

029/2018

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 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.

029/2018

1. The idea of the suspension of Fundamental Rights during the emergency is taken from which of the following constitution ?
(A) German (B) American (C) British (D) Australian
2. Who among the following is known as 'Modern Manu' ?
(A) Jawaharlal Nehru (B) Dr. B.R. Ambedkar
(C) M.N. Roy (D) Fazal Ali
3. Which is the first nation in the world to implement the R.T.I. ?
(A) Sweden (B) The Netherlands
(C) Switzerland (D) Denmark
4. Who is known as the Father of Kerala Literacy ?
(A) Vakkom Abdul Khader Moulavi
(B) Kuriakose Elias Chavara
(C) M.C. Joseph
(D) P.K. Chathan Master
5. Who among the following led the historic 'Pattini Jatha' from Kannur to Madras ?
(A) K. Kelappan (B) A.K. Gopalan
(C) P. Krishna Pillai (D) T.K. Madhavan
6. The founder editor of the journal 'Yuktivadi' is :
(A) Sahodaran Ayyappan (B) K. Kelappan
(C) Ayyankali (D) C. Kesavan
7. Who is known as the 'Jhansi Rani of Travancore' ?
(A) Arya Pallam (B) A.V. Kuttimalu Amma
(C) Lalithambika Antharjanam (D) Akkamma Cheriyan
8. Which of the following state is known as the 'granary of India' ?
(A) Tamil Nadu (B) Andhra Pradesh (C) West Bengal (D) Punjab

A

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{P.T.O.}

9. Which Indian city is known as the 'Manchester of South India' ?
(A) Coimbatore (B) Bangalore (C) Hyderabad (D) Chennai
10. Who founded the 'Sree Narayana Gurukulam' ?
(A) Nataraja Guru (B) Nitya Chaitanya Yati
(C) Ananda Theertha (D) Vellapalli Natesan
11. Who is known as the 'Kavithilaka' ?
(A) Swadeshbhimani Ramakrishna Pillai
(B) Keralavarma Valiyakoyithampuran
(C) Pandit Karuppan
(D) Dr. Ayyathan Gopalan
12. Who among the following started the journal 'Sadhujana Dootan' ?
(A) Sahodaran Ayyappan (B) Pampady John Joseph
(C) M.C. Joseph (D) Velukutty Arayan
13. Which of the following newspaper is known as 'the Bible of the depressed' ?
(A) Malayali (B) Rajyasamacharam
(C) Kerala Kaumudi (D) Mithavaadi
14. The 'Melmundu Kalapam' of Travancore during the 19th century was conducted by :
(A) Arayas (B) Ezhavas (C) Nadars (D) Pulayas
15. Who is the first Kerala Chief Minister to be a participant in the 35th World Economic Forum held at Davos in Switzerland ?
(A) E.K. Nayanar (B) A.K. Antony
(C) Oommen Chandy (D) V.S. Achuthanandan
16. Which of the following temple is known as the 'Palani of Kerala' ?
(A) The Jagannath temple, Thalassery
(B) Sree Krishnaswamy temple, Ambalappuzha
(C) Sree Peralassery temple, Kannur
(D) Subrahmanya Swami temple, Haripad

17. Which of the following language is the most spoken Dravidian language ?
 (A) Tamil (B) Telugu (C) Malayalam (D) Kannada
18. 'Salim Ali National Park' is located in which Indian state ?
 (A) West Bengal (B) Uttar Pradesh (C) Bihar (D) Jammu and Kashmir
19. The Indian cricketer who got the Arjuna Award in 2016 is :
 (A) M.S. Dhoni (B) Virat Kohli
 (C) Ajinkya Rahane (D) Yuvraj Singh
20. Who is known as the 'Father of Indian Renaissance' ?
 (A) Rajaram Mohan Roy (B) Dayananda Saraswathy
 (C) Swami Vivekananda (D) Rabindranath Tagore
21. A coil has a resistance of 100Ω at 25°C and 200Ω at 100°C . Its temperature coefficient at 0°C is _____ per degree Celsius.
 (A) 0.002 (B) 0.02 (C) 0.2 (D) None of the above
22. Current flowing in an electric circuit is equivalent to _____ in magnetic circuit.
 (A) Flux (B) MMF (C) Reluctance (D) Permeance
23. The angular frequency of a 50 Hz sine wave is _____ rad/sec.
 (A) $50/\pi$ (B) 50π (C) $100/\pi$ (D) 100π
24. The resonance frequency of an RLC series circuit is 100 Hz. If the resistance value is doubled, keeping all other parameters same, what would be the new resonance frequency ?
 (A) 25 Hz (B) 50 Hz (C) 100 Hz (D) 200 Hz
25. A transistor in CB configuration draws a base current of 0.1 mA and emitter current is found to be 1 mA. Determine the value of dc alpha (α_{dc}) of this transistor.
 (A) 0.1 (B) 0.9 (C) 1.1 (D) 1.11

26. Input to a Half Wave Rectifier circuit is a 50 Hz sine wave. What will be the frequency of its output waveform ?
 (A) 0 Hz (B) 25 Hz (C) 50 Hz (D) 100 Hz
27. Which of the following transistor amplifier configuration is best suited for impedance matching ?
 (A) CB (B) CC (C) CE (D) CD
28. Gain 'A' of an amplifier circuit without feedback is found to be 50. To make it an oscillator circuit the value of the positive feedback gain required is _____.
 (A) 1 (B) 0.2 (C) 0.02 (D) 0.01
29. Material used for making brushes in a dc machine is _____.
 (A) Aluminium (B) Carbon (C) Nickel (D) Chromium
30. Direction of rotation of a dc motor can be reversed by changing the direction of _____.
 (A) Armature current only
 (B) Field current only
 (C) Either Armature current or Field current only
 (D) Both Armature current and Field current
31. A long shunt dc compound generator has armature, shunt and series field windings with 0.01Ω , 100Ω , 0.02Ω respectively. Find the armature current when it is supplying a load of 50 A at 200 V.
 (A) 48 A (B) 49 A (C) 51 A (D) 52 A
32. A 4 pole 255 V lap connected dc shunt motor with 500 conductors takes an armature current of 50 A at a magnetic field of 10 milli Weber. If the armature resistance is 0.02Ω , and total brush drop is 2 V, calculate the speed of the motor in rpm.
 (A) 1500 (B) 1560 (C) 3000 (D) 3120
33. In a metering instrument, hair spring used for providing controlling torque is made of _____.
 (A) Copper (B) Carbon (C) Aluminium (D) Phosphor Bronze

34. Creeping in an energy meter occurs when _____.
- (A) Only Pressure coil is energized
 (B) Only Current coil is energized
 (C) Both Pressure coil and Current coil are energized
 (D) Both Pressure coil and Current coil are not energized
35. An energy meter was tested in a laboratory by phantom loading method with a resistive load and by providing a balanced 3 phase supply. The current coil is connected in the R phase and the pressure coil is connected across R phase and B phase. What would be the power factor under test ?
- (A) Upf (B) 0.5 lag (C) 0.866 lead (D) 0.866 lag
36. Schering bridge is used for measuring unknown _____.
- (A) Resistance (B) Inductance (C) Capacitance (D) Impedance
37. LVDT is used for measurement of _____.
- (A) Velocity (B) Pressure (C) Tension (D) Displacement
38. All joints in earthing conductors shall be properly tinned because, Tin offers _____.
- (A) Corrosion protection (B) Solderability
 (C) A better contact surface (D) All of these
39. Which one of the following is used to reduce water hammer effect in Hydro Electric Power Plants ?
- (A) Surge Tank (B) Butterfly valve
 (C) Globe valve (D) Spill way
40. A generating station has a connected load of 50 MW and a maximum demand of 20 MW. No. of units generated is 60 MWhr for the year. What is the Demand factor ?
- (A) 0.33 (B) 0.4 (C) 2.5 (D) 3
41. In an ac transmission system the receiving end voltage is found to be more than the sending end voltage. This phenomenon is called _____.
- (A) Harmonics (B) Ferranti effect (C) Corona (D) Skin effect

42. Which one of the following law is helpful to determine the most economical size of the electric power transmission line conductor ?
 (A) Ohms Law (B) Kirchoff's Laws (C) Faradays Law (D) Kelvin's Law
43. Three $100\ \Omega$ resistances are connected in delta and are connected to a 400 V, 3 phase, and 50 Hz ac supply. If one of the resistance is burned out what will be the reduction in power consumption ?
 (A) 400 W (B) 800 W (C) 1600 W (D) 3200 W
44. What will be the value of the regulation of the single phase transformer with percentage resistance drop 2% and percentage reactance drop 8% at a power factor of unity.
 (A) 2 (B) 5 (C) 8 (D) 10
45. A 30 kVA Delta bank is created by using 3 similar single phase transformers. When one of the transformer is removed then what will be the capacity in kVA of the new arrangement ?
 (A) 12.7 (B) 17.3 (C) 20 (D) 30
46. A standard incandescent lamp having a lumen intensity of 160 Cd in all directions gives an illuminance of 40 lux at the surface of a table vertically below the lamp. What is the distance of the lamp above the table ?
 (A) 1 m (B) 2 m (C) 3 m (D) 4 m
47. Which one of the following is not the name of ACSR Conductor ?
 (A) ANT (B) DOG (C) WOLF (D) TIGER
48. Saving of copper in an autotransformer, compared to ordinary transformer is given by _____ times weight of copper in ordinary transformer.
 (A) K (B) $1/K$ (C) $1-K$ (D) $1/(1-K)$
49. Calculate the number of sub circuits required for an electrification circuit which contains 28 lamps of 100 W.
 (A) 1 (B) 2 (C) 3 (D) 4
50. Calculate the number of street lights required for 3 km long street which is to be illuminated by 85 W sodium vapour lamp at a span of 30 meter.
 (A) 98 (B) 99 (C) 100 (D) 101

51. As per IE rules 1956 (Rule No. : 80), Vertical clearance above the highest part of the building immediately under high voltage lines up to and including 33,000 volts is _____.
- (A) 1.2 m (B) 2 m (C) 2.7 m (D) 3.7 m
52. The IS code specifying Earthing is _____.
- (A) IS 3043 - 1957 (B) IS 4043 - 1957 (C) IS 3043 - 1987 (D) IS 4043 - 1987
53. A hardware circuit is implemented to find the one's compliment of a 4 digit binary number. This circuit consists of _____.
- (A) 4 AND Gates (B) 4 OR Gates (C) 4 NAND Gates (D) 4 NOT Gates
54. Simplification of the boolean expression $Y = A + AB$ yields $Y =$ _____.
- (A) A (B) B (C) A + B (D) A·B
55. Total number of JK flip flops required to construct a BCD decade counter is _____.
- (A) 1 (B) 2 (C) 3 (D) 4
56. Gain of an ideal Op-Amp is _____.
- (A) 0 (B) 1 (C) 10^5 (D) Infinity
57. Which one of the following coordinate system is best used in CAD for drawing a horizontal line if only the starting point and length of the line are given ?
- (A) Absolute (B) Relative rectangular
(C) Relative Polar (D) None of these
58. The component which makes and breaks the contacts in a motor starter is _____.
- (A) Circuit breaker (B) Relay
(C) Contactor (D) Push Button
59. A slip ring induction motor runs at 1450 rpm at full load, when connected to 50 Hz supply. Determine the number of poles.
- (A) 2 (B) 4 (C) 6 (D) 8
60. The best unit used to represent the torque of an induction motor is _____.
- (A) Watts (B) Synchronous N-m
(C) Synchronous Watts (D) Synchronous Torque

68. The ratio of OC Voltage to SC current keeping the field excitation constant in an alternator is called _____.
- (A) Synchronous resistance (B) Synchronous inductance
(C) Synchronous capacitance (D) Synchronous impedance
69. Hunting in an alternator can be prevented by _____.
- (A) Injecting harmonics (B) Damper bars
(C) Inter poles (D) None of the above
70. An alternator connected to a 440 V, 50 Hz supply will run at higher speed when number of poles are _____.
- (A) 2 (B) 4 (C) 6 (D) 8
71. In a 3 phase alternator a field current of 100 A produces a full load armature current of 400 A on short circuit and 1730 V on open circuit. The value of synchronous impedance is _____ Ω .
- (A) 2 (B) 2.5 (C) 4 (D) 8
72. When two or more protective devices are used for the protection of the same circuit, the correct operation of the correct device on occurrence of a fault is called _____.
- (A) Discrimination (B) Expulsion (C) Drop Out (D) Rupture
73. The transient voltage which appears across the circuit breaker contacts, at the instant of arc being extinguished is known as _____.
- (A) Recovery voltage (B) Restriking voltage
(C) System voltage (D) Normal voltage
74. Which of the following is an example for a distance relay ?
- (A) Impedance relay (B) Elliptical relay
(C) Quadrilateral relay (D) All the above

75. What will be the content of A register if the following program segment is executed in 8051 microcontroller ?
- ```
MOV A,#75 H
MOV B,#30 H
MOV B,A
ADD A,B
```
- (A) A5                      (B) EA                      (C) 105                      (D) 150
76. MOV A,@R0. This is an instruction in 8051 microcontroller. What type of addressing mode is used in this instruction ?
- (A) Relative Addressing                      (B) Immediate Addressing  
(C) Register Indirect Addressing                      (D) Register Addressing
77. Internal RAM in 8051 microcontroller has capacity of \_\_\_\_\_ Bytes.
- (A) 128                      (B) 256                      (C) 4 K                      (D) 64 K
78. Which one of the following is a programming language used for PLC ?
- (A) Ladder logic                      (B) Statement List  
(C) Function Block Diagram                      (D) All of these
79. Which one of the following is **not** a renewable source of energy ?
- (A) Solar                      (B) Fossil Fuel                      (C) Wind                      (D) Biomass
80. Solar cells are made off \_\_\_\_\_.
- (A) Silicon                      (B) Copper                      (C) Cadmium                      (D) Aluminium
81. The main constituents of biogas are :
- (A) Methane and Carbon dioxide                      (B) Ethane and Carbon dioxide  
(C) Carbon dioxide and Nitrogen                      (D) Hydrogen and sulphur
82. An energy conversion device that can harness the power of hydrogen is \_\_\_\_\_.
- (A) Fuel cell                      (B) Biogas plant                      (C) SHEP                      (D) Wind mill
83. Magnetic materials are heated with the help of \_\_\_\_\_.
- (A) Electric arc                      (B) Electric current                      (C) Radiation                      (D) Hysterisis loss

84. Select a suitable motor for continuous rolling mills.  
(A) DC shunt motor  
(B) 3 phase slip ring induction motor  
(C) 3 phase squirrel cage induction motor  
(D) 3 phase synchronous motor
85. The device used to collect the current from over head conductor for electric traction service is \_\_\_\_\_.  
(A) Phantograph (B) Phonograph (C) Phantogram (D) Phonogram
86. The speed-time characteristics of city service in electric traction system has no \_\_\_\_\_ period.  
(A) Coasting (B) Acceleration (C) Free running (D) Breaking
87. A gate current of 25 mA is applied to turn on an SCR. Anode current flowing through this SCR is found to be 100 A. What will be the Anode current through the SCR if the gate current is reduced gradually to 10 mA. The holding current of this SCR is 10 mA.  
(A) Zero (B) 50 A (C) 100 A (D) 200 A
88. The power electronics device which converts constant dc voltage to variable dc voltage is called \_\_\_\_\_.  
(A) Inverter (B) UPS (C) Chopper (D) SCR
89. How many number of SCRs are required for constructing a single phase semi converter circuit ?  
(A) 1 (B) 2 (C) 3 (D) 6
90. Buck converter is used as a \_\_\_\_\_ converter.  
(A) Step up (B) Step down (C) Isolation (D) None of these
91. Calculate the back pitch of the simplex progressive lap winding with 24 slot and 4 pole dc armature with 24 commutator segments.  
(A) 6 (B) 12 (C) 13 (D) 15
92. Cruciform construction of a transformer core consists of \_\_\_\_\_ number of steps.  
(A) 1 (B) 2 (C) 3 (D) 4

93. Which of the following material is used as an insulation between commutator segments ?  
 (A) Carbon            (B) Graphite            (C) Mica            (D) Silicon
94. Quantity or condition that is varied by the controller in a control system is called \_\_\_\_\_.  
 (A) Manipulated variable            (B) Controlled variable  
 (C) System variable            (D) None of these
95. A metal detector is an example for \_\_\_\_\_ Proximity sensor.  
 (A) Inductive            (B) Capacitive            (C) Conductive            (D) Photo electric
96. Single phase ac servo motor has \_\_\_\_\_ number of windings in stator.  
 (A) 1            (B) 2            (C) 3            (D) 4
97. In Quartz non digital watches which type of motor is used ?  
 (A) Servo motor            (B) Series motor            (C) Stepper motor            (D) No motor is used
98. In two position control system which type of control action is used ?  
 (A) P+I            (B) P+D  
 (C) I+D            (D) Bang-Bang control
99. Small computerized electronics units deployed in the field at specific sites and locations for the implementation of SCADA is called \_\_\_\_\_.  
 (A) RTU            (B) SCADA Master            (C) HMI            (D) DATA Logger
100. Primary and secondary windings of a transformer are interleaved for \_\_\_\_\_.  
 (A) Easy construction            (B) Increasing leakage reactance  
 (C) Reducing Magnetic leakage            (D) Reducing cost

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