OPSC
MVI

Previous Year Paper
(Automobile Engg.)
05 May, 2024

DO NOT OPEN THIS TEST BOOKLET UNTIL YOU ARE ASKED TO DO SO

Test Booklet Series

A

T. B. C. : MVI-I-23/24

TEST BOOKLET

INSPECTOR OF MOTOR VEHICLE/ADDITIONAL R.T.O. (ENFORCEMENT)/ASSISTANT WORKS ENGINEER

(AUTOMOBILE ENGINEERING)

Sl. No. **10041**

Time Allowed : 3 Hours

Maximum Marks : 150

: INSTRUCTIONS TO CANDIDATES :

1. IMMEDIATELY AFTER THE COMMENCEMENT OF THE EXAMINATION, YOU SHOULD CHECK THAT THIS TEST BOOKLET **DOES NOT** HAVE ANY UNPRINTED OR TORN OR MISSING PAGES OR ITEMS ETC. IF SO, GET IT REPLACED BY A COMPLETE TEST BOOKLET OF THE SAME SERIES ISSUED TO YOU.
2. ENCODE CLEARLY THE TEST BOOKLET SERIES **A, B, C** OR **D**, AS THE CASE MAY BE, IN THE APPROPRIATE PLACE IN THE ANSWER SHEET USING BALL POINT PEN (BLUE OR BLACK).
3. You have to enter your **Roll No.** on the Test Booklet in the Box provided alongside. **DO NOT** write *anything else* on the Test Booklet.
4. **YOU ARE REQUIRED TO FILL UP & DARKEN ROLL NO., TEST BOOKLET / QUESTION BOOKLET SERIES IN THE ANSWER SHEET AS WELL AS FILL UP TEST BOOKLET / QUESTION BOOKLET SERIES AND SERIAL NO. AND ANSWER SHEET SERIAL NO. IN THE ATTENDANCE SHEET CAREFULLY. WRONGLY FILLED UP ANSWER SHEETS ARE LIABLE FOR REJECTION AT THE RISK OF THE CANDIDATE.**
5. This Test Booklet contains **150** items (questions). Each item (question) comprises of four responses (answers). You have to select the correct response (answer) which you want to mark (darken) on the Answer Sheet. In case, you feel that there is more than one correct response (answer), you should mark (darken) the response (answer) which you consider the best. In any case, choose **ONLY ONE** response (answer) for each item (question).
6. You have to mark (darken) all your responses (answers) **ONLY** on the **separate Answer Sheet** provided, by **using BALL POINT PEN (BLUE OR BLACK)**. See instructions in the Answer Sheet.
7. All items (questions) carry equal marks. All items (questions) are compulsory. Your total marks will depend only on the number of correct responses (answers) marked by you in the Answer Sheet. **There shall be negative marking at the rate of 25% assigned to a correct answer for each wrong response.**
8. Before you proceed to mark (darken) in the Answer Sheet the responses (answers) to various items (questions) in the Test Booklet, you have to fill in some particulars in the Answer Sheet as per the instructions sent to you with your **Admission Certificate**.
9. After you have completed filling in all your responses (answers) on the Answer Sheet and after conclusion of the examination, you should hand over to the Invigilator the *Answer Sheet* issued to you. You are allowed to take with you the candidate's copy / second page of the Answer Sheet along with the **Test Booklet**, after completion of the examination, for your reference.
10. Sheets for rough work are appended in the Test Booklet at the end.

SEAL

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1. Which principle states that the sum of all forces acting on a body in static equilibrium is zero?

(A) Newton's first law

(B) Newton's second law

(C) Newton's third law

(D) Principle of moments

2. Which method is commonly used to analyze the internal forces in determinate truss structures?

(A) Method of sections

(B) Method of joints

(C) Slope-deflection method

(D) Moment distribution method

3. Which property of a material describes its resistance to deformation under an applied load?

(A) Elasticity

(B) Toughness

(C) Ductility

(D) Resilience

4. What is the unit of power?

(A) Newton-meter

(B) Watt

(C) Joule

(D) Kilogram-meter per second

5. The principle of conservation of energy states that

(A) energy cannot be created or destroyed

(B) power equals force times velocity

(C) momentum is conserved in collisions

(D) work done is equal to force times distance

6. Which quantity represents the product of force and time during a collision?

(A) Energy

(B) Power

(C) Impulse

(D) Momentum

7. The factor of safety in engineering design is defined as

(A) the ratio of applied load to allowable load

(B) the ratio of yield strength to ultimate strength

(C) the ratio of stress to strain

(D) the ratio of deformation to original length

8. Strain energy in tension and compression is directly proportional to

(A) load applied

(B) deformation

(C) cross-sectional area

(D) density

9. Mohr's circle is a graphical method used to determine

(A) principal stresses and strains

(B) shear stresses and strains

(C) normal stresses and strains

(D) axial stresses and strains

10. In simple bending of beams, where is the maximum bending moment usually located?

(A) At the free end

(B) At the fixed support

(C) At the mid-span

(D) Uniformly distributed along the beam

11. The Bending Moment Diagram (BMD) represents the variation of

(A) shear force along the beam

(B) bending stress along the beam

(C) moment of inertia along the beam

(D) bending moment along the beam

12. Torsion in solids occurs, when

(A) a force is applied along the length of the beam

(B) a force is applied perpendicular to the length of the beam

(C) a twisting moment is applied along the length of the beam

(D) a bending moment is applied along the length of the beam

13. Which type of loading is a close coiled helical spring designed to resist?

(A) Tensile loading

(B) Compressive loading

(C) Shear loading

(D) Torsional loading

14. Which theory is used to analyze the behavior of columns under compressive loads considering both material and geometric imperfections?

(A) Euler's theory

(B) Rankine's theory

(C) Perry-Robertson theory

(D) Ritter's theory

15. The theory of failures in engineering materials primarily deals with predicting

(A) buckling loads

(B) fatigue life

(C) yield strength

(D) ultimate tensile strength

16. When analyzing thin cylinders and spheres, what assumption is often made about their thickness?

(A) Negligible thickness

(B) Uniform thickness

(C) Varying thickness

(D) Infinite thickness

17. Which property of a material is crucial in determining its behavior under impact loads?

(A) Ductility

(B) Toughness

(C) Creep resistance

(D) Modulus of elasticity

18. In the biaxial state of stress, how many principal stress(es) is/are present?

(A) One

(B) Two

(C) Three

(D) Four

19. The slope of the Shear Force Diagram (SFD) represents the

(A) bending moment

(B) shear force

(C) rate of change of bending moment

(D) rate of change of shear force

20. Which of the following statements regarding the theory of columns is ***true***?

(A) It primarily deals with the analysis of lateral torsional buckling

(B) It focuses on predicting the compressive strength of columns

(C) It considers both material and geometric imperfections in column design

(D) It assumes columns to be infinitely rigid

21. Which of the following is an example of a permanent fastening method?

(A) Bolt and nut

(B) Rivet

(C) Key and keyway

(D) Dowel pin

22. Screwed fasteners are commonly used in applications, where

(A) quick assembly and disassembly are required

(B) high torque transmission is needed

(C) corrosion resistance is important

(D) precise alignment is necessary

23. Welded joints are preferred over other types of joints, when

(A) high disassembly is expected

(B) aesthetics is a primary concern

(C) high structural strength is required

(D) flexibility in design is essential

24. Fit and tolerance specify the

(A) maximum size of a hole

(B) minimum size of a shaft

(C) allowable difference between mating parts

(D) clearance between mating parts

25. What is the purpose of a bearing in a shaft design?

(A) To provide support and reduce friction

(B) To transmit torque between shafts

(C) To align shafts accurately

(D) To prevent shaft deflection

26. Which component is used to store and release energy in a mechanical system?

(A) Gear

(B) Spring

(C) Flywheel

(D) Clutch

27. Simple mechanisms are characterized by

(A) complex motion generation

(B) multiple moving parts

(C) minimal number of components

(D) high efficiency

28. Kinematics primarily deals with the

(A) forces acting on a system

(B) geometry of motion

(C) material properties of components

(D) energy transfer in a system

29. Which type of mechanism is formed by four links connected to form a closed loop?

(A) Gear mechanism

(B) Crank mechanism

(C) Slider-crank mechanism

(D) Four-bar chain mechanism

30. In flexible power transmission systems, which component is used to transmit motion between non-parallel shafts?

(A) Gear

(B) Belt

(C) Chain

(D) Shaft coupling

31. A gyroscope is used to

(A) measure angular velocity

(B) maintain orientation

(C) amplify vibrations

(D) transmit power

32. The profile of a cam determines the

(A) speed ratio in a mechanism

(B) direction of motion in a mechanism

(C) velocity of rotation in a mechanism

(D) motion of a follower in a mechanism

33. Balancing in mechanical systems is primarily done to

(A) reduce friction

(B) increase speed

(C) eliminate vibrations

(D) improve efficiency

34. Dynamic balancing is concerned with balancing of

(A) rotating parts

(B) stationary parts

(C) linear motion systems

(D) oscillating systems

35. The design of IC engine parts is primarily focused on optimizing

(A) fuel efficiency

(B) noise reduction

(C) material cost

(D) aesthetics

36. Which component is used to engage and disengage power transmission in a vehicle?

(A) Gear

(B) Brake

(C) Clutch

(D) Suspension system

37. The primary function of the suspension system in a vehicle is to

(A) provide steering control

(B) absorb shocks from the road

(C) transmit power to the wheels

(D) regulate engine temperature

38. Which component of a vehicle is responsible for transferring power from the transmission to the wheels?

(A) Propeller shaft

(B) Brake rotor

(C) Steering column

(D) Differential gear

39. Understanding vehicle dynamics involves studying the

(A) structural integrity of vehicle components

(B) motion and behavior of vehicles in various conditions

(C) material properties of vehicle parts

(D) aerodynamic design of vehicles

40. Road loads in vehicles primarily include

(A) inertial forces

(B) wind resistance

(C) frictional forces

(D) impact loads

41. Vibration and noise fundamentals are primarily concerned with

(A) heat transfer mechanisms

(B) mechanical properties of materials

(C) study of sound waves and their effects

(D) analysis of fluid dynamics

42. The rating and regulation of sound and noise are important in industries to

(A) improve employee productivity

(B) ensure environmental compliance

(C) enhance product aesthetics

(D) reduce material costs

43. Plastic deformation of metals occurs, when

(A) metal is heated to its melting point

(B) metal is subjected to high pressure

(C) metal undergoes rapid cooling

(D) metal is exposed to high-frequency vibrations

44. Heat treatment processes are used to

(A) increase material density

(B) improve mechanical properties

(C) decrease material ductility

(D) enhance electrical conductivity

45. Alloy formation involves combining of

(A) different types of ceramics

(B) metals with non-metals

(C) metals with other metals

(D) polymers with ceramics

46. The iron-carbon equilibrium diagram is used to understand

(A) alloy formation in steel

(B) heat treatment of ceramics

(C) plastic deformation of metals

(D) composite material properties

47. Which type of solution is formed, when one metal dissolves into another in its solid state?

(A) Liquid solution

(B) Solid solution

(C) Gas solution

(D) Polymer solution

48. TTT curves are used to study the transformation of

(A) metals during heat treatment

(B) ceramics under pressure

(C) polymers under stress

(D) alloys during casting

49. Ceramics are primarily composed of

(A) metallic bonds

(B) ionic bonds

(C) covalent bonds

(D) Van der Waals forces

50. Powder metallurgy is a process used for

(A) casting metals

(B) forging metals

(C) shaping metals from powder

(D) heating metals to high temperatures

51. NC, CNC and DNC are all related to

(A) heat treatment processes

(B) casting processes

(C) metal forming processes

(D) machine control systems

52. Which manufacturing process involves heating a metal billet and forcing it through a die to obtain the desired shape?

(A) Turning

(B) Welding

(C) Forging

(D) Molding

53. Which type of manufacturing process involves shaping a material by compressing it between two dies?

(A) Shaping

(B) Molding

(C) Casting

(D) Drilling

54. Gear manufacturing typically involves

(A) forging

(B) casting

(C) machining

(D) welding

55. Foundry technology is primarily concerned with

(A) metal casting processes

(B) metal forming processes

(C) heat treatment processes

(D) powder metallurgy processes

56. Plastic materials are characterized by

(A) high ductility

(B) low tensile strength

(C) brittle behavior

(D) low melting point

57. Composite materials are formed by combining

(A) different types of metals

(B) metals with non-metals

(C) polymers with ceramics

(D) ceramics with glass

58. Cold working of metals involves

(A) heating the metal to high temperatures

(B) subjecting the metal to mechanical stress at room temperature

(C) heating the metal above its recrystallization temperature

(D) cooling the metal rapidly after heating

59. The concept of solid solubility in metals is governed by

(A) temperature and pressure

(B) composition and pressure

(C) composition and temperature

(D) composition and density

60. CAD/CAM stands for

(A) Computer-Aided Design / Computer-Aided Manufacturing

(B) Computer-Aided Drawing / Computer-Aided Machining

(C) Computer-Algorithm Design / Computer-Assisted Mechanics

(D) Computer-Analysis Design / Computer-Assisted Manufacturing

61. The classification of fluids is based on their

(A) densities

(B) viscosities

(C) flow behaviors

(D) surface tensions

62. Newton's law of viscosity states that the shear stress in a fluid is

(A) directly proportional to the velocity gradient

(B) inversely proportional to the velocity gradient

(C) independent of the velocity gradient

(D) proportional to the pressure gradient

63. Surface tension occurs due to

(A) cohesive forces between fluid particles

(B) adhesive forces between fluid and solid particles

(C) cohesive forces between solid particles

(D) adhesive forces between gas particles

64. Fluid statics deals with the behavior of fluids

(A) in motion

(B) at rest

(C) in a vacuum

(D) under high pressure

65. Which thermodynamic law states that energy ***cannot*** be created or destroyed, but only transformed from one form to another?

(A) Zeroth law

(B) First law

(C) Second law

(D) Third law

66. The gas law that relates the pressure and volume of a gas at constant temperature is known as

(A) Boyle's law

(B) Charles' law

(C) Gay-Lussac's law

(D) Dalton's law

67. The process of refrigeration involves

(A) absorption of heat from a low-temperature source

(B) release of heat to a high-temperature sink

(C) maintaining a constant temperature throughout

(D) cooling a substance below its freezing point

68. In fluid dynamics, laminar flow is characterized by

(A) smooth and orderly flow patterns

(B) chaotic and irregular flow patterns

(C) high Reynolds number

(D) low viscosity

69. Rankine cycle is commonly used in

(A) steam engines

(B) gas turbines

(C) diesel engines

(D) refrigeration systems

70. The entropy of a system is a measure of its

(A) internal energy

(B) disorder or randomness

(C) temperature

(D) pressure

71. The principle behind air conditioning systems is based on

(A) Boyle's law

(B) Charles' law

(C) Zeroth law

(D) second law of thermodynamics

72. The process of combustion involves the reaction between a fuel and

(A) oxygen

(B) nitrogen

(C) carbon dioxide

(D) water vapour

73. Air compressors are used to

(A) increase the temperature of air

(B) increase the pressure of air

(C) decrease the volume of air

(D) decrease the density of air

74. In gas dynamics, flow through nozzles is characterized by

(A) decrease in velocity

(B) increase in pressure

(C) expansion of flow

(D) contraction of flow

75. Capillarity is the phenomenon of rise or fall of a liquid in a narrow tube due to

(A) viscous forces

(B) surface tension

(C) gravity

(D) pressure difference

76. The perfect gas equation is given by

(A) $PV = nRT$

(B) $PV = nkT$

(C) $PV = RT$

(D) $P = nRT$

77. Turbulent flow is characterized by

(A) smooth and orderly flow patterns

(B) chaotic and irregular flow patterns

(C) low Reynolds number

(D) high viscosity

78. In a refrigeration cycle, the refrigerant undergoes

(A) isothermal compression

(B) adiabatic expansion

(C) isobaric cooling

(D) isochoric heating

79. The Otto cycle is commonly used in

(A) steam engines

(B) gas turbines

(C) internal combustion engines

(D) refrigeration systems

80. The study of gas dynamics primarily deals with the behavior of gases under

(A) constant volume conditions

(B) constant pressure conditions

(C) variable temperature conditions

(D) variable density conditions

81. Two-stroke engines differ from four-stroke engines in

(A) their power outputs

(B) their number of strokes per cycle

(C) their fuel efficiencies

(D) their combustion processes

82. Port and valve timing diagrams are used to

(A) determine the power output of an engine

(B) analyze the performance of the cooling system

(C) study the movement of valves and ports in an engine

(D) calculate the efficiency of the fuel injection system

83. Indicator diagrams are the graphical representations of

(A) engine speed

(B) engine torque

(C) engine efficiency

(D) pressure changes inside the engine cylinder

84. Engine cooling can be achieved through methods, such as

(A) air cooling

(B) liquid cooling

(C) heat conduction

(D) All of the above

85. Lubrication in engines serves to

(A) increase engine speed

(B) reduce friction and wear

(C) improve fuel efficiency

(D) enhance combustion efficiency

86. Different methods of lubrication system include

(A) splash lubrication

(B) pressure lubrication

(C) oil mist lubrication

(D) All of the above

87. Ignition systems in SI engines are responsible for

(A) supplying fuel to the combustion chamber

(B) igniting the air-fuel mixture

(C) controlling exhaust emissions

(D) cooling the engine components

88. Engine power can be calculated by using the formula

(A) Power = Force × Distance

(B) Power = Torque × RPM

(C) Power = Energy ÷ Time

(D) Power = Pressure × Volume

89. Combustion principles in engines involve

(A) mixing fuel and air in the combustion chamber

(B) igniting the fuel-air mixture

(C) controlling the combustion process

(D) All of the above

90. Emissions from automotive engines include pollutants, such as

(A) carbon dioxide (CO_2)

(B) nitrogen oxides (NO_x)

(C) sulfur dioxide (SO_2)

(D) All of the above

91. Turbocharging and supercharging are methods used to

(A) increase engine displacement

(B) improve fuel efficiency

(C) increase engine power output

(D) reduce engine emissions

92. The thermodynamics of combustion involve the study of

(A) heat transfer during combustion

(B) energy conversion in the combustion chamber

(C) combustion efficiency

(D) All of the above

93. Premixed laminar and premixed turbulent combustions refer to

(A) different types of fuel-air mixtures

(B) different ignition systems

(C) different combustion chamber designs

(D) different combustion modes

94. Heat transfer by conduction occurs through

(A) direct physical contact between particles

(B) movement of fluid particles

(C) electromagnetic waves

(D) None of the above

95. Radiator systems in vehicles are used for

(A) engine cooling

(B) exhaust gas recirculation

(C) fuel injection

(D) power steering

96. Heat exchangers are devices used to

(A) generate heat

(B) transfer heat from one fluid to another

(C) cool engine components

(D) increase engine efficiency

97. The combustion process in SI engines is initiated by

(A) compression ignition

(B) spark ignition

(C) heat ignition

(D) pressure ignition

98. The emission norms set standards for limiting emissions of

(A) particulate matter

(B) nitrogen oxides

(C) carbon monoxide

(D) All of the above

99. Flame speed or burning velocity is influenced by factors, such as

(A) fuel composition

(B) compression ratio

(C) engine temperature

(D) lubrication system

100. Which type of engine employs the scavenging process to remove exhaust gases and fill the cylinder with fresh air-fuel mixture?

(A) Two-stroke engine

(B) Four-stroke engine

(C) Rotary engine

(D) Wankel engine

101. Hydraulic pumps in automotive systems are primarily responsible for

(A) cooling the engine

(B) pressurizing the hydraulic fluid

(C) controlling air flow

(D) regulating fuel injection

102. Hydraulic actuators are used in vehicles for

(A) steering control

(B) brake operation

(C) acceleration control

(D) gear shifting

103. Servo valves in hydraulic systems are utilized for

(A) controlling pressure

(B) regulating flow rate

(C) monitoring temperature

(D) adjusting viscosity

104. Automotive heaters function by

(A) converting electrical energy into heat

(B) absorbing heat from the engine coolant

(C) utilizing hydraulic pressure

(D) generating steam from fuel combustion

105. The purpose of an automotive air conditioner is to

(A) increase engine efficiency

(B) improve fuel economy

(C) regulate cabin temperature

(D) enhance vehicle aerodynamics

106. Automatic temperature control systems in vehicles rely on

(A) manual adjustment by the driver

(B) sensors and feedback mechanisms

(C) hydraulic fluid pressure

(D) pneumatic actuators

107. Engine protection systems in vehicles are designed to

(A) prevent fuel leaks

(B) monitor fluid levels

(C) detect engine malfunctions

(D) control exhaust emissions

108. Refrigeration system diagnostics involve

(A) testing the compressor efficiency

(B) checking refrigerant levels

(C) inspecting evaporator coils

(D) monitoring cabin temperature

109. Ambient conditions affecting system pressure in automotive HVAC systems include

(A) altitude and humidity

(B) engine temperature and fuel type

(C) tire pressure and vehicle speed

(D) wind speed and direction

110. Evaporator care involves ensuring

(A) proper airflow through the dash

(B) lubrication of hydraulic seals

(C) correct pressure in pneumatic lines

(D) adequate fuel supply to the engine

111. Alternate fuels used in automobiles include

(A) diesel and gasoline only

(B) LPG, CNG and biofuels

(C) petrol and kerosene only

(D) ethanol and methanol only

112. Hydrogen fuel cells in vehicles produce electricity through

(A) combustion of hydrogen

(B) electrolysis of water

(C) oxidation of carbon

(D) reduction of oxygen

113. Automotive pneumatic circuits are commonly employed in

(A) brake systems

(B) steering systems

(C) suspension systems

(D) fuel injection systems

114. The primary function of hydraulic valves in automotive systems is to

(A) control fluid flow direction

(B) generate electrical power

(C) regulate air pressure

(D) measure engine temperature

115. Automotive HVAC systems utilize duct systems to

(A) redirect exhaust gases

(B) control airflow within the cabin

(C) increase fuel efficiency

(D) improve engine cooling

116. Testing of air control and handling systems involve

(A) checking tire pressure

(B) inspecting brake pads

(C) monitoring exhaust emissions

(D) evaluating air conditioning performance

117. The purpose of vacuum reserve in pneumatic systems is to

(A) regulate fuel injection

(B) store excess hydraulic fluid

(C) provide backup power for actuators

(D) maintain system pressure during fluctuations

118. Automatic temperature control in vehicles adjusts

(A) engine RPM

(B) tire pressure

(C) cabin temperature

(D) fuel mixture ratio

119. The protection system in air conditioning units prevents damage from

(A) overheating

(B) corrosion

(C) pressure buildup

(D) electrical faults

120. Automotive refrigeration systems typically use which refrigerant?

(A) R12

(B) R134a

(C) R22

(D) R410a

121. Aerodynamic drag of vehicles primarily depends on

(A) engine power

(B) tire pressure

(C) vehicle speed and shape

(D) fuel type

122. Shape optimization of cars aims to

(A) increase aerodynamic drag

(B) improve fuel efficiency

(C) reduce vehicle stability

(D) enhance engine performance

123. Wind tunnels for automotive aerodynamics are used to

(A) simulate real-world driving conditions

(B) test engine efficiency

(C) monitor tire wear

(D) analyze vehicle emissions

124. The chassis of a vehicle provides

(A) structural support

(B) thermal insulation

(C) electrical power

(D) hydraulic pressure

125. The function of the front axle and steering system in a vehicle is to

(A) transmit engine power to the wheels

(B) control vehicle direction

(C) absorb shocks from the road

(D) regulate tire pressure

126. Automotive driveline components include

(A) transmission and clutch

(B) fuel tank and exhaust pipe

(C) radiator and cooling fan

(D) windshield wipers and lights

127. Drum and disc brakes are examples of

(A) mechanical brakes

(B) hydraulic brakes

(C) pneumatic brakes

(D) electric brakes

128. Automatic transmission systems in vehicles utilize

(A) manual gear shifting

(B) clutch engagement

(C) fluid coupling or torque converters

(D) hydraulic brakes

129. Propeller shafts in automotive systems are used to

(A) transmit power from the engine to the wheels

(B) control vehicle direction

(C) provide structural support

(D) regulate tire pressure

130. Differentials in vehicles are responsible for

(A) regulating engine temperature

(B) distributing engine power to the wheels

(C) monitoring tire pressure

(D) controlling vehicle speed

131. Measurement methods for weight typically involve the use of

(A) thermocouples

(B) load cells

(C) pressure transducers

(D) accelerometers

132. Endurance tests in automotive engineering involve

(A) evaluating vehicle performance over time

(B) assessing crash safety

(C) testing fuel efficiency

(D) analyzing emission levels

133. Crash tests are conducted to

(A) evaluate vehicle stability

(B) measure aerodynamic drag

(C) assess occupant safety

(D) monitor tire wear

134. Transducers for automotive applications are used to

(A) amplify electrical signals

(B) filter noise from data

(C) measure physical quantities

(D) analyze combustion processes

135. Microprocessors in automobiles are utilized for

(A) controlling engine ignition timing

(B) monitoring tire pressure

(C) adjusting brake fluid levels

(D) regulating fuel injection

136. Vehicle body engineering involves

(A) designing chassis components

(B) analyzing fluid flow

(C) optimizing vehicle shape

(D) testing engine performance

137. Signal conditioning elements in measurement systems are used to

(A) convert analog signals to digital

(B) filter noise from data

(C) transmit signals over long distances

(D) control vehicle speed

138. The purpose of a torque converter in an automatic transmission is to

(A) control engine temperature

(B) regulate fuel injection

(C) transmit power from the engine to the transmission

(D) measure vehicle speed

139. Brake tests in automotive engineering involve evaluating

(A) fuel efficiency

(B) engine performance

(C) brake performance and efficiency

(D) transmission fluid levels

140. The elements of a general measurement system include

(A) sensing elements and transducers

(B) microprocessors and filters

(C) amplifiers and indicators

(D) displays and printers

141. In automotive engineering, what does EGR stand for?

(A) Electronic Gearbox Response

(B) Exhaust Gas Recirculation

(C) Engine Gear Ratio

(D) Electric Generator Regulator

142. Which type of engine uses hydrogen as a primary fuel source?

(A) GDI (Gasoline Direct Injection) engine

(B) CRDI (Common Rail Direct Injection) engine

(C) Hydrogen engine

(D) Lean burn engine

143. What is the primary function of a regulator in an automotive electrical system?

(A) To control fuel injection timing

(B) To maintain a steady voltage output

(C) To monitor tire pressure

(D) To adjust engine timing

144. Which technology is used to improve fuel efficiency and reduce emissions in gasoline engines?

(A) GDI (Gasoline Direct Injection)

(B) MPFI (Multi-Point Fuel Injection)

(C) CRDI (Common Rail Direct Injection)

(D) SPFI (Single-Point Fuel Injection)

145. In hybrid vehicles, what does regenerative braking do?

(A) Recycles engine exhaust gases

(B) Generates electricity during braking

(C) Increases engine efficiency

(D) Monitors tire wear

146. What is the purpose of a camless engine design?

(A) To improve engine cooling

(B) To reduce engine vibrations

(C) To eliminate the need for camshafts

(D) To enhance exhaust emissions

147. Which component is responsible for converting solar energy into electrical energy in solar-powered vehicles?

(A) Alternator

(B) Battery

(C) Solar panel

(D) Regulator

148. What is the function of a transformer in electric vehicles?

(A) To control engine temperature

(B) To convert high voltage to low voltage

(C) To monitor tire pressure

(D) To adjust fuel injection timing

149. What is the primary goal of automotive safety systems?

(A) To increase fuel efficiency

(B) To enhance engine performance

(C) To improve vehicle handling

(D) To protect occupants in case of accidents

150. What does GDI stand for in automotive technology?

(A) Gasoline Direct Injection

(B) Gear Driven Ignition

(C) Generator Drive Interface

(D) Gearbox Differential Integration

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WRITTEN EXAMINATION FOR RECRUITMENT TO THE POST OF INSPECTOR OF MOTOR VEHICLE/ADDITIONAL R.T.O.(ENFORCEMENT)/ASSISTANT WORKS ENGINEER, PURSUANT TO ADVT. NO. 15 OF 2023-24 (HELD ON 05.05.2024). DISTRIBUTION OF QUESTIONS IN DIFFERENT SERIES WITH ANSWER IN THE SUBJECT OF AUTOMOBILE ENGINEERING.

A	B	C	D	Answer
1	33	71	111	D
2	34	72	112	B
3	35	73	113	A
4	36	74	114	B
5	37	75	115	A
6	38	76	116	C
7	39	77	117	A
8	40	78	118	B
9	41	79	119	A
10	42	80	120	C
11	43	81	121	D
12	44	82	122	C
13	45	83	123	B
14	46	84	124	A
15	47	85	125	B
16	48	86	126	A
17	49	87	127	B
18	50	88	128	B
19	51	89	129	D
20	52	90	130	C
21	53	91	131	B
22	54	92	132	A
23	55	93	133	C
24	56	94	134	C
25	57	95	135	A
26	58	96	136	B
27	59	97	137	C
28	60	98	138	B
29	61	99	139	D
30	62	100	140	B
31	63	101	141	B
32	64	102	142	D
33	65	103	143	C
34	66	104	144	A
35	67	105	145	A
36	68	106	146	C
37	69	107	147	B
38	70	108	148	A
39	71	109	149	B
40	72	110	150	A

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A	B	C	D	Answer
41	73	111	1	C
42	74	112	2	B
43	75	113	3	B
44	76	114	4	B
45	77	115	5	C
46	78	116	6	A
47	79	117	7	B
48	80	118	8	A
49	81	119	9	C
50	82	120	10	C
51	83	121	11	D
52	84	122	12	C
53	85	123	13	B
54	86	124	14	C
55	87	125	15	A
56	88	126	16	B
57	89	127	17	C
58	90	128	18	B
59	91	129	19	C
60	92	130	20	A
61	93	131	21	C
62	94	132	22	A
63	95	133	23	A
64	96	134	24	B
65	97	135	25	B
66	98	136	26	A
67	99	137	27	A
68	100	138	28	A
69	101	139	29	A
70	102	140	30	B
71	103	141	31	B
72	104	142	32	A
73	105	143	33	B
74	106	144	34	D
75	107	145	35	B
76	108	146	36	A
77	109	147	37	B
78	110	148	38	C
79	111	149	39	C
80	112	150	40	D

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A	B	C	D	Answer
81	113	1	41	B
82	114	2	42	C
83	115	3	43	D
84	116	4	44	D
85	117	5	45	B
86	118	6	46	D
87	119	7	47	B
88	120	8	48	B
89	121	9	49	D
90	122	10	50	D
91	123	11	51	C
92	124	12	52	D
93	125	13	53	D
94	126	14	54	A
95	127	15	55	A
96	128	16	56	B
97	129	17	57	B
98	130	18	58	D
99	131	19	59	A
100	132	20	60	A
101	133	21	61	B
102	134	22	62	A
103	135	23	63	B
104	136	24	64	B
105	137	25	65	C
106	138	26	66	B
107	139	27	67	C
108	140	28	68	B
109	141	29	69	A
110	142	30	70	A
111	143	31	71	B
112	144	32	72	B
113	145	33	73	A
114	146	34	74	A
115	147	35	75	B
116	148	36	76	D
117	149	37	77	D
118	150	38	78	C
119	1	39	79	C
120	2	40	80	B

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A	B	C	D	Answer
121	3	41	81	C
122	4	42	82	B
123	5	43	83	A
124	6	44	84	A
125	7	45	85	B
126	8	46	86	A
127	9	47	87	B
128	10	48	88	C
129	11	49	89	A
130	12	50	90	B
131	13	51	91	B
132	14	52	92	A
133	15	53	93	C
134	16	54	94	C
135	17	55	95	A
136	18	56	96	C
137	19	57	97	B
138	20	58	98	C
139	21	59	99	C
140	22	60	100	A
141	23	61	101	B
142	24	62	102	C
143	25	63	103	B
144	26	64	104	A
145	27	65	105	B
146	28	66	106	C
147	29	67	107	C
148	30	68	108	B
149	31	69	109	D
150	32	70	110	A