NATIONAL TALENT SEARCH EXAMINATION (NTSE-2020) STAGE -1

STATE : TAMILNADU PAPER : SAT

Date: 03/11/2019

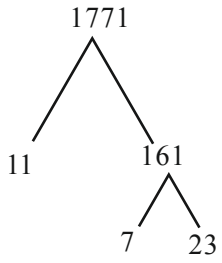
Max. Marks: 100 **SOLUTIONS** **Time allowed: 120 mins**

101. The sum of the exponents of prime factors in the prime factorization of 1771 is:

(1) 1 (2) 3 (3) 2 (4) 4

Ans. (2)

Sol. Sum of exponents of prime factors



$$1771 = 23 \times 11 \times 7$$

$\therefore$ sum of exponents = 1 +1+1=3

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

Ans. (3)

Sol. n^{th} term of an A.P $\Rightarrow a + (n-1)d = t_n$

$$a + nd = t_{n+1}$$

$$a + (n-2)d = t_{n-1}$$

$$t_{n+1} - t_{n-1} = (a + nd) - \left[a + (n-2)d\right] = 2d$$

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

(1) 5 (2) 3 (3) 2 (4) 1

Ans. (3)

Sol. $x + y = 3$

$$x^2 + y^2 = 5$$

$$\left(x + y\right)^2 = 3^2$$

$$x^2 + y^2 + 2xy = 9$$

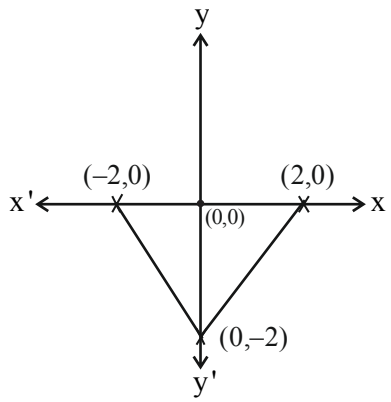
$$5 + 2xy = 9 \Rightarrow xy = {}^{4}\!/_{2} = 2$$

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

Ans. (2)

Sol.



Area of triangle = $\frac{1}{2}\times \text{base}\times \text{height}=\frac{1}{2}\times 4\times 2=4$

105. The area of equilateral triangle is $25\sqrt{3}\,\text{cm}^2$, then the perimeter is:

(1) 10 cm (2) 30 cm (3) $10\sqrt{3}$ cm (4) $30\sqrt{3}$ cm

Ans. (2)

Sol. Area of equilateral triangle = $25\sqrt{3}\ \text{cm}^2$

$$\frac{\sqrt{3}}{4}a^2=25\sqrt{3}$$

$$a^2=100\Rightarrow a=10$$

Perimeter $\Rightarrow 3a=3\times 10=30\text{cm}$

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

Ans. (4)

Sol. Let sides of two cubes be a & b

Surface area of cube = $6(\text{side})^2$

$$\therefore \frac{6a^2}{6b^2}=\frac{16}{36}$$

$$\frac{a}{b}=\frac{4}{6}=\frac{2}{3}$$

107. $\frac{1}{1+\sin\theta}+\frac{1}{1-\sin\theta}=?$

(1) $\sec^2\theta$ (2) $2\sec^2\theta$ (3) $\operatorname{cosec}^2\theta$ (4) $2\operatorname{cosec}^2\theta$

Ans. (2)

Sol. $\frac{1}{1+\sin\theta}+\frac{1}{1-\sin\theta}$

$=\frac{1-\sin\theta+1+\sin\theta}{(1+\sin\theta)(1-\sin\theta)}$

$=\frac{2}{1-\sin^2\theta}=\frac{2}{\cos^2\theta}=2\sec^2\theta$

108. Given that $\text{SinA}=\frac{1}{2}$ and $\text{CosB}=\frac{1}{\sqrt{2}}$ then the value of $A+B$ is:

(1) 30° (2) 45° (3) 75° (4) 15°

Ans. (3)

$\text{SinA}=\frac{1}{2}$ $\cos B=\frac{1}{\sqrt{2}}$

Sol. $\text{Sin}30^\circ=1/2$ $\cos 45^\circ=\frac{1}{\sqrt{2}}$

$A=30^\circ$ $B=45^\circ$

$A+B=30^\circ+45^\circ=75^\circ$

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

Ans. (4)

Sol. $5\tan\theta=4$

$\tan\theta=\frac{4}{5}$

$\frac{5\sin\theta-4\cos\theta}{5\sin\theta+4\cos\theta}=\frac{5\tan\theta-4}{5\tan\theta+4}$

$$= \frac{5 \cdot \frac{4}{5} - 4}{5 \cdot \frac{4}{5} + 4}$$

$$= \frac{4-4}{4+4}$$

$$= \frac{0}{8}$$

$$= 0$$

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

Ans. (3)

Sol. $\cos(A-B) = \frac{\sqrt{3}}{2} \Rightarrow A - B = 30^\circ$ .....(1)

$\sin(A+B) = 1 \Rightarrow A + B = 90^\circ$ .....(2)

Solving (1) and (2), we get

$A = 60^\circ \quad B = 30^\circ$

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°

Ans. (4)

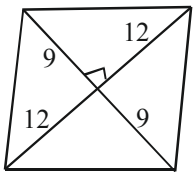
Sol. Sum of all three angles of triangle is 180° which is satisfied by 4^{th} option only

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

Ans. (2)

Sol.



Diagonals of rhombus are $d_1 = 18\text{cm}$ $d_2 = 24\text{cm}$

$\therefore$ Each side$\} = \frac{1}{2}\sqrt{d_1^2 + d_2^2}$

$= \frac{1}{2}\sqrt{18^2 + 24^2}$

$= \frac{1}{2}\sqrt{900}$

$= \frac{1}{2} \times 30$

$= 15\text{cm}$

113. Which of the following numbers will completely divide $\left(4^{61} + 4^{62} + 4^{63} + 4^{64}\right)$

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

Ans. (2)

Sol. $N = 4^{61} + 4^{62} + 4^{63} + 4^{64}$

$= 4^{61}\left(1 + 4 + 4^2 + 4^3\right)$

$= 4^{61}\left(1 + 4 + 16 + 64\right)$

$= 4^{61} \times 85$

$= 2^{122} \times 85$

$= 2^{121} \times 2 \times 5 \times 17$

$= 2^{121} \times 17 \times 10$

$\therefore N$ is divisible by 10

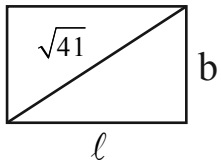
114. The diagonals of a rectangle is $\sqrt{41}\,\text{cm}$ and its area is 20 cm^2. The perimeter of a rectangle must be:

(1) 9 cm (2) 18 cm (3) 20 cm (4) 41 cm

Ans. (2)

Let length and breadth of rectangle be ℓ and b cm respectively

Sol.



Diagonal of rectangle $d = \sqrt{41}$ cm

$\sqrt{\ell^2 + b^2} = \sqrt{41}$

$\ell^2 + b^2 = 41 - - - - - - - -(1)$

Area of rectangle $A = 20\ cm^2$

$\ell b = 20 - - - - - - - - - -(2)$

From (1) & (2) $(\ell + b)^2 = \ell^2 + b^2 + 2\ell b$

$= 41 + 2(20)$

$= 41 + 40 \quad \Rightarrow 81$

$\ell + b = 9$

$\therefore$ Perimeter = $2(\ell + b) = 2(9) = 18$ 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

Ans. (4)

Sol. $N = 108000000$ Km

$= 108 \times 10^6$ Km

$= 1.08 \times 10^2 \times 10^6$ Km

$= 1.08 \times 10^8$ Km

116. Cards are marked from 1 to 50 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

Ans. (1)

Sol. Cards marked from 1 to 50

One card is drawn at random

$\therefore n(S) = 50$

Let E = card to multiple of 5

$= \{5, 10, 15 - - -, 50\}$

$n(E) = 10$

$\therefore \quad P(E) = \frac{n(E)}{n(S)}$

$= \frac{10}{50}$

$= \frac{1}{5}$

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)

Ans. (4)

Sol. Given line is $x - y = 0$

It passes through origin

$\therefore$ Option 4 is correct

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

Ans. (4)

Sol. $p(x) = (9x + 7)(2x + 9)$

$= 18x^2 + 81x + 14x + 63$

$= 18x^2 + 95x + 63$

$\therefore$ Coefficient of $x = 95$

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

(1) 3 (2) 27 (3) 8 (4) 5

Ans. (4)

Sol. $N = \left[5\left(8^{1/3} + 27^{1/3}\right)^3\right]^{1/4}$

$= \left[5(2 + 3)^3\right]^{1/4}$

$= \left(5.5^3\right)^{1/4}$

$= \left(5^4\right)^{1/4}$

$= 5$

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

Ans. (1)

Sol. $2, 3, 4, 4, (2x + 1), 5, 5, 6, 7$

Median $= 2x + 1 = 5$

$2x = 4$

$x = 2$

121. Lactometer is an instrument which works on the principle of ?

(1) Law of Floatation (2) Newton's Law (3) Ohm's Law (4) Avogadro's Law

Ans. (1)

Sol. Lactometer works on the principle of law of floation

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) $4m/sec^2$ (2) $6m/sec^2$ (3) $8m/sec^2$ (4) $9m/sec^2$

Ans. (3)

Sol. $a_c = \frac{v^2}{R} = \frac{20 \times 20}{50} = 8m/s^2$

123. Find the odd one out:

(1) $30.8 \times 10^{15}\,m$ (2) $9.46 \times 10^{15}\,m$ (3) $1.496 \times 10^{11}\,m$ (4) $3.08 \times 10^{16}\,m$

Ans. (1)

Sol. $30.8 \times 10^{15}\,m$ is not in standard scientific notation

124. The spectacular glow of diamond is due to:

(1) Refraction (2) Reflection (3) Total Internal Reflection (4) Scattering of Light

Ans. (3)

Sol. TIR is responsible for glow of diamond

125. A song was heard by a person who is at certain distance from a temple where in 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

Ans. (4)

Sol. $v = f\lambda$

$= 3 \times 10^3 \times \frac{20}{100}$

$= 600m/s$

distance = 600 x 5 = 3000 m

= 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) 6Ω (2) 5Ω (3) 7Ω (4) 4Ω

Ans. (1)

Sol. $H = i^2Rt$

$54000 = (5 \times 5) \times R \times (6 \times 60)$

$R = 6\Omega$

127. Match the following:

(a) Formation of real and inverted images 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)-(i) (4) (a)-(ii), (b)-(i), (c)-(iii), (d)-(iv)

Ans. (1)

Sol. a - (iv) c- (i)

b - (iii) d-(ii)

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

Ans. (1)

Sol. Radiation can take place even in vacuum

Conduction takes place only in solids

Convection takes place only in fluids

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

Ans. (1)

Sol. Rayleigh lines

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

Ans. (4)

Sol. Triton moves in a retrograde orbit

131. The reason for using red light in traffic signals to stop vehicles

(1) Red light has shorter wave length (2) Red light has longer wave length

(3) Red light is very bright and attractive (4) Red light has highest angle of refraction

Ans. (2)

Sol. Red colour has the largest wavelength among all visible rays of different colors.

132. Which of the following is not related to Joule's Law of Heating?

(1) $H = I^2Rt$ (2) $H = VIt$ (3) $H = VIRt^2$ (4) $H = VQ$

Ans. (3)

Sol. Dimensionally incorrect

133. Convert 1 Kilowatt into Horsepower:

(1) 1.43 HP (2) 746000 HP (3) 1.34 HP (4) 0.746 HP

Ans. (3)

Sol. $1\text{KW} = \frac{1000}{746}\text{HP}\left(\because 1\text{HP} = 746\text{W}\right)$

134. Pick the odd one but:

(1) CCl_4 (2) NaCl (3) $CuCl_2$ (4) $CaCl_2$

Ans. (1)

Sol. Except CCl_4 rest of the compounds are ionic in Nature.

135. Match the following:

(a) Tyndall 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)

Ans. (1)

Sol. (a) Tyndall effect $\rightarrow$ is the scattering of light as a light beam passes through a colloid

(b) Brownian movement is random motion by particles of matter when suspended in a fluid

(c) Centrifugation: is a technique which involves the application of centrifugal force to separate particles from a solution acc to their size, shape, density, viscosity of the medium and rotor speed

Paper chromoatography $\rightarrow$ It is an analytical method used to separate coloured chemicals or substances.

136. The Law of Multiple Proporation was proposed by:

(1) John Dalton (2) Jeremias Ritcher (3) Neil Bohr (4) Rutherford

Ans. (1)

Sol. The Laws of multiple properties was proposed by John Dalton. It states that when two elements combine with each other to form more than one compound the weights of one element that combine with a fixed weight of the other are in a ratio of small whole numbers

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)**

Ans. (1)

Sol. Bronze is an alloy containing primarly of copper, commonly with about 12 - 12.5 % Sn

$\rightarrow$ yes, alloys bear the characteristics of both metal and non - metal.

138. Find the odd one out:

(1) Galvanization (2) Bessemerisation (3) Electroplating (4) Anodizing

Ans. (2)

Sol. Galvanization : is the process of applying a protective zinc coating to steel or iron to prevent rusting

Bessemrisation : is the process used in the metallurgy of copper its used in pyrometallurgy.

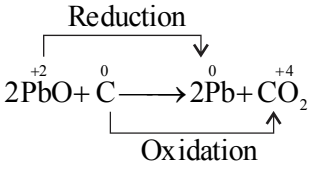
Electroplating : Anodizing : Galvanization is electrochemical process.

139. $2PbO + C \rightarrow 2Pb + CO_2$ is an example of _____reaction.

(1) Reduction (2) Redox (3) Oxidation (4) Decomposition

Ans. (2)

Sol.



$\therefore$ It is redox reaction

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

Ans. (3)

Sol. Kings water is Aqua regia

Composition is $\left(\underset{3}{HCl} : \underset{1}{HNO_3}\right)$

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

Ans. (4)

Sol. Ammonia emulsifies greese

white wash is $Ca(OH)_2$

soap is of sodium / potassium higher carboxylate

$Mg(OH)_2$ is not used in manufacture of fertilizer.

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

Ans. (2)

Sol. Plastic grades 1, 3, 6, 7 are unsafe.

143. Which among the following is highly toxic and inflammable gas?

(1) CO (2) CO_2 (3) CS_2 (4) CaC_2

Ans. (1)

Sol. $CaC_2 \rightarrow$ is solid, $CS_2 \rightarrow$ liquid at room temperature ; $CO_2 \rightarrow$ non toxic gas.

144. The reason for unstability of nano particles:

(1) Hydrolysis (2) Hydration (3) Combustion (4) Reduction

Ans. (2)

Sol. Nano particles have very small size

$\therefore$ due to hydration it become stable

145. Occult finger prints are made visible by the use of _____which turns purple.

(1) Cyano acrylate (2) Potassium di-chromate

(3) Nin - hydrin (4) Silver nitrate

Ans. (3)

Sol. Nin - hydrin turns purple due to reaction with Amino acids present in perspiration

146. Pick out the correct formula for blue vitroil:

(1) $CuSO_4.5H_2O$ (2) $CuSO_4.7H_2O$ (3) $CuSO_4.6H_2O$ (4) $CuSO_4.9H_2O$

Ans. (1)

Sol. $CuSO_4 \cdot 5H_2O \rightarrow$ Blue vitriol

147. When exposed to sunlight, parenchyma cells may develop chloroplasts and are known are———

(1) Collenchyma (2) Chromoplast (3) Chlorenchyma (4) Aerenchyma

Ans. (3)

Sol. Parenchyma storing chlorophyll are temed as chlorenchyma

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) $H^+ + H_2O \rightarrow H_3O^+$

Ans. (2)

Sol. Hints: Photosynthesis is $= 6CO_2 + 6H_2O \xrightarrow[\text{Chlorophyll}]{\text{Sunlight}} C_6H_{12}O_6 + 6O_2 \uparrow$

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

Ans. (3)

Sol. Hints : Slimy layer protecting bacteria - capsule. Capsule is made up by polysaccharides

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

Ans. (2)

Sol. Hints : $\Rightarrow$ Floating leaves has long stock
$\Rightarrow$ Submerged leaves are small

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

Ans. (4)

Sol. Hints : AYUSH AY= Ayurveda
U=Unani
S= Siddha
H=Homeopathy

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

Ans. (1)

Sol. Hints : Father of plant anatomy = Nehemiah Grew

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)** is explain **(A)**

Ans. (3)

Sol. Hints : Assertion and reason Both are correct. But reason is not correct explanation of Assertion.

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

Ans. (3)

Sol. Hints : Hirudin prevent co-agulation of Blood

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

Ans. (2)

Sol. Hints : Sino Arival node Generates impulse for heart Beat hence S. A node is pace maker

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

Ans. (NA)

Sol. Hints : Wrong question

157. Find the odd man out:

(1) Jejunum (2) Ileum (3) Caecum (4) Villi

Ans. (4)

Sol. Hints : Villi is modification of mucosal membrane to increase in surface area

158. Functions of areolar connective tissues:

(a) joins skin to muscle

(b) fills space inside organs

(c) provides shape to body and protects soft tissues and organs

(d) helps to repair tissues after injury.

(1) (a) and (d) only (2) (a), (b) and (c) only (3) (a),(b) and (d) only (4) All of the above

Ans. (4)

Sol. Hints : All the options given are functions of connective tissue hence option - D

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)

Ans. (3)

Sol. Hints : Trypsin - Acto on protein

Amylase - Breakdown starch to maltose

Bile - Converts fat to small droplets (Emulsification)

Lipase - Digests fat to fatty acids & Glycerol

160. Which among the following has three chambered heart?

(1) Tiger (2) Rat (3) Frog (4) Fish

Ans. (3)

Sol. Hints : a) Tiger - 4 Chambered heart

b) Rat - 4 chambered heart

c) Frog - 3 chambered heart

d) Fish - 2 chambered heart

161. 'Never was so much owed by so many to so few' was the saying of:

(1) Mussolini (2) Hitler (3) Winston Churchill (4) Woodrow Wilson

Ans. (3)

Sol. Hints: Saluting the bravery of the Royal Air force winston Churchill said in a speech.

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)

Ans. (1)

Sol. Hints: $\rightarrow$Chinese civilization contribution was invention of Gun powder

$\rightarrow$Mesopotanian civilization $\rightarrow$Hammurabi's law code is an important Legal document that specifies the laws related to various crimes.

$\rightarrow$Indus valley civilization - developed the system of weights & measures

$\rightarrow$Egyption civilization - The great sphinx of Giza is a massive Limstone image of a lion .

163. Find the odd one out:

(1) Kurinjipattu (2) Pattinapalai (3) Aingurununu (4) Nedunal Vadai

Ans. (4)

Sol. Hints: $\rightarrow$Pattinapaalai, kurinjipattu, Aingurununu were Tamil poem in the ancient sangam Literature

$\rightarrow$Nedural vadai is a 2019 Tamil drama film written & directed by selvakannan .

164. Identify the two cities in India which started declining in 1750's due to the increasing power of the European Companies:

(1) Madras and Bombay (2) Calcutta and Madras (3) Surat and Hoogly (4) Hoogly and Madras

Ans. (3)

Sol. Hints : Surat & Hoogly Textile mills were declined in 1750's due to incresing the power of the European companies.

165. Utopia, a satire on political evil was written by:

(1) Sir Thomas More (2) Cervantes (3) Erasmus (4) Machiavelli

Ans. (1)

Sol. Hints : Utopia written by Sir Thomas more in 1516 in Latin Language.

166. **Assertion (A):** Men disguised as Native American boarded the cargo vessel carrying tea and threw 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)**

Ans. (3)

Sol. Hints : It was related to American war of independence

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)

Ans. (2)

Sol. Hints : Great depression - 1929

Battle of marne - 1914

Fascist party - 1919

Battle of just land - 1916

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

Ans. (1)

Sol. Hints : M.G Ranade was the founder of widow Remarriage Association in 1861

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

Ans. (4)

Sol. Hints : Present number of member countries in UNO was 193. (South Sudan is the last membered country)

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) Leopold II

Ans. (1)

Sol. Hints : C olonel penny cuick was British Army engineer built the mullaiperiyar dam in Tamil Nadu.

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.

Ans. (3)

Sol. Hints : The cheras wore garlands made from the flowers of palm Tree

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 52 minutes 28 seconds (4) 1 hour 55 minutes 10 seconds

Ans. (1)

Sol. Hints : Time difference between Gujarat & Arunachal pradesh is 2 hours (Approximately 1 hour 57 minutes 12 seconds)

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

Ans. (2)

Sol. Hints : 1973 Laccadive, minicoy & Amindivi was renamed as Lakshadweep island .

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

Ans. (4)

Sol. Hints : Chilka Lake is a salt lake . Others are Fresh water lake.

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

Ans. (2)

Sol. Hints: Banxite deposits are abundantly land in odisha, Jharkhand, Tamil Nadu.

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

Ans. (3)

Sol. Hints : Pawan Hans Helicopter provides services to oil & Natural Gas corporation.

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

Ans. (4)

Sol. Hints : Chamba is a river
Others are Hills & Mountains.

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)

Ans. (2)

Sol. Origin of west flowing rivers & east flowing rivers

179. **Statement (I):** 75% of Indian rainfall is received from South-West Monsoon
Statement (II): Tamil Nadu which is located in hte 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)** and incorrect and **(II)** is correct

Ans. (3)

Sol. Hints : Statement - I is correct
Statement - II Tamil Nadu does not receive rainfall from South West monsoon

180. _____are long furrows which are formed when the joints of lime stone rocks are corrugated by groundwater.
(1) Sink holes (2) Caverns (3) Stalacities (4) Lappies

Ans. (4)

Sol. Hints : When the Joints of Limestone rocks are corrugated by ground water, long furrows are formed and these are called Lappies.

181. Which among the following statement / statements is / are correct?
(a) Troposphere is called ' Weather making layer'
(b) Exosphere is characterised 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

Ans. (1)

Sol. Hints : Troposphere is called wealther making layer.
Exosphere is extremely rarefied with gases and merges with the outer space. So it is characterized by Aurora Australis and Aurora borealis
$\rightarrow$ Ozonosphere found in stratosphere

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

Ans. (3)

Sol. Hints :The Grand Banks of New Foundland is a North American Continental Shelf in Atlantic ocean noted as an international Fishing ground.

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

Ans. (2)

Sol. Hints : Preamble is the introduction & key of constitution of India.

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

Ans. (3)

Sol. Hints : He must have attained the age of 35 years . He must not be a member of parliament or state legislature

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

Ans. (2)

Sol. Hints : 12th president of India was Mrs. Prathiba patil

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

Ans. (1)

Sol. Hints : Every High Court Consists of a chief Justice and such other Judges as appointed by the president from time to time (Article 216)

187. Rule 49-O describes:
(1) Transparency of the electrion 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

Ans. (4)

Sol. Hints : Rule 49-0 describes voters are not casting vote to elect any candidate (NOTA). It was a rule in the conduct of Election rules, 1961 of India which governs elections in the country.

188. _____ is exempted from RTI Act :

(1) Education Department (2) Intelligence Bureau

(3) Municipal Corporation (4) Village Panchayat

Ans. (2)

Sol. Hints : Intelligence Bureau maintains secrecy to the public to defend the country from enemy.

189. The new Panchyat Raj came into being in Tamil Nadu :

(1) 1993 (2) 1994 (3) 1995 (4) 1992

Ans. (2)

Sol. Hints : In 1994 the New panchayat Raj came into being in Tamil Nadu

190. Pick the odd man out :

(1) Aruna Roy (2) Arvind Kejrival (3) Mithali Raj (4) Nikil Dev

Ans. (3)

Sol. Mithali Raj is an indian cricket others are politicians.

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

Ans. (4)

Sol. Hints : Justice Ranganath Misra was the former chief justice of India became the first National Human Rights Commmission .

192. Which writ upholds the fundamental rights of the citizen ?

(1) Certiorari (2) Mandamus (3) Quo- warranto (4) Prohibition

Ans. (1)

Sol. Hints : Certiorari is issued to a lower court directing that the record of a case be sent up for review. It is one of the mechanism by which the fundamental rights of the citizens are upheld.

193. POCSO Act was passed in the year :

(1) 2012 (2) 2009 (3) 2010 (4) 2011

Ans. (1)

Sol. Hints :

Protection of children from sexual offences Act (POCSO) was enacted in 2012.

194. Match the following :

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

Ans. (2)

Sol. Hints : GDP=C+I+G+ (X-M)

NDP-GDP-Depreciation

GNP=C+I+G+ (X-M) + NFIA

NNP= GNP-Depreciation

195. Pick the odd one out:

(1) Iron (2) Wood (3) Coal (4) Glass

Ans. (4)

Sol. Hints : Glass is not natural resources

196. The author of the book "An Uncertain Glory"

(1) Jean Bodin (2) Samuelson (3) Adam Smith (4) Amartya Sen

Ans. (4)

Sol. Hints : The book "An uncertain Glory" Written by Dr. Amartya sen.

197. The leading Solar Power producing state in India:

(1) Telangana (2) Karnataka (3) Tamil Nadu (4) Kerala

Ans. (2)

Sol. Hints : Karnataka tops the list of states with the installed solar power generation capacity in the country.

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

Ans. (2)

Sol. Hints : Rain water is the main source of agricultural & industrial product.

199. An index used to measure the real development in an economy:

(1) GDP (2) HDI (3) IIP (4) CPI

Ans. (2)

Sol. Human Development Index to measure the real development in an economy.

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

Ans. (3)

Sol. Hints : William D. Nordhaus & Paul M. Romer of American economists won Nobel prize in 2018 in Economics