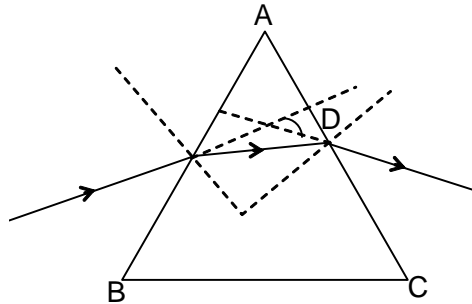# Uttar Pradesh

NATIONAL TALENT SEARCH EXAMINATION
(STAGE I)- 2019-2020(UP)
QUESTION PAPER (SAT)

PHYSICS

101. Unit of momentum is
(1) meter/second (2) Newton × meter (3) kg-meter/second (4) kg^{-1} meter second^{-1}

102. Which one of the following physical quantity is constant in simple harmonic motion?
(1) Restoring force (2) Kinetic energy (3) Potential energy (4) Total energy

103. A ray of light passes from glass $\left(\sim = \dfrac{3}{2} \right)$ to water $\left(\sim = \dfrac{4}{3} \right)$. The value of critical angle will be

(1) $\sin^{-1}\left(\dfrac{1}{2} \right)$ (2) $\sin^{-1}\left(\sqrt{\dfrac{8}{9}} \right)$ (3) $\sin^{-1}\left(\dfrac{8}{9} \right)$ (4) $\sin^{-1}\left(\dfrac{5}{7} \right)$ s

104. The value of acceleration due to gravity (g) on the earth will be maximum at
(1) surface (2) poles (3) equator (4) center

105. Which one of the following is an example of Biomass Energy source.
(1) Nuclear Energy (2) Sun energy (3) Gobar Gas (4) Wind energy

106. The refraction of light by a prism is shown in the following figure. Then Angle $\angle D$ is

(1) Angle of prism (2) Angle of refraction (3) Angle of emergent (4) Angle of deviation

107. The unit of power of a lens is dioptre. Then one dioptre (1 dioptre) is equal to
(1) 100 cm^{-1} (2) 1 meter^{-1} (3) 1 meter (4) 100 cm

108. If F be the focal length of a convex lens, then the nature of image of an object placed at a distance of 2F will be
(1) Real, inverted and same size (2) Virtual, erect and small
(3) Real, erect and same size (4) Virtual, inverted and same size

109. The power of a plane mirror is
(1) Zero (0) (2) + 1 (3) - 1 (4) Infinity (∞)

110. The resistance of a wire is 4Ω. If length of wire is made double and area of cross section is made half, then the new resistance will be
(1) 1Ω (2) 6Ω (3) 4Ω (4) 12Ω

111. Which one of the following alternating current is supplied in our house hold circuits?
(1) 110 V and 50 Hz (2) 220 V and 60 Hz (3) 110 V and 60 Hz (4) 220 V and 50 Hz

112. How much time will be taken by a 100 watt bulb to consume one unit of energy
(1) 1 hour (2) 10 hour (3) 100 hour (4) 1000 hour

113. Which one of the following is not a conventional source of energy?
(1) Coal (2) Petroleum (3) Hydro (4) Solar energy

CHEMISTRY

114. Which of the following element is more electro positive?
(1) Br (2) F (3) Cl (4) I

115. The name of metal which decomposes water in cold is
(1) Cu (2) Pt (3) Ag (4) Na

116. On heating camphor in a porcelain dish it got mixed in air without melting. This phenomenon is known as
(1) Condensation (2) Sublimation (3) Suspension (4) Evaporation

117. Ethylene and Sulpher monochloride on heating gives
(1) Chloroethane (2) Ethylene chloride (3) Mustard Gas (4) Ethylene glycol

118. The H^+ ion concentration of a solution is $2x \ 10^{-8}$ mol L^{-1}. The pH value of the solution is $\left(\log_{10} 2 = 0.3010\right)$
(1) 7.699 (2) 7.599 (3) 7.799 (4) 7.899

119. Which of the following elements exhibit variable valency?
(1) Normal element (2) Typical element (3) Transitional element (4) None of these

120. Which one is addition reaction?
(1) $Zn + H_2SO_4 \rightarrow ZnSO_4 + H_2$
(2) $2KBr + Cl_2 \rightarrow 2KCl + Br_2 2$
(3) $2H_2 + O_2 \rightarrow 2H_2O$
(4) $HgO \rightarrow 2Hg + O_2 2$

121. Which compound has both covalent as well as co-ordinate bond?
(1) H_2S (2) CO_2 (3) H_2O (4) SO_2

122. Complex salt is
(1) Zinc Sulphate (2) Sodium hydrogen Sulphate
(3) Iron ammonium Sulphate (4) Tetraamine Copper (II) Sulphate

123. Calamine is the ore of metal
(1) Copper (2) Aluminium (3) Zinc (4) Iron

124. Acid used in Lead Batteries is
(1) HCl (2) H_2SO_4 (3) HNO_3 (4) H_2CO_3

125. Which type of ores are concentrated by Froth floatation process?
(1) Oxide ores (2) Sulphide ores (3) Carbonate ores (4) Nitrate ores

126. Which of the following is amphoteric oxide?
(1) Na_2O (2) SO_2 (3) Al_2O_3 (4) CaO

BIOLOGY

127. In human body temperature control centre is
(1) Epithalamus　　(2) Hypothalamus　　(3) Thalamus　　(4) Medula oblongata

128. Which factor is responsible for Green House Effect?
(1) H_2O　　(2) CO　　(3) SO_2　　(4) CO_2

129. Which one of the following element is essential for synthesis of Thyroxin Hormones?
(1) Zinc　　(2) Iodine　　(3) Boron　　(4) Nitrogen

130. Smallest unit of classification is
(1) Species　　(2) Class　　(3) Order　　(4) Kingdom

131. Which of the following is not a part of the female reproductive system in human beings?
(1) Ovary　　(2) Uterus　　(3) Fallopian tube　　(4) Vas defereus

132. Most powerful digestive enzyme occurs in which cell organelles
(1) Mitochondria　　(2) Chloroplast　　(3) Golgibody　　(4) Lysosome

133. Causative agent of Kala azar (Black fever) is
(1) Bacteria　　(2) Virus　　(3) Protozoan　　(4) Fungi

134. Unisexual flowers occur in which of the following plants
(1) Mustard　　(2) Tomato　　(3) Pea　　(4) Watermelon

135. Biotic components of ecosystem are
(1) Producers　　(2) Consumers　　(3) Decomposers　　(4) All of above

136. Which one of the following substance is changed into amino acid after digestion
(1) Protein　　(2) Carbohydrate　　(3) Fat　　(4) Nucleic acid

137. Source of Penicillin antibiotic is
(1) Bacteria　　(2) Fungi　　(3) Virus　　(4) Algae

138. Testosteron Hormone is produced in
(1) Leyding cell　　(2) Kupffer cell　　(3) Granulosa cell　　(4) None of above

139. Number of sex chromosomes in human beings are
(1) 23　　(2) 46　　(3) 1　　(4) 2

140. Which of the following is known as the 'suicide bag' of the cell?
(1) Plastid　　(2) Mitochondria　　(3) Ribosome　　(4) Lysosome

SOCIAL STUDIES

141. The Harappan Civilization was discovered in the year
(1) 1910　　(2) 1921　　(3) 1935　　(4) 1942

142. The First Literary Source is
(1) Rigveda　　(2) Samveda　　(3) Yajurved　　(4) Atharvaved

143. During whose reign Megasthenes visited to India?
(1) Ashoka　　(2) Harsh Vardhan
(3) Chandragupta Maurya　　(4) Kumar Gupta

144. Which dynasty was ruling over North India at the time of Alexander's invasion?
(1) Nand   (2) Maurya   (3) Shunga   (4) Kanva

145. The name of Shershah in childhood was
(1) Hasan   (2) Farid   (3) Sher Khan   (4) None of the above

146. Which sultan of Delhi has also been called 'A mixture of opposites'?
(1) Balban   (2) Alauddin Khilji
(3) Mohammad Tughalaq   (4) Ibrahim Lodhi

147. The Emperor was called 'Kalandar'
(1) Babar   (2) Humayun   (3) Akbar   (4) Shahjahan

148. Famous ' Peacock Throne' was taken away out of India by
(1) Ahmad Shah Abdali   (2) Taimur
(3) Dalhousie   (4) Nadir Shah

149. 'Subsidiary Alliance' was implemented during period of
(1) Lord Cornwallis   (2) Lord Wellesley   (3) Sir John Shore   (4) Lord Auckland

150. Which one of the following writing is Not related to Mahatma Gandhi?
(1) My Experiments with truth   (2) Harijan
(3) Das Capital   (4) Hind Swaraj

151. Name the founder of 'Gadar Party'
(1) Lal Hardayal   (2) Subhash Chandra Bose
(3) Madam Cama   (4) Madan Lal Dhingra

152. Who among the following was not known as Moderate in the Indian National Movement?
(1) Bal Gangadhar Tilak   (2) Dadabhai Naoroji
(3) M.G. Ranade   (4) Gopal Krishna Gokhale

153. The Himalayan mountain range is an example of
(1) Block mountain   (2) Folding mountain   (3) Volcanic mountain   (4) Residual mountain

154. The forest of Ganga-Brahmputra-delta is known as
(1) Evergreen Forest   (2) Monsoon Forest   (3) Sundan Ban   (4) Deciduous Forest

155. How many districts are in Uttar Pradesh?
(1) 70   (2) 75   (3) 80   (4) 85

156. In which continent the Sahara desert is situated
(1) South America   (2) Africa   (3) Asia   (4) North America

157. The Blue Revolution is related with
(1) Food Grain   (2) Fish Production   (3) Milk Production   (4) Oil seed Production

158. The Oil and Natural Gas Commission (ONGC) was set up in
(1) 1956   (2) 1957   (3) 1959   (4) 1961

159. What is the name of Mid Latitude grass land in South America?
(1) Prairie   (2) Pampas   (3) Veld   (4) Steppes

160. Where Thar Desert is located?
(1) Pakistan   (2) China   (3) India   (4) United State of America

161. Where Gobind Sagar reservoir is situated?
(1) Uttar Pradesh (2) Haryana (3) Himanchal Pradesh (4) Punjab

162. When Tourism day is celebrated?
(1) 5 January (2) 10 December (3) 5 June (4) 27 September

163. According to Census 2011 the population of U.P. is
(1) 18.8 Crores (2) 19.98 Crores (3) 24.70 Crores (4) 30.00 Crores

164. I.M.F. was established by the recommendations of which Committee?
(1) Bretton woods committee (2) Goswami committee
(3) Narsingham committee (4) None of them

165. In which year India devalued its currency for the first time
(1) 1949 (2) 1966 (3) 1991 (4) None of them

166. The least Population State in India is
(1) Sikkim (2) Mizoram (3) Uttar Pradesh (4) Bihar

167. Where is situated the Headquarter of World Bank?
(1) Texas (2) Canada (3) Washington (4) Geneva

168. Who has first developed the theory of Rent?
(1) Recardo (2) Adam Smith (3) Marshall (4) None of them

169. Which Canal is largest in the world?
(1) Panama Canal (2) Ram Ganga Canal (3) Kra Canal (4) Suez Canal

170. 'Chipko Movement' was basically against
(1) Water Pollution (2) Noise Pollution (3) Soil Pollution (4) Deforestation

171. The President's Rule in a state means that the state is ruled by
(1) The President (2) The Chief Minister
(3) The Governor of The State (4) The Prime Minister State

172. In which year "The Right to Information Act" was passed
(1) 2001 (2) 2003 (3) 2005 (4) 2007

173. The Constitution of India primarily did not include in its preamble
(1) Sovereign (2) Socialist (3) Democratic (4) Republic

174. Article – 370 was associated with
(1) Uttar Pradesh (2) Nagaland (3) Jammu & Kashmir (4) Telangana

175. Who presided over the first meeting of the Indian Constituent Assembly?
(1) Sachchidanand Sinha (2) Dr. Rajendra Prasad
(3) Dr. B.R. Ambedkar (4) H.V. Kamath

176. Who appoints the Chairman of Union Public Service Commission?
(1) President (2) Prime Minister
(3) Chief Justice of India (4) Vice President

177. Which of the following appointments is not made by the President of India?
(1) Speaker of The Lok Sabha (2) Chief Justice of India
(3) Chief of Army (4) Prime Minister

178. The first female speaker of Lok Sabha is
(1) Vijay Laxmi Pandit
(2) Sucheta Kriplani
(3) Tarkeshwari Sinha
(4) Meira Kumar

179. The state in which Panchayati Raj was introduced first
(1) Uttar Pradesh
(2) Bihar
(3) Rajasthan
(4) Gujarat

180. Who was the first Muslim President in India?
(1) Fakhruddin Ali Ahmed
(2) Dr. Zakir Hussain
(3) Salman Khursheid
(4) Dr. Abdul Kalam Azad

MATHEMATICS

181. Which of the following statement is true?

(1) $\left(\dfrac{1}{2}\right)^{\frac{1}{2}} = \left(\dfrac{1}{3}\right)^{\frac{1}{3}}$
(2) $\left(\dfrac{1}{2}\right)^{\frac{1}{2}} < \left(\dfrac{1}{3}\right)^{\frac{1}{3}}$
(3) $\left(\dfrac{1}{2}\right)^{\frac{1}{2}} > \left(\dfrac{1}{3}\right)^{\frac{1}{3}}$
(4) $\left(\dfrac{1}{2}\right)^{\frac{1}{2}}$ and $\left(\dfrac{1}{3}\right)^{\frac{1}{3}}$

182. The mean of 15 observations written in some order is 50. If the mean of first eight observations and last eight observations are 48 and 53 respectively then the eighth observation is
(1) 35
(2) 80
(3) 72
(4) 58

183. The point on the y –axis, which is equidistant from points A(6, 5) and B(-4, 3) is
(1) (9, 0)
(2) (0, 9)
(3) (0, 4)
(4) (0, 3)

184. If $\left(\sec_\theta - \tan_\theta\right) = k,$ where $k \neq 0$ then the value of $\left(\sec_\theta + \tan_\theta\right)$ is

(1) $1 - \dfrac{1}{k}$
(2) $1 - k$
(3) $1 + k$
(4) $\dfrac{1}{k}$

185. The value of k for which the system of linear equation $x + 2y = 5$ and $3x + ky = 15$ has no solution, is

(1) 6
(2) - 6
(3) $\dfrac{3}{2}$
(4) $\dfrac{2}{3}$

186. If $x = 1$ is a common root of the equations $ax^2 + ax + 3 = 0$ and $x^2 + x + b = 0$ then the value of ab is
(1) 3
(2) 3.5
(3) 6
(4) - 3

187. If points (a, 0), (0, b) and (1, 1) are collinear, then the value of $\left(\dfrac{1}{a} + \dfrac{1}{b}\right)$ is

(1) 1
(2) 2
(3) 0
(4) - 1

188. If the centroid of the triangle formed by points (a, b), (b, c) and (c, a) is at the origin, then $a^3 + b^3 + c^3$ is equal to
(1) abc
(2) 0
(3) $a + b + c$
(4) $3abc$

189. The distance between the points $\left(\cos_\theta, \sin_\theta\right)$ and $\left(\sin_\theta, -\cos_\theta\right)$ is

(1) $\sqrt{3}$
(2) $\sqrt{2}$
(3) 2
(4) 1

190. If 35% of income of A is equal to 25% of income of B then the ratio of incomes of A and B is
(1) 4:3
(2) 5:7
(3) 7:5
(4) 4:3

191. If the ratio of volumes of two cubes is 27.64 then the ratio of their surface area is

(1) 3:4
(2) 4:3
(3) 9:16
(4) 16:9

192. If the base of a triangle is decrease in area of triangle is
(1) 20%   (2) 15%   (3) 22.5%   (4) 12.5%

193. The equation of the base of an equilateral triangle is $x + y - 2 = 0$. If one its vertex is (2, - 1) then area of triangle is

(1) $\dfrac{1}{2\sqrt{3}}$ sq. unit   (2) $\dfrac{\sqrt{3}}{12}$ sq. unit   (3) $\dfrac{2}{3}$ sq. unit   (4) $\dfrac{3\sqrt{3}}{4}$ sq. unit

194. The lengths of chords AB and AC of a circle are 6 cm and 8 cm respectively. If $\angle BAC = 90°$ then the radius of the circle is
(1) 2.5 cm   (2) 3 cm   (3) 4 cm   (4) 5 cm

195. If $\cos 43° = \dfrac{x}{\sqrt{x^2 + y^2}}$, then the value of $\tan 47°$ is

(1) $\dfrac{y}{x}$ (2) $\dfrac{y}{\sqrt{x^2 + y^2}}$ (3) $\dfrac{x}{y}$ (4) $\dfrac{x}{\sqrt{x^2 + y^2}}$

196. If the quadratic equations $2x^2 + 4x + (a + 5) = 0$ have equal roots and $(a + 4)x^2 + ax - 3b = 0$ have equal roots and $(a + 4)x^2 + ax - 3b = 0$ have distinct real roots then which of the following is true:

(1) $a = -3, b < \dfrac{3}{4}$ (2) $a = 3, b > \dfrac{3}{4}$ (3) $a = -3, b > \dfrac{3}{4}$ (4) $a = 3, b < \dfrac{3}{4}$

197. The value of $\tan 1° \tan 2° ..... \tan 89°$ is:

(1) 0   (2) 1   (3) $\dfrac{1}{\sqrt{3}}$ (4) not defined

198. The digit at the unit place in $(3157)^{2020}$ is
(1) 1   (2) 3   (3) 7   (4) 9

199. A metallic cuboid of dimension $9 cm \times 11 cm \times 12 cm$ is melted and recasted into spherical balls of diameter 0.3 cm. The number of balls will be
(1) 84000   (2) 10500   (3) 78000   (4) 86000

200. The length of tangent drawn from a point Q to a circle is 24 cm and distance from Q from the centre of circle is 25 cm. The radius of circle is
(1) 7 cm   (2) 12 cm   (3) 15 cm   (4) 24.5 cm