

061/2018

Question Booklet
Alpha Code

A

Question Booklet
Serial Number

Total No. of Questions: 100

Maximum : 100 Marks

Time : 75 Minutes

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.

061/2018-A



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Maximum : 100 Marks

Time : 1 hour and 15 minutes

1. The Malayalam newspaper published by Italian Carmelite missionaries.
(A) Rajya Samacharam (B) Satyanada Kahalam
(C) Nasrani Deepika (D) Paschima Tharaka
2. Which magazine was called the Bible of the Thiyyas ?
(A) Dootan (B) Sujana Nandini
(C) Sahodaran (D) Mitavadi
3. Channar Revolt was started in the year
(A) 1818 (B) 1820
(C) 1822 (D) 1832
4. Yachana Yatra was organised by which reformer ?
(A) V.T. Bhattathirippad (B) Poikayil Yohannan
(C) Ayyankali (D) Vaikunta Swamikal
5. Who started the newspaper Velakkaran ?
(A) Sahodaran Ayyappan (B) Thycaud Ayya
(C) Puthuppally Raghavan (D) C. Krishnan
6. Who is the first Indian woman who received Woodrow Wilson Award for Global Citizenship ?
(A) Archana Hingorani (B) Archana Bhargava
(C) Chanda Kochhar (D) Arundhathi Bhattacharya
7. Who is the author of The Buried Giant ?
(A) Jesmyn Ward (B) Kazuo Ishiguro
(C) Matthew Weiner (D) Masha Gessen
8. APJ Abdul Kalam Memorial was situated in
(A) Sri Perumputhur (B) Pudukkottai
(C) Thiruvavarur (D) Pei Karumbu
9. The first robot to get a citizenship is
(A) Catherine (B) Sophia
(C) Jennifer (D) Esther
10. The present President of Iran
(A) Hassan Rouhani (B) Bujar Nishani
(C) Muhammad Ashraf Ghani (D) Abdul Hamid

A

3

061/2018
[P.T.O.]

11. The spherical shape of rain drops are due to _____.
(A) surface tension (B) adhesion
(C) cohesion (D) viscosity
12. For maximum discharge the included angle of a triangular notch is _____.
(A) 30° (B) 45°
(C) 60° (D) 90°
13. In a lathe, the power transmitted by the lead screw to the carriage is through _____.
(A) gear box (B) worm and gear
(C) half nut (D) rack and pinion
14. The unit of kinematic viscosity is _____.
(A) stoke (B) poise
(C) pascal (D) faraday
15. For laminar flow; Reynolds number
(A) is more than 2000 (B) is less than 2000
(C) lies between 2000 and 3000 (D) lies between 3000 and 4000
16. Slow plastic deformation of metal under constant stress is known as _____.
(A) fatigue (B) pressure tunnel
(C) creep (D) stiffness
17. The device used for mixing air and petrol before admitting into the engine cylinder is _____.
(A) super charger (B) carburettor
(C) induction manifold (D) throttle valve
18. In IC engines, the reciprocating motion of the piston is converted into the rotary motion of the crankshaft by _____.
(A) connecting rod (B) piston rod
(C) crank (D) rocker arms
19. The work done in compressing air is maximum, when the compression is _____.
(A) isothermal (B) polytropic
(C) adiabatic (D) none of the above
20. When the pressure increases, the latent heat of steam _____.
(A) remains same (B) decreases
(C) increases (D) none of the above

21. The control rods in nuclear reactor are to control _____.
- (A) temperature (B) absorption of neutrons
(C) pressure (D) fuel consumption
22. _____ is a water tube boiler.
- (A) Cochran boiler (B) Cornish boiler
(C) Lancashire boiler (D) Babcock and Wilcox boiler
23. The square hole provided on the top surface of the anvil is called _____.
- (A) spud hole (B) drift hole
(C) hardie hole (D) pritchel hole
24. Method of governing used mainly in diesel engine is _____.
- (A) quality governing (B) quantity governing
(C) combined governing (D) partial governing
25. Internal energy of a substance depends on _____.
- (A) volume (B) pressure
(C) temperature (D) entropy
26. The efficiency of a Carnot engine depends on the _____.
- (A) working substance (B) design of engine
(C) size of engine (D) temperature of source and sink
27. _____ is used to check the clearances between two mating surfaces.
- (A) Radius gauge (B) Feeler gauge
(C) Fillet gauge (D) Pitch gauge
28. The forging operation that consist of increasing the cross section of a bar is called
- (A) upsetting (B) scarfing
(C) drawing (D) setting
29. If the standard time to complete a work is 20 hours and the actual time taken to complete the work is 15 hours with a wage rate of ₹ 100/- per hour, then the total earnings of a worker under Rowan plan is rupees _____
- (A) 1675 (B) 1875
(C) 1500 (D) 2000
30. The father of Scientific Management is _____.
- (A) F.W Taylor (B) H.C. Gantt
(C) Robert Owen (D) Meta Calfe

31. Charpy test is conducted to measure _____.
 (A) ductility (B) hardness
 (C) brittleness (D) malleability
32. A work holding device having an integral device for tool guidance is called _____.
 (A) clamp (B) fixture
 (C) attachment (D) jig
33. In _____ welding process exothermal chemical energy is employed for developing high temperature.
 (A) thermit (B) plasma
 (C) gas (D) friction
34. _____ has a safe edge or uncut edge.
 (A) Flat file (B) Hand file
 (C) Square file (D) Triangular file
35. The co-efficient of friction depends upon
 (A) strength of surfaces (B) area of contact
 (C) shape of the surfaces (D) nature of surfaces
36. Galvanizing is the process of providing coating of _____ on steel to prevent from rust.
 (A) zinc (B) aluminum
 (C) copper (D) tin
37. The modulus of elasticity of plastic material is _____.
 (A) less than unity (B) unity
 (C) greater than unity (D) zero
38. In a hydroelectric power plant, the storage reservoir fitted to the penstock near to the turbine is _____.
 (A) tail race (B) pressure tunnel
 (C) surge tank (D) dam
39. Which of the following is applicable for any fluid flow ?
 (A) Darcy's equation (B) Bernoulli's equation
 (C) Newton's law of motion (D) Continuity equation
40. The head developed by a centrifugal pump depends on _____.
 (A) impeller diameter (B) speed
 (C) impeller diameter and speed (D) density of fluid

41. _____ is a device which converts one form of energy into another.
- (A) Transistor (B) Thyristor
(C) Transformer (D) Transducer
42. Moving coil ammeter is _____ instrument.
- (A) an indicating (B) a controlling
(C) a recording (D) a digital
43. Fiber optic cable carry signals in the form of _____ energy.
- (A) light (B) electric
(C) magnetic (D) heat
44. Hot wire anemometer is an instrument used to measure _____.
- (A) impedance (B) flow
(C) RBC count (D) e.m.f.
45. _____ is the unit of resistivity.
- (A) Ohm.metre square (B) Ohm/metre
(C) Ohm/metre square (D) Ohm.metre
46. In vibration measurement, _____ is used as a transducer to sense displacement, velocity and acceleration.
- (A) accelerometer (B) pressure guage
(C) manometer (D) tachometer
47. If a strip of conducting material carries current in presence of tranverse magnetic field, an e.m.f. will be produced between the two edges of the material and this property is called _____.
- (A) seebeck effect (B) piezo electric effect
(C) hall effect (D) induction effect

48. _____ is defined as the mass of water vapour present per unit volume.
- (A) Relative humidity (B) Relative viscosity
(C) Apparent viscosity (D) Absolute humidity
49. To minimize _____ error, accurate analog meters are provided with mirrored scales.
- (A) random (B) parallax
(C) gross (D) instrumental
50. The pH value of a given solution is 14. The hydrogen ion concentration of that solution will be _____.
- (A) 10^{14} (B) 10^7
(C) 10^{-14} (D) 10^{-7}
51. In a NTC thermistor, resistivity _____ with the decrease in temperature.
- (A) increases (B) decreases
(C) will go up and down (D) has no effect
52. _____ is commonly used for high value insulation resistance measurement.
- (A) CRO (B) DSO
(C) Meggar (D) Multimeter
53. Light dependent resistor is an example of _____ device.
- (A) photo emissive (B) photo conductive
(C) photo voltaic (D) self generative
54. The output resistance of a source is R_O and it is connected to a load resistance R_L . The condition for maximum transfer of power from the source to load is given by _____.
- (A) $R_O = R_L$ (B) $R_O = 2 R_L$
(C) $R_L \times R_O = 1$ (D) $R_L = 2 R_O$

55. An arrangement of elastic member as primary transducer and a strain guage attached with it as secondary transducer, is called _____.
- (A) bellow (B) venturi meter
(C) guage meter (D) load cell
56. In an ECG machine, CRT acts as _____.
- (A) an analog to digital converter element
(B) a data presentation element
(C) a data sensing element
(D) a data processing element
57. LVDT is a variable _____ transducer.
- (A) inductive (B) resistive
(C) capacitive (D) semiconductor
58. Unit of dynamic viscosity is _____.
- (A) $N.s/m^3$ (B) $N.s/m$
(C) $N.s/m^2$ (D) $N.s.m$
59. Externally powered transducers are called _____ transducers.
- (A) null (B) active
(C) power (D) passive
60. Chromatography technique is used to study the _____.
- (A) presence of fire (B) hidden codes in a coded digital information
(C) components of a sample mixture (D) frequency spectrum of radio waves
61. A very high sensitive strain guage will have _____ guage factor.
- (A) very low (B) high
(C) zero (D) minimum
62. Let X_L be the inductive reactance of a coil and X_C be the capacitive reactance of a capacitor. Both are connected in parallel. At resonance frequency, _____.
- (A) X_L will be equal to X_C (B) X_L will be equal to $1/X_C$
(C) X_L will be equal to $16X_C$ (D) X_C will be equal to $16X_L$

63. The stroboscope is used for the measurement of _____.
 (A) viscosity (B) pressure
 (C) temperature (D) periodic rotary motion
64. When a ferromagnetic material is subjected to a changing magnetization, its dimensions will change. This property is known as _____.
 (A) Magneto resistive effect (B) Magneto strictive effect
 (C) Electromagnetic induction effect (D) Piezo electric effect
65. An equipment consumes 115 W, when it is connected to a 230 V/50 Hz ac power source. The alternating current through the equipment will be _____ amperes.
 (A) $115/230$ (B) $115/50$
 (C) $230/115$ (D) $50 \times 115/230$
66. Radiation pyrometers are used to measure _____.
 (A) very low pressure (B) very high pressure
 (C) very high temperature (D) very low temperature
67. In a capacitive hygrometer, _____ of the capacitor changes according to the humidity.
 (A) area of plates in action (B) distance between the plates
 (C) inductive reactance (D) dielectric constant
68. The smallest increment in the input quantity that can be detected by a measuring instrument is called its _____.
 (A) loading effect (B) resolution
 (C) accuracy (D) precision
69. Operating specifications of a typical UV water heater are shown as 230 V \pm 10 V, AC, 50 Hz, 1 phase, 11 W, input pressure 0.4 – 2 kg/sq.cm etc. on its chassis. Its power rating will be _____.
 (A) 240 V (B) 1.2 kg/Sq. cm
 (C) 11 W (D) 2 kg/Sq. cm
70. Pirani guage is used to measure _____.
 (A) humidity (B) diameter
 (C) pH (D) pressure

71. RC snubber circuit used for
(A) di/dt Protection (B) Over voltage Protection
(C) Over Current Protection (D) dv/dt Protection
72. Programmable language used in PLC
(A) VHDL (B) ladder logic
(C) Embedded C (D) python
73. In thyristor the time interval between 10% of gate current and 10% of thyristor on state anode current is known as
(A) turn-on time (B) rise time
(C) delay time (D) spread time
74. DIAC act as a
(A) bidirectional avalanche diode (B) bipolar transistor
(C) bidirectional SCR (D) unijunction
75. FET phototransistor have
(A) less sensitive and low offset voltage
(B) more sensitive and low offset voltage
(C) more sensitive and high offset voltage
(D) less sensitive and high offset voltage
76. The power rating of a 100 ohm resistor carrying a current of 90 mA should be
(A) 2 W (B) 1/4 W
(C) 1 W (D) 1/2 W
77. Which of the following used in narrowband RF frequency multiplier ?
(A) Zener diode (B) Tunnel diode
(C) P-N junction diode (D) Varactor diode
78. The resolution of D/A converter is approximately .2% of its full scale range. It is
(A) 8-bit converter (B) 4-bit converter
(C) 9-bit converter (D) 12-bit converter

79. What is the clock frequency of a 4 bit ripple counter, if the period of waveform at the last flip flop is 64 microseconds ?
- (A) 250 kHz (B) 500 kHz
(C) 10 kHz (D) 1 kHz
80. Each cell of static random access cell consist of
- (A) 4 MOS transistors and 2 capacitors
(B) 6 MOS transistors
(C) 1 MOS transistor and 1 capacitor
(D) 2 MOS transistors and 2 capacitors
81. Compare to 74-series TTL IC 54-series TTL IC have
- (A) More power dissipation (B) More fanout
(C) Less fanout (D) Greater tolerance to temperature variation
82. In a moving coil instrument, the deflecting torque is proportional to
- (A) Current (B) Square of the current
(C) Square root of the current (D) Sine of the measured
83. Which meter is suitable for measurement of 5 mV at 50MHz ?
- (A) VTVM (B) Electrostatic voltmeter
(C) Moving iron voltmeter (D) C.R.O
84. A galvanometer of resistance 10Ω gives full scale deflection of with a current of 2 mA. Which resistance should be connected in parallel so that it measure 2 A on full scale deflection ?
- (A) $.02 \Omega$ (B) $.2 \Omega$
(C) $.01 \Omega$ (D) $.1 \Omega$
85. An X-Y plotter is _____ instrument.
- (A) recording (B) integrating
(C) indicating (D) None of these
86. Which diode is used for reverse voltage protection ?
- (A) Photo diode (B) Schottky diode
(C) PIN diode (D) Avalanche diode

87. Compare to offline UPS online UPS have
- (A) Less harmonic distortion and low efficiency
 - (B) High harmonic distortion and low efficiency
 - (C) Less harmonic distortion and high efficiency
 - (D) High harmonic distortion and high efficiency
88. The maximum slew rate for output voltage $V_o = 2 \sin \omega t$, of an op amp is
- (A) Ω
 - (B) $\omega/2$
 - (C) $1/\omega$
 - (D) 2ω
89. An operational amplifier is basically a
- (A) Low gain amplifier
 - (B) High gain DC amplifier
 - (C) High gain RC coupled amplifier
 - (D) Low gain transformer coupled amplifier
90. The simplified logic expression for $A'B + AB' + AB$ is
- (A) $(A+B)'$
 - (B) AB
 - (C) $A+B$
 - (D) $A'+B'$
91. A compensating capacitor in OP AMP prevents
- (A) Voltage gain
 - (B) Oscillations
 - (C) Input offset current
 - (D) Power bandwidth
92. For faster switching action of transistor
- (A) The value of coupling capacitor may be increased
 - (B) A capacitor may be connected across R_E
 - (C) A capacitor may be connected in series with base resistor
 - (D) A capacitor may be connected across the base resistance
93. In voltage amplifiers load resistance should be
- (A) As large as possible
 - (B) As small as possible
 - (C) Equal to output impedance
 - (D) Equal to input impedance
94. Relation between I_C and I_B in saturation condition
- (A) $I_C = \beta I_B$
 - (B) $I_C > \beta I_B$
 - (C) $I_C < \beta I_B$
 - (D) I_C independent of all other parameters

95. The base transport factor, α_T
- (A) The current due to electrons injected into the collector, to the current due to electrons injected into the base.
 - (B) The current due to electrons injected in the emitter, to the current due to electrons injected in the base.
 - (C) The current due to electrons injected in the base, to the current due to electrons injected in the collector.
 - (D) The current due to electrons injected in the base, to the current due to electrons injected in emitter.
96. Ratio of majority to minority diffusion current in germanium is
- (A) 1
 - (B) 0.5
 - (C) 0.25
 - (D) 2
97. The GaAs tunnel diodes have
- (A) Low peak voltage to valley point ratio
 - (B) High peak voltage to valley point ratio
 - (C) Lowest negative differential resistance
 - (D) Low tunnel current
98. The ripple factor decreases with
- (A) Decrease in C
 - (B) Increase in C
 - (C) Increase in frequency
 - (D) Decrease in frequency
99. If one of diode in bridge full wave rectifier is opens, the output is
- (A) 0 V
 - (B) One fourth the amplitude of input voltage
 - (C) A half wave rectified voltage
 - (D) A 120 Hz voltage
100. The average value of halfwave rectified voltage with a peak value of 200 V is
- (A) 63.7 V
 - (B) 127.3 V
 - (C) 141 V
 - (D) 0 V

SPACE FOR ROUGH WORK

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