SCHOLASTIC APTITUDE TEST

Part – II

(FOR Students of Class X)

Time : 90 Minutes **Max. Marks : 100**

Instructions to Candidates

Read the following instructions carefully before you open the question booklet.

1. Answers are to be given on the same OMR Answer Sheet provided for Part – I.
2. There are **100** questions in this test. All are compulsory.
3. The question numbers 101 – 120 belong to Mathematics, 121 – 160 pertain to Science and 161 – 200 are social science subjects.
4. Choose the correct answer from the options given for each question and darken the corresponding circle with black ball point pen in the OMR answer Sheet.
5. Since the time allotted for this Question Paper is very limited you should make the best use of it by not spending too much time on any one question.
6. If you do not know the answer to any question, do not waste time on it and pass on to the next one. If time permits, you can come back to the questions, which you have left in the first instance and attempt them.
7. Rough work can be done anywhere in the Question Booklet but **not** on the OMR Sheet/loose paper.
8. Every correct answer will be awarded one mark.
9. Please return the **OMR Answer Sheet only to the invigilator after completion of the test. You can retain the Question Booklets.**
10. English version of the Question paper will be considered as final in case of any dispute arising out of variation in translated version.
11. Quote your seven digit Roll number without fail for any future correspondence.

PLEASE TURN OVER THE PAGE AND START ANSWERING.

Name of the Candidate : ……..

Enrollment Number :…….

MATHEMATICS

101. When $10x^2 + x - 23$ is divided by $(2x + 3)$, the reminder is:
(A) 1 (B) -2 (C) 2 (D) 0

102. If α and β are the zeros of the polynomial $25x^2 - 16$, then $\alpha^2 + \beta^2$ is:
(A) $\frac{32}{25}$ (B) $\frac{25}{32}$ (C) $\frac{25}{16}$ (D) $\frac{16}{25}$

103. The sum of $\frac{a^3}{b-a}$ and $\frac{b^3}{a-b}$ is :
(A) $a^2 + ab + b^2$ (B) $-a^2 - ab - b^2$ (C) $a^2 - ab + b^2$ (D) $a^3 - b^3$

104. Sum of the digits of two digit number is 9. The number obtained by interchanging the digits is 18 more than twice the original number. The original number is:
(A) 72 (B) 27 (C) 36 (D) 63

105. Which of the following are irrational numbers?
(i) $\sqrt{2+\sqrt{3}}$ (ii) $\sqrt{4+\sqrt{25}}$ (iii) $\sqrt[3]{5+\sqrt{7}}$ (iv) $\sqrt{6+\sqrt[3]{8}}$
(A) (i), (ii) (B) (iii), (iv) (C) (i), (iii) (D) (iv), (iv)

106. For which value, point A(a, b) lies in the quadrant III:
(A) $a > 0, b < 0$ (B) $a < 0, b < 0$ (C) $a > 0, b > 0$ (D) $a < 0, b > 0$

107. If the LCM of 12 and 42 is $(10m + 4)$ then the value of 'm' is:
(A) 50 (B) 8 (C) $\frac{1}{5}$ (D) 1

108. If the perimeter of protractor is 72 cm, then it's radius is $\left(\text{take } \pi = \frac{22}{7}\right)$:
(A) 7 cm (B) 21 cm (C) 14 cm (D) 3.5 cm

109. The degree of the polynomial $(x + 1)(x^2 - x - x^4 + 1)$ is:
(A) 2 (B) 3 (C) 4 (D) 5

110. Two right circular cones have same radii. Ratio of their slant height is 4: 3, then the ratio of their curved surface areas is:
(A) 16: 9 (B) 2: 3 (C) 4: 3 (D) 3: 4

111. AB and CD are two chords of a circle which intersect each other externally at p. if AB = 4 cm, BP = 5 cm, PD = 3 cm, then the length of CD is:
(A) 10 cm (B) 12 cm (C) 8 cm (D) 11 cm

112. The radii of two concentric circles are 7 cm and 14 cm are respectively. The area between the two sectors of the circles whose central angle 60° is:
(A) 154 sq. cm (B) 77 sq. cm (C) 308 sq. cm (D) 98 sq. cm

113. Arithmetic mean of 20 observations is 15. if each observation is multiplied by 3^2 then the arithmetic mean of them is:
(A) 10 (B) 30 (C) 45 (D) 15

114. There are 6 defective items in a sample of 20 items. One items is drawn at random. The probability that it is a non – defective item is:

(A) $\frac{7}{10}$ (B) 0 (C) $\frac{3}{10}$ (D) $\frac{2}{3}$

115. Segment of a quadrant of a circle has area equal to:

(A) $\frac{r^2}{2}\left(\frac{\pi}{2}-1\right)$ sq. units (B) $\left(\frac{\pi}{4}-1\right)^2$ sq. units (C) $\left(1-\frac{\pi}{2}\right)\frac{r^2}{2}$ sq. units (D) $\left(\frac{\pi}{4}r^2-1\right)$ sq. units

116. $\sqrt{1-\sin^2 A}\cdot\sqrt{\sec^2 A-1}\sqrt{\sqrt{1+\cot^2 A}}$

(A) 0 (B) 2 (C) 1 (D) -2

117. If $5x = \operatorname{cosec}\theta$ and $\frac{5}{x} = \cot\theta$ then $5\left(x^2-\frac{1}{x^2}\right) =$

(A) 25 (B) 1 (C) $\frac{1}{5}$ (D) -5

118. If $x = a\cos\theta$, $y = \sin\theta$, then $x^2 + y^2 =$

(A) 1 (B) a (C) a^2 (D) $a^2 + b^2$

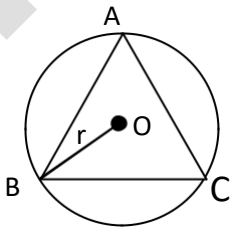
119. If the diagonals of a rhombus are 30 cm and 40 cm, then the length of side of rhombus is:

(A) 20 cm (B) 22 cm (C) 25 cm (D) 45 cm

120. Equilateral triangle ABC is inscribed in a circle. If side of the triangle = 24 cm, then the radius is

(A) $6\sqrt{3}$ cm (B) $12\sqrt{3}$ cm

(C) $8\sqrt{3}$ cm (D) 6cm



SCIENCE

121. Two cars A and B accelerate in the ratio of 2: 3 respectively. If they both accelerate for equal time, the ratio of their change in velocity is:

(A) 2: 3 (B) 3: 2 (C) 1:1 (D) 1: 2

122. Two cars X and Y accelerate at the rate of 2 m/ s^2 and 3 m/s^2 respectively from rest. The ratio of time taken by the cars X and Y is 4: 5. In that given ratio of time interval if the distance travelled by car X is 100 km then the distance travelled by car Y is:

(A) $\frac{1875}{8}$ km (B) $\frac{375}{2}$ km (C) $\frac{1875}{4}$ km (D) $\frac{375}{4}$ km

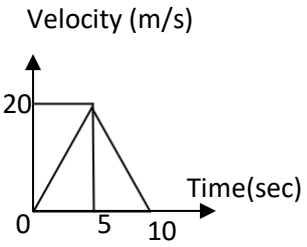
123. A car driver travelling with a uniform velocity of 2m/s notices a railway level crossing at a distance of 435 m from him. And also he notices that it is going to be closed in 10 seconds. First he decides to cross the level crossing hence he accelerates his car at the rate of 2 ms^{-2} for five seconds. Then he decides to stop the car. So he applies brake and stops the car exactly before the level crossing (without following the timer). Calculate the minimum rate at which he has to decelerate the car so that he stops the car exactly before the level crossing

(A) 1.8m/s^2 (B) 18 m/s^2 (C) 0.18 m/s^2 (D) 3.6 m/s^2

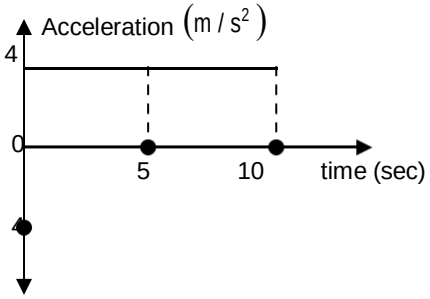
124. Two files A and B revolve around a light in concentric circular path. The radius of circular path of A is twice of B. A travels with a uniform linear speed of 4 m/s while B travels with a uniform linear speed of 3 m/s. when A completes tree full rounds then B would have completed:

(A) 4 rounds (B) 3 rounds (C) 2 rounds (D) 1 round

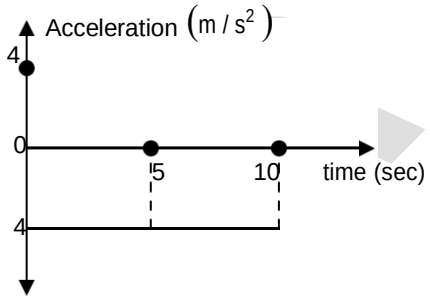
125. If the under given velocity (Vs), time graph can be changed into acceleration (Vs) time graph, then which one of the given options represents acceleration (Vs) time graph:



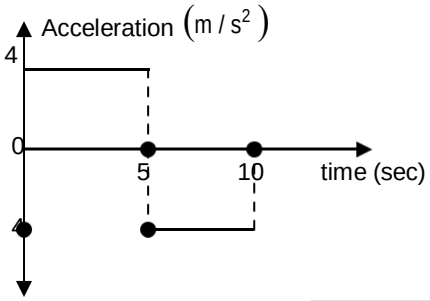
(A)



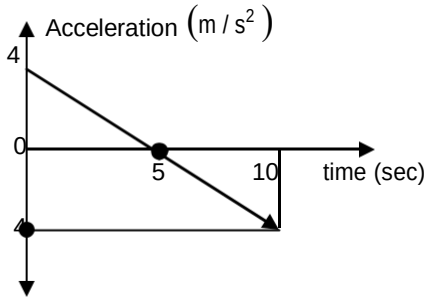
(B)



(C)



(D)



126. A boy travels along a circular path of radius 'r' m. when his angular displacement is $3\frac{\pi}{}$ radians then his linear displacement is:

(A) $r\sqrt{2}$ m (B) r m (C) $2\sqrt{}$ m (D) $\frac{\pi r}{3}$ m

127. From a tower of height 20 m a boy throws a stone in the vertically upward direction with a velocity of 40 m/s and at the same time a girl drops another identical stone from the same tower. When the momentum of the stone dropped by the girl is maximum what will be displacement of the stone projected in the upward direction from the top of the tower? (Take acceleration due to gravity of earth as 10 m/s^2)

(A) 60 m (B) 40 m (C) 20 m (D) 0 m

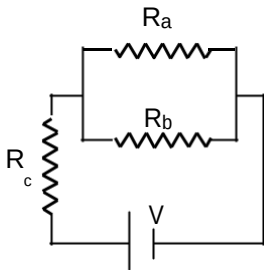
128. If all $R_a = R_b = R_c$ then the number of electrons travelling through R_a in every second is:

(A) Half the number of electrons travelling through R_b

(B) Equal to the number of electrons travelling through R_c

(C) Twice the number of electrons travelling through R_c

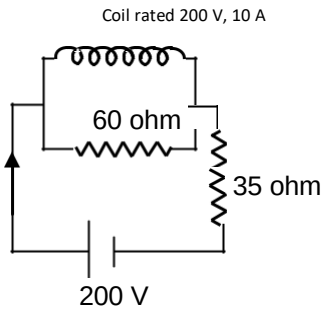
(D) Half the number of electrons travelling through R_c



129. The heat energy produced by the given coil in the given circuit in five minutes is:

(A) 6×10^5 J (B) 5.4×10^5 J

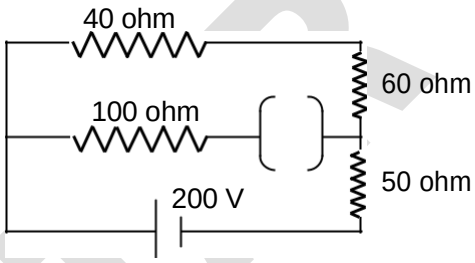
(C) 6×10^4 J (D) 5.4×10^4 J



130. The net current in the circuit is:

(A)2A (B) $\frac{4}{3}$ A

(C) 1A (D) $\frac{2}{3}$ A



131. A stone of mass 500 gm is dropped from a certain height. When it is exactly at the midpoint of is free fall, the kinetic energy possessed by it is 800 J. what is the height from where it is dropped? (take acceleration due to gravity of earth as $10ms^{-2}$)

(A) 320 m (B) 160 m (C) 80 m (D) 240 m

132. A car of mass 2, 000 Kg travelling with a uniform velocity of 2 m/s accelerates till its velocity becomes 22 m/s. The work done on the car is:

(A) 4.8 KJ (B) 480 KJ (C) 48 KJ (D) 500 KJ

133. The engine of a bus of mass 5, 000 kg accelerate the bus from 2 m/s to 20 m/s in 120 seconds. The power expended by the bus is:

(A) 8,250 W (B) 8.25 W (C) 82.5 W (D) 825 W

134. Tincture of iodine is a solution used as an antiseptic to clean wounds. This is prepared by dissolving solid iodine in:

(A) Alcohol (B) Water (C) Carbon di sulphide (D) Ether

135. You are provided with 64 g of sulphur in container A and 64 g of O_2 in container B. which will have more number of molecules? (Atomic mass of S = 32, O = 16)

(A) 64 g of S

B) 64 g of O_2

C) Both have equal number of molecules

(D) Cannot calculate with the given information

136. Shyam and hari have 2 identical pieces of marble chips with same mass. They take equal volumes of dil. HCl with the same concentration in two different test tubes. Shyam puts the marble piece directly into the acid whereas hari powdered the marble piece and puts it into the test tube. What will be the correct observation made?

(A) Reaction in Shyam's test tube will be faster (B) Reaction in Hari's test tube will be faster

(C) Both reactions will happen in the same speed (D) No reaction happens in both the test tubes

137. PH paper is separately dipped into 2 different solutions X and Y. colour of pH paper turned pale green in X and blue in Y. X and Y are most probably:

(A) X – water, Y – NaOH (B) X – NaOH, Y - H_2O

C) X – HCl, Y – NaOH (D) X – NaOH, Y – HCl

138. An element has two shells and has double the number of electrons in its valence shell than the first shell. The valency of the element could be:
(A) 8 (B) 4 (C) 2 (D) 6

139. Priya and karthik wanted to study about diffusion among liquids they took identical beakers and poured 100 mL of H_2O in both the beakers. Priya heated the water to 50° C but karthick maintained the water at room temperature. They both added 5 drops of ink into the beaker, what will they notice?
(A) Colour of ink spreads faster in Priya's beaker
(B) Colour of ink spreads faster in Karthick's beaker
(C) Colour of ink spread at the same rate in both beakers
(D) In both the beakers, ink drops settle down at the bottom without spreading

140. $_{13}^{27}Al$ looses electrons and forms trivalent cation. This ion will have
(A) 13 electrons and 14 protons (B) 10 electrons and 13 protons
(C) 10 electrons and 10 protons (D) 14 electrons and 13 protons

141. When CO_2 gas is passed through lime water, the solution turns milky, This is due to the formation of:
(A) $CaCO_3$ (B) CaO (C) $Ca(HCO_3)_2$ (D) $Ca(OH)_2$

142. A set of students went on a nature trip where one of the students disturbed the honey comb, by throwing a stone on it. Few students were stung by the bee. A person gathering medicinal plants, came to their rescue and applied the extract of some leaves, which relieved the students of their pain. The chemical nature of leaf would have been
(A) Acidic (B) Basic (C) Neutral (D) Mildly acidic

143. Metal A reacts with water to give B. 'B' is used for white washing. On heating B gives C. C reacts with water to give back B. Identify A, B and C.

	A	B	C
(1)	Ca	CaO	$Ca(OH)_2$
(2)	CaO	Ca	$Ca(OH)_2$
(3)	Ca	$Ca(OH)_2$	CaO
(4)	CaO	$Ca(OH)_2$	Ca

144. P, Q and R are 3 metals that undergo chemical reactions as follows: $P_2O_3 + 2Q \rightarrow Q_2O_3 + 2P$
$2P + 3RO \rightarrow P_2O_3 + 3P$
$2RSO_4 + 2Q \rightarrow Q_2(SO_4)_3 + 2R$
Observer the reactions and arrange the metals in the increasing order of their reactivity.
(A) R, P, Q (B) Q, P, R (C) P, Q, R (D) Q, R, P

145. Which among the following is the correct representation of 360 g of water (H = 1, O = 16)
(I) 2 moles
(II) 20 moles
(III) 6.022×10^{23} molecules
(IV) 1.2044×10^{25} molecules
(A) (I) and (III) (B) (II) and (IV) (C) (I) and (IV) (D) (II) and (III)

146. Metallic copper can be used to retrieve Silver from silver nitrate solution. This is because
(A) Cu is less reactive than Ag (B) Cu is more reactive than Ag (C) Cu and Ag have same reactivity (D) Cu does not react with $AgNO_3$

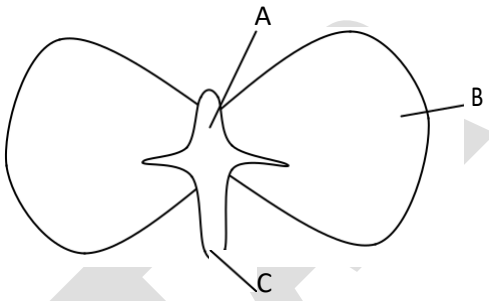
147. $6CO_2 + \xrightarrow{?} \xrightarrow[?]{\text{Sunlight}} C_6H_{12}O_6 + 6O_2 + 6H_2O$

Which two raw materials required for photosynthesis are missing in the above equations?
(A) Oxygen and Water (B) Oxygen and Calcium (C) Water and Chlorophyll (D) Chlorophyll and Oxygen

148. In bamboo plant, the water reaches all the parts of the plant. Name the force that helps in this process
(A) Diffusion (B) Transpirational pull (C) Gravitational pull (D) Translocation

149. Choose the correct arrangement of the parts A, B marked in the given figure.
(A) Cotyledon, Plumule and Radicle
(B) Plumule, Cotyledon and Radicle
(C) Radicle, Plumule and Cotyledon
(D) Radicle, Cotyledon and Plumule

.



150. The production of orchids by the method of Tissue Culture is also known as :
(A) Vegetative propagation (B) Micro propagation (C) Fragmentation (D) Regeneration

151. If a nail is hammered into the tree trunk, then the position of the nail after few years will be:
(A) Same (B) Above (C) Lower (D) Nail will disappear

152. Which one of the following is the correct hierarchy of classification?
(A) kingdom, Division, Class, Order, Family, Genus, Species
(B) Kingdom, Division, Order, Class, Family, Genus, Species
(C) Kingdom, Division, Class, Order, Genus, Family, Species
(D) Kingdom, Division, Class, Order, Family, Species, Genus

153. What will happen to the cell, if the medium has a lower concentration of water than the cell?
(A) Bulge (B) Shrink (B) No change (D) Cannot be predicted

154. Assertion (A) : People entering into the burning place die due to suffocation
Reason (R) : Smoke contains large amount of carbon mono oxide, a toxic gas
(A) (A) is correct and (R) is wrong (B) (R) explains (A)
(C) (R) does not explain (A) (D) (A) is wrong but (R) is correct

155. Study the relationship of the given pairs and choose the correct option to fill in the blank.
Oestrogen : Oogenesis
Prolactin : Lactation
Oxytocin : _____
(A) Thickness of endometrium
(B) Secondary sexual character
(C) Rhythmic contraction of uterus during delivery of the baby
(D) Provides protection against intestinal and respiratory functions

156. The carcinogenic toxic gas released during cigarette smoking is:
(A) Nitrogen oxide (B) Methyl Iso cyanate (C) Methyl mercury (D) Benzopyrene

157. Geetha is unable to walk in a straight line. Which part of the brain is affected?
(A) Cerebrum (B) Cerebellum (C) Medulla oblongata (D) Hypothalamus

158. In a case of snake bite, doctor treats the patient, with preformed antibodies. What type of immunity it develops?
(A) Innate immunity (B) Naturally Active Acquired immunity (C) Artificially Active Acquired immunity (D) Naturally Passive Acquired immunity

159. Match the organisms given in Column- I with the nutritional processes given in Column – II

	COLUMN - I		COLUMN - II
(A)	Leech	(I)	Holozoic Nutrition
(B)	Amoeba	(II)	Autotrophic Nutrition
(C)	Mushroom	(III)	Parasitic Nutrition
(D)	Green plant	(IV)	Saprophytic Nutrition

(A) (II), (IV), (I), (III) (B) (III), (I), (IV), (II) (C) (I), (IV), (III), (II) (D) (IV), (IIII), (II), (I)

160. Mendel crossed tall plant with dwarf plant in his famous experiment on Pisum sativum. In the first generation, he got only tall plants. Because:
(A) The parental plants were heterogenous to their characters
(B) The soil was fertile
(C) The parental plants were pure to their character
(D) The tallness character was a recessive character

SOCIAL SCIENCE

161. The treaty concluded after the II Indo – China war was
(A) Treaty of Nanking (B) Treaty of Peking (C) Treaty of Shimonoseki (D) Treaty of London

162. Mussolini was the editor of Socialist Newspaper called
(A) New India (B) Avanti (C) Mein Kemph (D) Social contract

163. The working languages of the United Nations are _____
(A) Arabic and Chinese (B) Chinese and English
(C) English and French (D) Russian and Spanish

164. The Indian who headed the United Nations General Assembly in 1953 was _____
(A) Mrs. Vijayalakshmi pandit (B) Moovalur Ramamirdham Ammaiyar (C) Dr. Muthulakshmi reddy (D) Dr. S. Dharmambal

165. Pick the odd man out:
Neelakesi, Choolamani, Yapperumkalam, Kundalakesi
(A) Choolamani (B) Kundalakesi (C) Neelakesi (D) Yapperumkalam

166. _____ was known as the 'World's First Compiler of Law'
(A) Napoleon III (B) Hammurabi (C) Confucius (D) Cheops Khufu

167. Plato wrote
(A) The Republic (B) The law of Twelve tables
(C) Justinian Code (D) Meditations

168. _____ was defeated in the battle of Waterloo.
(A) Hitler (B) Mussolini (C) Stalin (D) Napoleon Bonaparte

169. The Brihadeeshwara temple was built by the
(A) Cheras (B) Pandyas (C) Pallavas (D) Cholas

170. The Tower temples were also known as ____
(A) Ziggurants (B) Phramids (C) Hanging Garden (D) Tower of Badel

171. "Man is the maker of his own destiny" was stressed by _____
(A) Gauthama (B) Mahavira (C) Laotze (D) Zoroaster

172. The Longitude that helps us to calculate the Indian Standard time is;
(A) 80° E (B) 82" 30' E (C) 82" 50' E (D) 81" E

173. The Sorrow of Bihar is
(A) kosi (B) Yamuna (C) Brahmaputra (D) Ganga

174. “There is enough for everybody’s need and not for anybody’s greed”. It was voiced out by:
(A) Mahatma Gandhi (B) Jawaharlal Nehru (C) Medha patkar (D) Indira Gandhi

175. The main objective of National Forest Policy is to:
(A) Bring 33% of geographical area under forests (B) Bring 20% of geographical area under forests
(C) Maintain 30% of geographical area under forests (D) Bring 35% of geographical area under forests

176. Compressed Natural Gas (CNG) is becoming more popular because:
(A) Available at cheaper rate (B) Low emission of carbon dioxide (C) It is used in power and fertilizer (D) None of the above

177. Choose the correct order of arrangements, the types of coal according to its quality/ carbon content
(A) Anthracite, Bituminous, Lignite, Charcoal. (B) Anthracite, Charcoal, Bituminous, Lignite (C) Anthracite, Lignite, Charcoal, Bituminous (D) Bituminous, Lignite, Anthracite, Charcoal

178. The first state in India which has made roof top rainwater harvesting structure compulsory to all the houses across the state:
(A) Rajasthan (B) Maharashtra (C) Karnataka (D) Tamil Nadu

179. Srirangam, is a/ an _____ area.
(A) Island (B) Plateau (C) Coastal Plain (D) Hilly

180. Shrinking of forest cover is mainly because of:
(A) Over population (B) Urbanization (C) Industrializations (D) Farming activities

181. ‘Finland of Tamilnadu’ is:
(A) Kancheepuram (B) Villupuram (C) Ooty (D) Tirunelveli

182. Geographical surname, “Detroit of Southern Asia” refer to:
(A) Bengaluru (B) Mumbai (C) Chennai (D) New Delhi

183. Which article of our Constitution prohibits any child below the age of 14 from working in dangerous, hazardous employment like mining?
(A) 19 (B) 23 (C) 24 (D) 26

184. Name the presidency Constituency in which women were enfranchised for the first time in India.
(A) Madras (B) Bombay (C) Calcutta (D) Bengal

185. The President of World Bank is always the citizen of:
(A) UK (B) USA (C) Russia (D) France

186. Name the country which has single party system.
(A) China (B) Britain (C) Singapore (D) Ghana

187. Which Indian state has its own Constitutions?
(A) Jammu and Kashmir (B) Maharashtra (C) Uttarakhand (D) Nagaland

188. Here are some of the guiding values of the Constitutions and their meanings. Match them correctly:

	Guiding Values		**Meaning**
(A)	Sovereign	(I)	Government will not favour any religion
(B)	Republic	(II)	People have the supreme right to make decision
(C)	Fraternity	(III)	The state is ruled by the elected representatives
(D)	Secular	(IV)	People should live like brothers and sisters

(A) (II), (I), (IV), (III) (B) (III), (IV), (I), (II) (C) (IV), (III), (II), (I) (D) (II), (III), (IV), (I)

189. What is the role of Amnesty International?
(A) To work for international peace
(B) To stop arms race in the world
(C) Collecting information about condition of International prisoners
(D) None of the above

190. _____ is rightly known as the 'Guardian of the Constitution'.
(A) District Court (B) Magistrate Court (C) High Court (D) Supreme Court

191. Which state has bicameral legislatures?
(A) Tamil Nadu (B) Gujarat (C) Bihar (D) Kerala

192. Name the Chief Election Commissioner of India
(A) Nassim Zaidi (B) Rajesh Lakhoni (C) H.S. Brahma (D) V.S. Sampath

193. Pick the odd man out:
(A) Mrs. Sumitra mahajan (B) Mrs. Sushma Swaraj
(C) Mrs. Meera kumar (D) Mrs. Najma Heptullah

194. The growth rate of a country is decided by _____.
(A) The growth in literacy rate (B) The growth in employment opportunities
(C) The quality of the population (D) the growth of the economy

195. The state that has the lowest Infant Mortality Rate in India is:
(A) Andhra Pradesh (B) Tamil Nadu (C) Kerala (D) Rajasthan

196. The head of the Planning Commission in India is :
(A) The Vice President (B) The Prime Minister (C) The President (D) A Cabinet Minister

197. Pick the odd man out:
(A) Income Tax (B) Road Tax (C) Water Tax (D) Property tax

198. The process of withdrawal of United Kingdom from the European Union is called:
(A) BREXIT (B) BRIXTON (C) BRICS (D) BREXTON

199. If a mother is taking care of children and household activities within the walls of the house, what kind of activity is she performing ?
(A) Market activity (B) Non – market activity
(C) Economic activity (D) Non – economic activity

200. 'Green Revolution' is associated with the production of:
(A) Sugar (B) Pulses (C) Wheat (D) Cereals