



047/2017

Question Booklet
Alpha Code

A

Question Booklet
Serial Number

Total Number of Questions : 100

Time : 75 Minutes

Maximum Marks : 100

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/her 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. A blank sheet of paper is attached to the Question Booklet. This 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.

047/2017





1. Colpitt's oscillator is a
 - A) Square wave oscillator
 - B) Sinusoidal oscillator
 - C) Non sinusoidal oscillator
 - D) Sound generator

2. According to Faraday's law, induced emf is directly proportional to
 - A) Maximum flux
 - B) Rate of change of flux linkages
 - C) Time
 - D) Flux density

3. Differential compound generator is a/an
 - A) Self excited generator
 - B) Separately excited generator
 - C) Alternator
 - D) Function generator

4. EMF equation of a dc generator is
 - A) $\frac{\phi ZN}{120} \times \frac{A}{P}$
 - B) $\frac{\phi ZN}{60} \times \frac{A}{P}$
 - C) $\frac{\phi N60}{Z} \times \frac{A}{P}$
 - D) None of the above

5. Speed is a _____ quantity.
 - A) Scalar
 - B) Vector
 - C) A) or B)
 - D) None of the above

6. Which type of DC compound generator is used when the load is very far away from the generator ?
 - A) Level compounded
 - B) Under compounded
 - C) Over compounded
 - D) Differentially compounded

7. Pitch of lap winding
 - A) Y_B
 - B) $Y_B - Y_F$
 - C) $Y_B + Y_F$
 - D) Y_F

8. Transformers are rated in
 - A) KVA
 - B) KW
 - C) KVAR
 - D) MW

9. In a transformer, $I_1/I_2 =$
 - A) E_1/E_2
 - B) E_2/E_1
 - C) N_1/N_2
 - D) None of the above



10. Turns ratio of isolation or one-to-one transformer is
A) Greater than 1 B) Less than 1 C) 1 D) 2
11. Hysteresis loss, $W_h =$
A) $K_h B_{\max}^{1.6} f$ watts B) $K_h B_{\max}^2 f$ watts
C) $K_h B_{\max} f$ watts D) $K_h B_{\max}^2 f^2$ watts
12. Class 0.1 instruments are used as
A) Portable instrument B) Industrial measuring instruments
C) Precision measuring instruments D) Panel measuring instrument
13. Which is an absolute instrument ?
A) Ammeter B) Wattmeter
C) Voltmeter D) Tangent Galvanometer
14. If the pointer of measuring instrument moves quickly to its final deflected position, it is
A) Over damped B) Under damped
C) Critically damped D) Not damped
15. Power factor =
A) $\frac{KVA}{KW}$ B) $\frac{KVAR}{KW}$ C) $\frac{KW}{KVAR}$ D) $\frac{KW}{KVA}$
16. The ratio $\frac{Z}{R}$ is
A) Reciprocal of power factor B) Power factor
C) Reciprocal of form factor D) Form factor
17. PIC is the part of
A) MI voltmeter B) Induction energymeter
C) Digital energymeter D) Induction wattmeter
18. Tong-tester is used to measure
A) Power B) Voltage C) Energy D) Alternating current



19. Collector current, I_C of BJT =
A) $I_E + I_B$ B) $I_E - I_B$ C) $I_E - 2I_B$ D) $I_E + 2I_B$
20. Capacitive reactance is
A) Directly proportional to frequency B) Directly proportional to capacitance
C) Independent on frequency D) Inversely proportional to frequency
21. Current gain of common base amplifier is
A) Always less than 1 B) Always greater than 1
C) Equal to 1 D) None of the above
22. Frequency of rotor current of induction motor is
A) Frequency of stator current B) Slip \times frequency of stator current
C) Frequency of stator current/slip D) Slip/frequency of stator current
23. Which of the following motor is not self starting ?
A) Universal motor B) DC shunt motor
C) Single phase induction motor D) 3 phase induction motor
24. Electric charge, Q =
A) $V \times t$ B) $\frac{V}{t}$ C) $\frac{I}{t}$ D) $I \times t$
25. Which is wrong about the speed control of dc shunt motor by field control method ?
A) It is economical
B) Speed can be varied above normal speed
C) Speed cannot be varied above normal speed
D) Commutation becomes unsatisfactory
26. Which is constant speed motor ?
A) Synchronous motor B) Universal motor
C) DC series motor D) DC compound motor
27. Unit of mmf
A) Weber B) Ampere turns C) Tesla D) Henry



28. Negative plate of lead acid cell is
- A) Lead peroxide
B) Lead sulphate
C) Nickel
D) Spongy lead
29. As per IE rule, the leakage current in an installation should not exceed _____ part of full load current of installation.
- A) $\frac{1}{50}$ th
B) $\frac{1}{600}$ th
C) $\frac{1}{5000}$ th
D) $\frac{1}{1000}$ th
30. Capacitance =
- A) $\frac{\text{Potential difference}}{\text{Charge}}$
B) $\frac{\text{Charge}}{\text{Current}}$
C) $\frac{\text{Current}}{\text{Charge}}$
D) $\frac{\text{Charge}}{\text{Potential difference}}$
31. Permeance is the reciprocal of
- A) Permittivity
B) mmf
C) Reluctance
D) Flux
32. Energy stored in magnetic field, E =
- A) $\frac{1}{2}LI^2$
B) $\frac{1}{2}LI$
C) $\frac{1}{2}L^2I^2$
D) $\frac{1}{2}L^2I$
33. The Ah efficiency of lead acid cell is normally between
- A) 90 – 95%
B) 30 – 35%
C) 70 – 75%
D) 60 – 65%
34. Insulation resistance can be measured using
- A) Tong tester
B) Multimeter
C) Meggar
D) Ohmmeter
35. There is no control spring in
- A) PMMC voltmeter
B) Induction energymeter
C) PMMC ammeter
D) Dynamometer instrument



43. Synchronous speed, $N_s =$

- A) $\frac{120 f}{p}$ B) $\frac{120 p}{f}$ C) $\frac{60 p}{f}$ D) $\frac{60 f}{p}$

44. Which of the following has negative temperature coefficient of resistance ?

- A) Silicon B) Copper
C) Iron D) Brass

45. Secondary of a CT must be connected to an ammeter or must be short circuited in order to avoid

- A) High secondary emf
B) Increase in iron loss
C) Excessive heating of the core
D) All of the above

46. Rotor speed of 3 phase, 4 pole, 50 Hz induction motor

- A) 1440 RPM B) 1500 RPM
C) 1560 RPM D) 1600 RPM

47. Barrier potential of silicon at room temperature of 25°C is

- A) 0.3 V B) 0.4 V
C) 0.7 V D) 0.9 V

48. Power rating of low power transistors are

- A) up to 10 watts B) up to 20 watts
C) Less than 2 watts D) up to 15 watts

49. Convert decimal 9 to binary.

- A) 1011 B) 1000
C) 1100 D) 1001

50. Boolean expression for OR gate is

- A) $Y = AB$ B) $Y = A + B$
C) $Y = \overline{AB}$ D) $Y = \overline{A + B}$



51. Which connection is best suited for 3 phase, 4 wire service ?
- A) Delta-Delta
 - B) Star-Star
 - C) Delta-Star
 - D) Star-Delta
52. The scale range marked on the dial of the meggar is
- A) 500 Megaohm to zero ohm
 - B) Infinity to zero ohm
 - C) 50 Megaohm to zero ohm
 - D) 1000 Megaohm to zero ohm
53. Fusing factor is
- A) Ratio between minimum fusing current to current rating
 - B) Time taken by a fuse to interrupt the circuit in the event of fault
 - C) Safe maximum current that can pass through it continuously without overheating
 - D) Current at which fuse element melts
54. 1500 RPM = _____ RPS.
- A) 50
 - B) 60
 - C) 40
 - D) 25
55. 1 Kg wt = _____ Newton.
- A) 5.3
 - B) 6.7
 - C) 9.8
 - D) 12.6
56. The direction of force produced on a current carrying conductor placed in a magnetic field can be determined by
- A) Fleming's Right Hand Rule
 - B) Cork Screw Rule
 - C) Fleming's Left Hand Rule
 - D) Lenz's Law
57. Differential compound generators are suitable for
- A) Electroplating
 - B) Arc welding
 - C) Lighting
 - D) Battery charging
58. When a BJT operates in cut off
- A) $V_{CE} = V_{CC}$
 - B) $V_{CE} = 0$
 - C) $V_{CE} = \frac{V_{CC}}{2}$
 - D) $V_{CE} = 0.75 \times V_{CC}$



59. In a BJT, β (Beta) =

- A) $\frac{1-\alpha}{\alpha}$ B) $\frac{1+\alpha}{\alpha}$ C) $\frac{\alpha}{1+\alpha}$ D) $\frac{\alpha}{1-\alpha}$

60. Efficiency of class A amplifier is

- A) Between 50% – 60% B) Less than 50%
C) Nearly 90% D) Between 50% and 75%

61. Mechanical equivalent of heat, J is

- A) 36×10^5 Joules B) 4186 Joules/K Cal
C) 3186 Joules/Cal D) 5186 Joules/K Cal

62. 1 KWh = _____ Joules.

- A) 3600 B) 36×10^3
C) 36×10^5 D) 36×10^6

63. 1 Joule/second is equal to

- A) 1 Watt B) 1 Calorie
C) 1 Newton D) 1 Henry

64. 1 Coulomb of charge is defined as that charge which when placed in vacuum from equal and similar charge, repels it with a force of _____ N.

- A) 9×10^9 B) 9×10^6
C) 9×10^{-9} D) 9×10^{18}

65. Dielectric strength of air in KV/mm

- A) 2.1 B) 15 C) 3.2 D) 8.4

66. Capacitor that stores a charge of 0.005 C at 10 volts has a capacitance of _____ Farad.

- A) 0.05 B) 0.0005 C) 5×10^{-3} D) 5×10^{-6}



67. Unit of magnetic field strength (H) is

- A) Newton/Weber
B) Ampere Turns
C) Weber
D) Henry

68. MMF/Reluctance is equal to

- A) Permeance
B) Field strength
C) Flux
D) Permeability

69. Relative permeability, $\mu_r =$

- A) $\frac{B^2}{H}$
B) $\frac{H}{B}$
C) B^2H
D) $\frac{B(\text{Material})}{B(\text{Vacuum})}$

70. _____ is used as electrolyte in Nickel-Iron battery.

- A) H_2SO_4
B) HCl
C) MnO_2
D) KOH

71. Average emf of Edison cell is

- A) 2.1 V/cell
B) 2.5 V/cell
C) 2.7 V/cell
D) 1.2 V/cell

72. When three capacitors C_1 , C_2 and C_3 are connected in parallel, total capacitance will be

- A) $\frac{1}{C} = \frac{1}{C_1} + \frac{1}{C_2} + \frac{1}{C_3}$
B) $C = \frac{1}{C_1} + \frac{1}{C_2} + \frac{1}{C_3}$
C) $C = C_1 + C_2 + C_3$
D) $C = \frac{C_1 + C_2 + C_3}{C_1 C_2 C_3}$

73. _____ ammeter will be used to measure alternating current only.

- A) Moving iron
B) Induction
C) PMMC
D) Electrodynamic



74. Time period of 100 Hz alternating quantity is
- A) 0.05 seconds B) 0.02 seconds
C) 0.03 seconds D) 0.01 seconds
75. Average value \times Form factor =
- A) Peak value B) Peak to peak value
C) Instantaneous value D) rms value
76. The critical value of loop gain of an oscillator, $K A_v$ is
- A) Equal to 1 B) Less than 1
C) Greater than 1 D) Equal to 0
77. Resonant frequency of an RLC series circuit
- A) $\frac{1}{2\pi\sqrt{LC}}$ B) $\frac{1}{4\pi\sqrt{LC}}$
C) $\frac{1}{\sqrt{2\pi LC}}$ D) $\frac{1}{2\pi\sqrt{LR}}$
78. LSI integrated circuits consists of _____ transistors.
- A) 10 to 100 B) 1 to 10
C) 100 to 1000 D) 50 to 500
79. Hexadecimal $[23]_{16} =$ _____
- A) $[23]_{10}$ B) $[44]_{10}$
C) $[35]_{10}$ D) $[28]_{10}$
80. Base of a transistor is _____ doped.
- A) Heavily B) Very lightly
C) Moderately D) Not



81. Which National Leader of India is known as 'Prince of Workers' ?
A) Sardar Vallabhbhai Patel B) Lala Lajpath Roy
C) Bal Gangadhar Tilak D) Gopal Krishna Ghokale
82. Who is known as 'Akbar of British India' ?
A) Lord Wellesley B) Lord Canning
C) Lord Hardinge D) Lord Rippon
83. Who was the first British Viceroy to visit Kerala ?
A) Lord Lytton B) Lord Wavell
C) Lord Curzon D) Lord Mount Batten
84. Which is the most abundant metal in the Earth's crust ?
A) Iron B) Aluminium
C) Nickel D) Silicon
85. Who among the following is associated with the discovery of rings of Saturn ?
A) Copper Nikos B) Christian Huggins
C) Galileo D) Bhaskaracharya
86. How many delegates had attended the first session of Indian National Congress ?
A) 82 B) 72 C) 92 D) 98
87. India changed over to the decimal system of coinage in
A) April 1957 B) April 1935 C) April 1950 D) April 1947
88. Which country has the largest coastline ?
A) USA B) India C) Australia D) Canada
89. The National Anthem was first sung in the year ?
A) 1930 B) 1911 C) 1935 D) 1947
90. Where is the Railway Staff College located ?
A) Chennai B) Bhopal C) Pune D) Vadodara



91. Who was the author of the book 'Story of an Escape' ?
A) Surjith Singh Bernala B) Nirupama Rao
C) Dr. M. S. Venkatesh D) Dr. Ramesh Kumar Sharma
92. India's first Post Office Passport Seva Kendra (POPSK) has been inaugurated in which city ?
A) Kochi B) Bhopal C) Mysuru D) Chennai
93. The World Hindi Day is observed on which date ?
A) January 10 B) January 12
C) February 10 D) February 12
94. Which Indian State has become the first to introduce cashless system for Public distributing system of food grains ?
A) Sikkim B) Gujarat C) Madhya Pradesh D) Punjab
95. Which of the following State will host the 2022 National Games ?
A) Karnataka B) Rajasthan C) Bihar D) Meghalaya
96. Who compiled 'The Travancore State Manual' ?
A) Munro B) Mecauly
C) V. Nagam Aiya D) William Logan
97. Who founded the 'Vidya Poshini Sabha' ?
A) Sahodharan Ayyappan B) Swami Agamananda
C) Chattampi Swamikal D) Vagbhadananda
98. Who was called the 'Simhala Simham' ?
A) Ayyankali B) Dr. Palpu C) K. Kelappan D) C. Kesavan
99. Name the leader related to the 'Muthukulam Speech' of 1947.
A) Pattom Thanupillai B) Mannthu Padmanabhan
C) V. T. Bhattathirippad D) Pandit Karuppan
100. In which year Sree Narayana Guru held an all religions conference at Advaitasramam Aluva ?
A) 1922 B) 1914 C) 1924 D) 1918



Space for Rough Work



Space for Rough Work