143/23

Question Booklet Alpha Code

A

A

	Question Booklet Sl. No.

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. A wankel engine is
   A) An internal combustion engine
   B) An external combustion engine
   C) A reciprocating engine
   D) A steam powered engine

2. In a four stroke four cylinder inline engine
   A) One working stroke per two crankshaft revolutions obtained
   B) Two working strokes per two crankshaft revolutions obtained
   C) Two working strokes per one crankshaft revolution obtained
   D) Four working stroke per one crankshaft revolution obtained

3. In a compression ignition engine
   A) Fuel is injected into compressed air in the inlet manifold
   B) Air is mixed with fuel outside the cylinder during suction stroke
   C) The air is mixed with fuel before it enters the cylinder
   D) The air is mixed with fuel after it enters the cylinder

4. The valve stem to guide clearance is measured by using
   A) Feeler gauge
   B) Dial gauge
   C) Outside micrometer
   D) Telescopic gauge

5. The first cylinder in a four stroke four cylinder inline engine having the firing order 1-3-4-2 is in power stroke. The cylinder no. 4 will be in
   A) Suction stroke
   B) Compression stroke
   C) Power stroke
   D) Exhaust stroke

6. If the thermostat valve is always closed, it will lead to
   A) Higher thermal efficiency and low engine output
   B) High vapourisation of the fuel in the engine
   C) Quick engine warm up and overheating of engine
   D) Lower engine temperature and lower efficiency

7. The advantage of an expansion tank is
   A) The radiator does not need a pressure cap
   B) The presence of air bubbles in the radiator can be avoided
   C) No need to top up the coolant
   D) No need of fan in the cooling system

8. An Abel's apparatus is used to determine
   A) Ignition quality of petrol
   B) Ignition quality of diesel
   C) Pour point of lubricating oils
   D) Flash point of lubricating oils

9. From the main oil gallery, lubricating oil goes to
   A) Oil filter housing
   B) Crankshaft main bearings
   C) Oil sump
   D) Connecting rod big end bearings

10. For jump-starting a car, other end of cable connected to the negative terminal of donor battery
   A) Should be connected to positive terminal of dead car battery
   B) Should be connected to negative terminal of dead car battery
   C) Should be connected to negative terminal of starter motor
   D) Should be connected to an unpainted part of dead car

11. As compared to a d.c. generator, the alternator
   A) Produce more current at low speeds
   B) Requires a separate cut-out relay
   C) Produces low current at high speeds
   D) Allows all the current produced to pass through the brushes

12. The type of nozzles generally used in engines with pre-combustion chambers are
   A) Single hole type
   B) Multi hole type
   C) Pintle type
   D) Both B) and C)

13. The function of an oxygen sensor in an engine is to
   A) Measure the amount of oxygen in intake charge
   B) Measure the amount of oxygen in exhaust gas
   C) Measure the amount of oxygen in atmosphere
   D) Measure the amount of oxygen in the inlet manifold

14. The wastegate is used to
    A) Release the exhaust gas from muffler to tailpipe
    B) Allow part of exhaust gas back to inlet manifold for more power
    C) Allow part of exhaust gas to pass through compressor
    D) Allow part of exhaust gas to by-pass turbine, to prevent detonation

15. Which engine part is made by centrifugal casting ?
    A) Connecting rod
    B) Crankshaft
    C) Cylinder liner
    D) Cylinder block

16. Which type of muffler is also known as Helmholtz muffler ?
    A) Resonance type muffler
    B) Absorber type muffler
    C) Baffle type muffler
    D) Wave cancellation type muffler

17. The main advantage of Exhaust Gas Recirculation is
    A) Reduced emission of carbon monoxide
    B) Reduced emission of carbon dioxide
    C) Reduced emission of nitrogen oxide
    D) Reduced emission of hydrocarbons

18. Which part of the jerk type FIP helps to avoid dribbling of fuel ?
    A) Helix in the plunger
    B) Spill port in the barrel
    C) Delivery valve spring
    D) Relief plunger on the delivery valve

19. An engine is warming up very slowly. The reason can be
    A) Scale formation in the water jackets
    B) Thermostat valve stuck in open position
    C) Thermostat valve stuck in closed position
    D) Blocked air passages of the radiator

20. If a short reach spark plug is fitted into the hole for a long reach plug
    A) Compression ratio will be reduced
    B) Combustion chamber space is reduced
    C) Engine will overheat
    D) Possibility of preignition will be more

21. Gears used on the countershaft of a constant mesh gearbox are
    A) Spur gears
    B) Spiral bevel gears
    C) Helical gears
    D) Herringbone gears

22. When the driver press the clutch pedal ?
    A) Release bearing pushes against the inner ends of release fingers
    B) Release fingers push the release bearing towards flywheel
    C) Release fingers push the friction plate towards flywheel
    D) Friction plate moves towards pressure plate

23. A torque converter is used to
    A) Increase torque in the synchromesh gearbox
    B) Transmit engine power to gears in automatic transmission
    C) Transmit torque from gearbox to differential
    D) Convert heat energy into mechanical energy

24. The oil used for the gearbox is generally
    A) SAE 20W/40
    B) SAE 30
    C) SAE 90
    D) SAE 140

25. The trunnions in the universal joint are supported by
    A) Bushed bearings
    B) Ball bearings
    C) Roller bearings
    D) Needle bearings

26. Which PPE must be used for body protection ?
    A) Face shield
    B) Head shield
    C) Leather aprons
    D) Safety shoes

27. What is the shape of Warning safety sign ?
    A) Circular
    B) Triangular
    C) Square
    D) Oval

28. What is the first step of 5S stands for ?
    A) Sort
    B) Set in order
    C) Standardize
    D) Sustain

29. Which one of the following is a multi-point cutting tool ?
    A) Scraper
    B) File
    C) Punch
    D) Chisel

30. In a micrometer, the stationary round component with a linear scale is called

A) Spindle
B) Ratchet stop
C) Barrel
D) Thimble

31. What is responsible for the current to flow ?

A) Protons
B) Electrons
C) Nucleus
D) Protons and Electrons

32. Constant across all circuit elements such as resistor, capacitor and inductor etc.

A) Voltage
B) Current
C) Both voltage and current
D) Neither voltage nor current

33. Which is the instrument used for measuring both AC and DC circuits ?

A) Moving coil voltmeter
B) Induction type ammeter
C) Permanent magnet type ammeter
D) Moving iron type ammeter

34. The electrolyte used in a Lead acid battery is diluted

A) Hydrochloric acid
B) Hydrofluoric acid
C) Sulfuric acid
D) Nitric acid

35. The most commonly used battery type in modern electric vehicles are

A) Lead acid battery
B) Nickel cadmium battery
C) Nickel chloride
D) Lithium ion battery

36. The steering ratio for manual steering of a car is approximately

A) 5 : 1
B) 8 : 1
C) 15 : 1
D) 20 : 1

37. Purpose of suspension system
    A) Transmit the power from engine to tyre
    B) Prevent road shocks
    C) Connect mechanical energy into heat energy
    D) Connect axle and tyre

38. The delivery pressure of hydraulic power steering pump is in the range of
    A) 100 – 150 psi
    B) 300 – 500 psi
    C) 600 – 800 psi
    D) 1000 – 1200 psi

39. What is the angle between the steering axis and the vertical in the plane of the wheel ?
    A) Castor
    B) Camber
    C) Steering axis inclination
    D) King pin inclination

40. What are the two different cycles of shock absorbes ?
    A) Compression cycle and expansion cycle
    B) Acceleration and velocity cycle
    C) Variable velocity cycle and constant velocity cycle
    D) Momentum cycle and velocity cycle

41. What types of service brakes are usually employed on cars ?
    A) Mechanical
    B) Electrical
    C) Hydraulic
    D) Pneumatic

42. What is the purpose of booster pump in ABS ?
    A) To pump the fluid form wheel cylinder
    B) To release the brake
    C) Provide pressurised fluid
    D) To pump fluid to accumulator

43. Automatic Traction Control System in automobiles control the
    A) Vibrations on the steering wheel
    B) Engine power during acceleration
    C) Torque that is transmitted by the tyres to the road surface
    D) Stopping distance in case of emergency

44. The type of wheel preferred in sports cars are
    A) Disc wheel
    B) Wire wheel
    C) Magnesium alloy wheel
    D) Aluminium alloy wheel

45. If a tyre specification is 9.00 × 2.0.00 – 14 PR, what is meaning of 9.00 in the specification ?
    A) Diameter of tyre
    B) Ply rating
    C) Diameter of rim in inch
    D) Width of tyre in inch

46. Which are the three methods of heat transfer ?
    A) Conduction, Convection, Radiation
    B) Mild heating, Medium heating, High heating
    C) Spreading, Dissipating, Eliminating
    D) None of these

47. Which part pressurises the refrigerant in car AC system ?
    A) Evaporator
    B) Expansion valve
    C) Condensor
    D) Compressor

48. The data link connector for an OBD II system most often will be located
    A) Behind the front bumper
    B) Under the dash or center console, near the driver's seat
    C) Behind the dash on the passenger's side of the vehicle
    D) On the firewall, inside the engine compartment

49. Which of the following is NOT a cause for 'Engine not Starting' ?
    A) Bad or Dead battery
    B) Clogged Fuel filter
    C) Faulty spark plug
    D) Broken water pump belt

50. What do the Airbags, used for safety in cars contain ?
    A) Sodium bicarbonate
    B) Sodium azide
    C) Sodium nitrite
    D) Sodium peroxide

51. An electric iron is rated as 1000 W, 230 V, 50 Hz. The value of 230 V refers to
    A) Average voltage
    B) RMS voltage
    C) Peak voltage
    D) Minimum voltage

52. The time period of an Alternating quantity is 0.04 seconds. The frequency will be _____
    A) 50 Hz
    B) 100 Hz
    C) 25 Hz
    D) 0.04 Hz

53. Which of the following can have negative temperature coefficient ?
    A) Compounds of silver
    B) Electrolytes
    C) Liquid metals
    D) Metallic alloys

54. Conductance is analogous to _____
    A) Permeance
    B) Inductance
    C) Reluctance
    D) Flux

55. Peak value of a sine wave is 100V. Its average value is _____
    A) 63.7 V
    B) 7.07 V
    C) 6.37 V
    D) 70.7 V

56. What is the S.I. unit of specific resistance ?
    A) Ohm/m^2
    B) Ohm/cm
    C) Micro ohm/cm
    D) Ohm-metre

57. Which one is the diamagnetic material ?
    A) Wood
    B) Sulphur
    C) Copper
    D) Nickel

58. What is the unit of susceptance ?
    A) Mho
    B) Ohm
    C) Henry
    D) Farad

59. Power factor of an AC circuit is given by

A) L/Z
B) Z/R
C) Cos R/Z
D) R/Z

60. The reciprocal of impedance

A) Conductance
B) Inductance
C) Susceptance
D) Admittance

61. Which of the following is a vector quantity ?

A) Flux density
B) Relative permeability
C) Magnetic field intensity
D) Magnetic potential

62. The RMS value and mean value is the same in the case of

A) Sine wave
B) Triangular wave
C) Half wave rectified sine wave
D) Square wave

63. The power factor at resonance in R-L-C parallel circuit is

A) 0.08 lagging
B) 0.8 leading
C) Unity
D) Zero

64. In an AC circuit a low value of KVAR compared with KW indicates

A) Unity power factor
B) High power factor
C) Low efficiency
D) Maximum load current

65. Specific resistance of a conductor depends on

A) Conductor material
B) Conductor diameter
C) Conductor length
D) Conductor radius

66. Flemings right hand rule is used to find
    A) Direction of current in distribution lines
    B) Direction of induced emf
    C) Direction of flow of irons in electrolyte
    D) Direction of rotation of motor

67. What is the unit of permeability ?
    A) Ampere turns
    B) Weber/meter
    C) Ampere turns/Weber
    D) No unit

68. What is the current density of metal if a current of 40A is passed through a cross-sectional area of $0.4m^2$?
    A) 16 A/m^2
    B) 10 A/m
    C) 100 A/m^2
    D) 160 A/m^2

69. The product of apparent power and cosine of the phase angle between circuit voltage and current is
    A) True power
    B) Volt-ampere
    C) Reactive power
    D) Instantaneous power

70. The inductance of a coil can be increased by
    A) Decreasing the diameter of the former
    B) Increasing core length
    C) Choosing core material having high permeability
    D) Decreasing the number of turns

71. Silicon steel is used in electrical machines because it has _____
    A) Low hysteresis loss
    B) High coersivity
    C) Low retentivity
    D) High conductivity

72. If '1A' current flows in a circuit the number of electrons flowing through this circuit is
    A) 0.625×10^{19}
    B) 1.6×10^{19}
    C) 1.6×10^{18}
    D) 0.16×10^{19}

73. Which rule is used for determine the direction of magnetic lines in a current carrying conductor ?

A) Lenz's law

B) Flemings right hand rule

C) Flemings left hand rule

D) Right hand palm rule

74. The RMS value of a sinusoidal AC current is equal to its value at angle of _____ degrees.

A) 90 B) 45 C) 60 D) 30

75. One ampere current is passed for one second is called as one

A) Ohm B) Watt

C) Volt D) Coulomb

76. For a symmetrical wave form the average value of one full cycle is

A) 0.637 B) 1.11

C) 1 D) Zero

77. One weber is equal to

A) 10^8 lines B) 10^{10} lines

C) 10^{12} lines D) 10^4 lines

78. The unit of magnetic reluctance is

A) Weber/m^2

B) Nw/weber

C) AT/weber

D) Lumen/m^2

79. Which of the following frequencies has the longest time period ?

A) 10 Hz B) 1 Hz

C) 100 KHz D) 1 KHz

80. Resistance of a conductor of diameter 'D' and length 'L' is 'R' ohm. If the diameter is halved and its length is doubled the resistance will be

A) 8R B) 2R C) R D) 4R

81. How the capacity of batteries is specified ?
A) Volt B) Watt C) Volt Ampere D) Ampere hour

82. What is the output voltage of Lithium cell ?
A) 1.2 V B) 1.5 V C) 2.5 V D) 1.8 V

83. What is the purpose of the hydrometer is used during charging of battery ?
A) Determine level of electrolyte
B) Determine the specific gravity of electrolyte
C) Determine discharge level of battery
D) Determine battery voltage level

84. Which is used as an electrolyte in lead acid battery ?
A) Hydrochloric acid B) Ammonium chloride
C) Potassium hydroxide D) Dilute sulphuric acid

85. What is the name of defect that bending of plates in secondary cells ?
A) Buckling B) Local action
C) Partial short D) Hard sulphation

86. Why the vent plug is kept open during charging of battery ?
A) To allow oxygen enter inside
B) To escape the gas freely
C) To check level of electrolyte
D) To check the colour changes in the plates

87. Which material is used as positive electrode in a dry cell ?
A) Carbon B) Zinc C) Copper D) Lithium

88. Why cells are connected in series ?
A) To reduce total voltage B) To obtain higher current
C) To obtain higher voltage D) To reduce current

89. Which method is used to charge the battery at very low rate and long period ?
A) Rectifier method B) Trickle charging method
C) Constant current method D) Constant potential method

90. Which is rechargeable cell ?
A) Voltaic cell B) Carbon zinc cell
C) Lead acid cell D) Mercury cell

91. Which meter is integrating type instrument ?
A) Energymeter B) Ammeter
C) Multimeter D) Wattmeter

92. What is the recommended minimum height of light fitting from the floor level ?
A) 1.5 m B) 2 m C) 2.25 m D) 3 m

93. What is the maximum power recommended to the light and fan sub circuit as per IE rules ?
A) 3000 watts B) 1500 watts C) 750 watts D) 800 watts

94. Which represents the physical position of accessories in the wiring installation ?
A) Wiring diagram B) Schematic diagram
C) Installation plan D) Layout diagram

95. Which classification of instrument tangent galvanometer belongs ?
A) Secondary instrument B) Absolute instrument
C) Recording instrument D) Integrating instrument

96. Which material is used for making control spring in instrument ?
A) Phosphor bronze B) Copper
C) Aluminium D) Nickrome

97. The current rating of double pole iron clad switch is from
A) 15A to 200A B) 16A to 220A
C) 16A to 200A D) 16A to 400A

98. The insulation resistance of an installation is more than
A) 1M Ω B) 1 Ω C) 5M Ω D) 10M Ω

99. Three pin socket for light circuit rated as
A) 6A, 250 V B) 6A, 240 V C) 6A, 230 V D) 6A, 220 V

100. Which force helps the moving system to bring rest to its final deflected position quickly ?
A) Controlling force B) Deflecting force
C) Damping force D) Gravitational force

Space for Rough Work