FIITJEE Chennai Centre
TAMILNADU NTSE Stage 1 (2019-20)

SAT EXAM

101.The sum of the exponents of prime factors in the prime factorization of 1771 is:
(1) 1 (2) 3 (3) 2 (4) 4

102. If t_n is the n^{th} term of an A.P. then the value of $t_{n+1} - t_{n-1}$ is:
(1) 2a (2) – 2a (3) 2d (4) – 2d

103. If $x + y = 3$, $x^2 + y^2 = 5$ then xy is:
(1) 5 (2) 3 (3) 2 (4) 1

104. The area of the triangle formed by the points (-2, 0) (0, -2) and (2, 0) is:
(1) 0 (2) 4 (3) 2 (4) – 4

105. The area of equilateral triangle is $25\sqrt{3}$ cm^2, then the perimeter is:
(1) 10 cm (2) 30 cm (3) $10\sqrt{3}$ cm (4) $10\sqrt{3}$ cm

106. If the ratio of the surface areas of two cubes is 16 : 36, then the ratio of their sides will be:
(1) 4 : 9 (2) 9 : 4 (3) 3 : 2 (4) 2 : 3

107. $\frac{1}{1+\sin\theta} + \frac{1}{1-\sin\theta} = ?$
(1) $\sec^2\theta$ (2) $2\sec^2\theta$ (3) $\text{cosec}^2\theta$ (4) $2\,\text{cosec}^2\theta$

108. Given that sin A = $\frac{1}{2}$ and cos B = $\frac{1}{\sqrt{2}}$ then the value of A + B is:
(1) 30° (2) 45° (3) 75° (4) 15°

109.If 5 $\tan\theta = 4$ then the value of $\frac{5\sin\theta - 4\cos\theta}{5\sin\theta + 4\cos\theta}$ is:
(1) $\frac{5}{4}$ (2) $\frac{4}{5}$ (3) 1 (4) 0

110. If cos (A - B) = $\frac{\sqrt{3}}{2}$ and sin (A + B) = 1 then the value of A and B is:
(1) 45° and 15° (2) 30° and 15° (3) 60° and 30° (4) None of these

111. Which statement is true?
(1) A triangle can have two right angles
(2) Each of the angles of a triangle can be less than 60°
(3) Each of the angles of a triangle can be greater than 60°
(4) Each of the angles of a triangle can be equal to 60°

112. If the diagonals of a rhombus are 18 cm and 24 cm. then its side is:
(1) 16 cm (2) 15 cm (3) 20 cm (4) 17 cm

113. Which of the following numbers will completely divide $4^{61} + 4^{62} + 4^{63} + 4^{64}$?

(1) 3 (2) 10 (3) 11 (4) 13

114. The diagonals of a rectangle is $\sqrt{41}$ cm and its area is 20 cm^2. The perimeter of a rectangle must be:
(1) 9 cm (2) 18 cm (3) 20 cm (4) 41 cm

115. The scientific notation of 108000000 km is:
(1) 1.08000000 km (2) 10.80×10^6 km (3) 1.08×10^6 km (4) 1.08×10^8 km

116. Cards are marked from 1 to 5 are placed in the box and mixed thoroughly, a card is drawn at random from the box. What is the probability of this card to be a multiple of 5?
(1) $\frac{1}{5}$ (2) 0 (3) $\frac{1}{25}$ (4) 1

117. The graph of the line x – y = 0 passes through the point.
(1) (2, 3) (2) (3, 4) (3) (5, 6) (4) (0, 0)

118. If (9x + 7), (2x + 9) are the factors of a quadratic polynomial, then the co-efficient of x is:
(1) 9 (2) 2 (3) 18 (4) 95

119. Simplify : $\left[5\left(8^{1/2}+27^{1/3}\right)^3\right]^{1/4}$
(1) 3 (2) 27 (3) 8 (4) 5

120. The numbers 2, 3, 4, 4, 2x + 1, 5,5, 6, 7 are written in ascending order. If the median is 5, then find x.
(1) 2 (2) 3 (3) 4 (4) 5

121.Lactometer is instrument which works on the principle of?
(1) Law of Floatation (2) Newton's Law (3) Ohm's Law (4) Avogadro's Law

122. A 250 kg bike is ridden by a circus man at a speed of 20 m/sec. in a circular path of diameter 100 m. Calculate its acceleration.
(1) 4 m /sec^2 (2) 6 m/sec^2 (3) 8 m /sec^2 (4) 9 m /sec^2

123. Find the odd one out:
(1) 30.8×10^{15} m (2) 9.46×10^{15} m (3) 1.496×10^{11} m (4) 3.08×10^{16} m

124. The spectacular glow of diamond is due to:
(1) Refraction (2) Reflection
(3) Total Internal Reflection (4) Scattering of Light

125. A song was heard by a person who is at certain distance from a temple wherein the frequency of the sound is 3 kHz and the wavelength 20 cm. If the sound reaches the person in 5 seconds find the distance travelled by the sound.
(1) 5 km (2) 2 km (3) 4 km (4) 3 km

126. If a current of 5 A flows through the heater and the amount of heat produced is 54000 J in 6 minutes, then find the resistance of the electric heater.
(1) 6 Ω (2) 5 Ω (3) 7 Ω (4) 4 Ω

127. Match the following:

(a)	Formation of real and inverted image of objects	(i)	Pupil

(b)	Controls the amount of light entering the pupil	(ii)	Cornea
(c)	Pathway of the light to retina	(iii)	Iris
(d)	Refracts or bends the light onto the lens	(iv)	Retina

(1) (a) – (iv), (b) – (iii), (c) – (i), (d) – (ii)
(2) (a) – (iv), (b) – (iii), (c) – (ii), (d) – (i)
(3) (a) – (iii), (b) – (iv), (c) – (ii), (d) – (iv)
(4) (a) – (ii), (b) – (i), (c) – (iii), (d) – (iv)

128. Pick out the correct pair/pairs:

(a)	Radiation -	Heat is transferred in the form of waves. It can occur even in vacuum.
(b)	Conduction -	Transfer of heat in fluids. It doesn't take place in vacuum
(c)	Convection -	Transfer of heat in solids. It can occur in vacuum.

(1) (a) only (2) (b) and (c) only (3) (a) and (c) only (4) (c) only

129. Correct the given statement.
The spectral lines having frequency equal to the incident ray frequency is called 'Raman Lines'.
(1) Rayleigh Lines (2) Stokes Lines (3) Anti Stokes Lines (4) Tyndall Effect

130. The only moon in the solar system that moves in the opposite direction to the direction in which its planet spins?
(1) Sputnik (2) Titan (3) Ganymede (4) Triton

131. The reason for using red light in traffic signals to stop vehicles.
(1) Red light has shorter wavelength
(2) Red light has longer wavelength
(3) Red light is very bright and attractive
(4) Red light has highest angle of refraction

132. Which one of the following is not related to Joule's Law of Heating?
(1) $H = I^2Rt$ (2) $H = VIt$ (3) $H = VIRt^2$ (4) $H = VQ$

133. Convert 1 Kilowatt into Horespower:
(1) 1.43 HP (2) 746000 HP (3) 1.34 HP (4) 0.746 HP

134. Pick the odd one out:
(1) CCl_4 (2) NaCl (3) $CuCl_2$ (4) $CaCl_2$

135. Match the following:

(a)	Tydall Effect	(i)	Separates blood cells from blood samples
(b)	Brownian Movement	(ii)	Separates different coloured dyes
(c)	Centrifugation	(iii)	Colloidal particles moves in zig – zag direction
(d)	Paper Chromatography	(iv)	Not observed in true solution

(1) (a) – (iv), (b) – (iii), (c) – (i), (d) – (ii)
(2) (a) – (iii), (b) – (iv), (c) – (i), (d) – (ii)
(3) (a) – (iii), (b) – (i), (c) – (iv), (d) – (ii)
(4) (a) – (i), (b) – (iii), (c) – (ii), (d) – (iv)

136. The Law of Multiple Proportion was proposed by:
(1) John Dalton (2) Jeremias Ritcher (3) Neil Bohr (4) Rutherford

137. Assertion (A): Bronze is an alloy.
Reason (R): Alloy bears the characteristics of both metal and non – metal
(1) Both (A) and (R) are correct
(2) Both (A) and (R) are wrong

(3) (A) is correct but (R) doesn't explain (A) (4) (A) is correct and (R) explains (A).

138. Find the odd one out:
(1) Galvanization (2) Bessemerisation (3) Electroplating (4) Anodizing

139. $2\ PbO + C \rightarrow 2\,Pb + CO_2$ is an example of _____ reaction.
(1) Reduction (2) Redox (3) Oxidation (4) Decomposition

140. The ratio of conc. HCl and conc. HNO_3 in 'King's Water' is:
(1) 4 : 1 (2) 1 : 4 (3) 3 : 1 (4) 1 : 3

141. Find the incorrect pair:

(1)	Ammonium Hydroxide -	Removes grease stains from clothes
(2)	Calcium Hydroxide -	White washing of building
(3)	Sodium Hydroxide -	Manufacture of soap
(4)	Magnesium Hydroxide -	Manufacture of fertilizers

142. Which one of the following resin codes in plastic items are unsafe?
(1) 1, 2, 3 (2) 3, 6, 7 (3) 3, 4, 5 (4) 5, 6, 7

143. Which among the following is highly toxic and inflammable gas?
(1) CO (2) CO_2 (3) CS_2 (4) CaC_2

144. The reason for unstability of nano particles:
(1) Hydrolysis (2) Hydration (3) Combustion (4) Reduction

145. Occult fingerprints are made visible by the use of _____ which turns purple.
(1) Cyano acrylate (2) Potassium di – chromate
(3) Nin – hydrin (4) Silver nitrate

146. Pick out the correct formula for blue vitriol:
(1) $CuSO_4.\ 5H_2O$ (2) $CuSO_4.\ 7H_2O$ (3) $CuSO_4.\ 6H_2O$ (4) $CuSO_4.\ 9H_2O$

147. When exposed to sunlight, parenchyma cells may develop chloroplasts and are known as_____.
(1) Collenchyma (2) Chromoplast (3) Chlorenchyma (4) Aerenchyma

148. Give the correct equation of photosynthesis:
(1) $Na_2CO_3 + 2HCl \xrightarrow[\text{Chlorophyll}]{\text{Photosynthesis}} 2NaCl + H_2O + CO_2 \uparrow$ (2) $6CO_2 + 6H_2O \xrightarrow[\text{Chlorophyll}]{\text{Photosynthesis}} C_6H_{12}O_6 + 6O_2 \uparrow$
(3) $3H_2O_2 + 6CO_2 \xrightarrow[\text{Chlorophyll}]{\text{Photosynthesis}} C_6H_6O_6 + 6O_2 \uparrow$ (4) $H^+ + H_2O \rightarrow H_3O^+$

149. In some bacteria, outside the cell wall, there is an additional slimy protective layer called _____ made up of _____.
(1) Epiderm, monosaccharides (2) DNA, mitochondria
(3) Capsule, polysaccharides (4) Ribosomes, protein

150. Which is/are wrong about the adaptation of hydrophytes?
(1) Air chambers provide mechanical support to plant
(2) Floating leaves have short leaf stalk
(3) Roots are poorly developed
(4) Submerged leaves are broad and big

151. 'AYUSH' refers to the systems of medicines of:
(1) Unani (2) Siddha (3) Ayurveda (4) All of the above

152. Father of Plant Anatomy:
(1) Nehemiah Grew (2) Robin Hill (3) Sachs (4) Kolliker

153. Assertion (A) : The opening and closing of the stomata is due to change in turgidity of the guard cell.
Reason (R) : Evaporation of water in plants through stomata in leaves is called Transpiration.
(1) (A) is correct and (R) is incorrect
(2) (A) is incorrect and (R) is correct
(3) (A) is correct but (R) doesn't explain (A)
(4) (A) is correct and (R) explains (A)

154. When leech attaches itself to the body of the host, continuous supply of blood is maintained by the presence of _____ in its salivary gland.
(1) botryoidal tissue
(2) Parapodia
(3) Hirudin
(4) Setae

155. Which acts as the 'Pacemaker of the Heart'?
(1) Superior Venacava
(2) Sino Atrial Node
(3) Aoric Arch
(4) Inferior Venacava

156. Pick out the incorrect pair:
(1) Rh Factor – Lansteiner and Wiener
(2) Circulation of Blood – Dacastello and Steini
(3) AB Blood Group – William Harvey
(4) Purkinje Fibre – Wilhelm His

157. Find the odd man out:
(1) Jejunum
(2) Ileum
(3) Caccum
(4) Villi

158. Functions of areolar connective tissues:
(1) Joins skin to muscle
(2) Fills space inside organs.
(3) Provides shape to body and protects soft tissues and organs.
(4) Helps to repair tissues after injury

159. Match the following:

(a)	Trypsin	(i)	Converts fat to smaller droplets
(b)	Amylase	(ii)	Acts on protein
(c)	Bile	(iii)	Digests fat
(d)	Lipase	(iv)	Breakdown starch to maltose

(1) (a) – (ii), (b) – (i), (c) – (iii), (d) – (iv)
(2) (a) – (iii), (b) - (ii), (c) – (i), (d) – (iv)
(3) (a) – (ii), (b) – (iv), (c) – (i), (d) – (iii)
(4) (a) – (iv), (b) – (iii), (c) – (ii), (d) – (i)

160. Which among the following has three chambered heart?
(1) Tiger
(2) Rat
(3) Frog
(4) Fish

161. 'Never was so much owed by so many to so few' was the saying of:
(1) Mussolini
(2) Hitler
(3) Wiston Churchill
(4) Woodrow Wilson

162. Match the following:

(a)	Chinese civilization	(i)	Hammurabi's Law Code
(b)	Mesopotamian civilization	(ii)	Invention of Gun Powder
(c)	Indus Valley civilization	(iii)	The Great Sphinx
(d)	Egyptian civilization	(iv)	Developed the system of weights and measures

(1) (a) – (ii), (b) – (i), (c) – (iv), (d) – (iii)
(2) (a) – (ii), b – (iii), (c) – (iv), (d) – (i)
(3) (a) – (iv), (b) – (iii), (c) – (i), (d) – (ii)
(4) (a) – (i), b – (ii), (c) – (iii), (d) – (iv)

163. Find the odd one out:
(1) Kurinjipattu
(2) Pattinapalai
(3) Aingurunuru
(4) Nedunal Vadai

164. Identify the two cities in India which started declining power of the European Companies:
(1) Madras and Bombay
(2) Calcutta and Madras
(3) Surat and Hoogly
(4) Hoogly and Madras

165. Utopia, a satire on political evil was written by:
(1) Sir Thomas More (2) Cervantes (3) Erasmus (4) Machiavelli

166. Assertion (A): Men disguished as Native American boarded the tea overboard which was hailed as 'Boston Tea Party'.
Reason (R) This incident led to the compromise between England and rebellious colonies.
(1) Both (A) and (R) are correct (2) Both (A) and (R) are incorrect
(3) (A) is correct but (R) does not explain (A) (4) (A) is correct and (R) explains (A)

167. Arrange the following events in the chronological order:
(a) Great Depression (b) Battle of Marne (c) Fascist Party (d) Battle of Jutland
(1) (a), (c), (b), (d) (2) (b), (d), (c), (a) (3) (d), (a), (c), (b) (4) (a), (d), (b), (c)

168. The founder of Widow Remarriage Association:
(1) M.G. Ranade (2) Devendranath Tagore
(3) Jyotiba Phule (4) Ayyankali

169. The number of member countries in UNO as in August 2019:
(1) 190 (2) 194 (3) 192 (4) 193

170. The British Engineer who diverted the flow of Periyar River towards East and built a dam in Tamil Nadu:
(1) Colonel Penny Cuick (2) Arthur Cotton (3) Robert Clive (4) Leophold II

171. Find the incorrect statement:
(1) Prakrit was the language spoken by the people during Mauryan Period.
(2) Erythrean Sea refers to the water around the Red Sea.
(3) The Cheras wore garlands made from the flowers of neem tree.
(4) Nalli, Ai, Kari and Pegan were Velirs.

172. The difference in Local time between Gujarat and Arunachal Pradesh:
(1) 1 hour 57 minutes 12 seconds (2) 1 hour 56 minutes 13 seconds
(3) 1 hour 56 minutes 13 seconds (4) 1 hour 55 minutes 10 seconds

173. Laccadive, Minicoy and Amindivi was renamed as 'Lakshadweep Island' in the year _____.
(1) 1983 (2) 1973 (3) 1993 (4) 1975

174. Pick the odd man out:
(1) Wulur Lake (2) Dal lake (3) Nainital Lake (4) Chilka Lake

175. In India, bauxite deposits are abundantly found in:
(1) Rajasthan (2) Odisha (3) Jammu and Kashmir (4) Andhra Pradesh

176. The company which provides Helicopter services to Oil and Natural Gas Corporation:
(1) Indian Airlines (2) Air India (3) Pawan Hans (4) Vayu doot

177. Pick out the odd one out:
(1) Almora (2) Shiwaliks (3) Ranikhet (4) Chamba

178. Match the following:

	Rivers		**Origin**
(a)	Tapti	(i)	Amarkantak
(b)	Narmada	(ii)	Sihawa
(c)	Godavari	(iii)	Multai
(d)	Mahanadi	(iv)	Nasik

(1) (a) – (i), (b) – (iii), (c) – (iv), (d) – (ii) (2) (a) – (iii), b – (i), (c) – (iv), (d) – (ii)
(3) (a) – (iv), (b) – (ii), (c) – (iii), (d) – (i) (4) (a) – (ii), b – (i), (c) – (iii), (d) – (iv)

179. Statement (I) : 75% of Indian rainfall is received from South – West monsoon.
Statement (II): Tamil Nadu which is located in the leeward side receives abundant rainfall.
(1) Statement (I) and (II) are correct
(2) Statement (I) and (II) are incorrect
(3) Statement (I) is correct and (II) is incorrect
(4) Statement (I) is incorrect and (II) is correct

180. _____are long furrows which was formed the joints of limestone rocks are corrugated by groundwater.
(1) Sink holes (2) Caverns (3) Stalactites (4) Lappies

181. Which among the following statement/ statements is/are correct?
(a) Troposphere is called 'Weather making layer'.
(b) Exosphere is characterized by Aurora Australis and Aurora Borealis.
(c) Thermosphere is called Ozonosphere.
(d) Stratosphere is referred as Homosphere/Heterosphere.
(1) (a) and (b) only (2) (c) and (d) only (3) (a) only (4) (a), (b) and (c) only

182. The significance of 'The Grand Banks' of New Foundland:
(1) Mining activites (2) Oil drilling (3) Fishing ground (4) Mineral fuels

183. _____has been described as the 'Key to the Constitution'.
(1) Fundamental Rights (2) Preamble
(3) Directive Principles of State Policy (4) Emergency Provision

184. Which among the statements related to the qualification for the election as President is/are incorrect?
(a) He should be a citizen of India.
(b) He must have attained the age of twenty five years.
(c) He must not hold any office of profit
(d) He must be a member of Parliament or State Legislature.
(1) (b) only (2) (a) and (c) only (3) (b) and (d) only (4) (a), (c) and (d) only

185. Who was India's 12th President?
(1) Dr. A.P.J Abdul kalam (2) Mrs. Pratibha Patil
(3) Dr. Pranab Mukherjee (4) Dr. K.R. Narayanan

186. Who is appointed according to Article 216?
(1) Chief Justice of High Court (2) Chief Justice of India
(3) President (4) Prime Minister

187. Rule 49 – O describes:
(1) Transparency of the election proceedings.
(2) Conduct of free and fair election
(3) Auditing procedure of the expenditure incurred by the contesting party.
(4) Not willing to elect any candidate

188._____ is exempted from RTI Act:
(1) Education Department (2) Intelligence Bureau
(3) Municipal Corporation (4) Village Panchayat

189. The new Panchayat Raj came into being in Tamil Nadu:
(1) 1993 (2) 1994 (3) 1995 (4) 1992

190. Pick the odd man out:
(1) Aruna Roy (2) Arvind Kejrival (3) Mithali Raj (4) Nikil Dev

191. The first chairman of National Human Rights Commission:
(1) Justice Fathima Bee (2) Justice H.L. Dattu (3) Justice J.S. Verma (4) Justice Ranganath Misra

192. Which writ upholds the fundamental rights of the citizen?
(1) Certiorari (2) Mandamus (3) Quo – warranto (4) Prohibition

193. POCSO Act was passed in the year:
(1) 2012 (2) 2009 (3) 2010 (4) 2011

194. Match the following:

(a)	Net National Product	(i)	GDP – Deprecitation
(b)	Gross Domestic Product	(ii)	GNP – Deprecitation
(c)	Net Domestic Product	(iii)	GMP = C + I + G + (X - M) + NFIA
(d)	Gross National Product	(iv)	GDP = C + I + G + (X - M)

(1) (a) – (i), (b) – (iii), (c) – (iv), (d) – (ii) (2) (a) – (ii), b – (iv), (c) – (i), (d) – (iii)
(3) (a) – (iii), (b) – (ii), (c) – (iv), (d) – (i) (4) (a) – (iv), b – (i), (c) – (ii), (d) – (iii)

195. Pick the odd one out:
(1) Iron (2) Wood (3) Coal (4) Glass

196. The author of the book “An Uncertain Glory”:
(1) Jean Bodin (2) Samuelson (3) Adam Smith (4) Amartya Sen

197. The leading Solar power producing state in India:
(1) Telangana (2) Karnataka (3) Tamil Nadu (4) Kerala

198. The water consumed in production process of an agricultural and industrial product:
(1) Virtual Water (2) Rain Water (3) Hard Water (4) Soft Water

199. An index used to measure the real development in an economy:
(1) GDP (2) HDI (3) IIP (4) CPI

200. The Noble Prize Winner in Economics in 2018
(1) Amartya Sen (2) Richard Thaler
(3) William D. Nordhaus and Paul M. Romer (4) Oliver Hart and Bengt Holmstorm