26/2019

Question Booklet Alpha Code [**A**]

Question Booklet Serial Number

Total No. of Questions: 100 **Time : 75 Minutes**

Maximum : 100 Marks

INSTRUCTIONS TO CANDIDATES

1. The question paper will be given in the form of a Question Booklet. There will be four versions of question booklets with question booklet alpha code viz. A, B, C & D.

2. The Question Booklet Alpha Code will be printed on the top left margin of the facing sheet of the question booklet.

3. The Question Booklet Alpha Code allotted to you will be noted in your seating position in the Examination Hall.

4. If you get a question booklet where the alpha code does not match to the allotted alpha code in the seating position, please draw the attention of the Invigilator IMMEDIATELY.

5. The Question Booklet Serial Number is printed on the top right margin of the facing sheet. If your question booklet is un-numbered, please get it replaced by new question booklet with same alpha code.

6. The question booklet will be sealed at the middle of the right margin. Candidate should not open the question booklet, until the indication is given to start answering.

7. Immediately after the commencement of the examination, the candidate should check that the question booklet supplied to him contains all the 100 questions in serial order. The question booklet does not have unprinted or torn or missing pages and if so he/she should bring it to the notice of the Invigilator and get it replaced by a complete booklet with same alpha code. This is most important.

8. Blank sheets of paper is attached to the question booklet. These may be used for rough work.

9. **Please read carefully all the instructions on the reverse of the Answer Sheet before marking your answers.**

10. Each question is provided with four choices (A), (B), (C) and (D) having one correct answer. Choose the correct answer and darken the bubble corresponding to the question number using Blue or Black Ball-Point Pen in the OMR Answer Sheet.

11. **Each correct answer carries 1 mark and for each wrong answer 1/3 mark will be deducted. No negative mark for unattended questions.**

12. No candidate will be allowed to leave the examination hall till the end of the session and without handing over his/her Answer Sheet to the Invigilator. Candidates should ensure that the Invigilator has verified all the entries in the Register Number Coding Sheet and that the Invigilator has affixed his/her signature in the space provided.

13. Strict compliance of instructions is essential. Any malpractice or attempt to commit any kind of malpractice in the Examination will result in the disqualification of the candidate.

26/2019-A

26/2019

Maximum : 100 Marks

Time : 1 hour and 15 minutes

1. Who won the 'Odakkuzhal Award' of 2018 ?
   - (A) Dr. M. Leelavathi
   - (B) E.V. Ramakrishnan
   - (C) Sugalhakumari
   - (D) N.S. Madhavan

2. First Scheduled Caste woman passed school final in Kerala
   - (A) Dhakshayani Velayudhan
   - (B) Mayilamma
   - (C) C.K. Janu
   - (D) Dayabai

3. National income of India first scientifically calculated under :
   - (A) Dadabhai Naoroji
   - (B) Jawaharlal Nehru
   - (C) Prof. P.C. Mahalanobis
   - (D) Prof. V.K.R.V. Rao

4. Headquarters of Asian Development Bank
   - (A) New Delhi
   - (B) Tokyo
   - (C) Manila
   - (D) Kathmandu

5. World population reached 600 crores in the year
   - (A) 1987
   - (B) 1999
   - (C) 2000
   - (D) 1989

6. The winner of Women Qatar Open in 2019
   - (A) Elise Mertens
   - (B) Simona Halep
   - (C) Serena Williams
   - (D) Petra Kvitova

7. The 10 + 2 + 3 pattern of Education introduced by
   - (A) Mudaliar Commission
   - (B) Radhakrishnan Commission
   - (C) Kothari Commission
   - (D) Hunter Commission

8. Name the only planet that has a day longer than its year
   - (A) Mercury
   - (B) Jupiter
   - (C) Neptune
   - (D) Venus

9. First woman justice of Supreme Court of India
   - (A) Indu Malhotra
   - (B) K.K. Usha
   - (C) M. Fathima Beevi
   - (D) Anna Malhotra

10. The Act which provides 100 days assured employment every year to every rural household :
    - (A) NREGA
    - (B) NFWP
    - (C) NEGF
    - (D) REGP

11. National Consumers Day
    (A) March 10th   (B) March 1st
    (C) December 1st   (D) December 24th

12. Mahalwari settlement was introduced by
    (A) Cornwallis   (B) Holt Meckenzie
    (C) Col. Read   (D) Munro

13. The system of cultivation that the planter produced indigo on those lands which were under his direct control :
    (A) Ryoti Cultivation   (B) Intensive Cultivation
    (C) Nij Cultivation   (D) Transitional Cultivation

14. Partition of Bengal revoked by
    (A) Lord Ripon   (B) Lord Curzon
    (C) Lord Lytton   (D) Lord Hardinge

15. Atmavidya Sangham organised by
    (A) Vagbhatananda   (B) Vaikunda Swamikal
    (C) Chattampi Swamikal (D) Pandit K.P. Karuppan

16. The land of Naduvazhi
    (A) Brahmaswam   (B) Cherikkal
    (C) Iqta   (D) Devadana

17. The Constitution incorporated 10 Fundamental Duties by which Amendment Act of 1976 ?
    (A) 45th   (B) 42nd
    (C) 52nd   (D) 41st

18. First woman climbed Agasthyakoodam peak in Kerala
    (A) Arunima Sinha   (B) Dhanya Suresh
    (C) Dhanya Sonal   (D) Bachhendri Pal

19. The first book completely printed in Malayalam
    (A) Malabar Manuel   (B) Samkshepavedartham
    (C) Bible   (D) Paschimodayam

20. Gandhiji hailed it as "a miracle of modern times"
    (A) Temple Entry Proclamation   (B) Paliyam Satyagraha
    (C) Shanar Agitation   (D) Vaikom Satyagraha

21. A conductor has specific resistance 'ρ', length '*l*' and area of cross section 'a', then its resistance 'R' is

    (A) $R = \dfrac{\rho l}{a}$

    (B) $R = \dfrac{\rho a}{l}$

    (C) $R = \dfrac{la}{\rho}$

    (D) $R = \dfrac{\rho}{la}$

22. Unit of specific resistance is

    (A) Ω

    (B) $\Omega\text{-}M^2$

    (C) $\Omega\text{-}M$

    (D) $\Omega\text{-}M^3$

23. Which material has negative temperature coefficient of Resistance ?

    (A) Tungsten

    (B) Eureka

    (C) Manganin

    (D) Mica

24. If three resistors of 4 Ω are connected in parallel, find the effective resistance.

    (A) 12 Ω

    (B) 4 Ω

    (C) 1.33 Ω

    (D) 1.2 Ω

25. If a 230 V rated heater is connected to 110 V supply, the heat produced by it changes to

    (A) 2 times

    (B) $\dfrac{1}{4}$ times

    (C) $\dfrac{1}{2}$ times

    (D) 4 times

26. Mathematical expression of Coulomb's law is

    (A) $F \propto \dfrac{Q_1 Q_2}{d^2}$

    (B) $F \propto \dfrac{Q_1 Q_2}{d}$

    (C) $F \propto \dfrac{d}{Q_1 Q_2}$

    (D) $F \propto \dfrac{d^2}{Q_1 Q_2}$

27. Two positive charges of 1 coulomb are placed 1 metre apart in air. Force of repulsion between them is nearly

    (A) 1 N

    (B) 8.854×10^{-12} N

    (C) 9×10^9 N

    (D) 1.38×10^{-23} N

28. Two capacitors of 4 μF and 2 μF are connected parallel to a circuit, then the effective capacitance is

    (A) 1.33 μF   (B) 8 μF

    (C) 2 μF   (D) 6 μF

29. A capacitor of _____ farad stores a charge of 1 coulomb at 10 volts.

    (A) 10   (B) 1

    (C) 0.1   (D) 11

30. Relative permeability of Vacuum is

    (A) 1   (B) $4\pi \times 10^{-7}$

    (C) 8.854×10^{-12} H/M   (D) 0

31. Unit of magnetic flux density is

    (A) weber   (B) weber/metre^2

    (C) amp-turn   (D) henry

32. In a lead acid cell +ve plate is made up of

    (A) PbO_2 (B) Pb

    (C) H_2SO_4 (D) $PbSO_4$

33. Electrolyte of Nickel-Iron batteries is

    (A) H_2SO_4 (B) NaOH

    (C) KOH   (D) $Ni(OH)_4$

34. Example of absolute instrument is

    (A) PMMC voltmeter   (B) MI Ammeter

    (C) Wattmeter   (D) Tangent Galvanometer

35. The electrostatic effect directly utilized for the operation of

    (A) Voltmeter   (B) Ammeter

    (C) Wattmeter   (D) Ohmmeter

36. Which material is used for making control springs in electrical measuring instruments ?

    (A) Phosphor Bronze   (B) Phosphor Brass

    (C) Tin-Lead Alloy   (D) Silicon Steel

37. Working principle of thermocouple ammeter is based on the

    (A) Hall effect   (B) Skin effect

    (C) Seebeck effect   (D) Light effect

38. kWh meter is _____ instruments.

    (A) Indicating   (B) Recording

    (C) Deflecting   (D) Integrating

39. A 50 Hz alternating current has the time-period of _____ second.

    (A) 50   (B) 0.02

    (C) 0.1   (D) 1

40. rms value of alternating current is

    (A) $0.637\ I_m$ (B) $1.11\ I_m$

    (C) $1.414\ I_m$ (D) $0.707\ I_m$

41. In AC series circuits Q factor is

    (A) $\dfrac{1}{\cos\phi}$ (B) $\dfrac{1}{\sin\phi}$

    (C) $\cos\phi$ (D) $\sin\phi$

42. Resonant frequency of AC series circuit is

    (A) $f_o = \dfrac{1}{LC}$ (B) $f_o = \dfrac{1}{2\pi\sqrt{LC}}$

    (C) $f_o = \dfrac{\sqrt{LC}}{2\pi}$ (D) $f_o = \dfrac{1}{\sqrt{LC}}$

43. Power factor of R-C series circuit is

    (A) zero   (B) between zero and one

    (C) unity   (D) greater than one

44. Nature of induced current in the dc generator is

    (A) Alternating   (B) Direct

    (C) Rectified DC   (D) Unidirectional

45. Steinmetz formula is related with

    (A) Hysteresis loss   (B) Eddy current loss

    (C) Friction loss   (D) Field copper loss

46. The critical resistance of a DC generator is the resistance of

    (A) Commutator   (B) Armature

    (C) Field   (D) Brush

47. The wave winding is suitable for _____ voltage, _____ current dc generators.

    (A) high, low   (B) high, high

    (C) low, high   (D) low, low

48. In dc machines the armature winding must be a

    (A) lap winding   (B) wave winding

    (C) closed one   (D) simplex winding

49. Which type of DC generators do not need equalizers for satisfactory parallel operation ?

    (A) Under compound   (B) Series

    (C) Over compound   (D) Level compound

50. The direction of rotation of a dc motor is found by

    (A) Fleming's right hand rule   (B) Faraday's laws

    (C) Fleming's left hand rule   (D) Lens law

51. No load voltage of a dc generator is 240 V and rated load voltage is 220 V. Find the voltage regulation of the generator.

    (A) 8.3%   (B) 91%

    (C) 9.1%   (D) 83%

52. Which of the following Generator has poorest voltage regulation ?

    (A) Shunt   (B) Series

    (C) Compound   (D) Flat compound

53. The external characteristics of a shunt generator is obtained from its _____ characteristics.

    (A)   Internal   (B)   Performance

    (C)   Open circuit   (D)   Load

54. Voltage equation of a dc motor is

    (A) $V = Eb - IaRa$ (B) $V = Eb + IaRa$

    (C) $V = Eb - Ia^2Ra$ (D) $V = \dfrac{\phi ZNP}{A}$

55. Condition for maximum mechanical power developed in a dc motor is

    (A) $Eb = V$ (B) $Eb > V$

    (C) $Eb < V$ (D) $Eb = \dfrac{V}{2}$

56. At constant load, the speed of a dc motor is affected by

    (A)   Back emf   (B)   Armature current

    (C)   Field flux   (D)   Armature resistance

57. A compound motor is best suited for driving

    (A)   Reciprocating pump   (B)   Crains and hoists

    (C)   Lathes   (D)   Electric locomotives

58. For dc shunt motors, which method is used for wide and very sensitive speed control ?

    (A)   Armature voltage control   (B)   Flux control method

    (C)   Tapped field control   (D)   Ward-Leonard method

59. Which of the following test requires two identical dc shunt machines ?

    (A)   Retardation test   (B)   Swinburn's test

    (C)   Hopkinson's test   (D)   No load test

60. Among the following, which is the transmission voltage used in India ?

    (A)   1000 V   (B)   40000 V

    (C)   220000 V   (D)   440 V

61. The maximum temperature permitted for class 'F' insulation is

    (A) 155 °C   (B) 105 °C

    (C) 120 °C   (D) 180 °C

62. Which material is used for making resistors of loading rheostats ?

    (A) Tungsten   (B) Manganin

    (C) Constantan   (D) Brass

63. Earthing is necessary to give protection against

    (A) Overloading   (B) Electric shock

    (C) Short circuit   (D) Electric fire

64. The main purpose of core in a transformer is to

    (A) Carry primary current

    (B) Prevent eddy current

    (C) Eliminate hysteresis loss

    (D) Decrease reluctance of Magnetic circuit

65. Buchholz relay is _____ type relay.

    (A) Solenoid   (B) Induction

    (C) Thermal   (D) Attracted armature type

66. Fusing factor of a fuse is

    (A) More than one   (B) Less than one

    (C) Equal to one   (D) Zero

67. Unit of Luminous Intensity

    (A) lux   (B) candle

    (C) lumen   (D) lumens/m^2

68. Which type of electric lamp is used in Cinema projectors ?

    (A) Incandescent lamp   (B) Carbon arc lamp

    (C) Neon lamp   (D) Discharge lamp

69. Open circuit test on a transformer is carried out to measure its

    (A) Total loss   (B) Cu loss

    (C) Efficiency   (D) Core loss

70. Stray loss in DC machines is accounted as

    (A) Magnetic and electrical loss   (B) Copper loss and core loss

    (C) Magnetic and Mechanical loss   (D) Windage loss and friction loss

71. Materials for donor impurities in intrinsic semi-conductor

    (A) Monovalent   (B) Trivalent

    (C) Tetravalent   (D) Pentavalent

72. Which type squirrel cage motors have high starting torque, low starting current and normal slip ?

    (A) Class A   (B) Class C

    (C) Class B   (D) Class F

73. Stroboscopic method is used to find _____ of an induction motor.

    (A) torque   (B) slip

    (C) speed   (D) efficiency

74. Which of the following motor is suitable for compressors ?

    (A) Universal motor   (B) Two value capacitor run motor

    (C) Capacitor start and run motor   (D) Shaded pole motor

75. The ratio of intensity of magnetisation I to the magnetising force H is called

    (A) Permeability   (B) Magnetic potential

    (C) Magnetic field strength   (D) Susceptibility

76. Which method is used for measuring dielectric loss of a capacitor ?

    (A) Schering Bridge   (B) Anderson Bridge

    (C) Hay's Bridge   (D) De Sauty Bridge

77. The sum of the three phase emfs of a three phase ac supply is

    (A) $\sqrt{3}\ V_m$ (B) V_m

    (C) $\dfrac{V_m}{2}$ (D) Zero

78. Brass contains Copper and _____ .

    (A) Tin   (B) Lead

    (C) Zinc   (D) Nickel

79. The earth resistance of any earthing should not be more than

    (A) 1 ohm   (B) 5 ohm

    (C) $10 \, \Omega$ (D) 3 ohm

80. The minimum size of earth conductor used in a domestic installation is

    (A) 8 SWG   (B) 12 SWG

    (C) 16 SWG   (D) 14 SWG

81. In an ac circuit $3 \, \Omega$ resistor is connected in series with a $4 \, \Omega$ capacitive reactance. The impedance of the circuit is

    (A) $5 \, \Omega$ (B) $7 \, \Omega$

    (C) $1 \, \Omega$ (D) $25 \, \Omega$

82. The speed of synchronous motor is always

    (A) Less than synchronous speed   (B) Synchronous speed

    (C) More than synchronous speed   (D) Low speed at heavy load

83. The working of a synchronous motor is similar to

    (A) DC series motor

    (B) The power transformer

    (C) Induction motor

    (D) The transmission of mechanical power by a shaft

84. Synchronous motor runs with

    (A) lagging pf only   (B) leading pf only

    (C) both lagging and leading pf   (D) Unity power factor only

85. Which of the following motor has centrifugal switch ?

    (A) Hysteresis motor   (B) Reluctance motor

    (C) Stepper motor   (D) Shaded pole motor

86. Zero power factor method is used to find _____ of an alternators.

   (A) Power factor (B) Synchronous impedance

   (C) Efficiency (D) Voltage regulation

87. A 10 Ω resistor, 0.1 H inductor and 150 µF capacitor are connected in series and give a 200 V, 50 Hz ac supply. Find the power factor of the circuit.

   (A) 0.6 (B) 0.5

   (C) 0.7 (D) 0.9

88. At the time of 3 phase power measurement using two wattmeter method; wattmeter 1 reads positive and wattmeter 2 reads zero, then the power factor is

   (A) 0.5 (B) 0.8

   (C) Unity (D) Zero

89. If a 400 V, 5 HP motor having a cold resistance of armature is 0.25 Ω and full load current of 50 A is connected directly to the 400 V supply. The motor draws a starting current of

   (A) 50 A (B) 1600 A

   (C) 1760 A (D) 500 A

90. Face-plate type controller is used for starting a

   (A) DC series motor (B) DC shunt motor

   (C) Compound motor (D) Linear induction motor

91. If the value of a resistor is 4.7 ± 5% Ω, then its colour code is

   (A) Gray Violet Gold Silver (B) Gray Blue Silver Gold

   (C) Yellow Violet Gold Gold (D) Yellow Violet Silver Gold

92. In colour coding of resistors, which band indicates the tolerance value ?

   (A) First (B) Fourth

   (C) Third (D) Fifth

93. Which one of the following motor does not change its direction of rotation ?

   (A) Split phase motor (B) Universal motor

   (C) Stepper motor (D) Shaded pole motor

94. Which diode is used in measuring instruments for protection from overload ?

    (A)   PN junction diode   (B)   Zener diode

    (C)   1 N 4007   (D)   LDR

95. Ripple frequency of a centre tap fullwave rectifier is at 230 V, 50 Hz supply is

    (A)   100 Hz   (B)   50 Hz

    (C)   0 Hz   (D)   25 Hz

96. Peak inverse voltage of fullwave bridge rectifier is

    (A) $2 V_m$ (B) $\dfrac{V_m}{2}$

    (C) $4 V_m$ (D) V_m

97. The binary number 11011 is equal to the decimal

    (A)   27   (B)   25

    (C)   29   (D)   11

98. The value of forbidden energy gap of silicon atom is

    (A)   1.43 eV   (B)   0.72 eV

    (C)   0.5 eV   (D)   1.12 eV

99. Which material is used for thermal insulation in electrical heating equipments ?

    (A)   Mica   (B)   Asbestos

    (C)   Bakelite   (D)   Enamel

100. In staircase wiring the lamp is operated with

    (A)   two intermediate switch

    (B)   two one-way switches

    (C)   one one-way and one two-way switch

    (D)   two two-way switches

SPACE FOR ROUGH WORK

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