101. At the critical point, the latent heat of vapourisation is
    1) 2256.9 KJ/kg   2) 2.335 KJ/kg   3) zero   4) 2245 KJ/kg
102. Which of the following is a water tube boiler
    1) Bobcock – wilcox   2) Yarrow   3) stirling   4) all of these
103. Artificial draught is produced by
    1) steam jet   2) fan   3) chimney   4) both 1 and 2
104. If H is the total heat of steam at working pressure, h is the sensible heat of feed water entering the boiler, and L_0 is the latent heat of steam at atmospheric pressure, then the factor of evaporation is given by
    1) H / L_0 2) $\dfrac{(H + h)}{L_0}$ 3) $\dfrac{(H - h)}{L_0}$ 4) $\dfrac{L_0}{(H - h)}$
105. In a steam nozzle, the enthalpy drop actual observed is 256 KJ/kg. If the nozzle efficiency is 80% the isentropic enthalpy drop will be
    1) 310 KJ/kg   2) 315 KJ/kg   3) 320 KJ/kg   4) 320 KJ
106. Critical pressure ratio is
    1) the pressure ratio at throat of nozzle   2) at which maximum discharge occurs
    3) 0.545 times the superheated steam   4) 0.58 times the dry saturated steam
107. Work done on the blade is due to the following velocity
    1) flow velocity   2) whirl velocity   3) absolute velocity   4) relative velocity
108. For the same blade speed the enthalpy drop is minimum in
    1) impulse stage   2) velocity compounded stage   3) reaction stage   4) curtis stage
109. If the degree of reaction is R, the optimum blade speed ratio for a reaction turbine is
    1) $R \cos \alpha$ 2) $\dfrac{\cos \alpha}{R}$ 3) $\dfrac{\cos \alpha}{2(1 - R)}$ 4) $\dfrac{\cos \alpha}{2R}$
110. The gas turbine cycle with regenerator improves
    1) thermal efficiency   2) work ratio   3) avoids pollution   4) turbine work
111. A heat pump working on reversed carnot cycle has a C.O.P of 5. It works as a refrigerator taking 1 kW of work input, the refrigerating effect will be
    1) 1 kW   2) 2 kW   3) 3 kW   4) 4 kW
112. Carnot C.O.P for domestic refrigerator compared to that of domestic air-conditioner is
    1) more   2) less   3) same   4) uncertain
113. The refrigerant used in vapour absorption refrigeration system is
    1) Freon-12   2) Ammonia   3) carbon-dioxide   4) Aqua-ammonia
114. The temperature of air at which condensation of moisture begins when air is cooled is called
    1) DBT   2) DPT   3) WBT   4) saturation temperature at atmospheric pressure
115. The process of adding heat to moist air at the same humidity ratio is
    1) sensible heating   2) sensible cooling   3) humidification   4) dehumidification
116. The following psychometric processes are usually carried in summer air-conditioning
    1) heating and humidification   2) cooling and dehumidification
    3) cooling and humidification   4) heating and dehumidification
117. In diesel engines tendency to knock increases with
    1) increase in compression ratio   2) increase in inlet air temperature
    3) decrease in cooling water temperature   4) decrease in compression ratio
118. Which of the following does not relate to a two stroke 4 cylinder diesel engine
    1) crank shaft   2) cam shaft   3) deflectors type piston   4) valves
119. For a 4-stroke cycle internal combustion engine running at 2000 rpm has its cam shaft running at
    1) 1500 rpm   2) 2000 rpm   3) 2500 rpm   4) 1000 rpm
120. Morse test is used in IC engines to determine
    1) brake power of a single cylinder CI engine   2) brake power of a multi cylinder CI engine
    3) indicated power of a single cylinder SI engine
    4) indicated power of a multi cylinder SI engine
121. Heat transferred is equal to work done in the case of the following non-flow process
    1) isobaric   2) isothermal   3) isometric   4) isothermal
122. Equal volumes of the gases at N.T.P contain equal number of molecules. This is
    1) Gay Lussac's law   2) Regnaults Law   3) Dalton's Law   4) Avagadro's law
123. The specific weight is following type of property
    1) extensive   2) intensive   3) special property   4) none

124. A reversible engine transforms one fifth of the heat input into work when the temperature of the sink is reduced by 67^0C, its efficiency is doubled. The temperature of the source is given by

    1) 1200^0K   2) 2000^0K   3) 2500^0K   4) 1700^0K

125. The optimum intermediate pressure P_2 in a two stage air compressor having P_1 and P_3 as such that inlet and delivery pressure respectively is equal to

    1) $P_1 \times P_2$ 2) $P_1^2 \times P_2^2$ 3) $\sqrt{P_1 P_3}$ 4) $P_1 \times P_3$

126. Rocket engine for the combustion of its fuel uses

    1) surrounding air   2) its own oxygen   3) compressed atmospheric air   4) any of them

127. Second law of thermodynamic defines

    1) entropy   2) enthalpy   3) internal energy   4) all of them

128. If $ds = \dfrac{dQ}{T}$ during process, the process is

    1) reverisble   2) irriversible   3) impossible   4) any of these

129. During an irreversible cycle, the change in entropy of system is

    1) positive   2) negative   3) zero   4) none

130. 1 m^3 of methane needs Vm^3 of O_2 for complete combustion. Then the value of V is

    1) ½ m^3 2) 1 m^3 3) 2 m^3 4) 3 m^3

131. In micro motion study, the therblig is described by

    1) symbol   2) event   3) activities   4) symbol and colour

132. ABC analysis deals with

    1) analysis of process chart   2) flow of material

    3) controlling inventory costs   4) ordering schedules

133. The group incentive plan is associated with

    1) scanlon plan   2) Rowan plan   3) Halsey plan   4) Bedaux plan

134. Probability of statistical quality control is a

    1) $\pm 3\sigma$ confidence level, statistics are measured

    2) one machine producing several components in one shift

    3) several machines producing several machines

    4) one component is produced on several machines

135. The cost of Lubricating oil in a machine shop may be classified as

    1) direct material   2) machine hour method

    3) factory overhead cost   4) administrative overhead cost

136. Quality systems containing guide lines on technical, administrative and human factors effecting the quality of products and services are specified by

    1) ISO 9001   2) ISO 9003   3) ISO 9004   4) none of them

137. Type of organisation invented by Taylor

    1) line organisation   2) functional organisation

    3) line and functional organisation   4) matrix organisation

138. The ratio used to measure firms effectiveness in earning profit is

    1) current ratio   2) earnings per share   3) debt ratio   4) capital turn-over ratio

139. Determination of time that is required to perform each operation and also time necessary to perform entire series as routed is called

    1) routing   2) scheduling   3) planning   4) expediting

140. Point or level of inventory at which order for fresh supplies is placed is called

    1) re-order point   2) re-order level   3) max. level   4 min. level

141. Slip gauges is also called as

    1) Johannsen gauges   2) Ramson gauges   3) sleeping gauges   4) none

142. Telescope gauge is used to measure

    1) internal diameter of hole   2) external diameter of hole   3) both 1 and 2   4) none

143. Go and NOGO gauges used in inspection follows

    1) Taylor's principle   2) Abblle's principle

    3) minimum allowance   4) maximum allowance method

144. Which of the following is not provided on combination set

    1) centre head   2) protractor head   3) vernier scale   4) spirit level

145. One of the materials used for surface plate is

    1) granite   2) brass   3) stainless steel   4) wood

146. A V-block is ideally used for locating

    1) V-type objects   2) spherical objects   3) cylindrical objects   4) square type of objects

147. In ASA system, if the tool nomenclature is 8-6-5-5-10-15-2mm then the side rake angle will be

    1) 5^0 2) 6^0 3) 8^0 4) 10^0

148. Which type of chuck is used occesionally for gripping irregular shaped work pieces

    1) self centering chuck   2) four jaw independent chuck

    3) combination chuck   4) all of the above

149. The operation of finishing a drilled hole to the correct size is known as
    1) reaming   2) counter sinking   3) counter boring   4) spot facing

150. Maximum metal removal rate is high in
    1) abrasive jet machining   2) chemical milling
    3) electro beam machining   4) electro discharge machining

151. The instrument for NC machine is usually prepared by the following system
    1) numeric   2) alpha-numeric   3) binary numbers   4) binary code

152. The arbor of a milling machine is used to hold the
    1) work piece   2) cutting tool   3) mandrel   4) spindle

153. In FMS the machines are usually
    1) manually controlled 2) electrically controlled   3) numerically controlled   4) none

154. The resultant of two forces each equal to P/4 and acting at right angles is
    1) P/2   2) P/2√2   3) √2 P   4) P/√2

155. In an actual machine, the amount of friction present may be expressed in terms of effort. Additional effort is required to overcome this friction. The value of additional effort required is equal to (P^1=effort required by considering friction)
    1) $\dfrac{W}{V.R} P^1$ 2) $P^1 - \dfrac{W}{V.R}$ 3) $P^1 + \dfrac{W}{V.R}$ 4) $P^1 + \dfrac{V.R}{W}$

156. A fixed beam of length (l) carries a uniformly distributed load of W per unit length over the whole span. The deflection at the centre is equal to
    1) $\dfrac{wl^3}{48EI}$ 2) $\dfrac{wl^3}{96EI}$ 3) $\dfrac{wl^3}{192EI}$ 4) $\dfrac{wl^4}{384EI}$

157. The modulus of elasticity (E) and bulk modulus (K) are related by
    1) $K = \dfrac{mE}{3(m-2)}$ 2) $K = \dfrac{mE}{2(m+1)}$ 3) $K = \dfrac{3(m-2)}{mE}$ 4) $K = \dfrac{2(m+1)}{mE}$

158. In a western differential pulley block, the upper block has two pulleys of diameters 25 cm and 20 cm. A load of 100N is lifted by an effort of 20N, by this machine. The velocity ratio of this machine is
    1) 40   2) 30   3) 20   4) 10

159. The max B.M in a simply supported beam of span 5 m and with a point load of 80N acting at mid span is
    1) 400 N-m   2) 200 N-m   3) 100 N-m   4) 800 N-m

160. The deflection of a helical spring is directly proportional to
    1) cross-section   2) load applied   3) modulus of rigidity   4) spring material

161. Core sand needs which type of property
    1) collapsability   2) baked strength   3) permeability   4) all the above

162. Lifters serve the following purpose in foundry
    1) mending and finishing surfaces   2) cleaning and finishing of bottom of mould
    3) removing the pattern from the mould 4) removing loose sand particles

163. The type of core used in Semi-centrifugal casting is
    1) metalic   2) dry sand   3) hard sand   4) none

164. In metal arc welding the electrode is
    1) non-consumable   2) consumable   3) both   4) none of the above

165. In atomic hydrogen welding the arc produced between
    1) tungstum electrode and work   2) two tungsten electrodes
    3) carbon electrode and work   4) two carbon electrodes

166. Welding of high carbon steels by gas welding
    1) neutral flame is used   2) carburising flame is used
    3) oxydising flame is used   4) none of the above

167. Connecting rods of I.C engines are produced preferably by
    1) closed die forging   2) hand forging   3) casting   4) machining

168. Internal stresses are not developed during the following process
    1) cold working   2) hot working   3) both 1 and 2   4) none

169. Swage block is used for
    1) sizing   2) bending   3) squaring   4) all of these

170. Which of the following are used as tool materials
    1) tool steels   2) carbon steels   3) cemented carbides   4) all of the above

171. Gun metal contains
    1) copper = 80%, tin=15%, and zinc=5%   2) copper=70% and zinc=30%
    3) copper=88%, tin=10% and zinc=2%   4) copper=60% and zinc=40%

172. Eutectoid steels contain _____ percent carbon
    1) 0.2   2) 0.6   3) 0.8   4) 1.0

173. The purpose of annealing is to _____ the steel
    1) harden   2) soften   3) both 1 and 2   4) carburize

174. German silver contains
    1) 1% silver   2) 5% silver   3) 10% silver   4) no silver

175. In a V-belt drive the belt makes contact at
   1) bottom of pulley
   2) sides of the grooves of pulley
   3) sides of groove and bottom of pulleys
   4) every where
176. When two pulleys of different diameters are connected by means of a cross belt, then angle of contact on which pulley should be taken
   1) on large pulley
   2) on smaller pulley
   3) on any one pulley
   4) none
177. If the chain is having odd number of links the link used to connect the ends is known as
   1) inverted link
   2) offset
   3) bushed link
   4) roller
178. Bolt designed is based on
   1) effective diameter
   2) nominal diameter
   3) core diameter
   4) standard diameter

179. Summer field number is given by
   Where Z =absolute viscosity of the lubricant N=speed of the Journal in r.p.m
   d=diameter of journal, c=diameter clearance, p=bearing pressure
   1) $\left(\dfrac{ZN}{P}\right)\left(\dfrac{d}{c}\right)^2$
   2) $\left(\dfrac{ZP}{N}\right)\left(\dfrac{c}{d}\right)^2$
   3) both 1 and 2
   4) none
180. If T be the torque transmitted by the shaft and 'd' be the diameter of the shaft and 'l', 'b' and 't' be the length, width and thickness of the key respectively then the design for shear stress is
   1) $\dfrac{T}{2l}$
   2) $\dfrac{2T}{dlb}$
   3) $\dfrac{2T}{dlt}$
   4) $\dfrac{4T}{pdt}$
181. Bell crank levers used in railway signalling belong to this type of levers
   1) first order
   2) second order
   3) third order
   4) none
182. Buttons are generally used for
   1) vertical location
   2) horizontal locations
   3) oblique location
   4) none
183. In a multi disc clutch if n_1=number of plates on driving shaft, n_2=number of plates on driven shaft, then the number of effective surfaces 'n' given by
   1) $n = \dfrac{n_1 + n_2}{2}$
   2) $n = n_1 + n_2 + 1$
   3) $n = n_1 + n_2 - 1$
   4) $n = \dfrac{n_1 n_2}{n_1 + n_2}$
184. Cam and follower constitute a
   1) lower pair
   2) sliding pair
   3) higher pair
   4) closed pair
185. In all reaction turbines, maximum efficiency is obtained if
   1) the guide vane angle is 90^0
   2) the blade angle of the runners is 90^0
   3) the blade angle of the runners is 90^0 at the outlet
   4) the angle of the absolute velocity vector at the outlet is 90^0
186. The specific speed of a hydraulic pump is the speed a geometrically similar pump working against a unit head and
   1) delivering unit quantity of water
   2) consuming unit power
   3) having unit velocity of flow
   4) having unit radial velocity
187. Relief valve protects the following from being over loaded
   1) pump
   2) electric motor
   3) fluid lines
   4) all of the above
188. The symbol   represents
   1) pneumatic motor
   2) hydraulic motor and cylinder
   3) air cylinder
   4) manual shut off valve
189. The cross-sectional area of the jet is 1.863×10^{-3} and the velocity of the jet is 30 m/s. find the force exerted by the jet on the fixed vertical plate if the jet is normal to the plate
   1) 1.77 kN
   2) 1.67 kN
   3) 1.7 kN
   4) 1.6 kN
190. A Lungstrom turbine is
   1) impulse turbine
   2) reaction turbine
   3) outward radial flow turbine
   4) inward flow impulse reaction turbine
191. The device to convert solar energy into direct electric energy is
   1) fuel cell
   2) photo-voltaic cell
   3) generator
   4) solar pond
192. Smoke detector basically a circuit of
   1) resistance-capacitance circuit
   2) current-voltage circuit
   3) magnetic coils circuit
   4) piezo-electric circuit
193. In a nuclear power plant, slow moving neutrons as compared to fast moving neutrons are
   1) more effective
   2) less effective
   3) same effective
   4) none
194. Power plant giving least running cost of production of electrical power is
   1) gas turbine power plant
   2) hydro-electric power plant
   3) nuclear power plant
   4) steam power plant
195. When a point lies on H.P its front view lies
   1) above xy
   2) below xy
   3) on xy
   4) any where
196. When a sphere is cut by a section plane, the true shape of the section is
   1) parabola
   2) hyperbola
   3) circle
   4) ellipse

197. Type of nut used when frequent removal is necessitated
   1) cap nut   2) done nut   3) wing nut   4) flanged nut
198. In this method projections are parallel to each other but are inclined at 30^0 to plane of projection
   1) orthographic projection   2) isometric projection
   3) oblique projection   4) perspective projection
199. The difference between the maximum and minimum limits of size is called
   1) allowance   2) tolerance   3) clearance   4) interference
200. Given the dimension of an assembled part as $\text{Hole}_{44.515}^{44.500}$ $\text{shaft}_{43.957}^{43.975}$, then the maximum clearance is
   1) 0.525 mm   2) 0.558 mm   3) 0.540 mm   4) none