091/23

Question Booklet Alpha Code

A

Question Booklet Sl. No.

A

Total Number of Questions : 100 **Time : 90 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.

A

1. In Die casting process, the molten metal is
   i) Feed in the cavity of a metallic mould by gravity
   ii) Injecting at high pressure into metallic mould
   iii) Poured and allowed to solidify while the mould is revolving
   iv) Forced by inserting a plunger in the cavity.
   A) Only (i & iii)
   B) Only (iii & iv)
   C) Only (i)
   D) Only (ii)

2. Long cast iron water supply and sewerage pipes are generally produced by
   A) Centrifugal casting
   B) Sand casting
   C) Permanent mould casting
   D) Ceramic moulding

3. Flat forgings of gear blanks are usually made by
   i) Upsetting the bar stock
   ii) Flattening the bar stock
   iii) Swaging the bar stock
   iv) Fullering the bar stock
   A) Only (i & ii)
   B) Only (i, iii & iv)
   C) Only (ii & iii)
   D) Only (i)

4. Which of the following is a step of powder metallurgy ?
   A) Powder production and blending
   B) Sintering
   C) Compaction and shaping
   D) All of the mentioned

5. The amount of heat produced in resistance welding is
   i) Directly proportional to square of current
   ii) Inversely proportional to square of current
   iii) Directly proportional to duration of time
   iv) Inversely proportional to duration of time
   A) Only (i)
   B) Only (ii & iv)
   C) Only (i & iii)
   D) Only (iv)

6. The welding process in which use non consumable electrodes.
   A) Manual Arc welding
   B) Gas Tungsten Arc welding
   C) Submerged Arc welding
   D) Gas Metal Arc welding

7. The ability of a material to resist fracture due to shock and impact load.
   A) Stiffness B) Toughness C) Brittleness D) Strength

8. Gama iron is stable in the temperature range of
   A) 405°C to 610°C B) 610°C to 910°C
   C) 910°C to 1403°C D) 1403°C to1535°C

9. Within elastic limit in a loaded material stress is
   A) Directly proportional to strain B) Inversely proportional to strain
   C) Equal to strain D) None of the above

10. The ratio of ultimate tensile stress to the working stress is called
    A) Bulk modulus B) Poisson's ratio
    C) Factor of Safety D) Modulus of rigidity

11. Newton's law of viscosity relates
    A) Stress and strain in a fluid
    B) Pressure, velocity and viscosity
    C) Shear stress and angular deformation in a fluid
    D) Shear stress, temperature, velocity and viscosity

12. A fluid which is incompressible and having no viscosity is known as
    A) Ideal fluid B) Real fluid
    C) Newtonian fluid D) Ideal plastic fluid

13. A piezometer tube is used only for measuring _____ of liquids.
    A) Low pressure B) Moderate pressure
    C) High pressure D) Vacuum pressure

14. Bernoulli's equation is applied to
    A) Venturi meter B) Orifice meter C) Pitot tube D) All of these

15. The pump suitable for small discharge and higher heads
    A) Centrifugal pump B) Axial flow pump
    C) Reciprocating pump D) Mixed flow pump

16. The delivery valve of a centrifugal pump is fully closed, the pressure of fluid inside the pump will
    A) Increase B) Reduce
    C) Become zero D) Remain unaltered

17. Which of the following are intensive properties of a thermodynamic system ?
    i) Kinetic Energy
    ii) Temperature
    iii) Pressure
    iv) Volume
    A) Only (i & ii)
    B) Only (ii & iii)
    C) Only (ii, iii & iv)
    D) Only (i, iii & iv)

18. First law of thermodynamic refers to conservation of
    A) Energy
    B) Mass
    C) Momentum
    D) Force

19. Internal energy of a perfect gas is a function of
    A) Temperature
    B) Pressure and volume
    C) Entropy
    D) Pressure

20. In diesel cycle, heat addition takes place at
    A) Constant temperature
    B) Constant pressure
    C) Constant volume
    D) None of the mentioned

21. The capacity of a battery is expressed in terms of
    A) Voltage rating
    B) Current rating
    C) Ampere-Hour rating
    D) None of the mentioned

22. Which of the following device is used to conduct specific gravity test of a battery ?
    A) Voltmeter
    B) Cadmium rod
    C) Rotameter
    D) Hydrometer

23. The number of positive plates in a battery cell is
    A) One less than the negative plate
    B) One more than the negative plate
    C) Two more than the negative plate
    D) Two less than the negative plate

24. The gear ratio between starting motor and flywheel is about
    A) 5 : 1
    B) 15 : 1
    C) 25 : 1
    D) 50 : 1

25. Which of the following is known as breakerless ignition system ?
    A) Battery coil ignition system
    B) Magneto coil ignition system
    C) Capacitive discharge ignition system
    D) Electronic ignition system

26. In a 4 cylinder 4 stroke engine running at 3000 rpm, the number of sparks produced per minute will be
    A) 3000 B) 6000 C) 9000 D) 12000

27. The size of the spark plug indicates
    A) Diameter of the screwed portion B) Diameter of the shell
    C) Diameter of the central electrode D) Gap between the electrode

28. The ratio between the number of turns in an induction coil primary and secondary winding is about
    A) 1 : 10 B) 1 : 50 C) 1 : 100 D) 1 : 200

29. The drive shaft in distributor is rotated at _____ the engine speed in four stroke engine.
    A) Half B) Equal to
    C) One and half time D) Double

30. A solid state switch, known as thyristor is employed in
    A) Battery coil ignition system
    B) Magneto ignition system
    C) Electronic ignition system
    D) Capacitive discharge ignition system

31. Two general types of tyres are
    A) Tube type and tubeless B) Solid and tubeless
    C) Air and pneumatic D) Split rim and drop centre

32. The advantage of a tubeless tyre over tube type tyre is
    A) Slow air leakage B) Better fuel efficiency
    C) Less chances of running flat D) All of these

33. In a single dry plate clutch, torsional vibrations are absorbed by
    A) Cushion springs
    B) Coil springs known as torsional springs
    C) Central hub
    D) Clutch pedal

34. In radial tyres
    A) Inner tubes are always used
    B) All plies run parallel to one another and vertical to tyre bead
    C) One ply layer runs diagonally one way and another layer runs diagonally the other way
    D) None of these

35. A clutch is usually designed to transmit maximum torque which is
    A) Equal to the maximum engine torque
    B) 80% of the maximum engine torque
    C) 150% of the maximum engine torque
    D) None of these

36. The natural gas is compressed in a CNG cylinder at a pressure of
    A) 300 bar B) 250 bar C) 200 bar D) 220 bar

37. The purpose of adding pigment to the paint is that it
    A) Optimises the viscosity of paint
    B) Makes paint film hard
    C) Gives colour and filling up effect to the paint
    D) None of the above

38. An under-inflated tyre will wear the tread most
    A) Near the centre B) Near the edges
    C) In the lateral direction D) In the cross direction

39. When a gear box has four forward speeds and one reverse speed, it is said to be a
    A) 4-speed gear box B) 3-speed gear box
    C) 6-speed gear box D) 5-speed gear box

40. The octane number of Compressed Natural Gas (CNG) is
    A) 90 B) 100 C) 110 D) 120

41. In a torque converter, the oil leaving the turbine is changed into a helping direction by curved
    A) Pump vanes B) Turbine vanes C) Stator vanes D) None of these

42. Freewheeling mechanism contains
    A) A planetary gear B) A transmission
    C) An over running clutch D) A propeller shaft

43. On a diaphragm spring clutch, pressing down on the clutch pedal moves throw out bearing in against the
    A) Diaphragm B) Release levers
    C) Pressure plate D) Friction disc

44. The main advantages of a fluid coupling is
    A) Steady state torque characteristics
    B) Due to its ability to slip
    C) In its low torque capacity at low speeds
    D) Due to its ability to function fluid medium

45. The purpose of the guide ring in the fluid coupling is to reduce oil
    A) Movement between the members B) Level in coupling
    C) Turbulence D) None of these

46. Chassis is a strong steel frame which supports the body and engine
    A) Incorrect B) With driving cab C) Correct D) With body

47. The three important types of chassis are, ladder chassis, backbone chassis, and monocoque chassis
    A) Correct B) Incorrect
    C) Except ladder chassis D) Except backbone chassis

48. The basic automobile structure consists of the suspension system, wheels, frame and
    A) Lights B) Axles C) Steering D) Brakes

49. The fuel called CNG used in automobiles stands for
    A) Compound Natural Gas B) Compound Nature Gasoline
    C) Compound Nature Gas D) Compressed Natural Gas

50. The following defects may be found in the chassis body
    A) Cracks B) Broken welds C) Buckling D) All of these

51. If the tractor was equipped with a swinging drawbar it could be set the center or offset from center to allow the tractor
    A) To run outside the path of the implement
    B) To run inside the path of the implement
    C) No action
    D) None of the above

52. The flat drop carries the seed on a flat in the cell of the Plate, number of seed is allowed in the cell at each time
    A) 1 B) 2 C) 3 D) 4

53. Cranes, like all machines, obey the principle of
    A) conservation of energy B) conservation of momentum
    C) both A and B D) none of the above

54. The cells round the edge of the plate are large enough to admit several seeds at a time
    A) Flat drop B) Hill drop
    C) Side drop D) None of the above

55. That power from one shaft can be transmitted to different metering units through
    A) Counter shaft B) Chain Drive
    C) Belt Drive D) None of the above

56. Hand seed drill furrow arrangement is used to
    A) To store seed B) To open soil
    C) To transmit power D) To feed seed

57. In seed drill the delivery rate of the seed is influenced by the forward speed, in such cases speed has to be limited to
    A) 6 km./h B) 7 km./h C) 8 km./h D) 9 km./h

58. While excavating, the trench walls are excavated in
    A) U shaped manner B) V shaped manner
    C) C shaped manner D) None of the above

59. The graders can perform all the operations except
    A) Cutting materials B) Moving Materials
    C) Making shallow cuts D) Heavy excavation

60. Conventional cranes are used for drop weights of up to and drop height below
    A) 20 tons and below 100 ft
    B) 30 tons and below 100 ft
    C) 40 tons and below 75 ft
    D) 50 tons and below 75 ft

61. The sound of a periodic clunck indicates
    A) Broken gear teeth
    B) Broken clutch
    C) Defective synchronizer
    D) Broken bearing

62. The maximum pressure that a power steering pump can produce is
    A) 2500 psi
    B) 2000 psi
    C) 1500 psi
    D) 1000 psi

63. The purpose of a front stabilizer bar is
    A) Provide a smooth ride
    B) Increase load carrying capacity
    C) Stiffens the suspension to control body roll
    D) Prevent sideward movement

64. Lubrication of shackle pins are done with
    A) SAE 40
    B) SAE 90
    C) SAE 140
    D) SAE 250

65. If thrust angle is not zero
    A) The vehicle will dog track
    B) Rear wheels follow front wheel
    C) All four wheel should be parallel to the frame
    D) None of the above

66. In a master cylinder when the brakes are not applied, fluid flows through _____ ports to fill the high pressure chamber ahead of each piston
    A) Replenishing port
    B) Vent port
    C) Both A and B
    D) None of the above

67. Longitudinal torsion occurs on the frame due to
    A) Sudden impact loads due to collision
    B) Engine torque and braking torque
    C) Load due to wheel impact
    D) Vertical loads when vehicle come across a hump or hallow

68. Master cylinder have flexible diaphragms that covers the reservoirs to
    A) Brake fluid from spilling out
    B) Air from contacting fluid
    C) A vacuum from forming in the hydraulic system
    D) Vapour from forming in the hydraulic system

69. What is the approximate percentage of braking force from the secondary shoe, in a servo type brake ?
    A) 68% B) 82% C) 75% D) 60%

70. In a disc brake the brake pad linings wear the caliper piston moves
    A) Inward B) Outward
    C) No change D) None of the above

71. In respect of routes where fare stages the distance between two stages will be taken generally as for Ordinary/Mofussil/City/City Fast Passenger/Town Services is
    A) 1.5 kilometers B) 2.5 kilometers
    C) 3.5 kilometers D) 4.5 kilometers

72. In respect of services operated in connection with the festival occasions the fare rate is increased in fixed rate is
    A) 20% B) 25% C) 30% D) 40%

73. As per the Kerala State Motor Vehicle Act a driver shall not cause or allow any person, animal or thing to be placed or to be in the space reserved for the driver's seat in accordance with Rule
    A) 271(1) B) 273(2) C) 274(2) D) 275(1)

74. In the trolleybus in order to avoid damage to the power transmission gear, _____ braking is used.
    A) Regenerative braking B) Plugging type braking
    C) Dynamic braking D) Stabilized rheostatic braking

75. In LRT, use of low axle load of _____ compared to 17 tonnes of Metro rail saves operating cost.
    A) 10 tonnes B) 11 tonnes
    C) 12 tonnes D) 14 tonnes

76. For establishing the best bus routes and services for a urban area entails an examination of

A) past systems
B) the current system
C) potential needs for future service
D) All the above

77. As per Road Regulation of 1989, a duty of the driver to slow down vehicle when approaching a pedestrian or zebra crossing comes under

A) Rule 6
B) Rule 7
C) Rule 8
D) Rule 9

78. As per the accessibility guidelines for bus terminals and bus stops, Wheelchair bay should be minimum of _____ in the bus stop design.

A) 700 mm
B) 800 mm
C) 900 mm
D) 1000 mm

79. The second year 20 year plan is known as a

A) Bombay
B) Madras
C) Calcutta
D) Delhi

80. The intermediate sight distance is provided to give limited overtaking opportunities to fast vehicle

A) 1.5 times of stopping distance
B) 2 times of stopping distance
C) 2.5 times of stopping distance
D) 3 times of stopping distance

81. When Drag or spin occurs in a clutch assembly, the following are the causes involved

i) Broken driven-plate or friction lining.
ii) Misalignment of the engine to the gear box, caused by incorrect assembly of the bell-housing to the engine.
iii) Oil or greases on the driven-plate faces.

A) Only (i & ii)
B) Only (ii & iii)
C) Only (i & iii)
D) All the above (i, ii & iii)

82. The formula used to determine the value of pressure expected from the cylinder during the compression stroke.
    A) Compression Pressure = atmospheric pressure times the compression ratio plus atmospheric pressure plus 96 kPa
    B) Compression Pressure = atmospheric pressure times the compression ratio plus atmospheric pressure plus 69 kPa
    C) Compression Pressure = atmospheric pressure times the compression ratio minus atmospheric pressure minus 69 kPa
    D) Compression Pressure = atmospheric pressure times the compression ratio minus atmospheric pressure minus 96 kPa

83. To calculate the bobweight of a crankshaft while balancing, the formula used is equal to
    A) 100% of the rotating weight + 50% of the reciprocating weight
    B) 50% of the rotating weight + 100% of the reciprocating weight
    C) 100% of the reciprocating weight + 60% of the rotating weight
    D) 60% of the reciprocating weight + 100% of the rotating weight

84. Possible causes of abnormal or excessive engine cylinder liner wear are
    i) Due to friction and corrosion
    ii) Abrasion
    iii) Scuffing or Adhesion
    iv) Excessive heat
    A) Only (i & ii)
    B) Only (iii & iv)
    C) Only (i, ii & iii)
    D) All the above (i, ii, iii & iv)

85. The oscillation of the front wheels at high speed is called
    A) Wheel tramp
    B) High-speed shimmy
    C) Wheel wobble
    D) Wander

86. Multiple radially worn areas around the fire is due to
    A) Faulty shocks, loose/worn wheel bearings, severe balance issues, mismatched pressures
    B) Faulty shocks, lateral runout, loose wheel bearings, mismount
    C) Incorrect air pressure, worn mechanical part, mismount
    D) Misalignment, radial and lateral runout, severe out of balance, loose wheel bearings

87. The presence of air in the hydraulic braking system because the brakes are not able to function properly is called as
    A) Brakes noise
    B) Braking less
    C) Burning smells
    D) Spongy brake

88. A valve that doesn't close fully will
    A) allow combustion gases to escape, which increases engine performance
    B) not allow combustion gases to escape, which reduces engine performance
    C) allow combustion gases to escape, which reduces engine performance
    D) none of the above

89. The commonly accepted rule for bearing clearance that most crankshaft manufacturers prefer for street and performance engines is
    A) 0.010 inch for every 1-inch of journal diameter
    B) 0.0010 inch for every 1-inch of journal diameter
    C) 0.00010 inch for every 1-inch of journal diameter
    D) 0.0020 inch for every 1-inch of journal diameter

90. Technician A says a vehicle with torsion bar suspension can be adjusted to repair ride height. Technician B says to take measurements before and after adjustments are performed. Who is correct ?
    A) Technician A
    B) Technician B
    C) Both A and B
    D) Neither A nor B

91. In port injection
    i) Fuel injectors inject an optimum quantity of fuel into the combustion chamber.
    ii) Better atomization and swirl of fuel in the combustion chamber.
    iii) There is a negligible possibility of fuel condensation outside the intake manifold.
    A) Only (i & ii)
    B) Only (ii & iii)
    C) Only (i & iii)
    D) All the above (i, ii & iii)

92. The inputs used in electrically controlled diesel fuel injection system are
    A) engine speed
    B) accelerator pedal position
    C) crankshaft position
    D) combination of engine speed, accelerator pedal position and crankshaft position

93. In the CRDI, the injectors are opened and closed by
A) reed valve
B) a CB point
C) a poppet valve
D) a solenoid valve

94. The Supreme Court has banned the sale and registration of motor vehicles, conforming to the emission standard Bharat Stage IV in the entire country from 1st April
A) 2018
B) 2019
C) 2020
D) 2021

95. What are thermal reactors ?
A) Electronic system for controlling vacuum
B) Type of a filter
C) Insulated and greatly enlarged exhaust manifold
D) Block of the cooling system

96. EGR is designed to reduce
A) Hydro Carbon
B) Oxides of Nitrogen
C) Particulate Matter
D) Lead Peroxide

97. Centrifugal governor in an engine order to
A) increase compression ratio
B) to control idle rpm
C) to control minimum and maximum motion of the engine
D) to increase the temperature of the engine

98. _____ refrigerant is chlorine free and less destructive to the ozone layer with a small impact on global warming.
A) R-125
B) R-123
C) R-22
D) R-115

99. ABS is an automated system that uses the principles of
i) threshold braking
ii) cadence braking
iii) braking distance
A) Only (i & ii)
B) Only (ii & iii)
C) Only (i & iii)
D) All the above (i, ii & iii)

100. A transparent display to display customizable information is called as
A) Vehicle immobilizer
B) Head-up Guidance System
C) Automatic traction control system
D) In car infotainment

Space for Rough Work