

**Date: 27.12.2020**

**Max. Marks: 100**

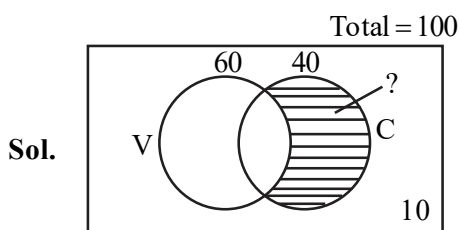
**SOLUTIONS**

**Time allowed: 120 minutes**

**101.** In a party of 100 people, 60 had Vanilla ice-cream and 40 had chocolate ice-cream. 10 people did not have any ice-cream. How many had only chocolate ice-cream?

- (1) 10                                      (2) 0                                      (3) 20                                      (4) 30

**Ans. 4**



$$n(\text{any one of the ice creams}) = 100 - 10 = 90$$

$$\therefore n(v \cup c) = 90$$

$$n(v \cap c) = 60 + 40 - 90 = 10$$

$$\therefore n(\text{only } c) = 40 - 10 = 30$$

**102.** If  $x^2 + y^2 + z^2 = 29$  and  $xy + yz + zx = 26$ , then the value of  $x + y + z$  is:

- (1) 9                                      (2) 81                                      (3)  $\pm 9$                                       (4)  $\pm 3$

**Ans. 3**

**Sol.**  $x^2 + y^2 + z^2 = 29; xy + yz + zx = 26$

$$(x + y + z)^2 = (x^2 + y^2 + z^2) + 2(xy + yz + zx)$$

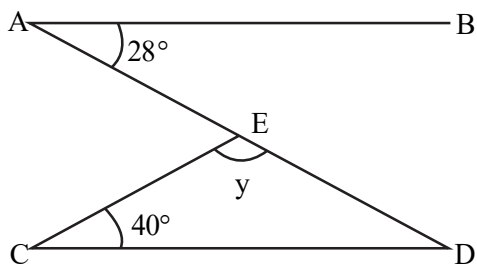
$$= 29 + 2(26)$$

$$= 29 + 52$$

$$= 81$$

$$x + y + z = \pm 9$$

103.

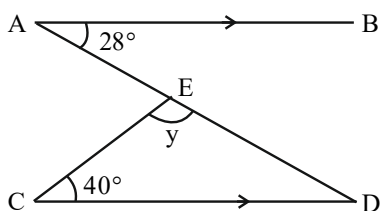


In the given figure, AB is parallel to CD. The angle y is:

- (1)  $68^\circ$                       (2)  $34^\circ$                       (3)  $112^\circ$                       (4)  $56^\circ$

Ans. 3

Sol.



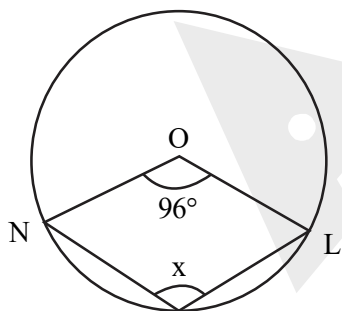
$AB \parallel CD \Rightarrow \angle EDC = \angle A = 28^\circ$  (Alternate angles)

In  $\triangle CED$ ,  $y + 40^\circ + 28^\circ = 180^\circ$

$$y = 112^\circ$$

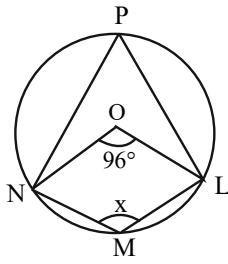
104. From the given figure, the angle x is:

(where O is the centre of the circle)



- (1)  $48^\circ$                       (2)  $132^\circ$                       (3)  $96^\circ$                       (4)  $264^\circ$

Ans. 2



**Sol.**

Let P be a point on major arc  $\widehat{NL}$ .

$$\therefore \angle NPL = \frac{1}{2} \cdot \angle NOL$$

$$= \frac{1}{2} \times 96^\circ$$

$$= 48^\circ$$

$\therefore$  In cyclic quadrilateral PLMN,

$$x + 48^\circ = 180^\circ$$

$$x = 132^\circ$$

**105.**  $\frac{\sin 35^\circ}{\cos 55^\circ} - \frac{\tan 12^\circ}{\cot 78^\circ} - \frac{\sin 18^\circ}{\cos 72^\circ} = ?$

(1) 1

(2) 0

(3) 3

(4) -1

**Ans.** 4

**Sol.**  $\frac{\sin 35^\circ}{\cos 55^\circ} - \frac{\tan 12^\circ}{\cot 78^\circ} - \frac{\sin 18^\circ}{\cos 72^\circ}$

$$= \frac{\sin 35^\circ}{\sin 35^\circ} - \frac{\tan 12^\circ}{\tan 12^\circ} - \frac{\sin 18^\circ}{\sin 18^\circ}$$

$$= 1 - 1 - 1$$

$$= -1$$

**106.** Mean of 10 observations is 58 and 5 is subtracted from each observation, then the mean of new observation is:

(1) 53

(2) 514

(3) 63

(4) 151

**Ans.** 1

**Sol.** New mean = 58 - 5

$$= 53$$

107. Which of the following is a true statement?

- (1) Any real number is either rational or irrational      (2) 0 is not real number  
(3) Any real number is either prime or composite      (4)  $\sqrt{9}$  is an irrational number

Ans. 1

Sol.  $Q \cup Q' = R$

108. The area of a rectangle is  $6x^2 + 5x - 6$ . If its length is  $3x - 2$ , then its breadth is :

- (1)  $2x + 3$                       (2)  $2x + 1$                       (3)  $x + 3$                       (4)  $3x + 2$

Ans. 1

Sol.  $(3x - 2) \times b = (6x^2 + 5x - 6)$

$$= 6x^2 + 9x - 4x - 6$$

$$= 3x(2x + 3) - 2(2x + 3)$$

$$(3x \cancel{- 2}) \times b = (2x + 3)(3x \cancel{- 2})$$

$$b = 2x + 3$$

109. If  $\frac{x}{y} + \frac{y}{x} = -1$ , ( $x, y \neq 0$ ), then the value of  $x^3 - y^3$  is :

- (1) 1                      (2) -1                      (3) 0                      (4)  $\frac{1}{2}$

Ans. 3

Sol.  $\frac{x}{y} + \frac{y}{x} = -1$

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

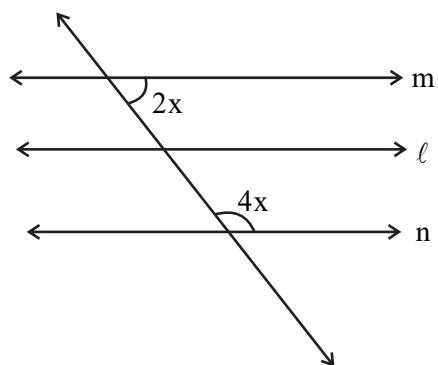
$$x^2 + y^2 + xy = 0$$

$$\therefore x^3 - y^3 = (x - y)(x^2 + xy + y^2)$$

$$= (x - y)(0)$$

$$= 0$$

110. In the given figure, the line  $l$  is parallel to the lines  $m$  and  $n$ . Then the value of  $x$  is :



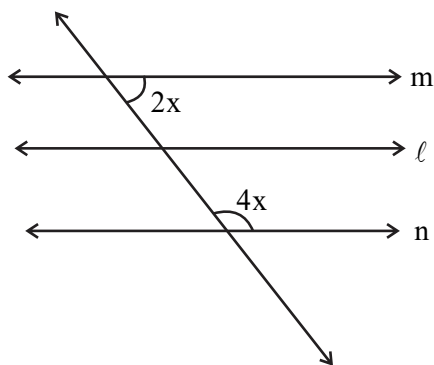
(1)  $90^\circ$

(2)  $30^\circ$

(3)  $45^\circ$

(4)  $60^\circ$

Ans. 2



Sol.

$$l \parallel m \parallel n$$

$$\Rightarrow 2x + 4x = 180^\circ (\because \text{co-interior angles})$$

$$6x = 180^\circ$$

$$x = 30^\circ$$

111. If the total surface area of a cube is  $96\text{cm}^2$ , then its volume is :

(1)  $64\text{cm}^3$

(2)  $512\text{cm}^3$

(3)  $8\text{cm}^3$

(4)  $27\text{cm}^3$

Ans. 1

Sol.  $6a^2 = 96$

$$a = 4$$

$$\text{volume}(v) = a^3 = 64\text{cm}^3$$

112. The probability of choosing a vowel in the word 'EDUCATION' is :

(1)  $\frac{3}{9}$

(2)  $\frac{4}{9}$

(3)  $\frac{5}{9}$

(4)  $\frac{7}{9}$

Ans. 3

Sol. EDUCATION

$$\text{vowels} = A = \{E, U, A, I, O\}$$

$$n(A) = 5$$

$$\therefore P(A) = \frac{5}{9}$$

113. The L.C.M. of  $6x^2y^2$  and  $8x^4y^4$  is :

(1)  $24x^4y^4$

(2)  $48x^6y^6$

(3)  $24x^6y^6$

(4)  $48x^4y^6$

Ans. 1

Sol.  $6x^2y^2 = 2 \times 3 \times x^2 \times y^2$

$$8x^4y^4 = 2 \times 2 \times 2 \times x^4 \times y^4$$

$$\therefore \text{LCM} = 2^3 \times 3 \times x^4 \times y^4$$

$$= 24x^4y^4$$

114. Two parallel lines touch the circle at the points A and B respectively. If area of the circle is  $25\pi \text{ cm}^2$ , then AB is equal to :

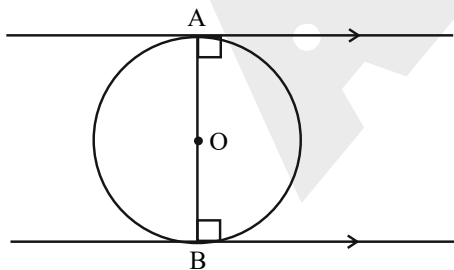
(1) 10 cm

(2) 8 cm

(3) 5 cm

(4) 25 cm

Ans. 1



Sol.

$$\text{Area of circle} = \pi r^2 = 25\pi$$

$$r = 5$$

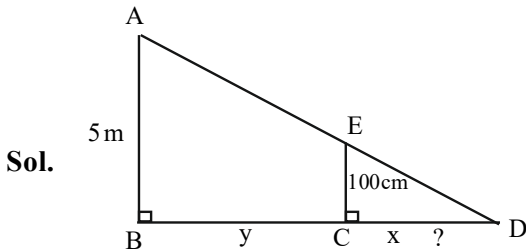
$$d = 10$$

$$\therefore AB = 10$$

**115.** A girl of height 100 cm is walking away from the base of a lamp post at a speed of 1.9 m/sec. If the lamp is 5 m above the ground, the length of the shadow after 4 sec. is :

- (1) 160 cm                      (2) 180 cm                      (3) 200 cm                      (4) 190 cm

**Ans.** 4



$$BC = \text{Distance walked} = \text{speed} \times \text{time}$$

$$= 1.9 \times 4$$

$$y = 7.6 \text{ m}$$

$\triangle ABD \sim \triangle CED$  (AA similarity)

$$\frac{AB}{EC} = \frac{BD}{CD}$$

$$\frac{5}{1} = \frac{7.6 + x}{x}$$

$$5x = 7.6 + x$$

$$4x = 7.6$$

$$x = 1.9 \text{ m} = 190 \text{ cm}$$

**116.** If 'a' and 'b' are any two positive integers and  $a^b \times b^a = 72$ , then the values of a and b are :

- (1) 2, 3                      (2) 3, 2                      (3) 2, 3 or 3, 2                      (4) 3, 3

**Ans.** 3

**Sol.**  $a^b \times b^a = 72$

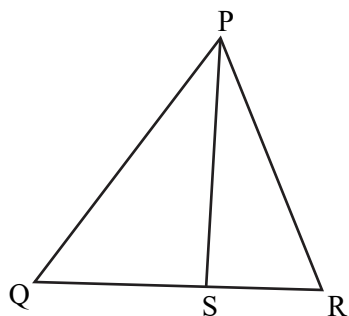
$$72 = 9 \times 8$$

$$= 3^2 \times 2^3$$

i.e.  $a = 3 \Rightarrow b = 2$

$$a = 2 \Rightarrow b = 3$$

117. If PS is the bisector of angle P and QS = 6 cm, SR = 5 cm; PQ = 12 cm, then PR is :



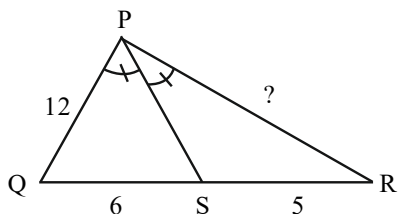
(1) 12 cm

(2) 10 cm

(3) 8 cm

(4) 30 cm

Ans. 2



Sol.

By ABT,  $\frac{PQ}{PR} = \frac{QS}{SR}$

$$\frac{12}{PR} = \frac{6}{5}$$

$$6 \times PR = 12 \times 5$$

$$PR = 10$$

118. The distance between two points (4, 3) and (-2, 1) is :

(1)  $2\sqrt{10}$

(2) 4

(3)  $2\sqrt{2}$

(4)  $5\sqrt{2}$

Ans. 1

Sol. Distance =  $\sqrt{6^2 + 2^2} = \sqrt{40} = 2\sqrt{10}$

119. The simplified value of  $\cos \theta \sec \theta + \sin \theta \operatorname{cosec} \theta$  is :

(1) 2

(2) 3

(3) 0

(4) 1

Ans. 1

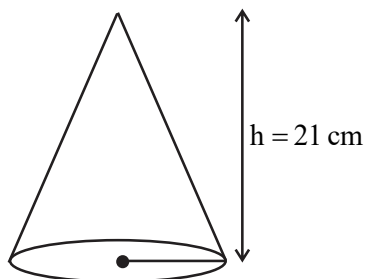
Sol.  $\cos \theta \frac{1}{\cos \theta} + \sin \theta \frac{1}{\sin \theta} = 1 + 1 = 2$



120. If the base circumference of a right circular cone and its height are 220 cm and 21 cm respectively, then the volume of the cone is :

- (1) 24,650 cm<sup>3</sup>                      (2) 21,750 cm<sup>3</sup>                      (3) 26,950 cm<sup>3</sup>                      (4) 25,400 cm<sup>3</sup>

Ans.



Sol.

$$2\pi r = 220$$

$$h = 21$$

$$2 \times \frac{22}{7} \times r = 220$$

$$r = 35$$

$$\therefore \text{volume}(v) = \frac{1}{3} \times \frac{22}{7} \times 35 \times 35 \times 21$$

$$= 26,950 \text{ cm}^3$$

121.  $\alpha = \frac{R_T - R_0}{R_0(T - T_0)}$  where  $R_T, R_0$  - Resistance,  $T, T_0$  - Temperature, then the unit of  $\alpha$  is :

- (1)  $\Omega/^\circ\text{C}$                       (2)  $\Omega^\circ\text{C}$                       (3)  $^\circ\text{C}$                       (4)  $^\circ\text{C}/\Omega$

Ans. 3

Sol.  $\alpha$  is temperature coefficient of resistance unit  $^\circ\text{C}$ .

122. A girl of mass 40 kg stands on her feet of surface area 80 cm<sup>2</sup> ( $g = 10 \text{ m/s}^2$ ). The pressure exerted by her feet is :

- (1)  $5 \times 10^3 \text{ Pa}$                       (2)  $5 \times 10^4 \text{ Pa}$                       (3) 0.5 Pa                      (4) 2 Pa

Ans. 2

Sol.  $P = \frac{F}{A}; F = mg$

$$F = 40 \times 10 = 400 \text{ N}$$

$$A = 80 \text{ cm}^2 = 80 \times 10^{-4} \text{ m}^2$$

$$P = \frac{F}{A} = \frac{400}{80 \times 10^{-4}} = 5 \times 10^4 \text{ Pa}$$

123. If the EMF of a cell is 1.5 V, then the energy provided by the cell to drive 0.5 C of charge around the circuit:

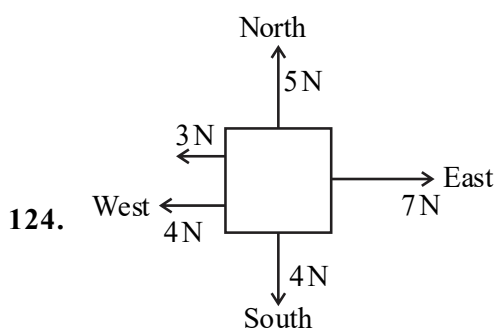
- (1) 1 J                                      (2) 0.75 J                                      (3) 0.5 J                                      (4) 0.25 J

Ans. 2

Sol.  $\frac{W}{q} = V; W = qV$

$$W = 0.5 \times 1.5$$

$$W = 0.75 \text{ J}$$



In which direction does the net force act ?

- (1) North                                      (2) South                                      (3) East                                      (4) West

Ans. 1

Sol. No Net force along horizontal direction.

$$\text{Net force along vertical direction} = 5 - 4 = 1 \text{ N (Towards North)}$$

125. Pick out the correct statements regarding the properties of Magnetic Lines of force.

- (a) Magnetic Lines of force never intersect.  
 (b) They will be maximum at the equator than at the poles.  
 (c) Magnetic Lines of force start from South pole and end at the North pole.  
 (d) Magnetic Lines of force are closed continuous curves extending to the body of the magnet.
- (1) (a), (b) and (c) only      (2) (a), (b) and (d) only      (3) (a) and (d) only      (4) (b) and (c) only

Ans. 3

Sol. Properties of magnetic field lines.

126. Pick out the right answer to correct the given statement.

The distance travelled by sound in one second is called time period of the sound.

- (1) Loudness                                      (2) Pitch                                      (3) Velocity                                      (4) Frequency

Ans. 3

Sol. Distance travelled by wave per unit time is called as wave speed.

127. A person wears glasses of power  $-2.0$  D. The defect of the eye and the far point of the person without the glasses will be :

- (1) Near sightedness, 50 cm (2) Far sightedness, 50 cm  
(3) Near sightedness, 250 cm (4) Astigmatism, 50 cm

Ans. 1

Sol. As power given is negative, person is wearing concave lens. It is used as correction lens ie near sightedness.

$$P = \frac{100}{f}; f = \frac{100}{-2} = -50 \text{ cm}$$

Far point is at a distance equal to 50 cm.

128. Pick the odd one out.

- (1) Water recovery system (2) Oxygen generation system  
(3) Eye tracking technology (4) Sound Navigation and Range (SONAR)

Ans. 4

Sol. Water recovery system, oxygen generation system and eye tracking technology comes under the benefits of ISS.

129. The monthly bill (30 days), if the following appliances are used as indicated below at the rate of Rs 5 per unit:

- (a) A heater of 1000 Watt for 2 hours daily.  
(b) Ten 60 Watt bulbs for 5 hours daily.

- (1) Rs 550 (2) Rs 700 (3) Rs 750 (4) Rs 500

Ans. 3

Sol. For Heater =  $(1\text{Kw} \times 2\text{hr}) \times 30$   
= 60 units per month.

$$\text{For bulb} = \left( 10 \times \left( \frac{60}{1000} \right) \text{kw} \times 5 \text{hr} \right) \times 30$$
$$= 90 \text{ units per month}$$

Total bill =  $150 \times 5 = 750$  Rs.

130. A DC generator works on the principle of \_\_\_\_\_.

- (1) Len'z Law (2) Ohm's Law  
(3) Faraday's Law of Electromagnetic Induction (4) Fleming's Rule

Ans. 3

Sol. DC Generator works on principle of Faraday's law of electromagnetic induction.

131. Match the following :

- (a) Highest refraction (i) Convex Mirror  
(b) Lowest refraction (ii) Concave Mirror  
(c) Headlights of a car (iii) Diamond  
(d) Side rear view mirror (iv) Ice

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

Ans. 1

Sol. Highest Refraction - Diamond

Lowest Refraction - Ice

Headlights of car - Concave mirror

Side rear view mirror - Convex mirror

132. The expression for the magnification of a spherical mirror in terms of focal length  $f$  and distance of the object from mirror ( $u$ ) is :

- (1)  $\frac{-f}{u-f}$  (2)  $\frac{f}{u+f}$  (3)  $\frac{-f}{u+f}$  (4)  $\frac{f}{u-f}$

Ans. 1

Sol.  $m = \frac{-v}{u}$ ;  $f = \frac{uv}{u+v}$

$$fu + fv = uv; v(u - f) = uf$$

$$v = \frac{uf}{u-f}; m = -\left(\frac{\frac{uf}{u-f}}{u}\right)$$

$$\boxed{m = \frac{-f}{u-f}}$$

133. When a lactometer is used in a given sample of milk A, it floats in the milk such that half of the length of its stem is immersed in the milk. When it is used in another sample of milk B, the length of the stem immersed in the milk is one fourth of the total length. Then which of the following is/are true?

(a) Water content in A is more than that of B.

(b) Density of the sample A is less than the density of the sample B.

(1) (a) is true, but (b) is false

(2) (a) and (b) are false

(3) (a) and (b) are true

(4) (a) is false, but (b) is true

Ans. 3

**Sol.** Let density of Lactometer  $\rho$

$$\text{for milk A } \rho = \frac{1}{2}\rho_A \text{ -----(1)}$$

For milk B

$$\rho = \frac{1}{4}\rho_B \text{ -----(2)}$$

$$\boxed{\rho_B = 2\rho_A}$$

Water content in A is more than B.

**134.** Which of the following does not release  $H^+$  ion when added in water?

- (1) HCl                      (2) HCOOH                      (3)  $CH_3OH$                       (4)  $CH_3COOH$

**Ans.** 3

**Sol.** Because alcohols donot release  $H^+$  in water.

**135.** Find the odd one out.

- (1) mesons                      (2) positrons                      (3) neutrinos                      (4) protons

**Ans.** 3

**Sol.** Neutrino - neutral in charge

**136.** An element 'X' has 8 electrons in the M shell when it gains one electron. Which statements given below are not correct about the element 'X' ?

- (a) It belongs to 3<sup>rd</sup> period in the modern periodic table  
(b) It has a valaney of 7  
(c) It belongs to 18<sup>th</sup> group in the modern periodic table  
(d) Its valency is 1  
(1) (a) and (b)                      (2) (b) and (c)                      (3) (b) and (d)                      (4) (a) and (d)

**Ans.** 2

**Sol.** K L M

$$d - 17e^-$$

2, 8, 7

$Cl^-$     K L M

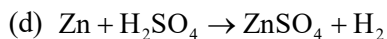
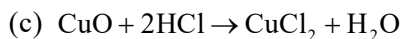
2 8 8

3<sup>rd</sup> period, 17<sup>th</sup> group

valency -1

b, c  $\rightarrow$  incorrect

137. Identify the double displacement reactions.



- (1) (a) and (b)                      (2) (b) and (c)                      (3) (a), (b) and (d)                      (4) (a), (b) and (c)

Ans. 4

Sol. a,b,c  $\rightarrow$  double displacement

d  $\rightarrow$  single displacement

138. **Assertion (A)** : The position of hydrogen in the modern periodic table is still under debate.

**Reason (R)** : In the periodic table hydrogen is placed at the bottom of the alkali metals while hydrogen is a gas.

- (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. A  $\rightarrow$  correct

R  $\rightarrow$  wrong

Reason. It has similarities with both group 1 & Group 17 elements.

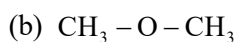
139. The Rule of Eight was proposed by :

- (1) Kossel and Lewis                      (2) Henry Moseley                      (3) Dimitri Mendeleev                      (4) John Newland

Ans. 1

Sol. Kossel & Lewis proposed the octet rule

140. (a)  $\text{CH}_3 - \text{CH}_2 - \text{OH}$



If compounds (a) and (b) have same molecular formula but different kind of arrangements, then compound (b) is an :

- (1) alcohol                      (2) ether                      (3) aldehyde                      (4) acid

Ans. 2

Sol. Compound (b) is ether.

Name : Methoxy methane.

141. Identify the incorrect pair

- (1) Group 11 - Halogen family                      (2) Group 2 - Alkaline earth metals  
(3) Group 13 - Boron family                      (4) Group 16 - Chalcogen family

Ans. 1

Sol. is correct

Halogen family - group 17.

142. If the difference in electronegativity between two elements is 1.7, then the bond is \_\_\_\_\_.

- (1) 60% covalent 40% ionic (2) 50% covalent 50% ionic  
(3) 40% covalent 60% ionic (4) 70% covalent 30% ionic

Ans. 2

Sol.  $\Delta EN > 1.7 \rightarrow$  Bond will be Ionic

$\Delta EN < 1.7 \rightarrow$  Bond will be covalent.

$\Delta EN = 1.7 \rightarrow$  50% Ionic & 50% covalent.

143. The acid which makes iron passive is \_\_\_\_\_.

- (1) Conc. HCl (2) Conc. H<sub>2</sub>SO<sub>4</sub> (3) Conc. HNO<sub>3</sub> (4) Conc. HF

Ans. 3

Sol. Conc. HNO<sub>3</sub> being a strong oxidising agent deposits a thin layer of iron oxide making it passive.

144. The value of  $p^{OH}$  of rain water is :

- (1) 7 (2) 6 (3) 8 (4) 9.5

Ans. 4

Sol. Rain water is slightly acidic having a pH is 5 - 5.5.

$\therefore$  w.k.T  $PH + POH = 14$

$POH = 14 - 5$

$= 8(\text{approx}).$

145. The organic compound contains 4 carbon atoms, the root word according to IUPAC is :

- (1) Meth- (2) Eth- (3) Prop- (4) But-

Ans. 4

Sol. Direct

146. Which one of the following element is not a Metalloid ?

- (1) Arsenic (2) Silicon (3) Boron (4) Copper

Ans. 4

Sol. Cu is a metal.

147. Hydroponics was demonstrated by a German Botanist \_\_\_\_\_ in 1980.

- (1) Julius Von Sachs. (2) Nehemiah Grew (3) Robin Hill (4) Robert Brown

Ans. 1

Sol. Julius Van Sachs was a German Botanist for the first time plants could be grown to maturity in a defined nutrient solution in the complete absence of soil. This technique of growing plants in a nutrient solution is known as Hydroponics.

**148. Assertion (A) :** Rhizobium is a soil bacterium that colonize the roots of leguminous plants to form root nodules.

**Reason (R) :** They increase the intake of Phosphorous

- (1) (A) is correct and (R) is incorrect                      (2) (A) is incorrect and (R) is correct  
(3) (A) is correct but (R) does not explain (A)            (4) (A) is correct and (R) explains (A)

**Ans. 1**

**Sol.** Rhizobium increases the intake of nitrogen.

**149. Which is not a component of stele ?**

- (1) Pitch                                      (2) Pericycle                      (3) Cambium                      (4) Vascular tissue

**Ans. 3**

**Sol.** Stele is the central part of the stem inner to endodermis. It consist pericycle, vascular bundle, pith.

**150. Choose the incorrect statement.**

- (1) Epithelium helps in absorption of nutrients.                      (2) Epithelium allows the normal movement.  
(3) Epithelium helps in elimination of waste products.            (4) Epithelium secretes chemical substances.

**Ans. 2**

**Sol.** Muscular tissue allows the normal movement.

Epithelium does not allow the normal movement.

**151. Find out the true and false statements.**

- (a) A recessive factor is altered by the presence of a dominant factor.  
(b) Dominant factor is expressed in both  $F_1$  and  $F_2$  generations  
(c) Recessive factor is expressed only in  $F_1$  generation of a monohybrid cross  
(d) Gregor Mendel conducted his experiment on bean plant

- (1) (a) false, (b) false, (c) true, (d) false  
(2) (a) true, (b) false, (c) true, (d) true  
(3) (a) true, (b) true, (c) false, (d) false  
(4) (a) true, (b) false, (c) false, (d) false

**Ans. 3**

**Sol.** a, b statements are correct

c, d statements are false

Dominant factor is expressed only in  $F_1$  generation of a monohybrid cross.

Gregor Mendel conducted his experiment on pea plant.

**152. Which is/are wrong about the properties of meristematic tissue?**

- (a) Cells are small                                      (b) Vacuoles are absent  
(c) Intercellular spaces are present                      (d) Cell grow and divide regularly

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

**Ans. 3**



**Sol.** a, b, d are correct properties of meristematic tissues

In meristematic tissue intercellular spaces are absent.

**153.** The cells once dead and that cannot be replaced in lifetime:

- (1) Skin cell                      (2) Liver cell                      (3) Red blood cell                      (4) Eye lens

**Ans.** 4

**Sol.** Cells of the eye lens, nerve cells of cerebral cortex and most muscle cells last a life time but once dead are not replaced.

Duration of cell replacement:

\* Skin cells - about every 2 weeks

\* Bone cells - about every 10 years

\* Liver cells - about every 300 - 500 days

\* Red blood cells last for about 120 days and are replaced.

**154.** Match the following:

- |                  |  |
|------------------|--|
| (a) Carbohydrate | (i) Made up of amino acids                       |
| (b) Protein      | (ii) Metabolic function                          |
| (c) Fat          | (iii) Physiological and biological function      |
| (d) Vitamins     | (iv) Provides chief source of energy to the body |
- (1) (a) - (ii), (b) - (iv), (c) - (iii), (d) - (i)  
(2) (a) - (iii), (b) - (ii), (c) - (i), (d) - (iv)  
(3) (a) - (iv), (b) - (i), (c) - (ii), (d) - (iii)  
(4) (a) - (iv), (b) - (iii), (c) - (i), (d) - (ii)

**Ans.** 3

**Sol.** Carbohydrate - Provides chief source of energy to the body.

Protein - Made up of Aminoacids

Fat - Metabolic function

Vitamin - Physiological & Biological function.

**155.** Choose the incorrect pair.

- |                       |   |                              |
|-----------------------|---|------------------------------|
| (1) Robert Koch       | - | Father of Bacteriology       |
| (2) Sir Ronald Rose   | - | Founder of Malaria           |
| (3) Stanley B Broiner | - | Microscope                   |
| (4) William Beaumont  | - | Father of Gastric Physiology |

**Ans.** 3

**Sol.** Antonie van Leeuwenhoek is father of microscope.

**156.** Find the odd one out.

- (1) Eosinophils                      (2) Monocytes                      (3) Neutrophils                      (4) Myofibrils

**Ans.** 4

**Sol.** Eosinophils, monocytes, neutrophils are type of WBC's, myofibrils are long filament like structures to form muscle fibers.

**157.** Pick the odd one out

- (1) Cuticle                      (2) Diverticula                      (3) Botryoidal tissue                      (4) Dermis

**Ans.** 2

**Sol.** Dermo-muscular body wall: The body wall of leech contains

- i) Cuticle                      ii) Epidermis                      iii) Dermis                      iv) Muscular layer.

**158.** \_\_\_\_\_ Promotes the development and enlargement of all tissues of the body.

- (1) GH                      (2) TSH                      (3) GTH                      (4) ACTH

**Ans.** 1

**Sol.** Growth hormone [GH].

**159.** Match the following:

- |                       |                                    |
|-----------------------|------------------------------------|
| (a) Analogous organs  | (i) Caudal vertebra                |
| (b) Vestigial organs  | (ii) Bat wing                      |
| (c) Atavism           | (iii) Front leg of a cat           |
| (d) Homologous organs | (iii) Thick hair on the human body |
- (1) (a) - (i), (b) - (ii), (c) - (iii), (d) - (iv)  
(2) (a) - (ii), (b) - (i), (c) - (iv), (d) - (iii)  
(3) (a) - (iv), (b) - (ii), (c) - (i), (d) - (iii)  
(4) (a) - (ii), (b) - (iv), (c) - (iii), (d) - (i)

**Ans.** 2

**Sol.** Analogous organs - Bat wing.

Vestigial organs - Caudal vertebra

Atavism - Thick hair on the human body

Homologous organs - Front leg of a cat.

**160.** Assertion (A) : RBC plays an important role in the transport of respiratory gases.

Reason (R) : RBC do not have cell organelles and nucleus.

- (1) Both (A) and (R) are true and (R) is correct explanation of (A)
- (2) Both (A) and (R) are true but (R) is not the correct explanation of (A)
- (3) (A) is true but (R) is false.
- (4) Both (A) and (R) are false

**Ans.** 1

**Sol.** The RBC are devoid of nucleus, mitochondria ribosome and endoplasmic reticulum. The absence of these organelles accommodates more haemoglobin thereby maximising the oxygen carrying capacity of the cell. Biconcave shape increase the surface area for oxygen binding, loss of mitochondria allow the RBC to transport all the oxygen to tissues and loss of endoplasmic reticulum allows more flexibility for RBC to move through the narrow capillaries.

**161.** Who among the following was the first Peshwa of Shahu?

- (1) Balaji Vishwanath
- (2) Baji Rao
- (3) Balaji Baji Rao
- (4) Madhava Rao

**Ans.** 1

**Sol.** Balaji Vishwanath was first Peshwa appointed by Shahu in 1713.

**162.** The great military genius of the Mangols:

- (1) Napoleon Bonaparte
- (2) Jan Zizka
- (3) Alexander
- (4) Genghis Khan

**Ans.** 4

**Sol.** Genghis Khan was the one who united all tribes and formed a military.

**163.** Who was awarded the title of Nawab after the defeat of Sirajuddaulah ?

- (1) Mir Zafar
- (2) Tipu Sultan
- (3) Bahadur Shah Zafar
- (4) Hyder Ali

**Ans.** 1

**Sol.** After the Battle of Plassey British awarded Mir Zafar as Nawab

**164.** Before French Revolution the political body of French was called as \_\_\_\_\_.

- (1) Duma
- (2) Reich Stag
- (3) Lok Sabha
- (4) Estates General

**Ans.** 4

**Sol.** Estate general was a political body consist of 3 tiers in France.

**165.** The war between Britan and France had centred on the control of colonies in North America:

- (1) The American war of Independence
- (2) Seven years war
- (3) The Crusades
- (4) Battle of Bunker Hill

**Ans.** 2

**Sol.** Seven years war was fought between France and England (Britain) in 1756 ended with treaty of Paris - in 1763.

**166.** Find the correct match.

(1) Corvee	-	Free Labour
(2) Gabelle	-	Land tax
(3) Taille	-	Salt tax
(4) Tithe	-	Customs Duty

**Ans.** 1

**Sol.** Corvee was a free labour system it was imposed by a state for the purpose of public works.

**167.** Choose the correct statement/Statements.

- (i) The Portuguese were the Pioneers of naval expeditions
  - (ii) New Plymouth was named after the Quaker Penn
  - (iii) Quakers have the reputation of encouraging wars
  - (iv) The English changed the name of New Amsterdam to New York
- (1) (i) and (ii) are correct  
(2) (iii) only correct  
(3) (iv) only correct  
(4) (i) and (iv) are correct

**Ans.** 4

**Sol.** Portuges were the one who started Navigation school to find new sea routes to Asia.  
Early name of New York was New Amsterdom changed by British.

**168.** Arrange the following events in the chronological order :

- (a) Vietnam Nationalist Party
  - (b) Fascist Party
  - (c) The Union of South Africa
  - (d) French Communist Party
- (1) (a), (b), (c), (d)  
(2) (a), (d), (c), (b)  
(3) (c), (b), (d), (a)  
(4) (c), (b), (a), (d)

**Ans.** 3

**Sol.** Vietnam National Party - 1939  
Facist - 1919  
The union of South Africa - 1910  
French Communist Party - 1920

**169.** Who called Slater as the "Father of American Industrial Revolution"?

- (1) George Washington      (2) Thomas Jefferson      (3) Andrew Jackson      (4) Abraham Lincoln

**Ans.** 3

**Sol.** Andrew Jackson said Salter as father of American Industrial revolution.

**170.** Emperor Menelik was the ruler of which African country?

- (1) Ethiopia                      (2) Cape colony                      (3) Kenya                      (4) Uganda

**Ans.** 1

**Sol.** Ethiopia was ruled by Menelik from 1889 to 1913.

**171.** Match the following:

- |                            |            |
|----------------------------|------------|
| (a) Hundred Days of Reform | (i) 1832   |
| (b) Russian Revolution     | (ii) 1898  |
| (c) First Opium War        | (iii) 1911 |
| (d) The Chinese Revolution | (iv) 1917  |

(1) (a) - (iv), (b) - (iii), (c) - (ii), (d) - (i)

(2) (a) - (iv), (b) - (i), (c) - (ii), (d) - (iii)

(3) (a) - (ii), (b) - (iv), (c) - (i), (d) - (iii)

(4) (a) - (ii), (b) - (iii), (c) - (i), (d) - (iv)

**Ans.** 3

**Sol.** Hundred days of reform - 1898

Russian Revolution - 1917

First opium war - 1832

Chinese Revolution - 1911.

**172.** Which statement is 'false' with regard to Volcanoes?

- (1) Volcanic materials enrich the soil fertility.  
(2) Hot volcanic region helps in generating tidal energy  
(3) Volcanoes are the most attractive tourist spots of the world  
(4) Volcanic eruption causes earthquakes

**Ans.** 2

**Sol.** Volcanic region does not help in generating tidal energy. It helps to generate Geothermal energy.

**173.** Which wind is referred as 'rotating forties' at 40°, 'furious fifties' at 50° and 'screaming sixties' at 60° latitudes?

- (1) Trade winds                      (2) Easterlies                      (3) Westerlies                      (4) Cyclones

**Ans.** 3

**Sol.** The extreme wind which blows in Southern hemisphere known as westerly

**174.** \_\_\_\_\_ is the National Geo - portal developed and hosted by ISRO, it enables visualisation of satellite imagery and maps.

- (1) GPS                      (2) Agni                      (3) Bhuvan                      (4) Kalpana

**Ans.** 3

**Sol.** Bhuvan - Geo portal by ISRO comprising of Geo Spatial Data.

175. Pulicat lake lies in the \_\_\_\_\_ district.

- (1) Kanchipuram                      (2) Chennai                      (3) Tiruvallur                      (4) Vellore

Ans. 3

Sol. Pulicat lake is in Tamil Nadu North east Border district Tiruvallur.

176. Match the following:

- |                         |                 |
|-------------------------|-----------------|
| (a) Tehri Dam           | (i) Sutlej      |
| (b) Hirakud Dam         | (ii) Bhagirathi |
| (c) Nagarjuna Sagar Dam | (iii) Mahanadi  |
| (d) Indira Gandhi Canal | (iv) Krishna    |

(1) (a) - (ii), (b) - (iii), (c) - (iv), (d) - (i)

(2) (a) - (iii), (b) - (iv), (c) - (i), (d) - (ii)

(3) (a) - (ii), (b) - (iv), (c) - (iii), (d) - (i)

(4) (a) - (iv), (b) - (iii), (c) - (ii), (d) - (i)

Ans. 1

Sol. Tehri - Bhagirathi

Hirakud - Mahanadi

Nagarjun Sagar - Krishna

Indira Gandhi canal - Suttlej

177. \_\_\_\_\_ is not a part of the world network biosphere reserves of UNESCO.

- (1) Nilgiri                      (2) Agasthiyamalai                      (3) Great Nicobar                      (4) Kachch

Ans. 4

Sol. Kachch is not recognised by UNESCO.

178. The Indian Council of Agriculture Research was set up in \_\_\_\_\_.

- (1) 1935                      (2) 1954                      (3) 1951                      (4) 1953

Ans. 4

Sol. ICAR founded in 1953.

179. Pick the odd one out.

- (1) Assam                      (2) Meghalaya                      (3) Tripura                      (4) Nagaland

Ans. 4

Sol. Nagaland is not sharing Border with Bangladesh.

180. \_\_\_\_\_ is the most common but powerful means of communication.

- (1) Internet                      (2) Social Media                      (3) Print Media                      (4) Television

Ans. 3

Sol. Print media which is cheap and easy accesable and powerfull.

181. The name Gaja (Cyclone) was named by \_\_\_\_\_.

- (1) Bangladesh                      (2) Sri Lanka                      (3) Pakistan                      (4) Oman

Ans. 2

Sol. Gaja was named by Sri lanka it is originated in 2018.

**182.** Match the following:

(a) Mount Helens

(b) Mount Fuji

(c) Mount Kilimanjaro

(d) Mauna Loa

(1) (a) - (ii), (b) - (i), (c) - (iii), (d) - (iv)

(3) (a) - (iv), (b) - (i), (c) - (ii), (d) - (iii)

(i) Japan

(ii) Tanzania

(iii) Hawaii Island

(iv) United States of America

(2) (a) - (iii), (b) - (iv), (c) - (i), (d) - (ii)

(4) (a) - (iv), (b) - (i), (c) - (iii), (d) - (ii)

**Ans.** 3

**Sol.** Mt. Helens - USA Mount Kilimanjaro Tanzania

mt. Fuji - Japan

Mauna Loa - Hawaii

**183.** A communication issued by an appropriate authority stating the policy of the Government is known as:

(1) Office Memorandum (2) Legislative Procedure (3) Government Order (4) Circular

**Ans.** 1

**Sol.** Office memorandum is a special order of government issued for day to day administration.

**184.** Which party always won elections in Mexico since its independence in 1930 until will?

(1) Revolutionary Party

(2) Mexican Revolutionary Party

(3) Institutional Revolutionary Party

(4) Institutional Party

**Ans.** 3

**Sol.** Institutional revolutionary party (PRI) won until 1930.

**185.** The Government of India Act came into function in the year:

(1) 1930

(2) 1932

(3) 1935

(4) 1938

**Ans.** 3

**Sol.** Government of India Act issued in 1935 by British.

**186.** Assertion (A) : The Constitution of a country is a set of written rules that are accepted by all people living together in a country.

Reason (R) : Our leaders gained confidence to learn from other countries, but on our own terms.

(1) Both (A) and (R) are true and (R) is the right explanation of (A)

(2) Both (A) and (R) are true but (R) is not the correct explanation of (A)

(3) (A) is false but (R) is true

(4) Both (A) and (R) are false

**Ans.** 2

**Sol.** Both statements individually correct but R does not explain.

**187.** The state in which assembly election held in 2020:

(1) Odisha

(2) Maharashtra

(3) Karnataka

(4) Bihar

**Ans.** 4

**Sol.** Bihar elections held in 2020.

**188.** Which of the following sentence is not true of Decentralisation Act of 1992?

- (1) 33% Reservation for women
- (2) Regular election every 5 years
- (3) Election Commission of India to conduct Panchayat Elections
- (4) Reservations for SC, ST and OBC

**Ans.** 3

**Sol.** Panchayat elections are conducted by state election commission.

**189.** Chanakya, in his book, Arthashastra, supports a powerful king but believed in \_\_\_\_\_ as the basic unit of administration.

- (1) Nayaks
- (2) Gram Sabha
- (3) Samitis
- (4) Janapada

**Ans.** 4

**Sol.** According chanakya Janapada was the basic unit of administration in 3rd century.

**190.** Liberty, Equality and Fraternity were the important slogans during the \_\_\_\_\_

- (1) American Revolution
- (2) French Revolution
- (3) Russian Revolution
- (4) Chinese Revolution

**Ans.** 2

**Sol.** Liberty equality fraternity are three powerfull words given by French revolution to the world.

**191.** \_\_\_\_\_ is an informal body of Senior Ministers.

- (1) Council of Ministers
- (2) Cabinet Ministers
- (3) Ministers of State
- (4) Cabinet

**Ans.** 4

**Sol.** Cabinet is a unofficial body of senior ministers.

**192.** The Legislative Council still in existence in

- (1) Maharashtra
- (2) Tamil Nadu
- (3) Odisha
- (4) Kerala

**Ans.** 1

**Sol.** Maharashtra is the one among seven states with dual house.

**193.** The Elected Representatives in turn elect their representative is known as \_\_\_\_\_ election.

- (1) Direct
- (2) Indirect
- (3) National Level
- (4) State Level

**Ans.** 2

**Sol.** Indirect election people will not cost vote directly.

**194.** Assertion (A) : Informal financial institutions are easily approachable to the customers with flexible procedures.

Reason (R) : Safety of the pledged items and low rates of interest are the special features of informal financial institutions.

- (1) Both (A) and (R) are true and (R) is the correct explanation of (A)
- (2) Both (A) and (R) are true and (R) is not the correct explanation of (A)
- (3) (A) is true but (R) is false
- (4) (A) is false but (R) is true.

**Ans.** 3

**Sol.** A is true but R is false interest rates are high in informal sector.



**195.** The full form of HCR:

- (1) Head Count Ratio (2) Human Center Ratio  
(3) Head Calculating Rate (4) Head Continue Ratio

**Ans.** 1

**Sol.** Head count ratio

**196.** Development of a country is determined by the World Bank by :

- (1) Its per capital income (2) Its health status (3) Average literacy level (4) All of these

**Ans.** 1

**Sol.** Per capital income

**197.** Identify the basic services from this list of occupations in the tertiary sector.

Banks, Mass Media, Legal Services, Telephones, Real Estate, Transportation, Gambling, Postal, Education.

- (1) Banks, Real Estate, Legal Services, Telephones  
(2) Banks, Transportation, Postal, Education  
(3) Transportation, Gambling, Real Estate, Legal Services  
(4) Real Estate, Transportation, Telephones, Mass Media

**Ans.** 2

**Sol.** Bank, Postal, Education, Transport.

**198.** Look at the following statements about globalisation. Choose the one that is incorrect.

- (1) Globalisation has be enabled due to development in Information Technology  
(2) Globalisation has increased trade between countries  
(3) Globalisation has made countries more connected  
(4) Globalisation has reduced foreign investments.

**Ans.** 4

**Sol.** Globalisation increased foreign investment.

**199.** \_\_\_\_\_ is an innovator of new ideas and business processes.

- (1) Entrepreneur (2) Professionals (3) Business people (4) Organizer

**Ans.** 1

**Sol.** Entrepreneur

**200.** Paper Money Spread to Europe through the travels of \_\_\_\_\_

- (1) Marcopolo (2) Columbus (3) Magellan (4) Stanley

**Ans.** 1

**Sol.** Macropolo who carry the paper currency to Europe by China & Japan.