

# MIZORAM PUBLIC SERVICE COMMISSION

## TECHNICAL COMPETITIVE EXAMINATIONS FOR RECRUITMENT TO THE POST OF MOTOR VEHICLE INSPECTOR UNDER GOVERNMENT OF MIZORAM JANUARY, 2014

### AUTOMOBILE ENGINEERING PAPER – II

Time Allowed : 2 hours

Full Marks : 150

*All questions carry equal marks of 2 each.*

*Attempt all questions.*

1. A petrol that detonates easily is called
  - (a) high octane petrol
  - (b) low octane petrol
  - (c) unleaded petrol
  - (d) leaded petrol
2. The advantage of the fuel injection system over the carburetor system is
  - (a) improved fuel efficiency
  - (b) improved emission
  - (c) improved power output
  - (d) all of these
3. The octane rating of petrol commercially available is
  - (a) 85-95
  - (b) 95-100
  - (c) 100-110
  - (d) 110-125
4. The rating of C.I engine fuel (Diesel) is given by
  - (a) octane number
  - (b) performance number
  - (c) cetane number
  - (d) none of these
5. The fuel pump in the programmed fuel injection system is located
  - (a) between the fuel-filter pipe and fuel tank
  - (b) in the fuel tank
  - (c) on the distributor mounting in the engine compartment
  - (d) between the tank and pump
6. The ease with which petrol vaporizes is called
  - (a) oxidation
  - (b) octane number
  - (c) volatility
  - (d) cetane number
7. In a diesel engine, the function of a fuel injector is to
  - (a) mix the fuel and air
  - (b) ignite the air-fuel mixture
  - (c) provide flame for ignition
  - (d) spray atomized fuel in the cylinder
8. In the electrical fuel pump the \_\_\_\_\_ pulls the diaphragm against the spring.
  - (a) magnetic field
  - (b) solenoid
  - (c) electric pump
  - (d) none of these

9. Flooding in the carburettor is controlled by  
(a) float (b) toggle lever  
(c) toggle pin (d) none of these
10. The main source of engine fuels is:  
(a) Hydro carbons (b) Crude petroleum  
(c) Paraffins (d) None of these
11. Paraffins with branched chain structure are:  
(a) Normal paraffins (b) Olefins  
(c) Iso-paraffins (d) None of these
12. The minimum cetane number specified for H.S.D oil is:  
(a) 12 (b) 48  
(c) 45 (d) None of these
13. Carburetion is the process of preparing combustible fuel-air mixture in the:  
(a) C.I engine (b) S.I Engine  
(c) Steam turbine (d) None of these
14. Fuel is delivered from the fuel pump to the carburettor by the:  
(a) Rocker arm pull (b) Diaphragm spring pressure  
(c) Flat bowl vacuum (d) None of these
15. The petrol filter is connected to a fuel pipe:  
(a) Between the fuel pump and carburettor (b) Between the petrol tank and fuel pump  
(c) Between the oil sump and oil pump (d) None of these
16. The most widely used fuel supply system for car engines is the:  
(a) Gravity system (b) Pressure system  
(c) Vacuum system (d) Pump system
17. The venturi in the carburettor causes:  
(a) Increase of air velocity (b) Decrease of air velocity  
(c) Decrease of fuel flow (d) Decrease of manifold vacuum
18. When the choke is applied, the fuel comes out from the  
(a) Main jet (b) Idle port  
(c) Transfer port (d) Any of these
19. Supercharger is a blower which forces air into cylinder:  
(a) At atmospheric pressure (b) At lower than atmospheric pressure  
(c) At higher than atmospheric pressure (d) None of these
20. The full form of MPFI is  
(a) Micro Point Fuel Injection (b) Multi Point Fuel Injector  
(c) Multi Point Fire Injection (d) Multi Point Fuel Injection
21. Air cooling system is used in  
(a) 4-wheeled light cars (b) two-wheelers  
(c) both (a) and (b) (d) none of these

22. Water cooling system is used in  
(a) 4-wheeled medium trucks (b) 6-wheeled heavy trucks  
(c) 10-wheeled heavy trucks (d) all of these
23. Which is not a part of air cooling system?  
(a) fins (b) hose pipe  
(c) engine block (d) engine head
24. Which is not a part of radiator?  
(a) fins (b) tubes  
(c) radiator cap (d) hose pipe
25. The function of Thermostat is to shut off cold water from the radiator when the engine is cold  
(a) correct (b) incorrect  
(c) open (d) none of these
26. The advantages of air cooling system over water cooled system are:  
(a) Air cooled engines are lighter  
(b) Air cooled engine can be operated in extreme climate  
(c) Maintenance is easier  
(d) All of these
27. Under normal conditions, the water in the radiator circulates:  
(a) From top to bottom (b) From bottom to top  
(c) In a circular path in the radiator (d) None of these
28. The fan in the Maruti car is controlled:  
(a) Electrically (b) Mechanically  
(c) Hydraulically (d) Magnetically
29. A liquid that boils at a relatively high temperature is said to have  
(a) a low viscosity (b) a high viscosity  
(c) a low volatility (d) a high volatility
30. The lubrication oil flow in an engine is in order as  
(a) oil strainer-oil pump-relief valve-oil filter-cylinder block-cylinder head-oil pan  
(b) oil pump-oil strainer-relief valve-oil filter-cylinder block-cylinder head-oil pan  
(c) oil strainer-oil filter-relief valve-oil pump-cylinder block-cylinder head-oil pan  
(d) oil strainer-oil pump-relief valve-oil filter-cylinder head-cylinder block-oil pan
31. The component of the oil filter that prevents the passage of metal particles and sludge is  
(a) element (b) relief valve  
(c) check valve (d) case
32. Which of the following indicates a multi grade oil?  
(a) SAE 30 (b) API SF  
(c) SAE 20 W-50 (d) SAE 40
33. The primary function of lubrication is to:  
(a) Provide cooling effect (b) Provide sealing action  
(c) Provide cleaning action (d) Reduce wear

34. Parts of engine that require lubrication are:
- (a) Timing gears
  - (b) Valve mechanism
  - (c) Gudgeon pin bearings
  - (d) All of these
35. The most important characteristic of a lubricating oil is its:
- (a) Viscosity
  - (b) Physical stability
  - (c) Chemical stability
  - (d) All of these
36. Chassis grease is used for lubricating the:
- (a) Steering box
  - (b) Gear box
  - (c) Propeller shaft
  - (d) All of these
37. Most commonly used lubrication system in automobiles is:
- (a) Petrol system
  - (b) Splash system
  - (c) Pressure system
  - (d) None of these
38. Maximum oil pressure in the lubrication system is controlled by:
- (a) Oil filter
  - (b) Pump rotor
  - (c) Pressure relief valve
  - (d) Pressure switch
39. An under inflated tyre will wear the tread most:
- (a) Near centre
  - (b) Near the edges
  - (c) In the lateral direction
  - (d) In the cross direction
40. The automobile tyre inflation are classified as, under inflation, proper inflation, and over inflation
- (a) correct
  - (b) incorrect
  - (c) excluding under inflation
  - (d) none of these
41. The type of wheel which cannot be used with a tubeless tyre is:
- (a) Disc wheel
  - (b) Wire wheel
  - (c) Light alloy wheel
  - (d) Composite wheel
42. The type of wheel generally used for heavy commercial vehicles are:
- (a) Disc wheel
  - (b) Wire wheel
  - (c) Light alloy wheel
  - (d) None of these
43. The type of Rims used almost on all trucks and heavy duty vehicles is:
- (a) Drop centre rims
  - (b) Top rims
  - (c) Flat base rims
  - (d) All of these
44. The term 'ply rating' with reference to a tyre refers to the:
- (a) actual no of plies
  - (b) aspect ratio
  - (c) rated strength
  - (d) none of these
45. Wheel balancing has to check two kinds of imbalance:
- (a) static and kinetic
  - (b) kinetic and dynamic
  - (c) static and dynamic
  - (d) tyre and alignment
46. The basic characteristics of a brake fluid is
- (a) a high boiling point
  - (b) low viscosity
  - (c) compatibility
  - (d) all of these

47. The hydraulic brake system is constructed based on the principle of  
(a) Archimedes's principle (b) Pascal's Laws  
(c) Laws of Gravity (d) Laws of Darwin
48. In a four-wheel drive having four wheels, there is one master cylinder and  
(a) four wheel cylinders (b) six wheel cylinders  
(c) eight wheel cylinders (d) ten wheel cylinders
49. The main function of the brake fluid is  
(a) lubrication (b) power transmission  
(c) cooling (d) greasing
50. The parking brakes employed in vehicles are operated  
(a) mechanically (b) hydraulically  
(c) pneumatically (d) none of these
51. The operation of removing trapped air from the hydraulic braking system is known as  
(a) trapping (b) tapping  
(c) bleeding (d) cleaning
52. The service brakes employed in cars are generally operated  
(a) mechanically (b) hydraulically  
(c) pneumatically (d) none of these
53. During braking, the brake shoe is moved outward to force the lining against the  
(a) wheel piston or cylinder (b) anchor pin  
(c) brake drum (d) wheel rim or axle
54. The ABS prevents vehicle  
(a) tyre burst (b) steering fail  
(c) brake fail (d) skidding
55. The purpose of tyre rotation on Automobile is:  
(a) Avoid ply separation (b) Equalize wear  
(c) Get better ride (d) None of these
56. The main function of the brake is:  
(a) To change speed (b) To stop in emergency  
(c) To couple the engine to the road wheels (d) To decelerate the automobile
57. In the disc brake, the disc is attached to:  
(a) The piston (b) The caliper  
(c) The wheel hub (d) None of these
58. Chassis is a strong steel frame which supports the body and engine  
(a) correct (b) incorrect  
(c) with driving cab (d) with body
59. The chassis frame consists of rear cross member, diagonal member, intermediate cross member, attachment and front cross member.  
(a) correct (b) incorrect  
(c) except front cross member (d) none of these

60. Automotive chassis is a skeletal frame on which various parts like engine, tyres, axle assembly, brakes, steering are bolted.
- (a) correct (b) incorrect  
(c) with air tank (d) none of these
61. 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
62. Modern cars use
- (a) monocoque chassis (b) ladder chassis  
(c) backbone chassis (d) long chassis
63. The purpose of chassis frame is:
- (a) To take the weight of the body (b) To take the full load of the vehicle  
(c) To support the driving cabin (d) All of these
64. The following defects may be found in the chassis body:
- (a) Cracks (b) Broken welds  
(c) Buckling (d) All of these
65. The shape of the automobile body should be designed in such a way that the air drag is:
- (a) Minimum (b) Maximum  
(c) Decreasing (d) None of these
66. Types of battery used in vehicle are
- (a) dry and wet type (b) only wet type  
(c) dry and alkaline type (d) wet and alkaline type
67. The specific gravity of acid in a fully charged battery is generally
- (a) 1.00 (b) 1.28  
(c) 1.82 (d) 2.81
68. Alternator generates \_\_\_\_\_ for recharging the battery
- (a) direct current (b) indirect current  
(c) field current (d) coil current
69. The magneto ignition system are mainly used in,
- (a) two wheelers (b) three wheelers  
(c) four wheelers (d) none of these
70. In a dynamo/d.c generator, magnetic field is produced in the
- (a) Armature (b) Commutator  
(c) Carbon brushes (d) Stator
71. An alternator frame is made of:
- (a) Cast iron (b) Brass  
(c) Aluminium (d) Copper
72. Automotive starting motors are:
- (a) Series wound (b) Series-shunt wound  
(c) Shunt wound (d) Both (a) and (b)

73. The device in the electrical system of an automobile that prevents the burning out of the filaments of an electric bulb is:
- (a) The cut out
  - (b) The electrical fuse
  - (c) The voltage regulator
  - (d) All of these
74. The contacts of the horn relay are in the circuit between:
- (a) The horn button and horn
  - (b) The relay winding and horn
  - (c) The horn and battery
  - (d) None of these
75. The starting motor is a device which converts
- (a) Mechanical Energy into Electrical Energy
  - (b) Electrical Energy into Mechanical Energy
  - (c) Kinetic Energy into Mechanical Energy
  - (d) Thermal Energy into Electrical Energy

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