

**195/2023**

Maximum : 100 marks

Time : 1 hour and 30 minutes

1. The most common cause of accident in the workshop is :  
(A) Defective parts (B) Defective equipment  
(C) Failure to follow instructions (D) Faulty workmanship
2. What is the point angle of centre punch?  
(A) 30° (B) 45°  
(C) 60° (D) 90°
3. What does the 'A' stand for in ABC of first aid?  
(A) Ambulance (B) Airway  
(C) Alert (D) Artery
4. What is the pitch distance of a metric micrometer spindle thread?  
(A) 0.5 mm (B) 0.05 mm  
(C) 0.2 mm (D) 0.02 mm
5. The purpose of feeler gauge is :  
(A) Checking angle of screw thread  
(B) Checking clearances between mating surfaces  
(C) Checking radius of a job  
(D) Checking contour of a profile of a job
6. The hand tool used for making internal thread :  
(A) Tap (B) Die  
(C) Reamer (D) Scrapper
7. Which of the following is not a part of Drilling machine?  
(A) Spindle (B) Column  
(C) Mandrel (D) Head
8. Which component is used to prevent leakage between cylinder and cylinder head?  
(A) Rivet (B) Stud  
(C) Welding (D) Gasket

9. The thread angle of an ISO metric thread is :  
(A) 47.5° (B) 55°  
(C) 60° (D) 90°
10. For cutting soft materials, the hacksaw blade should have :  
(A) Coarse pitch (B) Medium pitch  
(C) Fine pitch (D) All the above mentioned
11. The electrolyte used in the lead-acid storage batteries is a solution of :  
(A) Hydrochloric acid (B) Phosphoric acid  
(C) Sulphuric acid (D) Boric acid
12. Which test is used to determine whether the battery plates are defective or not?  
(A) Specific gravity test (B) Open volt test  
(C) High discharge test (D) Cadmium test
13. Which of the following is provided to charge the battery constantly?  
(A) Ignition coil (B) Generator  
(C) Fuse box (D) ECU
14. A starter solenoid consists of two coils. These are called :  
(A) Push-in and pull-out (B) Push-in and hold-out  
(C) Pull-in and hold-in (D) Pull-in and push-out
15. In an alternator the magnetic field produced in the :  
(A) Rotor (B) Stator  
(C) Frame (D) Regulator
16. Which one of the following can be used to convert A.C to D.C?  
(A) Rectifier (B) Induction coil  
(C) Condenser (D) Brushes
17. In a starter motor, the field windings are wound around :  
(A) Armature (B) Commutator  
(C) Brush (D) Pole shoes
18. Any short-circuit in armature windings may be tested with a :  
(A) Voltmeter (B) Growler  
(C) Multimeter (D) None of the above

19. For aiming the head lights, the distance between the head light and screen should be :
- (A) 1.6 m (B) 4.6 m  
(C) 7.6 m (D) 10.6 m
20. The lamps are protected from overloading by :
- (A) Fuse (B) Switch  
(C) Capacitor (D) Harness
21. Distance travelled by the piston in moving from Top dead centre to Bottom dead centre is called :
- (A) Stroke (B) Bore  
(C) Engine capacity (D) Engine torque
22. The efficiency of an Otto cycle is increased by increasing :
- (A) Temperature ratio (B) Pressure ratio  
(C) Compression ratio (D) None of the above
23. For the condition of maximum pressure and heat supplied :
- (A) Otto cycle is more efficient than diesel cycle  
(B) Diesel cycle is more efficient than Otto cycle  
(C) Dual cycle is more efficient than Otto and diesel cycle  
(D) Dual cycle is less efficient than Otto and diesel cycle
24. The firing order in case of six cylinder in-line engine is usually :
- (A) 1-6-3-5-2-4 (B) 1-3-5-2-4-6  
(C) 1-4-5-6-3-2 (D) 1-5-3-6-2-4
25. In a four stroke cycle diesel engine the inlet valve opens :
- (A)  $10^\circ - 20^\circ$  before TDC (B)  $10^\circ - 20^\circ$  after TDC  
(C)  $39^\circ - 50^\circ$  before TDC (D)  $39^\circ - 50^\circ$  after TDC
26. A four stroke petrol engine theoretically works on :
- (A) Diesel cycle (B) Stirling cycle  
(C) Otto cycle (D) Joule cycle
27. The compression ratio for Diesel engine varies from :
- (A) 3 to 6 (B) 20 to 30  
(C) 5 to 8 (D) 15 to 20

28. What is the piston speed of an engine when it runs at N rpm and its length of stroke is L?  
 (A) 0.5 LN (B) LN  
 (C) 2 LN (D) 4 LN
29. Stroke length of an IC Engine equals :  
 (A) Half the crank radius (B) The crank radius  
 (C) Twice the crank radius (D) Four times the crank radius
30. The cross-sectional area of one cylinder of an engine multiplied by its stroke length is called :  
 (A) Engine capacity (B) Clearance volume  
 (C) Combustion volume (D) Swept volume
31. A \_\_\_\_\_ is used in the piston head to control compression ratio and detonation.  
 (A) Compression rings (B) Dish  
 (C) Piston pin (D) Deflector
32. The cast iron is mainly used material for cylinder block because of :  
 (A) It has sound - damping properties  
 (B) It has a low value of coefficient of thermal expansion  
 (C) Due to its slightly porous nature  
 (D) All of the above
33. The purpose of the gear teeth around the flywheel is :  
 (A) To engage with starter motor (B) To connect with camshaft  
 (C) To engage with clutch disc (D) To engage with distributor
34. The crankshaft carries a vibration damper in order to control the \_\_\_\_\_ vibration caused by the power impulses.  
 (A) Longitudinal vibration (B) Lateral vibration  
 (C) Torsional vibration (D) None of these
35. The distance between the axis of the main journal and the crankpin centre lines is exactly one half of the engine stroke and is called :  
 (A) Side crank (B) Crank Radius  
 (C) Crank pin length (D) Crank throw
36. The \_\_\_\_\_ is used to measure bearing clearance.  
 (A) metal rule (B) vernier calliper  
 (C) plasti gauge (D) dial gauge

37. Technician A says that the valve rotates slightly as it opens. Technician B says that the valve rotates slightly as it closes. Who is right?
- (A) A only (B) B only  
(C) Both A and B (D) Neither A nor B
38. Camshaft in an engine is always mounted :
- (A) Inclined to the crankshaft (B) Perpendicular to the crankshaft  
(C) Parallel to the crankshaft (D) None of these
39. \_\_\_\_\_ is a type of cylinder head, the intake and exhaust port passages open on opposite sides of the engine.
- (A) Counter flow (B) Cross flow  
(C) Radial flow (D) None of these
40. Which tool is used to remove the ridge at the cylinder top?
- (A) ridge reamer (B) ridge hammer  
(C) ridge driller (D) none of these
41. In \_\_\_\_\_ type of radiator cores, the coolant flows through tubes and air passes around them.
- (A) Tubular type (B) Cellular type  
(C) Pipe core (D) Split core
42. In modern engines instead of an overflow pipe, \_\_\_\_\_ is connected with the radiator, it receives the excess coolant as the engine temperature increases.
- (A) Reserve tank (B) Expansion reservoir  
(C) Radiator upper reservoir (D) Radiator lower reservoir
43. Commonly used corrosion - inhibitors in a cooling system are :
- (A) Silicates and Chromates (B) Iodates and Bromates  
(C) Sulphates and Chlorides (D) None of these
44. The \_\_\_\_\_ lubrication system is suitable for the vehicle may have to work in an inclined position.
- (A) Wet sump lubrication (B) Splash lubrication system  
(C) Pressure lubrication system (D) Dry sump Lubrication System
45. Semi-solid lubricant is :
- (A) Animal oil (B) Vegetable oil  
(C) Soap stone (D) Grease

46. The oil pump used in a lubrication system :
- (A) Gear pump (B) Rotor pump  
(C) Plunger pump (D) All of these
47. The Positive Crankcase Ventilation (PCV) the system is that it :
- (A) mixes fuel with air  
(B) promotes combustion by creating a swirling movement in the air fuel mixture  
(C) returns blow-by gases from the crankcase to the intake system  
(D) feeds blow-by gases to the exhaust manifold
48. The bellow type thermostat, bellows filled with \_\_\_\_\_ material.
- (A) Wax (B) Acetone  
(C) Sulphur (D) None of these
49. Water Circulation in a thermosyphon cooling system is caused by :
- (A) Water pump  
(B) The difference in densities of the water  
(C) A belt driven water impeller  
(D) The difference in pressures of the water
50. Which of the following is not a positive displacement pump?
- (A) Vane pump (B) Lobe pump  
(C) Centrifugal pump (D) Piston pump
51. In Spark Ignition System the two fuel systems are used they are :
- (A) Carbureted and diesel (B) Fuel injection and diesel  
(C) Port and throttle body (D) Fuel injected and carbureted
52. In electric fuel pump all the following are true except :
- (A) It may be mounted in-line or in-tank  
(B) It mounts on the cylinder block or head  
(C) It shuts off if the ignition switch opens  
(D) It reduces the possibility of vapor lock
53. Service man A says valve on cap of the fuel tank is to prevent pressure build up in the tank. Service man B says same has to use to prevent the vacuum build up in the tank. Who is right?
- (A) Service man A (B) Service man B  
(C) Both A and B (D) Neither A nor B

54. The dual exhaust system has a crossover pipe to :
- (A) To increase engine power (B) Helps to exhaust more freely  
(C) Help to reduce noise (D) All the above
55. The lowest possible back pressure in the exhaust system is produced by :
- (A) Exhaust Runners (B) Headers  
(C) Control valves (D) Mufflers
56. To relieve fuel pressure is to remove the fuel pump fuse and the :
- (A) open the fuel line (B) wait two hours  
(C) run the engine until it stalls (D) check for trouble code
57. When replacing a fuel injector, O rings are coated with :
- (A) gasoline (B) silicone – rubber sealant  
(C) gasket sealer (D) clean engine oil
58. Speed of the engine at the time of engine rpm drop test should :
- (A) Drop 50 rpm or more (B) Increase 50 rpm or more  
(C) Not change (D) Drop to zero as the engine stalls
59. If there is no flow in EGR the causes found are :
- (A) Engine overheating (B) Excessive Nox, in the exhaust gas  
(C) Detonation (D) All the above
60. Trouble indicated in Catalytic converter by all the following except :
- (A) Small particles coming out the tail pipe  
(B) A rotten-egg smell  
(C) Excessive exhaust noise  
(D) A defective e oxygen sensor
61. For Rotating parts of the clutch the inertia should be :
- (A) Maximum (B) Minimum  
(C) Zero (D) None of the above
62. For the maximum life of clutch facing the rubbing speed at the time of engagement while the pressure intensity are not exceed to :
- (A) 30 ms to 100 Kpa (B) 35 ms to 120 Kpa  
(C) 40 ms to 110 Kpa (D) 45 ms to 120 Kpa

63. Major cause for the clutch spin may be :
- (A) Excessive free pedal play (B) Oil or grease on friction facing  
(C) Pressure plate warped (D) All the above
64. Pulsation of the clutch pedal caused by :
- (A) Misalignment of engine and transmission  
(B) Worn out splines  
(C) Pressure plate warped  
(D) None of the above
65. When can we notice the clutch dragging?
- (A) At road speed (B) While shifting gears  
(C) During acceleration (D) At high speed
66. The transaxle (dual range) input shaft has :
- (A) An output shaft with ring gears (B) An input shaft with two pinion gears  
(C) Two counter gears (D) Two over drive ratios
67. In automatic transmission, One end of the band is anchored to the transmission case and other end is linked to :
- (A) A clutch (B) A servo  
(C) A drum (D) An accumulator
68. The plunger in the shift solenoid in an electronic shift transmission :
- (A) Pushes against one end of the shift valve  
(B) Pulls on the band to release it  
(C) Pushes against a clutch to engage it  
(D) Rise to open a fluid passage when turned ON
69. At normal line pressure the vehicle moves in reverse but not in the forward gear, due to :
- (A) Slipping stator clutch (B) Burned clutch  
(C) Broken output clutch (D) Stack governor
70. The clutch should be able to transmit maximum torque of the engine under all condition, it is usually design to transmit the maximum engine torque of :
- (A) 75 to 100% (B) 100 to 125%  
(C) 125 to 150% (D) 150 to 175%



71. Which change can be noticed by an Automatic level control?  
 (A) Load in the rear of the car (B) Speed of the car  
 (C) Air pressure on the tires (D) Load in the front of the car
72. In lower control arm steering knuckle is attached by a :  
 (A) kingpin (B) tension strut  
 (C) bushing (D) ball joint
73. The effect of rear end torque occurs :  
 (A) During braking  
 (B) During acceleration  
 (C) As the front end drives  
 (D) Only when the front suspension is defective
74. In hydraulic system air can enter because of :  
 (A) self-adjusters not working  
 (B) failure of one section of the hydraulic system  
 (C) linings contaminated with oil or brake fluid  
 (D) low fluid level in master cylinder
75. For the front and rear tires inflation pressures recommendation on the car is listed in the :  
 (A) VECI label (B) Tire information label  
 (C) VIN number (D) Sidewall markings
76. Unsprung weight is reduces by :  
 (A) Steel (B) Cast iron  
 (C) Aluminum (D) None of the above
77. What is the remedy for excessive radial run out?  
 (A) Replace the tire  
 (B) Reposition the wheel on the hub  
 (C) Remove the balance weight causing the distortion  
 (D) Reposition the tire on the wheel
78. Rapid wear with feathered edge on the tread due to :  
 (A) Overloading (B) Over inflation  
 (C) Insufficient air pressure (D) Incorrect wheel alignment
79. Sway bar connects between two lower control arms, when the vehicle moves around the curve the body, :  
 (A) Leans inward (B) Leans outward  
 (C) No action (D) None of the above

80. The major cause for the shimmy effect is :
- (A) Wearing out of hub bearing (B) Low tire pressure  
(C) Overloading (D) Incorrect wheel alignment
81. The Davis steering gear mechanism has :
- (A) less number of sliding pairs resulting in low friction  
(B) less number of sliding pairs resulting in high friction  
(C) more number of sliding pairs resulting in low friction  
(D) more number of sliding pairs resulting in high friction
82. In recirculating ball type steering gear box the backlash between the sector and the external teeth on the nut is adjusted by :
- (A) turning a screw till the required adjustment is effected  
(B) help of adjuster nut  
(C) adding shims to the damper cover plate  
(D) adding shims to the bearing cover plate
83. The purpose of positive castor on wheels is to :
- (A) counteracts the effect of centrifugal force and causes rolling in of the vehicle  
(B) aids the centrifugal force and causes rolling out of the vehicle  
(C) prevent uneven tyre wear  
(D) bring the wheel to toe-out
84. The steering road wheel stub axles must be able to twist through a maximum steering angle of \_\_\_\_\_ either side of straight ahead position.
- (A) 20° (B) 40°  
(C) 60° (D) 80°
85. Extreme shaking in a steering can be called as :
- (A) Drifting (B) Grinding noises  
(C) Speed wobble (D) Steering wheel looseness
86. The axle which helps to maintain wheel alignment and handles side thrust and driving torque is called as :
- (A) semi-floating axle (B) full-floating axle  
(C) three-quarter floating axle (D) front axle
87. In Hotchkiss drive, the rear end torque is absorbed by :
- (A) torque tube (B) rear spring  
(C) radius rods (D) axle

88. The drive shafts are connected to the differential and wheel hubs through universal joints because the universal joints :
- (A) absorb the vibrations transferred from the surface of the road
  - (B) compensate for variations in the relative positions of the differential and the wheels which result from bumpy road surfaces or other similar driving conditions
  - (C) absorb any difference in speed between the left and right wheels when the vehicle is turning
  - (D) none of the above
89. Which of the following statements are correct for all-wheel drive systems?
- (i) suitable for SUVs and crossovers driven on varying road conditions
  - (ii) suitable for off-road SUVs with very low traction
  - (iii) sends power to the front and rear wheels all the time
- (A) only (i) and (ii)
  - (B) only (ii) and (iii)
  - (C) only (i) and (iii)
  - (D) all the above (i), (ii) and (iii)
90. Sound occurred due to the splines on the axle shafts being worn out is called as :
- (A) Humming noise
  - (B) Knocking noise
  - (C) Noise when accelerating
  - (D) Noise when turning
91. Brake torque on the front wheels is absorbed by the :
- (A) knuckle and suspension control arm
  - (B) axle housing and control arm
  - (C) axle housing and the leaf spring
  - (D) brake drum and suspension control arm
92. The shoes that provide self-energizing or servo action are known as :
- (A) Trailing shoes
  - (B) Leading shoes
  - (C) Brake shoes
  - (D) None of the above
93. During the application of disc brakes, the reduction of speed is :
- (A) directly proportional to the vehicle weight
  - (B) inversely proportional to the vehicle weight
  - (C) directly proportional to the hydraulic pressure acting on each piston
  - (D) inversely proportional to the hydraulic pressure acting on each piston
94. The common cause of the car pulling to one side under braking is :
- (i) a fault with the pad or caliper
  - (ii) the brake on one side is grabbing
  - (iii) the brake fluid pressure is low
- (A) Option (i) and (ii)
  - (B) Option (ii) and (iii)
  - (C) Option (i) and (iii)
  - (D) All the above options (i), (ii) and (iii)

- 95.** The brake fluid needs to be replaced depends on a number of factors, such as :
- (i) wear and damaged parts of the brake
  - (ii) driving habits
  - (iii) environmental variables like heat and humidity
- (A) Option (i) and (ii)                      (B) Option (ii) and (iii)  
(C) Option (i) and (iii)                      (D) All the above options (i), (ii) and (iii)
- 96.** The functions of receiver-drier are :
- (i) to filter out any dirt from the refrigerant
  - (ii) to absorb moisture if present in the refrigerant
  - (iii) to trap any refrigerant vapour that did not condense in the condenser
- (A) Option (i) and (ii)                      (B) Option (ii) and (iii)  
(C) Option (i) and (iii)                      (D) All the above options (i), (ii) and (iii)
- 97.** ————— compressor provides the greatest cooling capacity per kg of compressor weight.
- (A) York's van rotary compressor
  - (B) Reciprocating compressor
  - (C) Variable displacement compressor
  - (D) None of the above
- 98.** In heating system little or no heat may be due to :
- (i) air leaks around blower case or coolant leaks around heater core
  - (ii) inefficient air circulation
  - (iii) presence of air in heater core
- (A) Option (i) and (ii)                      (B) Option (ii) and (iii)  
(C) Option (i) and (iii)                      (D) All the above options (i), (ii) and (iii)
- 99.** In AC system the air coming from the vents is not cool enough, the causes are :
- (i) The compressor belt is slipping
  - (ii) Condenser is clogged with debris
  - (iii) Receiver/drier is plugged
- (A) Option (i) and (ii)                      (B) Option (ii) and (iii)  
(C) Option (i) and (iii)                      (D) All the above options (i), (ii) and (iii)
- 100.** The thermostatic expansion value meters the required amount of liquid refrigerant into the evaporator for proper cooling action, which varies with the evaporator heat loads is called as :
- (A) Throttling action
  - (B) Modulating action
  - (C) Controlling action
  - (D) None of the above
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