

ARK-1 [Paper - 1]

PROVISIONAL ANSWER KEY

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Instructions / સૂચના

Candidate must ensure compliance to the instructions mentioned below, else objections shall not be considered: -

- (1) All the suggestion should be submitted in prescribed format of suggestion sheet Physically.
- (2) Question wise suggestion to be submitted in the prescribed format (Suggestion Sheet) published on the website.
- (3) All suggestions are to be submitted with reference to the Master Question Paper with provisional answer key (Master Question Paper), published herewith on the website. Objections should be sent referring to the Question, Question No. & options of the Master Question Paper.
- (4) Suggestions regarding question nos. and options other than provisional answer key (Master Question Paper) shall not be considered.
- (5) Objections and answers suggested by the candidate should be in compliance with the responses given by him in his answer sheet. Objections shall not be considered, in case, if responses given in the answer sheet /response sheet and submitted suggestions are differed.
- (6) Objection for each question shall be made on separate sheet. Objection for more than one question in single sheet shall not be considered & treated as cancelled.

ઉમેદવારે નીચેની સૂચનાઓનું પાલન કરવાની તકેદારી રાખવી, અન્યથા વાંધા-સૂચન અંગે કરેલ રજૂઆતો ધ્યાને લેવાશે નહીં

- (1) ઉમેદવારે વાંધા-સૂચનો નિયત કરવામાં આવેલ વાંધા-સૂચન પત્રકથી રજૂ કરવાના રહેશે.
- (2) ઉમેદવારે પ્રશ્નપ્રમાણે વાંધા-સૂચનો રજૂ કરવા વેબસાઇટ પર પ્રસિધ્ધ થયેલ નિયત વાંધા-સૂચન પત્રકના નમૂનાનો જ ઉપયોગ કરવો.
- (3) ઉમેદવારે પોતાને પરીક્ષામાં મળેલ પ્રશ્નપુસ્તિકામાં છપાયેલ પ્રશ્નક્રમાંક મુજબ વાંધા-સૂચનો રજૂ ન કરતા તમામ વાંધા-સૂચનો વેબસાઇટ પર પ્રસિધ્ધ થયેલ પ્રોવિઝનલ આન્સર કી (માસ્ટર પ્રશ્નપત્ર)ના પ્રશ્ન ક્રમાંક મુજબ અને તે સંદર્ભમાં રજૂ કરવા.
- (4) માસ્ટર પ્રશ્નપત્ર માં નિર્દિષ્ટ પ્રશ્ન અને વિકલ્પ સિવાયના વાંધા-સૂચન ધ્યાને લેવામાં આવશે નહીં.
- (5) ઉમેદવારે જે પ્રશ્નના વિકલ્પ પર વાંધો રજૂ કરેલ છે અને વિકલ્પ રૂપે જે જવાબ સૂચવેલ છે એ જવાબ ઉમેદવારે પોતાની ઉત્તરવહીમાં આપેલ હોવો જોઈએ. ઉમેદવારે સૂચવેલ જવાબ અને ઉત્તરવહીનો જવાબ ભિન્ન હશે તો ઉમેદવારે રજૂ કરેલ વાંધા-સૂચન ધ્યાનમાં લેવાશે નહીં.
- (6) એક પ્રશ્ન માટે એક જ વાંધા-સૂચન પત્રક વાપરવું. એક જ વાંધા-સૂચન પત્રકમાં એકથી વધારે પ્રશ્નોની રજૂઆત કરેલ હશે તો તે અંગેના વાંધા-સૂચનો ધ્યાને લેવાશે નહીં.

001. The modulus of rigidity in terms of the modulus of elasticity (E) and Poisson's ratio (ν) is given by
- (A) $\frac{E}{2(1 - \nu)}$ (B) $\frac{E}{2(1 + \nu)}$
 (C) $\frac{2E}{(1 - \nu)}$ (D) $\frac{2E}{(1 + \nu)}$
002. Under uniaxial loading, the maximum shear stress is _____ times the uniaxial stress
- (A) three (B) two
 (C) one & half (D) half
003. For a metal bar of cross section area (A), Length (L) and Young's modulus (E), the strain energy stored under the action of tensile load (P) will be
- (A) $\frac{PL}{AE}$ (B) $\frac{PL^2}{2AE}$
 (C) $\frac{P^2L}{AE}$ (D) $\frac{P^2L}{2AE}$
004. Maximum bending moment in a cantilever beam of length L and carrying uniformly distributed load of intensity w is
- (A) $\frac{wL^2}{4}$ (B) $\frac{wL^2}{8}$
 (C) $\frac{wL^2}{2}$ (D) $\frac{wL^3}{4}$
005. The point of contraflexure lies where
- (A) shear force changes sign (B) bending moment changes sign
 (C) shear force is zero (D) bending moment is maximum
006. The bending stress in a beam is less if its section modulus is
- (A) high (B) low
 (C) zero (D) none of the options
007. The maximum deflection of a simply supported beam of length L , Young's modulus E and moment of inertia I , carrying a central point load W is
- (A) $\frac{WL^3}{4EI}$ (B) $\frac{WL^3}{8EI}$
 (C) $\frac{WL^3}{24EI}$ (D) $\frac{WL^3}{48EI}$
008. A flywheel of suitable dimensions attached to crankshaft makes the moment of inertia of rotating parts quite _____ and acts as reservoir of energy by
- (A) zero (B) less
 (C) large (D) constant

009. When the torque required by the machine is more than the torque supplied by the motor, the flywheel is
(A) retarded (B) accelerated
(C) rotating with constant speed (D) none of the options
010. The distribution of torsional shear stresses over cross section of shaft is _____
(A) maximum at outermost fiber and zero at the axis of rotation
(B) maximum at the axis of rotation and zero at outermost fiber
(C) constant over the cross section
(D) all of the options
011. The principal stresses in pure torsion are _____
(A) zero
(B) equal magnitude in tension and compression
(C) only tension
(D) only compression
012. In simply supported beams, the slope is _____ at supports.
(A) Minimum (B) Uniform
(C) Zero (D) Maximum
013. Wahl factor used in helical spring design takes into consideration effect of
(A) direct shear stress
(B) stress concentration due to curvature
(C) direct shear stress as well as stress concentration due to curvature
(D) none of the options
014. Scotch Yoke mechanism is an inversion of
(A) Single slider crank chain (B) Double slider crank chain
(C) Four bar chain (D) None of the above
015. The centrifugal tension in belt drives is _____
(A) independent of the velocity of the belt over the pulley
(B) independent of the tight and slack side tensions
(C) dependent of the tight and slack side tensions
(D) none of the options

016. For maximum power transmission, centrifugal tension in the belt must be equal to _____ of the maximum allowable belt tension and the belt should be on the point of slipping
- (A) twice (B) half
(C) one-third (D) none of the above
017. In a radial cam, the follower moves in a direction
- (A) parallel to the cam axis (B) perpendicular to the cam axis
(C) along the cam axis (D) none of the options
018. The path described by the trace point is known as the
- (A) Pitch curve (B) Pitch circle
(C) Prime circle (D) Prime curve
019. In case of rotating masses, the magnitude of the balancing mass is _____ when the speed of the shaft is doubled
- (A) doubled (B) halved
(C) unaffected (D) quadrupled
020. For complete dynamic balance, at least _____ balancing mass/masses are necessary.
- (A) one (B) two
(C) three (D) four
021. The magnitude of the gyroscopic couple applied to a disc of moment of inertia I , spinning with an angular velocity (ω) and having an angular velocity of precession (ω_p) is
- (A) $I^2 \times \omega \times \omega_p$ (B) $I \times \omega^2 \times \omega_{p_2}$
(C) $I \times \omega \times \omega_p$ (D) $I \times \omega \times 2\omega_p$
022. The axis of spin, the axis of precession and the axis of gyroscopic torque are in
- (A) Two parallel planes
(B) Two perpendicular planes
(C) Three perpendicular planes
(D) Three parallel planes
023. In a spring-mass system, if the mass is halved and the spring stiffness is doubled, the natural frequency is
- (A) halved (B) doubled
(C) unchanged (D) quadrupled

024. The ratio of the amplitude of the steady-state response of forced vibrations to the static deflection under the action of a static force is known as
- (A) Damping ratio
 - (B) Damping factor
 - (C) Transmissibility
 - (D) Magnification factor
025. At resonance, the amplitude of vibration is
- (A) very large
 - (B) small
 - (C) zero
 - (D) none of the above
026. The maximum stress in thick cylinder is
- (A) radial stress
 - (B) hoop stress
 - (C) longitudinal stress
 - (D) none of the above
027. A work piece having a large hole in it like a pipe can be held on lathe machine using _____ from inside
- (A) mandrels
 - (B) chuck
 - (C) rests
 - (D) none of the above
028. In lathe operations, the distance that the tool advances for each revolution of the work piece is called?
- (A) Cutting speed
 - (B) Depth of cut
 - (C) Feed
 - (D) Material removal rate
029. Which of the following is the driving end of the twist drill?
- (A) Land
 - (B) Flute
 - (C) Shank
 - (D) All of the above
030. Clapper box is provided in shaper machines _____
- (A) to make cutting sound
 - (B) to lift the tool during return stroke
 - (C) to lift the tool during cutting stroke
 - (D) none of the above

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031. The process of shaping a flat or a hollow blank into a three-dimensional hollow component without any appreciable change in sheet thickness is called
- (A) Drawing
 - (B) Coining
 - (C) Blanking
 - (D) None of the above
032. Which of the following pattern is used to produce a large number of castings?
- (A) Loose piece pattern
 - (B) Split pattern
 - (C) Gated pattern
 - (D) Match plate pattern
033. The taper provided to the pattern for its removal is known as
- (A) Shaking allowance
 - (B) Distortion allowance
 - (C) Machining allowance
 - (D) Draft allowance
034. Which of the following metal forming processes performs squeezing out of material through a hole?
- (A) Beading
 - (B) Extrusion
 - (C) Rolling
 - (D) All of the above
035. Which of the following manufacturing processes is mainly considered for producing the components of very high strength such as connecting rods of engines?
- (A) Sheet metal work
 - (B) Extrusion
 - (C) Casting
 - (D) Forging
036. In gas welding, carburizing flame is obtained when
- (A) acetylene is in excess
 - (B) oxygen is in excess
 - (C) methane is in excess
 - (D) all of the above
037. In forehand welding _____.
- (A) the torch points in the direction opposite to that in which welding is being done
 - (B) welding is done by right hand
 - (C) the torch points in the same direction in which welding is being done
 - (D) none of the above

038. Which of the following is indirect measuring instrument?
- (A) Vernier calliper
 - (B) Micrometer
 - (C) Protractors for measuring angles
 - (D) None of the above
039. The permissible deviation of a dimension from the desired size is known as
- (A) precision
 - (B) tolerance
 - (C) fit
 - (D) none of the above
040. Cutting tool life is affected by _____
- (A) depth of cut
 - (B) cutting speed
 - (C) feed
 - (D) all of the above
041. Which of the following operation is carried out to make the drilled hole dimensionally more accurate?
- (A) Reaming
 - (B) Tapping
 - (C) Centering
 - (D) Countersinking
042. Which of the following material can be a choice for flat belts used in belt drives?
- (A) Lather
 - (B) Fabric
 - (C) Rubber
 - (D) All of the above
043. To adjust for the change in length of the propeller shaft _____ joint is provided
- (A) universal
 - (B) slip
 - (C) cotter
 - (D) all of the above
044. As per the uniform wear theory used to obtain torque transmitting capacity of friction clutch, pressure is _____.
- (A) coefficient of friction
 - (B) axial pressure/Load
 - (C) mean effective radius of contact surfaces
 - (D) all of the above

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045. As per the uniform wear theory used to obtain torque transmitting capacity of friction clutch, pressure is _____.
(A) minimum at the outer periphery
(B) minimum at the inner radius
(C) constant
(D) none of the above
046. For the friction cone clutches torque transmission capacity is _____ to semi cone angle
(A) not related
(B) directly proportional
(C) inversely proportional
(D) none of the above
047. In order to avoid the breakage of spur gear tooth due to bending, the beam strength should be _____ than the effective force between the meshing teeth.
(A) more
(B) less
(C) varying
(D) none of the above
048. For two parallel helical gears in mesh, hand of the helix should be _____.
(A) same
(B) opposite
(C) less
(D) all of the above
049. When two identical bevel gears are mounted on shafts, which are intersecting at right angles, they are called _____ gears
(A) internal bevel
(B) hypoid
(C) herringbone
(D) miter
050. The distance measured from a point on one thread to the corresponding point on the adjacent thread, measured along the axis of the worm is called _____.
(A) axial pitch
(B) lead
(C) helical angle
(D) pitch angle
051. While braking a vehicle if unity coefficient of friction is achieved between the road and tyre then _____.
(A) brakes are said to be efficient less than 100%
(B) brakes are said to be efficient more than 100%
(C) brakes are said to be 100% efficient
(D) none of the above

052. For forward moving vehicles with internal expanding drum brakes when the brakes are applied, the net force exerted on the leading shoe becomes _____ the net force exerted on the trailing shoe.
- (A) less than
 (B) more than
 (C) equal to
 (D) none of the above
053. If by turning of stub axles, it is possible to turn the steering wheel, then steering gear is said to be _____.
- (A) reversible
 (B) irreversible
 (C) locking
 (D) all of the above
054. Ackermann steering mechanism gives only _____ positions for correct steering.
- (A) three
 (B) four
 (C) infinite
 (D) none of the above
055. Wheel alignment refers to the positioning of the front wheels and steering mechanism that gives the vehicle
- (A) directional stability
 (B) promotes ease of steering
 (C) reduces tyre wear to a minimum
 (D) all of the above
056. The tilting out of the front wheels from the vertical, when viewed from the front of the vehicle is called
- (A) negative camber
 (B) negative caster
 (C) positive camber
 (D) positive caster
057. When the vehicle will try to move away from its normal direction of motion and therefore to keep it on the right path, little more steering is required than theoretically needed. This condition is called _____.
- (A) oversteer
 (B) understeer
 (C) pitching
 (D) rolling

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058. For the leaf springs used in suspension, flexible connection at one end is provided by _____.
- (A) shackle (B) clamp plate
(C) U-bolt (D) straps
059. Which of the following is/are type/s of independent suspension?
- (A) Wishbone arm system
(B) Trailing link system
(C) Sliding pillar system
(D) All of the above
060. Which of the following laws is applicable for the behavior of a perfect gas?
- (A) Gay-Lussac's Law
(B) Kirchhoff's Laws
(C) Coulomb's Law
(D) Hooke's Law
061. The unit of pressure in SI unit is
- (A) Kg per square centimeter
(B) Millimeter of water column
(C) Pascal
(D) Dynes per square centimeter
062. A closed system is one in which
- (A) Mass does not cross boundaries of the system, though energy may do so
(B) Energy does not cross boundaries of the system, though mass may do so
(C) Neither mass nor energy crosses the boundaries of the system
(D) Both energy and mass cross the boundaries of the system
063. Specific heat ratio of air at 300K is equal to
- (A) 1.005 (B) 1.4
(C) 1 (D) 0.718
064. Which of the following quantities is not the property of the system?
- (A) Pressure (B) Temperature
(C) Specific volume (D) Heat

065. In an isothermal process, the internal energy
- (A) Increases (B) Decreases
(C) Remains constant (D) None of the above
066. According to first law of thermodynamics
- (A) Mass and energy are mutually convertible
(B) Mass and heat are mutually convertible
(C) Heat and work are mutually convertible
(D) Mass and light are mutually convertible
067. In a Carnot cycle, heat is transferred at
- (A) Constant pressure
(B) Constant volume
(C) Constant temperature
(D) Constant enthalpy
068. Thermal power plant works on
- (A) Carnot cycle (B) Joule cycle
(C) Rankine cycle (D) Otto cycle
069. Otto cycle consists of following four processes
- (A) Two isothermals and two isentropics
(B) Two isentropics and two constant volumes
(C) Two isentropics, one constant volume and one constant pressure
(D) Two isentropics and two constant pressures
070. Brayton cycle consists of following four processes
- (A) Two isothermals and two isentropics
(B) Two isentropics and two constant volumes
(C) Two isentropics, one constant volume and one constant pressure
(D) Two isentropics and two constant pressures
071. Thermal conductivity of iron with rise in temperature normally
- (A) Increases
(B) Decreases
(C) Remains constant
(D) None of the above

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072. Which of the following has maximum value of thermal conductivity?
(A) Copper (B) Wood
(C) Glass (D) Ice
073. _____ of a material can be viewed as the ratio of the heat conducted through the material to the heat stored per unit volume
(A) Thermal conductivity
(B) Thermal diffusivity
(C) Convection heat transfer coefficient
(D) Overall heat transfer coefficient
074. In solids, _____ is due to the combination of vibrations of the molecules in a lattice and the energy transport by free electrons.
(A) Convection
(B) Radiation
(C) Conduction
(D) None of the above
075. _____ is a heat transfer phenomenon in which fluid is forced to flow over the surface by external means such as a fan or pump
(A) Conduction
(B) Radiation
(C) Natural convection
(D) Forced convection
076. Emissivity of a blackbody is _____
(A) equal to one
(B) equal to zero
(C) less than one
(D) none of the above
077. Fraction of the radiation energy incident on a surface that is absorbed by the surface is called _____
(A) emissivity
(B) diffusivity
(C) absorptivity
(D) transmissivity

078. When a substance is heated and the temperature rises as the heat is added, the increase in heat is called _____.
- (A) sensible heat
 - (B) latent heat
 - (C) specific heat
 - (D) none of the above
079. According to _____, the absolute pressure of a given mass of a perfect gas varies inversely as its volume, when the temperature remains constant
- (A) Gay Lussac Law
 - (B) Charle's Law
 - (C) Boyle's Law
 - (D) Coulomb's Law
080. In vapour compression system the state of refrigerant, after compression process is _____
- (A) high pressure, high temperature vapour
 - (B) high pressure, low temperature vapour
 - (C) high pressure, high temperature liquid
 - (D) high pressure, low temperature liquid
081. In SI unit, one ton of refrigeration is equal to
- (A) 210 J/min
 - (B) 21 kJ/min
 - (C) 21 J/min
 - (D) 210 kJ/min
082. In refrigeration system, throttle valve is a _____.
- (A) Expansion device
 - (B) Compression device
 - (C) Condensation device
 - (D) Evaporation device
083. The refrigerant, commonly used in vapour absorption system, is
- (A) Nitrogen
 - (B) Air
 - (C) Freon
 - (D) Aqua-ammonia
084. An Electrolux refrigerator is a
- (A) vapour compression refrigerator
 - (B) vapour absorption refrigerator with a liquid pump
 - (C) vapour absorption refrigerator without any pump
 - (D) none of the above

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085. Which of the following refrigerant has the lowest freezing point?
(A) R-11 (B) R-12
(C) R-22 (D) Ammonia
086. In summer air-conditioning, the air is
(A) cooled and humidified
(B) cooled and dehumidified
(C) heated and humidified
(D) heated and dehumidified
087. On a psychrometric chart, sensible cooling is represented by
(A) horizontal line
(B) inclined line
(C) vertical line
(D) none of the above
088. The temperature of air recorded by a thermometer, when it is not affected by the moisture present in it, is called
(A) wet bulb temperature
(B) dry bulb temperature
(C) dew point temperature
(D) none of the above
089. The power produced inside the cylinder of an IC engine is known as
(A) break power
(B) indicated power
(C) frictional power
(D) none of the above
090. The four operations i.e., suction, compression, expansion and exhaust in a four-stroke cycle engine are completed in the _____ number of revolutions of the crankshaft
(A) one (B) two (C) three (D) four
091. In petrol engine suction consists of
(A) air only
(B) a mixture of air and fuel
(C) fuel only
(D) none of the above

092. The process of supplying the intake air to the engine cylinder at a density greater than the density of the surrounding atmosphere is known as
- (A) supercharging (B) scavenging
(C) polymerisation (D) detonation
093. For CI engine fuels most preferred are
- (A) naphthenes (B) paraffins
(C) olefins (D) aromatics
094. Octane number of iso-octane is
- (A) 0 (B) 30
(C) 60 (D) 100
095. Anti-knock characteristics of alcohol when compared to gasoline is
- (A) higher
(B) lower
(C) equal
(D) none of the above
096. Major constituent of natural gas is
- (A) ethane (B) methane
(C) propane (D) butane
097. Small amount of gasoline is often added to alcohol fuel to
- (A) reduce the emission
(B) increase the power output
(C) increase the efficiency
(D) improve cold weather starting
098. The choke is closed when the engine is
- (A) accelerating (B) hot
(C) cold (D) idling
099. Fuel injector is used for
- (A) Gas engines (B) CI engines
(C) SI engines (D) Steam engines

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100. Fuel is injected in a four-stroke CI engine
- (A) at the end of suction stroke
 - (B) at the end of expansion stroke
 - (C) at the end of compression stroke
 - (D) at the end of exhaust stroke
101. In compression-ignition engines, the auto ignition of the charge causing knocking is _____.
- (A) at the start of combustion
 - (B) at the end of combustion
 - (C) during combustion
 - (D) none of the above
102. Increasing the compression ratio in SI engines the knocking tendency
- (A) decreases
 - (B) increases
 - (C) not affected
 - (D) none of the above
103. In a BCC Unit cell, one atom is in contact with the following number of identical atoms
- (A) ten
 - (B) eight
 - (C) twelve
 - (D) none of the above
104. In crystal structure, vacancies are _____ defect.
- (A) planer
 - (B) line
 - (C) point
 - (D) volume
105. Which of the following is not ductile?
- (A) Aluminum
 - (B) Copper
 - (C) Polyethylene
 - (D) Glass
106. Cup and cone fracture is observed in the fracture of
- (A) brittle materials
 - (B) ductile materials
 - (C) advanced ceramic materials
 - (D) none of the above

107. The amount of energy a material can absorb before fracture is called
- (A) ultimate tensile strength
 - (B) yield strength
 - (C) stiffness
 - (D) toughness
108. The failure that happens due to cyclic loading is called
- (A) static failure
 - (B) shear failure
 - (C) creep failure
 - (D) fatigue failure
109. Lever rule is used to compute
- (A) weight percentages of the phases in any two phase region of a binary phase diagram
 - (B) volume percentages of the phases in any two phase region of binary phase diagram
 - (C) weight percentages of the two liquid phases in any binary phase diagram
 - (D) volume percentages of the two liquid phases in any binary phase diagram
110. Cooling curves are plots of which of the following (acquired during solidification of a metal)?
- (A) Temperature versus time
 - (B) Pressure versus time
 - (C) Composition versus time
 - (D) Temperature versus composition
111. The interstitial solid solution of carbon in gamma iron is called
- (A) cementite
 - (B) ferrite
 - (C) austenite
 - (D) pearlite
112. If plain carbon steel is rapidly cooled to the room temperature by quenching it in water, its structure is changed from
- (A) austenite to pearlite
 - (B) austenite to martensite
 - (C) austenite to cementite
 - (D) austenite to ferrite
113. In nodular iron, graphite is in the form of
- (A) Cementite
 - (B) Free carbon
 - (C) Flakes
 - (D) Spheroids

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114. Weld decay is the phenomenon found with
(A) Copper (B) Stainless steel
(C) Aluminum oxide (D) Polyethylene
115. Brass (alloy of copper and zinc) is an example of
(A) Substitutional solid solution
(B) Interstitial solid solution
(C) Intermetallic compounds
(D) None of the above
116. Which of the following is a thermosetting polymer?
(A) Polyethylene
(B) Polystyrene
(C) Poly Vinyl Chloride (PVC)
(D) Phenolic resins
117. Which of the following is a property of ceramics ?
(A) High ductility
(B) Low melting point
(C) Resistant to corrosion
(D) Bad insulation
118. Apart from hydrocarbons, the main pollutants in the engine exhaust are
(A) CO and CO₂ (B) CO₂ and NO_x
(C) CO and NO_x (D) CO₂ and H₂O
119. The catalyst used in the converter for oxidizing HC and CO is
(A) Copper (B) Charcoal
(C) Platinum (D) None of the above
120. Activity of a CAM process includes
(A) numerical control programming
(B) finite element analysis
(C) tolerancing
(D) assembly modeling

121. The CAD process and its tools utilize following discipline/disciplines
- (A) Geometric modeling
 - (B) Computer graphics
 - (C) Design
 - (D) All of the above
122. One of the major exhaust emissions from CI engines compared to SI engine is
- (A) oxides of nitrogen
 - (B) unburnt hydrocarbons
 - (C) particulates
 - (D) CO and CO₂
123. When the axes of two shafts are parallel, use
- (A) crossed helical gears
 - (B) bevel
 - (C) worm gears
 - (D) spur or helical gears
124. Which of the following gears are used in parallel shaft arrangement for noiseless operation?
- (A) Spur gears
 - (B) Bevel gears
 - (C) Worm gears
 - (D) Helical gears
125. When two shafts of different material are joined in parallel concentrically, torque applied to the composite shaft is the _____ of the torques on the two shafts.
- (A) zero
 - (B) sum
 - (C) product
 - (D) uniform
126. Who has to be cautious at the zebra crossing?
- (A) Vehicle drivers
 - (B) Pedestrians
 - (C) Both Vehicle drivers and Pedestrians
 - (D) The authority who has marked the zebra crossing
127. At which place can overtaking be done?
- (A) At cross-road junction
 - (B) On one-way road
 - (C) At a turn or at a corner
 - (D) On a narrow bridge

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128. At which place a motorcycle cannot blow horn?
- (A) Where there is a board of “No Horn”
 - (B) At a place where competent authority has declared a ban on blowing horn
 - (C) Near cross roads
 - (D) Both (A) and (B) are correct
129. Which of the following statement/s is/are correct?
- (A) The driver would switch on the right side indicator to allow the vehicle following him to overtake
 - (B) Overtaking cannot be done on roads having “School Zone” or “Hospital Zone” road signs
 - (C) Both (A) and (B)
 - (D) Neither (A) nor (B)
130. Where is the ‘U’-turn permitted?
- (A) On busy road with continuous flow of traffic
 - (B) Across a continuous single or double solid line
 - (C) After giving way to pedestrian and cyclists
 - (D) On major road and highway
131. If a longitudinal yellow continuous line is drawn in the middle of a double lane road _____
- (A) The said line cannot be crossed to overtake
 - (B) Said line can be crossed with caution
 - (C) Driver shall drive on or over said line
 - (D) If there are no vehicles on road said line can be crossed
132. Which type of minimum Insurance is compulsory for any vehicle?
- (A) Comprehensive Insurance
 - (B) Third party property damage
 - (C) Third party
 - (D) Insurance covering only property damage
133. What are the educational notifications for driving transport vehicle?
- (A) Standard 8th pass
 - (B) Standard 10th pass
 - (C) Standard 5th pass
 - (D) Educational qualifications not required

134. The 'Double Stop Line' is used exclusively at junctions controlled _____.
- (A) by 'GIVE WAY' signs
 - (B) without any signs
 - (C) by 'STOP' signs
 - (D) None of the above
135. The colours of registration number plate of transport vehicle is _____.
- (A) Yellow colour in white background
 - (B) Black colour on yellow background
 - (C) Yellow colour on black background
 - (D) Black colour on white background
136. The validity of driving school licence is _____.
- (A) Three years
 - (B) Five years
 - (C) Seven years
 - (D) One year
137. Is it compulsory to wear (fasten) seat belt for driving school instructor while imparting car driving training?
- (A) Yes
 - (B) No
 - (C) Exemption in city area for controlling the vehicle
 - (D) Only compulsory on highway training
138. For new transport vehicle validity of certificate of fitness is _____
- (A) Three years
 - (B) Two years
 - (C) One year
 - (D) Fifteen years
139. What is called the Gross Vehicle Weight (GVW)?
- (A) Only the weight falling on the front axle
 - (B) In the vehicle with three axles, the weight falling on both the first axle in the front as well as the last axle.
 - (C) The total weight falling on all the axles of the vehicle
 - (D) The total weight falling on all the axles fitted in the load body only
140. Which is reverse light colour in vehicle?
- (A) Red
 - (B) White
 - (C) Orange
 - (D) Yellow

141. In which types of vehicle “spark arrester” is compulsory?
- (A) In army vehicles
 - (B) In vehicles used for medical and rescue purpose
 - (C) Carrying goods of dangerous or hazardous to human life
 - (D) In all BS VI vehicles running with CNG and LPG
142. What is the fine of Central and State Governments in crime of helmet/seat belt according to the new Motor Vehicle Act respectively?
- (A) Rs. 1,000 of Central and Rs. 500 of State government
 - (B) Rs. 500 of Central and Rs. 1,000 of State government
 - (C) Rs. 1,000 of Central and Rs. 1,000 of State government
 - (D) Rs. 500 of Central and Rs. 500 of State government
143. What is the respective fine for the first crime and second crime of racing and trial of speed without permission in the State of Gujarat?
- (A) Rs. 1,000 for first crime and Rs. 5,000 for second crime
 - (B) Rs. 1,000 for first crime and Rs. 2,000 for second crime
 - (C) Rs. 500 for first crime and Rs. 5,000 for second crime
 - (D) Rs. 5,000 for first crime and Rs. 10,000 for second crime
144. What is the respective fine of Gujarat State for the vehicles with three wheels and other vehicles for not having fitness certificate according to the new Motor Vehicle Act?
- (A) Rs. 1,000 for vehicles with three wheels and Rs. 2,000 for other vehicles
 - (B) Rs. 500 for vehicles with three wheels and Rs. 1,000 for other vehicles
 - (C) Rs. 5,000 for vehicles with three wheels and Rs. 10,000 for other vehicles
 - (D) Rs. 500 for vehicles with three wheels and Rs. 5,000 for other vehicles
145. What is the respective fine in Gujarat State for the first and second crime to the vehicles not having insurance of the vehicle according to the new Motor Vehicle Act?
- (A) Rs. 1,000 for first crime and Rs. 5,000 for second crime
 - (B) Rs. 2,000 for first crime and Rs. 4,000 for second crime
 - (C) Rs. 5,000 for first crime and Rs. 10,000 for second crime
 - (D) Rs. 2,000 for first crime and Rs. 3,000 for second crime
146. Heavy goods vehicle means any goods carriage whose gross vehicle weight exceeds _____.
- (A) 10,000 kgs.
 - (B) 7,500 kgs.
 - (C) 15,000 kgs.
 - (D) 12,000 kgs.

147. For which areas is the validity of the private vehicle types registered in Gujarat State valid?
- (A) For entire India
 - (B) Only for Gujarat State
 - (C) Only for Gujarat State and other State touching the border of Gujarat
 - (D) For all the States of India except the Union Territories
148. Goods vehicle whose gross vehicle weight _____ does not require goods vehicle permit (MVA-66).
- (A) does not exceed 3,500 kgs.
 - (B) does not exceed 7,500 kgs.
 - (C) does not exceed 3,000 kgs.
 - (D) is not required for any vehicle of LMV class
149. In general circumstance for how much maximum period the temporary permit can be issued by State / Regional Transport Authority?
- (A) Not more than two months
 - (B) Not more than four months
 - (C) Not more than six months
 - (D) Not more than one month
150. Vehicles with which defect sold in the market can be recalled by the manufacturer?
- (A) One which are harmful to environment and harmful to the driver and seated ones.
 - (B) One which are harmful to environment and producing very harmful noise.
 - (C) One which are harmful to environment and are not giving average fuel mileage as mentioned in the advertisement.
 - (D) One which are not running at the maximum speed according to the advertisement.
151. The maximum speed for LMV car (M_1) type vehicle on four lane and above divided carriageway (road with median strip or dividers) is _____.
- (A) 80 km/h
 - (B) 100 km/h
 - (C) 120 km/h
 - (D) No maximum speed limit
152. Which of the following options is correct regarding the vehicle powered by battery and not coming within the definition of Motor Vehicle?
- (A) 30 minute motor power is less than 0.25 KW and maximum speed is 25 km/hour
 - (B) 30 minute motor power is less than 1.00 KW and maximum speed is 50 km/hour
 - (C) 30 minute motor power is less than 0.50 KW and maximum speed is 30 km/hour
 - (D) 30 minute motor power is less than 0.75 KW and maximum speed is 40 km/hour

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153. Validity of how many years would a person of more than 40 years of holding driving licence of transport category, get at the time of renewing the licence?
- (A) Till the age of 50 years (B) 3 years
(C) 5 years (D) 10 years
154. The tourist permit shall be deemed to be invalid from the date on which vehicle covered by permit completes _____ ?
- (A) 5 years (B) 8 years (C) 9 years (D) 10 years
155. While passing near a school or a hospital the driver shall drive the vehicle at the speed not exceeding _____.
- (A) 25 km/h
(B) 20 km/h
(C) 30 km/h
(D) No speed restriction drive with caution only
156. What is full form of HSRP?
- (A) High Safety Registration Plate
(B) High Sensor Registration Plate
(C) High Security Registration Plate
(D) High Security approved Registration Plate
157. According to 'The Motor Vehicles Act, 1988', 'e-cart' or 'e-rickshaw' means a special purpose the battery powered vehicle of power not exceeding _____ watts.
- (A) 2,500 (B) 10,000 (C) 5,000 (D) 4,000
158. How many maximum number of conductor's licence can a person hold in Gujarat State?
- (A) Different for different vehicles.
(B) Not more than one.
(C) Can hold maximum two licence.
(D) Only one while serving in Gujarat State Road Transport Corporation (GSRTC) and according to the requirement while serving in private institutions.
159. How is the uniform of conductor of bus performing duties in Gujarat State?
- (A) As prescribed by the Regional Transport Office
(B) As prescribed by Gujarat State Road Transport Corporation
(C) As prescribed by the State Government
(D) As decided by the institution in which the conductor is performing duties

160. At which place should the name and address of the owner should be displayed in the transport vehicle registered in Gujarat?
- (A) On both sides of the vehicle
 - (B) On the front and rear side of the vehicle
 - (C) Only on the rear part of the left side of the vehicle
 - (D) Only on the rear part of the right side of the vehicle
161. How much baggage can a passenger carry per person in private service vehicles registered in Gujarat State?
- (A) As many as kilograms with prior intimation
 - (B) Maximum 15 kilograms
 - (C) Maximum 40 kilograms
 - (D) Maximum 25 kilograms
162. In every public service vehicle registered in Gujarat State other than a motorcab there should a seating space of not less than _____ for each passenger.
- (A) 381 square millimeters
 - (B) 400 square millimeters
 - (C) 325 square millimeters
 - (D) 425 square millimeters
163. Which type of vehicles in Gujarat having contract carriage permit can also be used as stage carriage?
- (A) Only buses of air conditioned seating and sleeper types
 - (B) All buses having contract carriage permit of respective States
 - (C) Motor Cab
 - (D) None of the above
164. According to Motor Vehicle rules of Gujarat State, child up to which age would be reckoned as one-half and child up to which age shall not be reckoned?
- (A) up to the age of 10 years as one-half and up to the age of 4 years
 - (B) up to the age of 12 years as one-half and up to the age of 5 years
 - (C) up to the age of 14 years as one-half and up to the age of 4 years
 - (D) Those studying up to fifth standard in school as one-half and those up to first standard shall not be reckoned.
165. Vehicles of which types registered in Gujarat State should have dustproof first aid box in it?
- (A) In all passenger vehicles
 - (B) In vehicles transporting dangerous and hazardous goods
 - (C) In all commercial vehicles
 - (D) In all public service vehicles except motorcab and maxicab

166. In the hill areas generally traffic signs shall be installed on
- (A) both sides of the road
 - (B) the valley side of the road
 - (C) the opposite valley side of the road
 - (D) all of the above are correct
167. The indicative target of blending of ethanol in petrol and diesel according to the Nation Policy on Bio Fuels to be achieved by the year 2030 is _____
- (A) 5% in Petrol and 20% in Bio diesel
 - (B) 10% in Petrol and 10% in Bio diesel
 - (C) 15% in Petrol and 8% in Bio diesel
 - (D) 20% in Petrol and 5% in Bio diesel
168. Adopting bio fuels as alternative energy can significantly _____
- (A) Improve farmers income
 - (B) Reduce import and reduce pollution
 - (C) Generate employment opportunities
 - (D) All of the above are correct
169. S. D. Banga is holding the post of _____ in the Supreme Court Committee on Road Safety.
- (A) Chairman
 - (B) Secretary
 - (C) President
 - (D) None of the above
170. The State Road Safety Council would hold its meeting _____
- (A) At least twice in a year
 - (B) At least once in a year
 - (C) At least every quarter
 - (D) At least every month
171. _____ has given directions for Automatic Headlights ON (AHO) for two wheelers.
- (A) State Road Safety Council
 - (B) Society of Indian Automobile Manufacturers (SIAM)
 - (C) Supreme Court Committee on Road Safety
 - (D) Automotive Research Association of India (ARAI)

172. According to the Supreme Court Road Safety Committee, the corpus of 'Road Safety Fund' will be collected from _____.
- (A) Traffic fines collection
 - (B) State vehicles road tax
 - (C) Special 'Road Safety Tax' on vehicles
 - (D) Special fund for Road Safety from Central Government
173. According to Section 3(3) of Gujarat Road Safety Authority Act, the Vice-Chairman of Authority is the Secretary to Government of Gujarat from _____.
- (A) Home department
 - (B) Transport department
 - (C) Education department
 - (D) Road and Building department
174. According to State Road Safety Policy of Gujarat, the State would establish a state-level road safety information system, create 'database' to fit the requirements of _____.
- (A) Home and Transport department
 - (B) Health and family welfare department
 - (C) Road and Building department
 - (D) All of the above
175. In which court and within how many days the decision of National Green Tribunal can be challenged?
- (A) In the Supreme Court, within 30 days
 - (B) In the Supreme Court, within 90 days
 - (C) In the High Court, within 60 days
 - (D) In the Civil Court, within 120 days
176. Which of the following is/are the qualifications to get appointed as the chairperson of the Tribunal?
- (A) Should be or should have been the Judge of Supreme Court of India
 - (B) Should be or should have been the Chief Justice of a High Court
 - (C) Both (A) and (B)
 - (D) Neither (A) nor (B)

177. 'Uniform Crash Test' for all category and models of vehicles is directed by _____.
- (A) State Road Safety Council
(B) Supreme Court Committee on Road Safety
(C) Automotive Research Association of India (ARAI)
(D) Automotive Indian Standards (AIS)
178. The member secretary of Executive Committee for the Gujarat Road Safety Authority is _____
- (A) The Regional Transport Officer, Ahmedabad
(B) The Transport Commissioner
(C) The Inspector General of Police (Traffic)
(D) The Deputy Enforcement Officer
179. According to Section 15(5) of Gujarat Road Safety Authority, if any person refuses or fails to comply with the order of the Chief/Joint Road Safety Commission, he would face a fine _____
- (A) up to Rs. 500 per day
(B) up to Rs. 25,000
(C) up to Rs. 1,00,000
(D) up to Rs. 5,00,000
180. The accounts of the Road Safety Fund is maintained by the Accounts Officer under the overall supervision and control of the _____ in Gujarat Road Safety Authority.
- (A) Chief Enforcement Officer
(B) Regional Enforcement Officer
(C) Joint Road Safety Commissioner
(D) Accountant General
181. Fee of _____ has to be paid while making an appeal against the order passed by Gujarat Road Safety Authority Officer.
- (A) Rs. 500
(B) Rs. 1,000
(C) Rs. 5,000
(D) Rs. 10,000
182. Which authority can issue direction under Section 33 of the Gujarat Road Safety Authority Act regarding control (Restriction) of the purchase of second vehicle?
- (A) State Government
(B) Supreme Court Committee on vehicle manufacture
(C) Central Pollution Control Board
(D) All of the above

183. Under which of the following situations, according to Section 14(3) of the Gujarat Road Safety Authority, would the authorised officer can forfeit the vehicle which is seized and lying with authority in the name of State Government?
- (A) If it is lying for more than one month
 - (B) If it is lying for more than two months
 - (C) If it is lying for more than one year
 - (D) If it is lying for more than two years
184. Colour of median marker reflective elements shall be _____
- (A) Fluorescent White
 - (B) Fluorescent Yellow
 - (C) Fluorescent Black
 - (D) Fluorescent Blue
185. Colour of hazard marker is _____
- (A) Alternating Black and Yellow stripes
 - (B) Alternating White and Black stripes
 - (C) Alternating White and Yellow stripes
 - (D) Alternating Red and White stripes
186. Before entering into a tunnel the driver shall switch on _____.
- (A) The parking lights
 - (B) The high beam head light
 - (C) The hazard light
 - (D) The dipped light (low beam) - head light
187. In the event wherein the ownership of any registered vehicle is transferred, the transferer shall [Act 50(a)(i)] report the fact of transfer to registering authority in _____.
- (A) One week for same State
 - (B) 14 days for same State
 - (C) 30 days for same State
 - (D) 45 days for same State

188. In the case of _____ the Supreme Court ruled that the registered owner of the vehicle is liable for insurance purpose in the case of accident.
- (A) Rajiv Raturi
(B) Prakashchand Daga
(C) Avishek Goenka
(D) Manindersingh Bitta
189. Golden hour means _____
- (A) the first hour starting from the moment of traumatic injury.
(B) the time period in which first aid is given to the injured person.
(C) the moment of the time period at the traumatic person dies.
(D) the time period in which the ambulance reaches to the injured person.
190. According to the judgment of the Supreme Court in the case of Shri Mukund Devangan the holder of the LMV type of licence _____.
- (A) can drive commercial vehicle of LMV type
(B) can only drive private vehicle of private type
(C) has to take a different licence to drive LMV series of passenger rickshaws.
(D) has to get a different licence to drive LMV type of tractor.
191. In the case of Manindersingh Bitta regarding HSRP, the Supreme Court inflicted fine of Rs. 10,000 on _____.
- (A) Andhra Pradesh
(B) Madhya Pradesh
(C) Gujarat
(D) Arunachal Pradesh
192. According to Rajiv Raturi Supreme Court case, _____ % of the government owned public transport vehicles are to be made fully accessible for disabled persons.
- (A) 25
(B) 15
(C) 10
(D) 5
193. According to the order of the Supreme Court, Black film of _____ visual light transmission (VLT) can be applied on the wind screen of a vehicle.
- (A) RTO approved film can be applied.
(B) Film having 50% light transmission can be applied
(C) Use of black films of any percentage of VLT is prohibited
(D) Film having 70% light transmission can be applied

194. ESC (Electronic Stability Control) works in vehicle _____.
(A) When vehicle gets overheated
(B) When all lighting system fail
(C) When vehicle driver gets distracted
(D) When there is a low of fraction in the vehicle
195. The main challenge(s) of EVs (Electric Vehicle) is _____.
(A) Charging time
(B) Driving range
(C) Capacity of maximum load it can carry
(D) All of the above
196. As per NEMMP (National Electric Mobility Mission Plan) 2020, the vehicular emission is _____%.
(A) 2.3 (B) 1.3 (C) 4.3 (D) 3.3
197. The breach of which of the following traffic signs by the vehicle driver would amount to time?
(A) Warning signs
(B) Mandatory signs
(C) Informatory signs
(D) Both (A) and (B) are correct
198. Parking means the bringing of a vehicle to a stationary position for any purpose other than dropping off or collecting person or goods, it includes _____.
(A) Stopping for more than one minute
(B) Stopping for more than two minutes
(C) Stopping for more than three minutes
(D) None of the above
199. Third Global Ministerial Conference on Road Safety was hosted by _____.
(A) Geneva (B) Stockholm (C) Moscow (D) Brazillia
200. The theme of Third Global Ministerial Conference on Road Safety was _____.
(A) Achieving Global Goals 2025
(B) Achieving Global Goals 2023
(C) Achieving Global Goals 2020
(D) Achieving Global Goals 2030
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