frequency of supply is less
D) Capacitance is more and frequency of supply is more

49. Capacitors for power factor correction are rated in
A) kW B) kVA C) kV D) kVAR

50. Inductance affects the direct current flow
A) only at the time of turning off B) only at the time of turning on
C) at the time of turning off and on D) at all the time of operation

51. A three phase star connected symmetrical load consumes P watts of power from a balanced supply. If the same load is connected in delta to the same supply, the power consumption will be
A) P B) $\sqrt{3}P$ C) 3P D) Not determined from the given data

52. In a three phase balanced star connected load, neutral current is equal to
A) Zero B) $I_P$ C) $I_L$ D) Unpredictable

53. In case of a delta connected load, if one resistor is removed, the power will become
A) Zero B) One-third C) Two-third D) Half

54. The minimum number of wattmeters to measure power in a three phase unbalance star connected load is.
A) One B) Two C) Three D) Four

55. In a two phase system, the phase voltages differ by
A) $60^0$ B) $90^0$ C) $120^0$ D) $180^0$

56. When phase sequence at the three phase load is reversed
A) Phase currents are changed in magnitude
B) Phase currents change in phase angle but not in magnitude
C) Total power consumed is changed
D) Phase powers are changed

57. The instantaneous values of currents in phase R and Y of a three phase system are 25 A each. For a phase sequence of BRY, the instantaneous value of current in phase B is
A) 25 A B) 50 A C) 12.5 A D) 43.3 A

58. A transformer core is laminated to reduce
A) Hysteresis loss B) Eddy current loss C) Copper loss D) Windage loss

59. The no-load current drawn by a transformer is usually what percent of the full-load current?
A) 0.2 to 0.5 percent B) 2 to 5 percent C) 12 to 15 percent D) 20 to 30 percent

60. During the short circuit test on a small transformer the frequency is increased from 50 Hz to 200 Hz. The copper losses will decrease by a factor of
A) 16 B) 4 C) 1 D) ¼

61. While conducting short circuit test on a transformer the following side is short circuited
A) High voltage side B) Low voltage side C) Primary side D) Secondary side

62. The chemical used in breather is
A) Asbestos fibre B) Silica sand C) Sodium chloride D) Silica gel

63. A transformer oil must be free from
A) Sludge B) Odour C) Gases D) Moisture

64. Distribution transformers are generally designed for maximum efficiency around
A) 90% load B) Zero load C) 25% load D) 50% load

65. If a pump motor is running on 2/3rd of its supply voltage, it will
A) Continue to deliver same power B) Burn
C) Stall D) Continue to run at lower speed

66. Harmonics in transformer result in
A) Increased core losses B) Increased copper losses
C) Magnetic interference with communication circuit D) All of the above

67. Power transformers are generally designed to have maximum efficiency around
A) No-load B) Half-load C) Near full-load D) 10% overload

68. The secondary winding of which of the following transformers is always kept closed?
A) Step-up transformer B) Step-down transformer
C) Potential transformer D) Current transformer

69. Which of the following is not the standard voltage for power supply in India
A) 11 kV B) 33 kV C) 66 kV D) 122 kV

70. The commutator segments are connected to the armature conductors by means of
A) Copper lugs B) Resistance wires C) Insulation pads D) Brazing

71. Small D.C motors upto 5 H.P. usually have
A) 2 poles B) 4 poles C) 6 poles D) 8 poles

72. By looking at which part of the motor, it can be easily confirmed that a particular motor is D.C. motor?
A) Frame B) Shaft C) Commutator D) Stator

73. If the supply voltage for D.C. motor is increased, which of the following will decrease?
A) Starting torque B) Operating speed C) Full load current D) Supply frequency

74. What will happen in case 220 V D.C. series motor is connected to 220 V A.C. supply?
A) Power factor will be high
B) The motor will vibrate violently
C) The motor will run with less efficiency and more sparking
D) The motor will not run

75. In an induction motor, on no-load the slip is generally
A) Less than 1% B) 1.5% C) 2% D) 4%

76. A three phase 440 V, 50 Hz induction motor has 4% slip. The frequency of rotor e.m.f. will be
A) 200 Hz B) 50 Hz C) 2 Hz D) 0.2 Hz

77. The cogging of an induction motor can be avoided by
A) Proper ventilation
B) Using DOL starter
C) Auto-transformer starter
D) Having number of rotor slots more or less than the number of stator slots

78. The torque developed by a three phase induction motor least depends on
A) Rotor current B) Rotor power factor C) Rotor e.m.f. D) Shaft diameter

79. 5 H.P., 50 Hz, 3-phase, 440 V induction motor are available for the following r.p.m., which motor will be the costliest?
A) 730 r.p.m. B) 960 r.p.m. C) 1440 r.p.m. D) 2880 r.p.m.

80. Which motor is preferred for use in mines where explosive gases exist?
A) Air motor B) Induction motor C) D.C. shunt motor D) Synchronous motor

81. The motor used on small lathes is usually
A) Universal motor B) D.C. shunt motor
C) Single phase capacitor run motor D) 3-phase synchronous motor

82. In a capacitor start motor, the phase displacement between starting and running winding can be nearly
A) $10^0$ B) $30^0$ C) $60^0$ D) $90^0$

83. In single phase repulsion motor power factor is
A) Always leading B) High at low speeds C) Always unity D) High at high speeds

84. The direction of rotation of universal motor can be reversed by reversing the flow of current through
A) Armature winding B) Field winding
C) Either armature or field winding D) Neither armature or field winding

85. An exciter is nothing but a
A) D.C. series motor B) D.C. shunt motor
C) D.C. shunt generator D) D.C. series generator

86. The frequency of voltage generated in large alternators is
A) 50 Hz B) 60 Hz C) In kilo cycles D) In mega cycles

87. A three-phase synchronous motor will have
A) No slip-rings B) One slip-ring C) Two slip-rings D) Three slip-rings

88. Overhead system can be designed for operation up to
A) 11 kV B) 33 kV C) 66 kV D) 400 kV

89. Multicore cables generally use
A) Square conductors B) Circular conductors
C) Rectangular conductors D) Sector-shaped conductors

90. On increasing the temperature of an intrinsic semiconductor
A) Resistance of the semiconductor increases B) Energy of the atoms is increased
C) Holes are created in the conduction band D) Atomic radius is reduced

91. Higher the electric field intensity
A) Lower will be the mobility B) Higher will be the mobility
C) Mobility remains the same D) First it increases and then decreases

92. For N-type semiconductor the doping material is
A) A tetravalent material B) A pentavalent material
C) A trivalent material D) Germanium

93. When an intrinsic semiconductor is doped with a P-type impurity, each impurity atom will
A) Acquire negative energy B) Acquire positive energy
C) Remain electrically neutral D) Give away one electron

94. The potential barrier across a P-N junction corresponds to
A) Height of the barrier B) Width of the barrier
C) Forward bias of the junction D) Reverse bias of the junction

95. The peak inverse voltage is the maximum voltage that can be applied to a diode without
A) Burning B) Destruction C) Over heating D) Charging

96. For measuring high values of alternating current with a dynamometer ammeter, we use a
A) Shunt B) Multiplier C) Potential transformer D) Current transformer

97. Electrostatic instruments are used as
A) Voltmeters only
B) Ammeters only
C) Both ammeters and voltmeters
D) Wattmeters only

98. When the terminals of a series ohmmeter are open-circuited, the pointer reads
A) Zero B) Infinity C) A high resistance D) A low resistance

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

100. The term service mains refers to
A) Primary transmission
B) Secondary transmission
C) Primary distribution
D) Secondary distribution

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