

142/2025

Question Booklet
Alpha Code

A

Question Booklet
Serial Number

Total No. of questions : 100

Time : 1 Hour 30 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. 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.

142/2025

Maximum : 100 marks

Time : 1 hour and 30 minutes

1. Which period referred to as the 'golden' hours for an injured person?
(A) First 15 minutes after incident
(B) First 45 minutes after incident
(C) First 30 minutes after incident
(D) First 60 minutes after incident
2. How many basic categories of safety signs used in industries?
(A) 3
(B) 6
(C) 5
(D) 4
3. What is the accuracy of a try square?
(A) 0.001 mm/10 mm length
(B) 0.01 mm/10 mm length
(C) 0.002 mm/10 mm length
(D) 0.02 mm/10 mm length
4. Which is the minimum angle can file by a knife edge file?
(A) 15°
(B) 30°
(C) 10°
(D) 13°
5. Which part of the micrometer is used for maintain equal pressure in between measuring faces?
(A) Spindle lock
(B) Thimble
(C) Ratchet stop
(D) Barrel
6. What is the purpose of diamond point chisels?
(A) Separating metals after chain drilling
(B) Cutting oil grooves
(C) Cutting key ways
(D) Squaring metal at corners and joints
7. What is the minimum thickness of feeler gauge leave in B.I.S set?
(A) 0.01 mm
(B) 0.02 mm
(C) 0.03 mm
(D) 0.04 mm
8. What is the class of fire involving gas and liquified gas?
(A) Class A
(B) Class B
(C) Class C
(D) Class D

9. Which extinguisher is most suitable for class D fire?
 (A) Dry powder extinguisher (B) Foam extinguisher
 (C) Water filled extinguisher (D) Halon extinguisher
10. Choose the correct statement about the drill :
 1. Drills are made from medium carbon steel
 2. Drills are used for providing round holes
 3. The Point angle of general purpose drill is 118°
 4. Drills are made from H.S.S and H.C.S
 (A) 1 and 2 (B) 1, 2 and 3
 (C) 2, 3 and 4 (D) 1, 3 and 4
11. Which is the unit of acceleration in S.I. system?
 (A) Foot/Second (B) Centimeter/Second
 (C) Meter/Second (D) Meter/Square second
12. One cent is equal to :
 (A) 454 square feet (B) 445 square feet
 (C) 463 square feet (D) 436 square feet
13. Which formula used for find Relative density or specific gravity of a substance?
 (A) Density of substance / density of water at 4 degree C
 (B) Density of water 4 degree C / density of substance
 (C) Density of substance $\times$ density of water
 (D) Density of substance + density of water
14. Choose the correct statement about acceleration :
 (A) It is change in velocity/time (B) It is distance covered/time
 (C) It is definite direction/time (D) It is mass $\times$ velocity
15. What is the unit of heat in S.I. system?
 (A) Calorie (B) Erg
 (C) Joule (D) B T U
16. Which instrument used for measure very high temperature in furnaces?
 (A) Pyrometer (B) Manometer
 (C) Thermometer (D) Hygrometer
17. Pascal's law is connected with :
 (A) Heat (B) Speed
 (C) Pressure (D) Gravity

18. What is the accuracy of vernier bevel protractor?
(A) 5 minutes (B) 5 degree
(C) 1 minute (D) 1 degree
19. Thermocouple pyrometer can measure temperature upto :
(A) 2450°C (B) 4000°C
(C) 1539°C (D) 3440°C
20. What is the boiling point of water?
(A) 100°F (B) 373°F
(C) 80°F (D) 212°F
21. The top surface that connects the two adjoining flanks of a thread is called :
(A) Root (B) Crest
(C) Pitch (D) Lead
22. This type of bolt assembly is used when the relative movement between the work pieces has to be prevented :
(A) Studs (B) Anti-fatigue bolt
(C) Body fit bolt (D) Bolts with clearance hole
23. These nuts have special provision in the form of slots for fixing split pins for locking the nuts :
(A) Castle Nuts (B) Wing Nuts
(C) Cap Nuts (D) Self-locking nuts
24. These keys are used for transmitting very low torque. No keyway is made on the shaft :
(A) Woodruff Key (B) Jib-headed Key
(C) Feather Key (D) Saddle Key
25. Hatchet Stake having :
(A) Sharp straight edge, beveled along one side
(B) Sharp head in the form of an arc of a circle
(C) Two horns, one is tapered and the other rectangular
(D) Round and concave face head
26. This Seam is used as a longitudinal corner seam for various types of pipes such as duct work, The single lock is placed in a pocket lock :
(A) Grooved Seam (B) Plain Dovetail Seam
(C) Pittsburgh Seam (D) Double Seam

27. Sizes of Rivets are determined by the :
- (A) Diameter of the head
 - (B) Length of the shank and head
 - (C) Hole size to be drilled for riveting
 - (D) Diameter and the length of the shank
28. Open end spanners are :
- (A) Single end spanners only
 - (B) Double end Spanners only
 - (C) Single end or Double End Spanners
 - (D) Single end, Double end or Ring Spanners
29. Which key is a semicircular in shape used for transmitting light torque?
- (A) Woodruff key
 - (B) Jib headed key
 - (C) Sunk Key
 - (D) Saddle Key
30. Which is used for closing a pipeline having an internal thread?
- (A) Union
 - (B) Plug
 - (C) Cap
 - (D) Eccentric
31. Dry saturated steam means :
- (A) Steam contains moisture
 - (B) Dry steam is further heated at constant pressure
 - (C) Wet steam is further heated and it does not contain any suspended particles of water
 - (D) Dry steam is further heated at constant volume
32. Volume of one kilogram of superheated steam is :
- (A) Greater than the volume of one kilogram of dry saturated steam at the same pressure
 - (B) Less than the volume of one kilogram of dry saturated steam at the same pressure
 - (C) The same volume of one kilogram of dry saturated steam at the same pressure
 - (D) Greater than the volume of one kilogram of dry saturated steam at the same temperature
33. In this type of draught system the fan is placed near or at the base of chimney so that a vacuum is created in the furnace :
- (A) Positive or Forced air draught
 - (B) Balanced air draught
 - (C) Negative or Induced air draught
 - (D) Air vacuum draught

34. The amount of heat energy required to convert a unit mass of ice at 0°C into water at the same temperature is called :
- (A) Melting point of water
 - (B) Latent heat of ice
 - (C) Latent heat of energy
 - (D) Latent heat of vaporisation
35. The energy required to change a unit mass of liquid into gas at its boiling point, without change in temperature is called :
- (A) Kinetic energy
 - (B) Enthalpy
 - (C) Entropy
 - (D) Latent heat
36. The temperature at which water starts boiling depends upon :
- (A) Volume of water
 - (B) Pressure of water
 - (C) Sensible heat of water
 - (D) All of the above
37. Volume occupied by a unit mass of a substance is called :
- (A) Specific Volume
 - (B) Density
 - (C) Area
 - (D) Capacity
38. It represents the amount of additional heat energy added to a gas beyond its boiling point at a constant pressure :
- (A) Degree of Latent heat
 - (B) Degree of boiling point
 - (C) Degree of Superheat
 - (D) Dryness fraction
39. The sum of a thermodynamic system's internal energy and the product of its pressure and volume is called :
- (A) Entropy
 - (B) Kinetic Energy
 - (C) Latent heat
 - (D) Enthalpy
40. The quantity of heat required to convert one kilogram of water at 0°C , at constant pressure, into wet steam is called :
- (A) Latent heat
 - (B) Enthalpy
 - (C) Entropy
 - (D) Specific heat
41. According to their use Steam boilers may be classified as :
- (A) Stationary and Mobile Boilers
 - (B) Natural and Forced circulation boilers
 - (C) Single tube and Multitubular
 - (D) Vertical and Horizontal boilers

42. Cochran Boiler is :
 (A) Water tube boiler
 (B) Multitubular boiler
 (C) Vertical Multitubular boiler
 (D) Stationary type water tube boiler
43. Boiler shells are made of :
 (A) Cast iron
 (B) Copper
 (C) Aluminium
 (D) Steel Plates
44. In Lancashire boiler _____ is fitted at the end of side flues to control the draught?
 (A) Damper
 (B) Stop valve
 (C) Safety valve
 (D) Fire Grate
45. Which of the following boilers uses forced circulation?
 (A) Lancashire boiler
 (B) Cochran boiler
 (C) Cornish boiler
 (D) La-mont boiler
46. Simple vertical boilers generally used for :
 (A) Low power generation
 (B) High power generation
 (C) Marine works
 (D) Locomotives
47. Boilers are classified into :
 (A) Horizontal, Vertical or Inclined
 (B) Fire tube and Water tube
 (C) Single tube and multitube
 (D) All of the above
48. The Benson boiler is also known as
 (A) Fire tube boiler
 (B) Light weight boiler
 (C) Velox boiler
 (D) Stirling boiler
49. Which boiler makes use of pressurised combustion?
 (A) Benson boiler
 (B) Loeffler boiler
 (C) Velox boiler
 (D) La-mont boiler
50. The diameter of flue tube of a Cornish boiler may be about :
 (A) Twice the shell
 (B) 1.5 times that of the shell
 (C) 3 times that of the shell
 (D) 0.6 times that of the shell

51. Which is used to recover heat from the exhaust flue gas?
 (A) Pressure gauge (B) Safety valve
 (C) Air preheater (D) Fusible plug
52. In locomotive and marine boilers which safety valve is used?
 (A) Spring loaded safety valve
 (B) Lever safety valve
 (C) Dead weight safety valve
 (D) High steam and low water safety valve
53. Which of the following are boiler mountings?
 (A) Pressure gauge (B) Safety valve
 (C) Stop valve (D) All of the above
54. Which boiler mounting is used to protect the boiler against damage due to overheating for low water level?
 (A) Safety valve (B) Stop valve
 (C) Fusible plug (D) Feed pump
55. Use of superheater is :
 (A) To increase the temperature of saturated steam
 (B) To control the flow of steam
 (C) Increases the steam raising capacity of a boiler
 (D) To recover heat from the exhaust flue gases
56. Which of the following is not a boiler mounting?
 (A) Water level indicator (B) Fusible plug
 (C) Stop valve (D) Air preheater
57. How many safety valves are usually provided in a steam boiler?
 (A) 1 (B) 3
 (C) 2 (D) 4
58. Which safety valve is used for stationary boilers?
 (A) Spring loaded safety valve
 (B) Dead weight safety valve
 (C) High steam and low water safety valve
 (D) Lever safety valve
59. Mud and scale are removed by :
 (A) Blow-off-cock (B) Injector
 (C) Economiser (D) Feed Pump

- 60.** Boiler accessories are used to :
- | | |
|-----------------------|-----------------------------------|
| (A) Prevent corrosion | (B) Increase water level |
| (C) For the safety | (D) To increase boiler efficiency |
- 61.** Which device produces natural draught in a boiler system?
- | | |
|-----------------|----------------|
| (A) Steam jet | (B) Chimney |
| (C) Induced fan | (D) Forced fan |
- 62.** What is the main function of a chimney in a boiler system?
- | | |
|---------------------------|---------------------------|
| (A) Increase furnace heat | (B) Supply combustion air |
| (C) Remove flue gases | (D) Cool the boiler tubes |
- 63.** What type of steam has no moisture particles?
- | |
|--------------------------------------|
| (A) Steam at 0°C |
| (B) Steam containing water particles |
| (C) Dry steam |
| (D) Steam mixed with air publishers |
- 64.** When is draught said to be forced in a boiler system?
- | |
|---|
| (A) When produced by induced draught |
| (B) When a fan is placed before the furnace |
| (C) When only natural draught is used |
| (D) When draught comes by jet action |
- 65.** What should be the chimney height for maximum discharge conditions?
- | |
|--|
| (A) Draught losses are minimum |
| (B) Induced draught equals natural draught |
| (C) Velocity of flue gas equals outside air velocity |
| (D) Density difference reaches maximum possible |
- 66.** Which type of draught system uses both induced and forced fans together?
- | | |
|---------------------|----------------------|
| (A) Natural draught | (B) Balanced draught |
| (C) Jet draught | (D) Chimney draught |
- 67.** What is the efficiency of a chimney defined as?
- | |
|--|
| (A) Ratio of actual draught to theoretical draught |
| (B) Ratio of flue gas velocity to air velocity |
| (C) Ratio of useful heat absorbed to fuel heat input |
| (D) Ratio of actual fan power to blower rating |

68. Which draught system works with both induced and forced draught fans simultaneously?
- (A) Balanced draught (B) Natural draught
(C) Steam jet draught (D) Chimney draught
69. Which relation is used to calculate the power required for a draught fan?
- (A) Mass flow rate $\times$ draught head / efficiency
(B) Chimney height $\times$ gas density difference
(C) Air velocity squared $\times$ chimney area
(D) Steam flow rate $\times$ dryness fraction
70. Where is steam jet draught most suitably applied?
- (A) Large thermal plants with chimneys
(B) Small vertical boilers and locomotives
(C) Domestic heating boilers
(D) Marine gas turbines
71. Which of the following is a solid fuel?
- (A) Petrol (B) Diesel
(C) Coal (D) LPG
72. Which instrument is commonly used to measure the calorific value of solid and liquid fuels?
- (A) Bomb Calorimeter (B) Venturimeter
(C) Orsat Apparatus (D) Manometer
73. Which of the following is a gaseous fuel?
- (A) Kerosene (B) LPG
(C) Coal (D) Naptha
74. The calorific value of a fuel is expressed in which unit?
- (A) kW (B) $^{\circ}\text{C}$
(C) kcal/kg (D) m/s
75. Which of the following best defines 'Equivalent Evaporation' of a boiler?
- (A) Steam generated at actual pressure and temperature
(B) Steam generated from water at 100°C to dry saturated steam at 100°C
(C) Steam generated per hour at all conditions of feed water
(D) Steam generated without considering latent heat

76. Which of the following parameters is usually considered in a boiler trial?
- (A) Fuel mass consumed (B) Steam pressure only
(C) Furnace shape (D) Flue gas colour
77. In Bomb Calorimeter, the purpose of using oxygen under high pressure is to :
- (A) Remove nitrogen content
(B) Ensure complete combustion of fuel sample
(C) Release latent heat instantaneously
(D) Reduce ash formation
78. Which of the following factors decreases boiler efficiency?
- (A) Proper air-fuel Ratio
(B) Regular soot blowing
(C) Fouling and scaling on heating surfaces
(D) Complete combusting of fuel
79. In a boiler trial, heat losses due to unburnt carbon in ash primarily indicate :
- (A) Restricted flue passage
(B) Incomplete combustion of fuel
(C) Excessive draft pressure
(D) Faulty steam separator
80. Which of the following does NOT directly affect boiler house heat losses?
- (A) Surface insulation of boiler
(B) Ambient air temperature
(C) Ash content in fuel
(D) Quality of feed water treatment
81. What are the main constituents of fuel?
- (A) Oxygen and Carbon (B) Hydrogen and Carbon
(C) Nitrogen and Oxygen (D) Nitrogen and Carbon
82. Which statement is true based on radiation?
- (A) Heat is transferred through electro magnetic waves
(B) Heat transfer takes place in solid object
(C) Heat transferred by molecules
(D) Heat transferred through liquids

83. Which thermodynamic law says that "Heat and mechanical work are mutually convertible"?
- (A) Zeroth law of thermo dynamic (B) First law of thermo dynamic
(C) Second Law of thermo dynamic (D) Third law of thermo dynamic
84. The device used to analyze flue gas sample is
- (A) Orsat apparatus (B) Hydrometer
(C) Hydal meter (D) Hygrometer
85. Bicarbonates of calcium and magnesium responsible for _____ of water.
- (A) Semipermanent hardness
(B) Perimo hardness
(C) Permanent hardness
(D) Temporary hardness
86. Which fuel is renewable obtained from living organisms?
- (A) Natural fuel (B) Chemical fuel
(C) Biomass fuel (D) Artificial fuel
87. Which material used to make boiler tubes?
- (A) Tin (B) Alloy steel
(C) Aluminium (D) Lead
88. If boiler water 'ph' drop below 8.5 the phenomenon called
- (A) Waterside thinning (B) Waterside thicken
(C) Waterside bright (D) Waterside low
89. To control growth of bacteria and algae, which treatment is used?
- (A) Acid treatment (B) Corrosion treatment
(C) Antiscale treatment (D) Biocide treatment
90. Water used in boiler is called
- (A) Boiler algae water (B) Boiler feed water
(C) Boiler drop water (D) Boiler lime water
91. Which test is used to check leakage in pressure parts?
- (A) Hydro test (B) Pinning test
(C) Hygro test (D) Hydal test
92. As per boiler act-1923 what is the period of certificate for use of boiler?
- (A) Three year (B) Lifetime
(C) Six year (D) One year

93. Boiler is restarted after a short duration of outage is called?
(A) Beginning startup (B) Hot startup
(C) Cold startup (D) Middle startup
94. Starvation means
(A) No water inside tube, tube overheat
(B) Feedwater pipe have block
(C) Burner slow
(D) Burner over heat
95. As per Indian boiler act, which section discuss about penalties for illegal use of boiler?
(A) Section-23 (B) Section-7
(C) Section-14 (D) Section-12
96. Which non-destructive test is used to check welding defect in pipe and tubes of boiler?
(A) Hardness test (B) Sound test
(C) Radiographic test (D) Vibration test
97. Where is fusible plug mounted?
(A) At lowest permissible water level
(B) At highest permissible water level
(C) At middle of water level
(D) Outlet of boiler
98. When hydrostatic test conducted?
(A) Twice in a year (B) Quarterly
(C) Once in a year (D) Between one or two years
99. To maintain 'ph' in cooling water which acid is added?
(A) Hydrochloric acid (B) Sulphuric acid
(C) Nitric acid (D) Acetic acid
100. Validity of Provisional order for permitting the boiler to be used
(A) One year (B) Two year
(C) One and half year (D) Six months

SPACE FOR ROUGH WORK

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