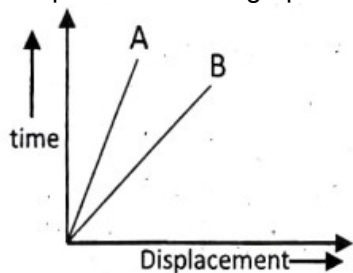


FIITJEE

**MUKHYAMANTRI VIGYAN PRATIBHA PARIKSHA
PART – II
SCHOLOASTIC APTITUDE TEST (SAT)
Held on: January 22, 2023
QUESTION PAPER**

101. If the distance between the two bodies is increased by 4%, then the force of attraction between them will
1. Decrease by 8%
 2. Increase by 8%
 3. Increase by 4%
 4. Decrease by 4%
102. The change in the momentum of a body in 0.01 sec. is 10kg m/s. The force acting on the body is–
1. 10N
 2. 0.1N
 3. 100N
 4. 1000N
103. If two bodies of the different masses m_1 and m_2 are dropped from different heights h_1 and h_2 . Then ratio of the time taken by the two to drop through these heights is–
1. $h_1 : h_2$
 2. $h_2 : h_1$
 3. $\sqrt{h_1} : \sqrt{h_2}$
 4. $h_1^2 : h_2^2$
104. In case of uniform circular motion which of the following quantity does not remain constant–
1. Speed
 2. Momentum
 3. Weight
 4. Mass
105. The distance travelled by a body is directly proportional to the square of the time taken. Its acceleration–
1. Increases
 2. Decreases
 3. Become zero
 4. Remains constant
106. A father has mass 60 kg and the mass of his son is 30 kg. The ratio of the inertia of the father to the inertia of the son is –
1. 1 : 1
 2. 1 : 2
 3. 2 : 1
 4. 1 : 3
107. Displacement covered by a body is directly proportional to the square of the time taken, the object is moving with
1. Uniform velocity
 2. Uniform acceleration
 3. Increasing acceleration
 4. Decreasing acceleration
108. A bullet penetrates a sand bag and loses 10% of its velocity. How many similar sand bags are needed to completely stop the bullet?
1. 4
 2. 10
 3. 6
 4. 20
109. SI unit of universal gravitational constant is
1. $\text{kg}^{-1} \text{m}^3 \text{s}^{-2}$
 2. $\text{kg} \text{m}^3 \text{s}^{-2}$
 3. $\text{kg}^{-1} \text{m}^{-3} \text{s}^{-2}$
 4. $\text{kg} \text{m}^{-3} \text{s}^{-2}$

110. In which case the pressure is maximum—
1. At the base of a bucket having water upto 20 cm height
 2. At the base of a bath tub having water upto 20 cm height
 3. At the base of a swimming pool having water upto 20 cm height
 4. Same pressure in all of the above cases
111. As per the given displacement time graph for body A and B, which body has higher velocity?



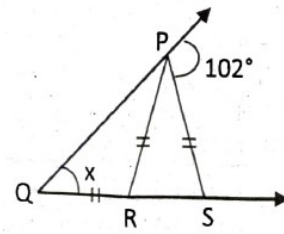
1. Body A
 2. Body B
 3. Both has same velocity
 4. None of the above
112. For how long a force of 20 N will act on a body of mass 10 kg, so that its velocity increases from 0 to 100 m/s?
1. 2 sec.
 2. 5 sec.
 3. 20 sec.
 4. 50 sec.
113. In which of the following situations the pressure of a person on the ground is minimum?
1. When person is lying on the ground
 2. When person is standing on one feet
 3. When person is standing on both the feets
 4. Pressure will be equal in all the above cases
114. What is tincture of iodine?
1. A solution of iodine in base
 2. A solution of iodine in alcohol
 3. A solution of iodine in acid
 4. Iodine powder
115. Which of the following will show “tyndall effect”?
- a. Milk
 - b. Starch solution
 - c. Copper sulphate solution
 - d. Blood
1. a and b
 2. a, b and d
 3. b, c and d
 4. All of these
116. Atomicity is also known as
1. Combining capacity of the element
 2. Number of atoms constituting a molecule
 3. Sum of number of electrons, protons and neutrons of an atom
 4. None of these
117. The valency of phosphorus is:
1. 3
 2. 5
 3. 2
 4. both 1 and 2

118. What is the number of electrons, protons, and neutrons in deuterium?
1. electron-1, proton-1, neutron-1
2. electron-1, proton-2, neutron-1
3. electron-1, proton-1, neutron-0
4. electron-2, proton-1, neutron-0
119. Which of the following is not the observation of Rutherford's model of atom?
1. There is a positively charged center in an atom called the nucleus
2. Most of the fast moving α -particles passed straight through the gold foil
3. Some of the α -particles were deflected by the foil by small angles
4. One out of very 12000 particles appeared to rebound
120. What is the symbol of nitride ion?
1. N^{3-}
2. NO_3^-
3. N^{2-}
4. N_3^-
121. 10^{22} atoms of an element 'x' are found to have a mass of 930 mg. What is the molar mass of the element 'x'?
1. 56.0 g
2. 56.0 mg
3. 57.17 g
4. 56.09 mg
122. A sample of ethane gas has the same mass as 1.5×10^{20} molecules of methane. How many C_2H_6 molecules does the sample of gas contain?
1. 8×10^{19}
2. 8×10^{20}
3. 0.8×10^{19}
4. 80×10^{17}
123. Which material is fall in the category of a "pure substance"?
1. Milk
2. Air
3. Dry ice
4. Smoke
124. What is the process of separation of a mixture of ammonium chloride and sodium chloride ($NH_4Cl + NaCl$)
1. Evaporation
2. Sublimation
3. Chromatography
4. Distillation
125. Chlorine occurs in nature in two isotopic forms with masses '35u' and '37u' in the ratio 3:1. What is the average atomic mass of chlorine atom?
1. 34.5 u
2. 36.5 u
3. 37 u
4. 35.5 u
126. Which of the following contains maximum number of molecules?
1. 1 g CO_2
2. 1 g N_2
3. 1 g H_2
4. 1 g CH_4
127. Waste disposal system of the cell are:
1. Ribosomes
2. Chromosome
3. Mitochondria
4. Lysosomes
128. Which of the following is in correct order?
1. Kingdom \rightarrow Class \rightarrow Family \rightarrow Species
2. Division \rightarrow Kingdom \rightarrow Family \rightarrow Genus
3. Order \rightarrow Division \rightarrow Family \rightarrow Genus
4. Kingdom \rightarrow Genus \rightarrow Species \rightarrow Order

129. Which of the following is/are true for Aerenchyma tissue?
- Present in aquatic plant
 - Made of parenchyma
 - Helps in floating
 - Provides hardness
- (i), (ii) and (iii)
 - (i), (ii) and (iv)
 - (i) and (ii)
 - (i), (ii), (iii) and (iv)
130. Mackerel, Tuna, Sardine and Bombay duck are:
- Marine birds
 - Freshwater fishes
 - Marine fishes
 - Marine insects
131. Notochord is present in tail of _____ larva.
- Petromyzon
 - Herdmania
 - Scoliodon
 - Exocoetus
132. Cutin is/are _____
- Waxy coating on epidermis of desert plant
 - Chemical substance with waterproof quality
 - Both 1 & 2
 - Helps in photosynthesis
133. 'Omnis cellule e cellula' was proposed by
- Albert Von Kolliker
 - Robert Hooke
 - Rudolf Virchow
 - R.H. Whittaker
134. Which of the following lack vascular tissue
- Cycas
 - Pinus
 - Fern
 - Riccia
135. Commercial cork is derivative of the
- Xylem
 - Vascular Cambium
 - Phellogen
 - Phloem
136. Which among the following is not an annelid?
- Nereis
 - Pheretima
 - Hirudinaria
 - Periplaneta
137. Carl woese divided Kingdom Monera into _____.
- Archaeobacteria and Mycorrhiza
 - Archaeobacteria and Eubacteria
 - Archaeobacteria and Protista
 - Bacteria and Mycoplasma
138. Red wood tree 'Sequoia' belongs to _____
- Gymnosperms
 - Angiosperms
 - Pteridophytes
 - Bryophytes
139. Which of the following is not a bacterial disease?
- Cholera
 - T.B. (Tuberculosis)
 - Anthrax
 - Influenza
140. Smog is a combination of _____.
- Smoke and light
 - Smoke and fog
 - Smoke and dust
 - Fog and light

141. If $\sqrt[3]{x} - \sqrt[3]{x-36} = 3$ then the value of $x - \frac{1}{x}$ is
 1. 27
 2. 36
 3. 54
 4. 72
142. If $\frac{1}{a-b} + \frac{1}{b-c} + \frac{1}{c-a} = 3\sqrt{10}$ then the value of $\left(\frac{1}{a-b}\right)^2 + \left(\frac{1}{b-c}\right)^2 + \left(\frac{1}{c-a}\right)^2 + 10$ is
 1. 40
 2. 90
 3. 100
 4. 110
143. If $x = 2 + \sqrt{3}$, then the value of $x^4 - 8x^3 + 18x^2 - 8x + 2$ is
 1. 0
 2. 1
 3. 2
 4. 3
144. If $l = 2021$, $m = 2022$ and $n = 2023$, then value of $l^3 + m^3 + n^3 - 3lmn$ is
 1. 18198
 2. 18189
 3. 18819
 4. 18918
145. If $a + b = 10$, $a^3 + b^3 = 370$, then the value of $a^2 + b^2$ is
 1. 180
 2. 100
 3. 58
 4. 29
146. If $A = 2^{\frac{1}{3}} + 2^{-\frac{1}{3}}$, then the value of $2A^3 - 6A + 3$ is
 1. 8
 2. 5
 3. -5
 4. -8
147. If $x + y + z = 3$, $x^2 + y^2 + z^2 = 6$ and $x^{-1} + y^{-1} + z^{-1} = 1$, where x , y and z are non zero, then the value of xyz is
 1. 1
 2. $\frac{1}{3}$
 3. $\frac{2}{3}$
 4. $\frac{3}{2}$
148. If a polygon has 54 diagonals, then number of sides in the polygon is
 1. 12
 2. 9
 3. 8
 4. 7
149. If $a = 0.\overline{2}$ and $b = 0.\overline{23}$ then the value of $a + b$ is
 1. $0.\overline{03}$
 2. $0.\overline{43}$
 3. $0.\overline{43}$
 4. $0.\overline{45}$
150. If the sum of the diagonals of a square is 100 cm, then the area is _____
 1. $100\sqrt{2}$ sq cm
 2. 125 sq. cm
 3. 1250 sq cm
 4. 5000 sq cm

151. In the given figure, $PR = PS = QR$, the value of x is
1. 32°
 2. 33°
 3. 34°
 4. 35°



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152. If volume of a cube is V cubic units, surface area is S square units and length of a diagonal is D units then

1. $6V = DS$
2. $6\sqrt{3}V = DS$
3. $S\sqrt{3} = VD$
4. $6D = VS$

153. A regular hexagon is inscribed in a circle of radius R , then its perimeter is

1. $3R$
2. $6R$
3. $6\sqrt{3}R$
4. $12R$

154. The unit digit of $12^{222} + 23^{333} + 34^{444}$ is

1. 3
2. 2
3. 4
4. 5

155. The value of n , for which the expression $x^4 + 4x^3 + nx^2 + 4x + 1$ becomes a perfect square is

1. 3
2. 4
3. 5
4. 6

156. Two trains of equal lengths are running on parallel lines in the same direction at the rate of 46 km/h and 36 km/h. The faster train passes the slower train in 36 seconds, the length of each train is

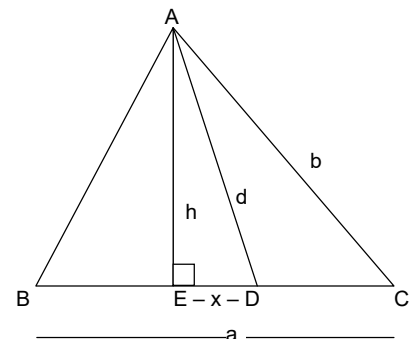
1. 50 m
2. 80 m
3. 72 m
4. 100 m

157. A man's salary is increased by 10%. In order to have his salary back to the original amount it must be reduced by $x\%$, then the value of x is

1. $11\frac{1}{9}\%$
2. $1\frac{11}{9}\%$
3. $1\frac{9}{11}\%$
4. $9\frac{1}{11}\%$

158. In the given figure $AE \perp BC$, D is mid point of BC , then x is equal to

1. $\frac{a^2 + b^2 + c^2 - d^2}{4}$
2. $\frac{b^2 - d^2 - \frac{a^2}{4}}{a}$
3. $\frac{h + d}{3}$
4. $\frac{c + d - h}{2}$



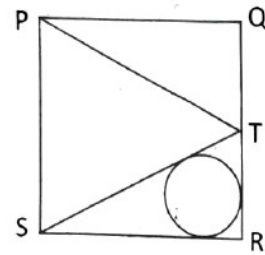
159. PQRS is a square of side 6 cm and T is the mid point of QR. The radius of circle inscribed in ΔTRS is

1. $\frac{3}{3-\sqrt{5}}$

2. $\frac{6}{3+\sqrt{5}}$

3. $\frac{2}{3+\sqrt{5}}$

4. $\frac{3+\sqrt{5}}{2}$



160. If $2^x = 3^y = 6^{-z}$ then $\frac{1}{x} + \frac{1}{y} + \frac{1}{z}$ is equal to

1. 0

2. 1

3. $\frac{3}{2}$

4. $-\frac{1}{2}$

161. What was “blandongdiensten” with reference to Dutch colonialism in Java?

1. Setting up of industries to create wagons.
2. Mechanism to create caste and ethnic divides.
3. Policy of introducing colonial laws for changing religion of tribals.
4. Technique of getting free labour and animal power from villages.

162. Who wrote the book “the sprit of the laws”?

1. John Locke
3. Montesquieu

2. Jean Jacques Rousseau
4. Rene Descartes

163. “Budenovka” was a Soviet.

1. Scarf
3. Boot

2. Hat
4. Gun

164. Jadidists were _____ in the Russian Empire

1. Mulslim reformers
3. Parsi reformers

2. Muslim educationist
4. German refugees

165. Which group of people did not join the Jacobin club

1. Artisan
3. Daily wages workers

2. Shop keepers
4. Men with property

166. Which of the following is not a feature of socialism?

1. Central economic planning
2. Equal distribution of income
3. Presence of market forces
4. More attention to collective social interest than personal gains.

167. With reference to Russian revolution of 1917 “April Theses” is associated with

1. karl Marx
 3. Stalin
2. Robert Owal
 4. Lenin

168. In post World War-I Germany, “November Criminals” were

1. Supporters of weimer republic
2. Prisoners of war of World War-I
3. Citizen who refused to join World War-I when asked to
4. Guilty politician who led Germany to the World War-I.

169. Which of the following body was set up to try and prosecute the Nazi were criminals at the end of World War-II?

1. International military tribunal
 3. Allied military tribunal
2. British military tribunal
 4. Allied judicial court

170. What was 'Dawes plan'?
1. A plan which imposed more fines on Germany.
 2. A plan which withdraw all punishment from Germany.
 3. A plan which reworked the terms of the separation to ease financial burden on the Germans.
 4. None of the above
171. With reference to India sarnas, devarakudu, kan and rai are names for.
1. Tribes of South India
 2. Sacred Groves
 3. Historical temples
 4. trade guilds
172. The tropic of cancer doesn't pass through in which of the followings?
1. Rajasthan
 2. Orissa
 3. Chhattisgarh
 4. Tripura
173. Geologically which of the following are the ancient land masses on the earth's surface?
1. Himalaya
 2. Peninsula Plateau
 3. The thar decent
 4. Andaman and Nicobar
174. A narrow gap in a mountain range providing access to other side is
1. Mound
 2. Pass
 3. Strait
 4. Valley
175. Mawsynram receives the highest average rainfall in the world. In which hills it is situated?
1. Garo hills
 2. Khasi hills
 3. Jaintia hills
 4. Mikir hills
176. In India the first census was held in the year .
1. 1871
 2. 1872
 3. 1877
 4. 1881
177. What is the name of world's largest reverine island formed by the Brahmaputra.
1. Majuli
 2. Dimapur
 3. Sundarban
 4. Lakta
178. Loktak lake is situated in which state?
1. Mizoram
 2. Manipur
 3. Assam
 4. Nagaland
179. Which of the following types of lakes is formed due to river action?
1. Salt water lakes
 2. Glacial lakes
 3. Oxbow lakes
 4. Lagoons
180. Which of the following is a component of upper air circulation?
1. North-easterlies
 2. Jet-stream
 3. South west monsoon
 4. Kal Baishaki
181. Which one of the following causes of rainfall during winters in north-western part of India?
1. Cyclonic depression
 2. Western depression
 3. Retreating monsoon
 4. South west monsoon
182. Rubber belongs to which types of given below vegetation.
1. Himalayan
 2. Tundra
 3. Tidal
 4. Tropical evergreen
183. When on election duty, under whose control does the government officers work.
1. Central government
 2. Election commission

3. District magistrate
4. District court
184. What is the foundation of any democracy?
1. Right to freedom
2. Rule of law
3. Right to vote
4. Fundamental rights
185. Which of the following terms is not included in the preamble to the Indian constitution?
1. Liberty
2. Equality
3. Secularism
4. Religion
186. Who appoints delimitation commission of India?
1. Prime Minister
2. President
3. Chief Election Commissioner
4. Chief Justice
187. For how long can the Rajya Sabha delay a money bill?
1. 1 month
2. 3 month
3. 15 days
4. 14 days
188. Which body acts as the guardian of Fundamental Rights.
1. President
2. Prime Minister
3. Supreme Court
4. Election Commission
189. In India, elections for of those bodies are held after every five year?
1. Rajya Sabha
2. Lok Sabha and Vidhan Sabha
3. Vidhan Parishad
4. Only Lok Sabha
190. The election commission of India is
1. An elected Body
2. Constitutional Body
3. Independent Body
4. 1 and 2
191. Who exercises all governmental powers?
1. President
2. Prime Minister
3. Chief Justice of Supreme Court
4. Chief Election Commission
192. Number of Lok Sabha constituencies in Uttar Pradesh is
1. 80
2. 82
3. 84
4. 90
193. When was the Constitution of India adopted?
1. 26 Nov, 1949
2. 26 Jan, 1949
3. 26 Jan, 1950
4. 26 Jan, 1950
194. Which of the following is most vulnerable to poverty as social group?
1. Schedule tribes households
2. Schedule castes households
3. Rural casual farm labour
4. Urban casual non-farm labour
195. Which revolution has increased the important of human capital?
1. Green Revolution
2. White Revolution
3. Information Technology Revolution
4. Blue Revolution
196. When a person in engaged in agriculture and does not find work during some months of the year, this type of unemployment is called_____.
1. Disguised unemployment
2. Seasonal unemployment
3. Cyclical unemployment
4. Structural unemployment

197. Which of the following collect data to estimate poverty line in India?
1. Mahatma Gandhi National Employment Guarantee Act (MGNREGA)
2. National Sample Survey Organisation (N.S.S.O)
3. International Labour Organisation (I. L. O)
4. World Health Organisation (W.H.O)
198. Which of the following activity does not belong to tertiary sector?
1. Banking
2. Telecommunications
3. Food processing
4. Tourism
199. Infant mortality rate refers to the death of infants under the age of ____
1. 5 years
2. 3 years
3. 2 years
4. 1 year
200. The pre-announced price of a crop by the government before the sowing season is called
1. Minimum support price
2. Issue price
3. Fair price
4. Market price

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