PROVISIONAL ANSWER KEY
Inspector of Motor Vehicles, Class II, Advt No. 102/2016-17(ATX-MECH)
Preliminary Test on 26-03-2017
Subeject Que : 001-200
Publish Date : 31-03-2017
Last Date to send suggestion(s) :07-04-2017
Note: Candidate must ensure the compliance to send all suggestion in the given format with reference to this paper with provisional answer key only.

001. A butt riveted joint with double strap is always in _____ shear.

(A) single (B) double

(C) Both A & B (D) None of these

002. A uniformly distributed load is one which

(A) acts at a point on a beam

(B) spreads non-uniformly over the whole length of a beam

(C) spreads uniformly over the whole length of a beam

(D) varies uniformly over the whole length of a beam

003. The shape of the bending moment curve (diagram) over the length of a beam, having linearly varying distributed load, is always

(A) Cubic (B) Linear

(C) Parabolic (D) Circular

004. According to theory of pure bending, the normal stress varies _____ across the cross section of a beam.

(A) linearly (B) cubic

(C) parabolic (D) none of these

005. For a cantilever beam with a uniformly distributed load acting over its whole length, the bending moment is

(A) zero at its fixed end (B) maximum at its centre.

(C) maximum at its free end (D) zero at its free end

006. The angle between plane of maximum shear and Principal plane is

(A) 30° (B) 45°

(C) 60° (D) 75°

007. Modulus of rigidity is defined as the ratio of

(A) longitudinal stress and longitudinal strain

(B) volumetric stress and volumetric strain

(C) lateral stress and lateral strain

(D) shear stress and shear strain

008. If the radius of wire stretched by a load is doubled, then its Young's modulus will be

(A) doubled (B) halved

(C) become one-fourth (D) remain unaffected

009. The impact strength of a material is an index of its

(A) toughness (B) tensile strength

(C) hardness (D) fatigue strength

010. If a material expands freely due to heating it will develop

(A) thermal stresses (B) tensile stress

(C) compressive stress (D) no stress

011. _____is the distance between the centers of rivets in adjacent rows of zigzag riveted joint.

(A) Pitch (B) Back pitch

(C) Diagonal pitch (D) Margin or marginal pitch

012. _____ is the distance between the centre of the rivet hole to the nearest edge of the plate.

(A) Pitch (B) Back pitch

(C) Diagonal pitch (D) Margin or marginal pitch

013. _____ are used mainly for structural work and machine riveting.

(A) Snap head rivets (B) Countersunk head rivets

(C) Pan head rivets (D) Pop rivets

014. _____ are employed for ship building where flush surfaces are necessary.

(A) Snap head rivets (B) Countersunk head rivets

(C) Pan head rivets (D) Pop rivets

015. A bar of cross-sectional area A is subjected to a tensile force P. The normal stress will be maximum on the plane which is _____ inclined to the cross-section of the bar.

(A) 0° (B) 45°

(C) 5° (D) 25°

016. Poisson's ratio is defined as the ratio of

(A) longitudinal stress and longitudinal strain

(B) longitudinal strain and lateral strain

(C) lateral strain and longitudinal strain

(D) lateral stress and lateral strain

017. Maximum principal stress theory was postulated by

(A) St. Venant (B) Rankine

(C) Mohe (D) Tresca

018. A cantilever is a beam whose

(A) Both ends are fixed

(B) Both ends are free

(C) One end is fixed and other free

(D) None of these

019. Stress in the beam and section modulus

(A) have curvilinear relation (B) are directly proportional

(C) are inversely proportional (D) None these

020. During tensile test, what does percentage elongation indicate?

(A) Malleability (B) Creep

(C) Ductility (D) Fatigue strength

021. For constant velocity ratio positive drive with large center distance between driver and driven shaft –

(A) Chain drive is used (B) V-belt drive is used

(C) Flat belt drive is used (D) None of these

022. The power transmitted by open belt-drive is designed on the basis of

(A) Average angle of contact of the two pulleys

(B) Angle of contact of the larger pulley

(C) Angle of contact of the smaller pulley

(D) Angle of contact of the driver pulley whether smaller or larger

023. Which of the following is a scaler?

(A) Time (B) Force

(C) Torque (D) Linear momentum

024. Stress is a _____ quantity.

(A) vector (B) scaler

(C) tensor (D) none of these

025. A uniformly accelerating body experiences force _____.

(A) In opposite direction

(B) In the same direction of motion

(C) Perpendicular to the direction of motion

(D) None of these

026. Newton's first law of motion provides the concept of _____.

(A) momentum (B) work

(C) inertia (D) energy

027. The law of conservation of linear momentum can be derived from _____.

(A) Newton's first law (B) Newton's second law

(C) Newton's third law (D) None of these

028. The static frictional force between two objects at rest with respect to one another is always _____.

(A) less than maximum value (B) smaller than maximum value

(C) equal to maximum value (D) none of these

029. If the normal force is doubled, the coefficient of friction is _____.

(A) not changed
(B) halved
(C) doubled
(D) triple

030. Displacement, velocity and acceleration of a particle are _____.

(A) all vector quantities
(B) all vector quantities except displacement
(C) all vector quantities except velocity
(D) all vector quantities except acceleration

031. The point of contra-flexure occurs in _____.

(A) cantilever beam only
(B) simply supported beam only
(C) overhanging beam only
(D) none of these

032. Which one of the following theory is suitable for brittle material?

(A) Maximum principal stress theory
(B) Distortion energy theory
(C) Maximum shear stress theory
(D) None of these

033. A shell with wall thickness small compared to internal diameter [(d/t) $\geq$ 20] is called _____.

(A) thin shell
(B) thick shell
(C) either thin or thick
(D) none of these

034. When mild steel is subjected to tensile loading, its fracture will conform to _____.

(A) granular
(B) cup & cone
(C) star
(D) none of these

035. The intensity of shear stress in a shaft subjected to torsion is maximum at _____.

(A) its axis
(B) its outer layer
(C) a layer at a distance half of radius of shaft from its center
(D) none of these

036. _____ governor is dead weight governor.

(A) Watt (B) Porter

(C) Hartnell (D) None of these

037. A point on a link connecting double slider crank chain traces a _____ path.

(A) straight (B) elliptical or circular

(C) parabolic (D) hyperbolic

038. _____ mechanism produces mathematically an exact straight line motion.

(A) Scotch yoke Mechanism (B) Elliptical Trammel

(C) Peaucellier's (D) None of these

039. For a vibrating system, if the damping factor is unity, then the system is _____ damped

(A) under (B) over

(C) critically (D) none of these

040. The size of cam depends on _____ circle

(A) prime (B) base

(C) outer (D) pitch

041. In a reciprocating engine mechanism, the number of links and instantaneous centers are _____

(A) 3, 3 (B) 3, 6

(C) 4, 4 (D) 4, 6

042. A quaternary joint, in a kinematic chain, is equivalent to _____.

(A) one binary joint (B) two binary joint

(C) three binary joint (D) none of these

043. A kinematic chain is known as a mechanism when _____ of the links is fixed.

(A) one (B) two

(C) three (D) none of these

044. A completely constrained motion can be transmitted with _____ links with pin joints.

(A) two
(B) four
(C) one
(D) three

045. SI unit of mass moment of inertia is _____.

(A) Kg-m
(B) m^4
(C) Kg-m^2
(D) Nm/kg

046. A rack is a gear of _____.

(A) infinite teeth
(B) infinite diameter
(C) infinite pitch
(D) none of these

047. Which of the following gears should be recommended for a speed reduction of 50: 1?

(A) Spur
(B) Helical
(C) Worm and worm wheel
(D) Bevel

048. _____ type of gear profile is free from interference.

(A) Cycloidal
(B) Involute
(C) Both involute & cycloidal
(D) None of these

049. While designing shaft and hub assembly _____ is taken as the weakest component.

(A) key
(B) shaft
(C) hub
(D) none of these

050. A screw is specified by its _____ diameter.

(A) minor
(B) pitch
(C) major
(D) none of these

051. The central gear of an epicyclic gear train is called a _____.

(A) Internal gear
(B) Ring gear
(C) Planet gear
(D) Sun gear

052. The fatigue life of a part can be more improved by

(A) electroplating (B) polishing

(C) coating (D) shot peening

053. Stress concentration in static loading is more serious in

(A) ductile materials (B) brittle materials

(C) equally serious in both cases (D) depends on other factors

054. The notch angle of the Izod impact test specimen is

(A) 10° (B) 20°

(C) 30° (D) 45°

055. In testing a material for endurance strength, it is subjected to

(A) static load (B) torsion load

(C) impact load (D) completely reversed load

056. Resistance to fatigue of a material is measured by

(A) Young's modulus (B) elastic limit

(C) ultimate tensile strength (D) endurance limit

057. Spring index is

(A) ratio of coil diameter to wire diameter

(B) load required to produce unit deflection

(C) its capability of storing energy

(D) indication of quality of spring

058. When two springs are in series (having stiffness K), the equivalent stiffness will be

(A) K (B) K/2

(C) 2K (D) none of these

059. In hydrostatic bearings

(A) the Oil film pressure is generated only by the rotation of the journal

(B) the oil film is maintained by supplying oil under pressure

(C) thin oil film causes metal to metal contact throughout

(D) none of these

060. According to Kennedy's theorem, if three bodies have plane motions, their instantaneous centers lie on

(A) a triangle
(B) a point
(C) a straight line
(D) a curve

061. What is effectiveness of fin?

(A) The ratio of the fin heat transfer rate to the heat transfer rate that would exist without the fin
(B) The heat which would be transferred if entire fin area was at minimum temperature to the ratio of actual heat transferred from fin area
(C) The ratio of actual heat transferred from fin area to the heat which would be transferred if entire fin area was at minimum temperature
(D) None of these

062. The Biot number is given by

(A) the ratio of the boundary layer thermal resistance to internal thermal resistance of a solid
(B) the ratio of internal thermal resistance of a solid to the boundary layer thermal resistance
(C) multiplying internal thermal resistance of a solid and the boundary layer thermal resistance
(D) none of these

063. If there are no externally induced flow velocities, then the Nusselt number (Nu) does not depend upon

(A) Prandtl number (Pr)
(B) Reynolds number (Re)
(C) Grashof number (Gr)
(D) none of these

064. Heat transfer deals with the rate of

(A) work transfer
(B) temperature transfer
(C) energy transfer
(D) none of these

065. What is the condition for conduction mode of heat transfer between two bodies?

(A) the two bodies must be in physical contact

(B) there must be temperature gradient between the bodies

(C) both A and B

(D) none of these

066. The fluid flow in which the fluid particles in one layer do not mix with the fluid particles in the other layer is called as

(A) laminar flow (B) turbulent flow

(C) layer flow (D) none of these

067. Viscosity of a fluid can be defined as

(A) change in density of the fluid per unit temperature

(B) flow resistance offered by the fluid

(C) flow velocity change

(D) none of these

068. The radiation takes place

(A) through molecular communication

(B) through vacuum

(C) both A and B

(D) none of the these

069. What is emissive power of a body?

(A) total radiation emitted by the body per unit volume per unit time

(B) total radiation emitted by the body per unit temperature per unit time

(C) total radiation emitted per unit area per unit time

(D) all of these

070. Sensible heat is the heat required to

(A) change vapour into liquid

(B) change liquid into vapour

(C) increase the temperature of a liquid or vapour

(D) convert water into steam and superheat it

071. Body centered cubic structure has an atomic packing factor equal to

(A) 0.74 (B) 0.68

(C) 0.52 (D) None of these

072. In which type of point defect, positive and negative ions are missing from the crystal?

(A) Vacancy defect (B) Interstitial defect

(C) Schottky defect (D) Substitutional defect

073. Which among the following is the characteristics of polymers?

(A) High tensile strength (B) High wear resistance

(C) Low density (D) All of these

074. Which among the following is a type of destructive test?

(A) Magnetic particle test (B) Cupping test

(C) Dye penetrant (D) All of these

075. What is meant by resilience in stress strain curve?

(A) area in the plastic region

(B) area in the elastic region

(C) area in elastic and plastic region

(D) none of these

076. Which among the following is known as Schmid factor? ϕ is angle between the normal to the slip plane and the applied stress direction, and λ the angle between slip and stress directions.

(A) $\cos 2\phi \times \cos 2\lambda$ (B) $\cos\phi \times \sin\lambda$

(C) $\sin\phi \times \sin\lambda$ (D) $\cos\phi \times \cos\lambda$

077. What is meant by malleability?

(A) Metals undergo plastic deformation under compressive stresses

(B) Metals can be drawn into wires

(C) Resistance to scratch

(D) None of these

078. In which type of test the capillary action principle is used?

(A) Probe test (B) Magnetic particle test

(C) Dye penetrant test (D) None of these

079. What causes transformation of deformed martensite into austenite phase?

(A) Heating (B) Cooling

(C) both A and B (D) all of these

080. Which process is used to remove internal stresses from a metal?

(A) Annealing (B) Cold working

(C) Both A and B (D) None of these

081. What does primary creep in creep curve indicate?

(A) Material is experiencing an increase in creep resistance

(B) Material is experiencing a decrease in creep resistance

(C) It represents high strain rate

(D) It represents creep at constant rate

082. As percentage of carbon increases in steel its _____ decreases.

(A) Corrosion resistance (B) Ultimate strength

(C) Hardness (D) Ductility

083. Austenite is a solid solution of carbon in _____ iron.

(A) Alpha (B) Gamma

(C) Beta (D) Delta

084. Out of the following which is the amorphous material?

(A) Steel (B) Brass

(C) Glass (D) Silver

085. _____ structure in metals can be studied by naked eye

(A) Atomic (B) Micro

(C) Grain (D) Macro

086. High speed steel belongs to the category of _____ steel

(A) Alloy (B) Stainless

(C) Low carbon (D) Medium carbon

087. _____ is the hardest known material.

(A) Cemented carbide (B) Ceramics

(C) Diamond (D) Alloy steel

088. The corrosion resistance property of stainless steel is due to the presence of _____.

(A) Manganese (B) Chromium

(C) Cobalt (D) Silicon

089. Slip gauges are generally made of _____

(A) Alloy steel (B) Cast iron

(C) Bronze (D) None of these

090. _____ material shows completely direction dependent properties.

(A) Orthotropic (B) Isotropic

(C) Anisotropic (D) None of these

091. _____ is the upper half of the mold.

(A) Cope (B) Drag

(C) Flask (D) None of these

092. A taper provided on the pattern for its easy and clean withdrawal from the mold is known as _____.

(A) draft allowance (B) machining allowance

(C) distortion allowance (D) shrinkage allowance

093. _____ is a reservoir in the mold that serves as a source of liquid metal for the casting to compensate for shrinkage during solidification.

(A) Riser (B) Runner

(C) Sprue (D) None of these

094. The hot working of metals is carried out _____

(A) below the recrystallization temperature

(B) above the recrystallization temperature

(C) at the recrystallization temperature

(D) at any temperature

095. Cold working of metal increases _____.

(A) Hardness (B) Tensile strength

(C) Yield strength (D) All of these

096. _____ is a sheet-metal cutting operation along a straight line between two cutting edges

(A) Shearing (B) Blanking

(C) Punching (D) Piercing

097. Smaller grain size in a grinding wheel tends to _____.

(A) degrade surface finish

(B) have no effect on surface finish

(C) improve surface finish

(D) None of these

098. Which one of the following abrasive materials is most appropriate for grinding hardened tool steel?

(A) Aluminum oxide (B) Cubic boron nitride

(C) Glass (D) Silicon carbide

099. As the temperature of a polymer increases, its density _____.

(A) increases (B) decreases

(C) remains constant (D) none of these

100. A lathe is used to perform which one of the following manufacturing operations.

(A) Broaching, (B) Lapping

(C) Milling (D) Turning

101. When ductile work materials are cut at high speeds and relatively small feeds and depths, _____ are formed.

(A) long continuous chips

(B) discontinuous chip

(C) continuous chip with built-up edge

(D) none of these

102. According to the Merchant equation, the shear plane angle can be increased by

(A) increasing the rake angle

(B) increasing the friction angle between the tool and the chip

(C) decreasing the rake angle

(D) none of these

103. Which one of the following metals would usually have the lowest unit horsepower in a machining operation?

(A) Brass (B) Cast iron

(C) Steel (D) Aluminum

104. Which of the following manufacturing processes are classified as material removal processes?

(A) Drawing (B) Grinding

(C) Extrusion (D) Forging

105. Which of the following is example of generating the workpart geometry in machining, as opposed to forming the geometry?

(A) Welding (B) Casting

(C) Profile milling (D) Beading

106. A tap is a cutting tool used to create which one of the following geometries?

(A) External threads (B) Flat planar surfaces

(C) Internal threads (D) Square holes

107. The basic milling machine is which one of the following?

(A) Knee-and-column Machine (B) Ram mill

(C) Universal milling machine (D) None of these

108. A planing operation is best described by which one of the following?

(A) A single-point tool moves linearly past a stationary workpart

(B) A tool with multiple teeth moves linearly past a stationary workpart

(C) A workpart is fed linearly past a rotating cutting tool

(D) A workpart moves linearly past a single-point tool

109. A broaching operation is best described by which one of the following?

(A) A rotating tool moves past a stationary workpart

(B) A tool with multiple teeth moves linearly past a stationary workpart

(C) A workpart is fed past a rotating cutting tool

(D) A workpart moves linearly past a stationary single point tool

110. Gear hobbing is a special form of, which one of the following machining operations?

(A) Grinding (B) Milling

(C) Planning (D) Shaping

111. Diamond pyramid indenter is used for

(A) Brinell Hardness Test (B) Vickers Hardness Test

(C) Rockwell B Hardness Test (D) None of these

112. Which of the following processes are classified as fusion welding?

(A) Diffusion Welding (B) Forge welding

(C) Laser-beam welding (D) Ultrasonic welding

113. Which one of the following arc-welding processes uses a nonconsumable electrode?

(A) FCAW (Flux-Cored Arc Welding)

(B) GMAW (Gas Metal Arc Welding)

(C) GTAW (Gas Tungsten Arc Welding)

(D) SMAW (Shielded Metal Arc Welding)

114. Which of the following metals are used in solder alloys?

(A) Aluminum
(B) Gold
(C) Iron
(D) Silver

115. Chemical milling is used in which one of the following applications?

(A) Drilling holes with high depth-to-diameter ratio
(B) Making intricate patterns in thin sheet metal
(C) Removing metal from aircraft wing panels
(D) Cutting of plastic sheets

116. Of the following processes, which one is noted for the highest material removal rates?

(A) Electric discharge machining
(B) Laser beam machining
(C) Plasma arc cutting
(D) Water jet cutting

117. The three components of an automated system are

(A) actuators, sensors, control system
(B) sensors, feedback loop, communication system
(C) actuators, humans, communication system
(D) power, a program of instructions, control system

118. The input/output relationship of a sensor is called

(A) analog
(B) converter
(C) sensitivity
(D) transfer function

119. A stepper motor is which one of the following types of devices?

(A) Actuator
(B) Interface device
(C) Pulse counter
(D) Sensor

120. The standard coordinate system for numerical control machine tools is based on _____.

(A) Cartesian coordinates plus three rotational axes
(B) cylindrical coordinates
(C) polar coordinates
(D) Both B & C

121. The APT (Automatically Programmed Tooling) command GORGT is

(A) geometry statement involving a volume of revolution about a central axis

(B) name of the humanoid in the latest Star Wars movie

(C) point-to-point command

(D) tool path command in which the tool must go right in the next move

122. Fixed routing is associated with which of the following types of manufacturing systems?

(A) Automated production lines

(B) Cellular manufacturing systems

(C) Flexible manufacturing systems

(D) All of these

123. Inventory carrying costs include which of the following?

(A) Equipment downtime cost (B) Production cost

(C) Setup cost (D) Storage cost

124. The word kanban is most closely associated with

(A) capacity planning (B) economic order quantity

(C) just-in-time production (D) material requirements planning

125. Machine loading refers most closely to

(A) assigning jobs to a work center

(B) floor foundation in the factory

(C) releasing orders to the shop

(D) sequencing jobs through a machine

126. In a control chart, the upper control limit is set equal to

(A) process mean

(B) process mean plus three standard deviations

(C) upper design tolerance limit

(D) upper value of the maximum range R

127. The R chart is used for

(A) number of rejects in the sample

(B) number of reworked parts in a sample

(C) radius of a cylindrical part

(D) range of sample values

128. Break-even analysis consists of

(A) fixed cost (B) variable cost

(C) fixed and variable cost (D) operation cost

129. Queuing theory deals with problems of

(A) material handling

(B) reducing the waiting time or idle time

(C) better utilization of man services

(D) effective use of machines

130. Gantt charts are used for

(A) forecasting sales (B) production schedule

(C) scheduling and routing (D) linear programming

131. Simplex method is used for

(A) linear programming (B) value analysis

(C) concurrent engineering (D) life cycle analysis

132. Positive slack on a PERT indicates that project is

(A) ahead of schedule (B) beyond schedule

(C) as per schedule (D) on critical path

133. First law of thermodynamics deals with

(A) conservation of hear (B) conservation of momentum

(C) conservation of mass (D) conservation of energy

134. Basic tool in work study is

(A) graph paper (B) process chart

(C) planning chart (D) stop watch

135. What does symbol 'O' imply in work study

(A) operation
(B) inspection
(C) transport
(D) delay/temporary storage

136. What does symbol 'D' imply in work study

(A) inspection
(B) transport
(C) delay/temporary storage
(D) permanent storage

137. CPM is the

(A) time oriented technique
(B) event oriented technique
(C) activity oriented technique
(D) target oriented technique

138. PERT is the

(A) time oriented technique
(B) event oriented technique
(C) activity oriented technique
(D) target oriented technique

139. Which of the following laws is applicable for the behavior of a perfect gas?

(A) Boyle's law
(B) Charles'law
(C) Gay-Lussac law
(D) all of these

140. The unit of temperature in S.I. units is

(A) Centigrade
(B) Celsius
(C) Fahrenheit
(D) Kelvin

141. An open system is one in which

(A) mass does not cross boundaries of the system, though energy may do so
(B) neither mass nor energy crosses the boundaries of the system
(C) both energy and mass cross the boundaries of the system
(D) mass crosses the boundary but not the energy

142. Absolute pressure is measured as

(A) Gauge pressure – Atmospheric pressure
(B) Gauge pressure + Atmospheric pressure
(C) Gauge pressure / Atmospheric pressure
(D) none of these

143. The process in which no heat transfer takes place through boundaries is called as

(A) isothermal process
(B) adiabatic process
(C) isochoric process
(D) none of these

144. Heat transfer is

(A) a point function
(B) a path function
(C) a transfer function
(D) none of these

145. The amount of heat required to raise a unit mass of substance through a unit rise in temperature is called as

(A) heat capacity of a substance
(B) specific heat of a substance
(C) latent heat of a substance
(D) none of these

146. Perpetual motion machine of first kind (PMM1) is the machine which violates _____

(A) Kelvin-Planck statement
(B) Clausius statement
(C) first law of thermodynamics
(D) none of these

147. Energy is not conserved but destroyed in the process. What is the reason behind this?

(A) reversibility
(B) irreversibility
(C) both reversibility and irreversibility
(D) none of these

148. The dryness (x) fraction of superheated steam is taken as

(A) $x = 0$
(B) $x = 0.9$
(C) $x = 0.5$
(D) $x = 1$

149. At 100% relative humidity, the wet bulb temperature is

(A) lower than the dew point temperature
(B) higher than the dew point temperature
(C) equal to the dew point temperature
(D) none of these

150. Assume that a reversible heat engine is operating between a source at T_1 and a sink at T_2. If T_2 decreases, the efficiency of the heat engine _____.

(A) decreases
(B) increases
(C) remains constant
(D) none of these

151. What should be the critical temperature of working fluid for maximum efficiency of vapour power cycle?

(A) the working fluid should have critical temperature as low as possible
(B) the working fluid should have critical temperature as high as possible
(C) the critical temperature does not affect the efficiency of the vapour power cycle
(D) none of these

152. In working condition of turbojet engine, velocity of air entering the engine is

(A) higher than the velocity of exhaust gases leaving the engine
(B) lower than the velocity of exhaust gases leaving the engine
(C) equal to the velocity of exhaust gases leaving the engine
(D) cannot say

153. The flow of steam is supersonic _____ of the nozzle.

(A) at the throat
(B) at the entrance
(C) in the divergent portion
(D) in the convergent portion

154. Which device used to separate condensate from the steam without letting steam escape?

(A) condenser
(B) steam valve
(C) steam trap
(D) none of these

155. Gas turbines are suitable for aircraft propulsion because

(A) gas turbines are light weight
(B) gas turbines are compact in size
(C) gas turbines have a high power-to-weight ratio
(D) all of these

156. On psychrometric chart, wet bulb temperature lines are

(A) horizontal with uniformly spaced

(B) horizontal with non-uniformly spaced

(C) inclined with uniformly spaced

(D) inclined with non-uniformly spaced

157. Which among the following is the basic air standard cycle for all modern gas turbine plants?

(A) Brayton cycle (B) Rankine cycle

(C) Otto cycle (D) Diesel cycle

158. What is the disadvantage of ammonia using as a refrigerant?

(A) ammonia cannot be detected in case of leakage

(B) ammonia has a bad effect on ozone layer

(C) ammonia is toxic in nature

(D) ammonia has higher energy cost

159. The mechanical work required to run vapour absorption system

(A) is more than the mechanical work required to run vapour compression system

(B) is less than the mechanical work required to run vapour compression system

(C) is similar to the mechanical work required to run vapour compression system

(D) cannot say

160. The formation of fog starts when,

(A) air temperature is equal to the dew point temperature

(B) air temperature is greater than the dew point temperature

(C) both a. and b.

(D) none of these

161. Work done in a constant volume process is

(A) negative (B) zero

(C) positive (D) none of these

162. What is the effect of superheated steam on efficiency of Rankine cycle?

(A) efficiency of Rankine cycle decreases with increase in superheat of the steam

(B) efficiency of Rankine cycle increases with increase in superheat of the steam

(C) efficiency of Rankine cycle is not affected by change in superheat of the steam

(D) none of these

163. Which processes do occur in the Brayton cycle?

(A) two reversible adiabatic processes and two reversible isochoric processes

(B) two reversible adiabatic processes and two reversible isobaric processes

(C) two reversible adiabatic processes and two reversible isothermal processes

(D) two reversible adiabatic processes and two reversible isentropic processes

164. When two refrigerating cycles are used in series with two different refrigerants, the system is known as

(A) dual refrigeration system

(B) cascade refrigeration system

(C) vapour absorption refrigeration system

(D) none of these

165. How is the natural draught produced for exhaust gases?

(A) by using fan (B) by using chimney

(C) by using gravity (D) none of these

166. The temperature of air recorded by thermometer when the bulb is covered by a cotton wick saturated by water is called as

(A) dry bulb temperature (B) wet bulb temperature

(C) stream temperature (D) psychrometric temperature

167. What is the purpose of using economizer in the boiler?

(A) to heat feed water by utilizing heat from exhaust gases

(B) to heat feed water by utilizing some heat from superheated steam

(C) to superheat steam

(D) none of the above

168. Otto cycle is the air standard cycle of

(A) spark ignition (SI) engine

(B) compression (CI) ignition engine

(C) both SI and CI engines

(D) none of the above

169. The following is an internationally recognized and accepted unit system

(A) MKS

(B) FPS

(C) SI

(D) All of the above

170. The following is a line standard of measurement

(A) Measuring tape

(B) Slip gauge

(C) Micrometer

(D) End bars

171. To check external diameter of cylindrical, we use

(A) Plug gauge

(B) Ring gauge

(C) Slip gauge

(D) Standard screw pitch gauge

172. A substance which produces a lot of heat on burning is called _____.

(A) oxidising agent

(B) biogas

(C) biomass

(D) fuel

173. Fuel formed under the earth's surface by the decomposition of organic matter is called _____.

(A) organic fuel

(B) biogas

(C) fossil fuel

(D) underground fuel

174. Which of the following causes the least pollution when burnt?

(A) Petrol

(B) Diesel

(C) Coal

(D) Natural gas

175. The radiation in the sunlight that gives us the feeling of hotness is _____.

(A) visible radiation
(B) infra-red
(C) ultra-violet
(D) none of these

176. India first underground nuclear test at _____.

(A) Kota
(B) Ranchi
(C) Jaipur
(D) Pokhran

177. In a diesel engine, the fuel is ignited by

(A) spark
(B) injected fuel
(C) heat resulting from compressing air that is supplied for combustion
(D) ignition

178. Scavenging air in diesel engine means

(A) air used for combustion sent under pressure
(B) burnt air containing products of combustion
(C) air used for forcing burnt gases out of engine's cylinder during the exhaust period
(D) air fuel mixture

179. Supercharging is the process of

(A) supplying the intake of an engine with air at a density greater than the density of the surrounding atmosphere
(B) providing forced cooling air
(C) injecting excess fuel for raising more load
(D) supplying compressed air to remove combustion products fully

180. Compression ratio of IC. engines is

(A) the ratio of volumes of air in cylinder before compression stroke and after compression stroke
(B) volume displaced by piston per stroke and clearance volume in cylinder
(C) ratio of pressure after compression and before compression
(D) swept volume/cylinder volume

181. The air standard efficiency of an Otto cycle compared to diesel cycle for the given compression ratio is

(A) same

(B) less

(C) more

(D) more or less depending on power rating

182. The ignition quality of petrol is expressed by

(A) Cetane number (B) Octane number

(C) Calorific value (D) All of these

183. A stoichiometric air-fuel ratio is

(A) chemically correct mixture (B) lean mixture

(C) rich mixture for idling (D) rich mixture for over loads

184. Which of the following is the lightest and most volatile liquid fuel?

(A) diesel (B) kerosene

(C) fuel oil (D) gasoline

185. Pour point of fuel oil is the

(A) minimum temperature to which oil is heated in order to give off inflammable vapours in sufficient quantity to ignite momentarily when brought in contact with a flame

(B) temperature at which it solidifies

(C) it catches fire without external aid

(D) indicated by 90% distillation temperature i.e., when 90% of sample oil has distilled off

186. Which of the following is a steam turbine?

(A) De laval (B) Kaplan

(C) Francis (D) Pelton

187. Which of the following medium is compressed in a diesel engine cylinder?

(A) air alone (B) air and fuel

(C) air and lub oil (D) fuel alone

188. The air-fuel ratio of the petrol engine is controlled by

(A) fuel pump (B) governor

(C) injector (D) carburetor

189. In diesel engine, the compression ratio in comparison to expansion ratio is

(A) same (B) less

(C) more (D) variable

190. The power actually developed inside the engine cylinder is called as

(A) Indicated power (B) Brake power

(C) Frictional power (D) None of these

191. The sequence order of events in a four stroke engine is

(A) Suction-exhaust-power-compression

(B) Suction-power-compression-exhaust

(C) Suction-compression-power-exhaust

(D) Exhaust-compression-power-suction

192. The main cause for the change in engine oil viscosity is

(A) Humidity (B) Temperature

(C) Vibration (D) Contamination

193. If the spark plug deposit indicates black coating of soot, it indicates that the engine has been generally operating on

(A) Too lean mixture (B) Stoichiometric mixture

(C) Most economical mixture (D) Too rich mixture

194. The connecting rod connects the piston and the

(A) Cylinder head (B) Cylinder block

(C) Camshaft (D) Crankshaft

195. The device for smoothening out the power impulses from the engine is called

(A) Clutch (B) Differential

(C) Flywheel (D) Torque converter

196. The example of rolling pair is

(A) bolt and nut
(B) lead screw of a lathe
(C) ball and socket joint
(D) ball bearing and roller bearing

197. Idler pulley is used in open belt drive arrangement

(A) for changing the direction of motion of the belt
(B) for applying tension
(C) for increasing -velocity ratio
(D) all of the above

198. In which type of vibrations, the amplitude of vibration goes on decreasing every cycle?

(A) Damped vibrations
(B) Undamped vibrations
(C) Both a. and b.
(D) None of the above

199. The rotating shafts tend to vibrate violently at whirling speeds because

(A) the shafts are rotating at very slow speeds
(B) bearing centre line coincides with the axis
(C) resonance is caused due to the heavy mass of the rotor
(D) the shafts are balance and rotating at very high speeds

200. The unbalanced primary forces in a reciprocating engine are

(A) balanced completely
(B) balanced partially
(C) balanced by secondary forces
(D) not balanced