

SOLUTION

91. $N = \{1, 2, 3, \dots\}$

$P = \{2, 3, 5, 7, \dots\}$

$A = \{2, 3, 4, 5, 6, 7, \dots\}$

$N - A = \{1\}$

92. $A = \text{sum of } n \text{ Natural number} = \frac{K(K+1)}{2}$

$B = \text{sum of cubes of } N \text{ rotation} = \left(\frac{K(K+1)}{2}\right)^2$

$\log_{\sqrt{A}}^B = \log \frac{(K(K+1))^2}{2}$

$$\left(\frac{K(K+1)}{2}\right)^{\frac{1}{2}} = \frac{2}{1} \log_{\frac{K(K+1)}{2}} \left(\frac{K(K+1)}{2}\right)$$

$$= 4$$

93. $\deg(p(x) + q(x)) = 6$ possible

$\deg(p(x) + q(x)) = 3$ possible

$\deg(p(x) - q(x)) = 3$ possible

$4 \deg(p(x))^2 \cdot q(x)^2 = 12$ but 15 is given 4th option is not possible

94. $x^2 + bx + 1 : b \in \mathbb{R}$

roots are reals

$\therefore b^2 - 4ac \geq 0$

$b^2 - 4 \geq 0$

$(b-2)(b+2) \geq 0$

$(b+2) \leq 0$ (or) $(b-2) \geq 0$

≤ -2 $b \geq 2$

b has infinitely many values

95. $x + 2y = 3$

$ax + by = 4$

$\frac{1}{a} = \frac{2}{b} \neq \frac{3}{4}$

$a \neq \frac{4}{3}$

A can have more than one value

96. $7^{25} = (7^4)^6 \cdot 7$

$= (\dots 1) \cdot 7$

$= \dots 7$

\therefore unit digit is 7

97. $15^2 = 225, 16^2 = 256$
 $17^2 = 281, 18^2 = 324$
 $19^2 = 361$
 $2x - 1 \quad 2x - 1 + 2x + 2x + 1 = 6(x)$
 $2x$
 $2x + 1$
 324 possible
 $\sqrt{324} = 18$

98. $\frac{x + 7 + x - 7}{2} = 73$
 $\frac{2x}{2} = 73$
 $x = 73$

99. $\frac{48}{4} - 3 = 12 - 3 = 9$

100. No. of prime numbers = 25
 $P(A) = \frac{25}{100} = \frac{1}{4}$

101. $Bq = Cr$
 $\begin{pmatrix} a & b \\ c & d \end{pmatrix} \begin{pmatrix} p & q \\ r & s \end{pmatrix} = \begin{pmatrix} p & q \\ r & s \end{pmatrix} \begin{pmatrix} a & b \\ c & d \end{pmatrix}$
 $bs = -Cr$
 $2bq = 0$
 $b = 0$
 $c = 0$
 $b^2 + c^2 = 0$

102. Area of reactangle = xy
Area of increased radius = $\frac{36}{25} \times y$
Increase % = $\frac{\left(\frac{36}{25} - 1\right)xy}{xy} \times 100$
 $= \frac{11}{75} \times 100$
 $= 44\%$

103. $l + 2r = 18$
 $\frac{lr}{2} = 20$
 $lr = 40$
 $l = \frac{40}{r}$
 $18 = \frac{40}{r} + 2r$
 $r^2 - 9r + 20 = 0$
 $(r - 4)(r - 5) = 0$
 $r = 4 \text{ or } 5$
 $l = 8 \text{ (or) } 10 \text{ cm}$

104. $\sec \theta + \cos \theta = \sqrt{5}$

S.O.B.S

$$\sec^2 \theta + \cos^2 \theta + 2 = 5$$

$$\sec^2 \theta + \cos^2 \theta = 3$$

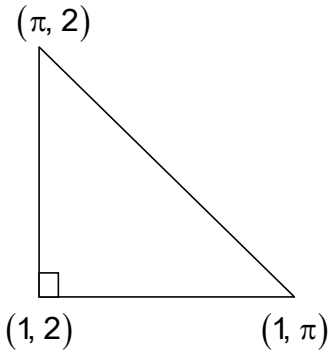
105. $\sin^2 5 + \sin^2 10 + \dots + \sin^2 90^\circ$

$$= \sin^2 5 + \cos^2 5 + \dots + \sin 40 + \cos^2 90^\circ + \sin^2 45^\circ + \sin^2 90$$

$$= 8 + \frac{1}{2} + 1$$

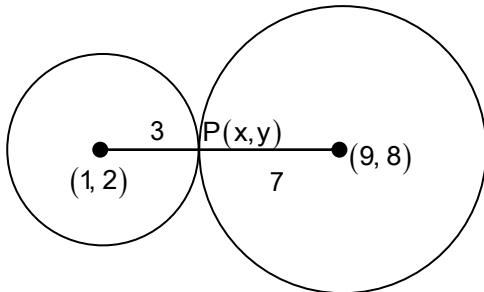
$$= 9 + \frac{1}{2} = 9\frac{1}{2}$$

106.



Orthocenter $(1, 2)$

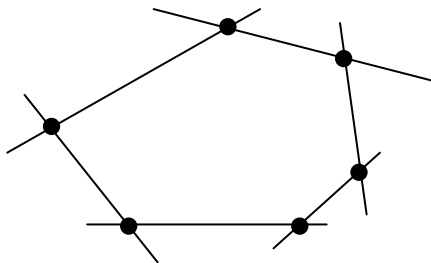
107.



$$P(x, y) = \left(\frac{mx_2 + nx_1}{m+n}, \frac{my_2 + ny_1}{m+n} \right)$$

$$= \left(\frac{27+7}{10}, \frac{24+14}{10} \right) = \left(\frac{17}{5}, \frac{19}{5} \right)$$

108.



6 intersecting points

110. $x = 3 + \sqrt{8}$

$$\frac{1}{x} = 3 - \sqrt{8}$$

$$x + \frac{1}{x} = 6$$

$$x^2 + \frac{1}{x^2} = 34$$

$$x^4 + \frac{1}{x^4} = 1154$$

111. Speed of light x one year = light year

112. Speed of water gives it kinetic energy.

113. Inertia is the property of mass. Mass of stone > mass of toothbal.

114. Steel (speed of sound depends on medium) $S_{\text{solid}} > S_{\text{liquid}} > S_{\text{gas}}$

115. Electrical energy runs the motor and motor gives mechanical energy by rotation.

116. Same (mass is always same)

117.

$$P \propto \frac{1}{v}$$

$$P = \frac{k}{V} \quad [\because PV = nRT]$$

$$Pv = k \quad T = \text{constant}$$

118. $F = \frac{mv^2}{r}$ (v → speed r → radius)

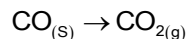
119. D

120. We always take direction of current opposite to the flow of electron.

121. In parallel connection, potential is same

122. Power x time → KWh

123. Solid carbon – di – oxide



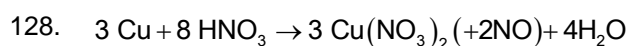
124. $\text{KNO}_3 + \text{Water} \rightarrow \text{KNO}_{3(aq)}$ endothermic

Temp ↑, solubility ↑ (1)

125. AlNiCOs (Al, Ni, Co, Fe)

126. Hg_2^{2+} (1)

127. Sonority (3) It is the property of metal to produce sound.



↓
Nitric oxide

129.
$$\text{pOH} = -\log\left(\frac{(-)}{\text{OH}}\right)$$

$$= -\log(10^{-1}) = 1$$

$$\text{pH} + \text{pOH} = 14 \quad \boxed{\text{pH} = 13}$$

130.

Redox reaction (or) Displacement reaction option (1) or (2)

131. $\text{NaHCO}_3 \rightarrow$ basic, to neutralize, they add, tartanic acid

132. (C)

133. (C)

134. Ascent of Sap : Ascent of sap in the xylem tissue of plants is the upward movement of water from the root to the crown.

135. Chlorofluoro Carbons: Many CFC's are used as refrigerants, propellants and solvents, which are organic compounds containing carbon, chlorine & fluorine.

136. Nitrogen Oxides: It absorbs light and leads to yellow brown haze.

137. Seed coat: The ovule becomes the seed and the surrounding integuments become the seed coat after fertilization.

138. Pinus : Almost all gymnosperms are anemophilous.

139. B, C, A

140. Ap is mellifera

141. Exophthalmic goiter: Because of excess secretion of thyroxine hormone.

142. Smooth & rough stem : Mendel didn't experiment with this trait.

143. Carbon – monoxide : It is an air pollutant

144. Purkinje

145. Tuberculosis.

146. Hammurabi

147. Parsees

148. Richerd I

149. Robert owen

150. Friar roger Bacon

151. 1689

152. Veliars

153. USA and England

154. Franklin D. Roosevelt

155. 15
156. Tmt sumitra Mahajan
157. Anglo – Indian
158. Lok Sabha
159. Speaker
160. 29
161. Wisdom
162. Tamil nadu
163. Dacca
164. France
165. President
166. Nilgiris
167. Thane
168. Sundarbans
169. Kudan Kulam
170. Karnataka
171. Study about population
172. Thiruvvarun
173. 29, 7
174. Sulphur dioxide
175. Cube
176. Price
177. Luxury
178. More than
179. Product and income
180. Electricity

ANSWER KEY:

91.D	92.A	93.B	94.A	95.C
96.D	97.C	98.B	99.D	100.A
101.C	102.C	103.A	104.D	105.B
106.C	107.A	108.C	109.B	110.D
111. A	112.A	113.C	114.B	115.B
116.D	117.C	118.B	119.D	120.B
121.B	122.A	123.C	124.A	125.D
126.A	127.C	128.B	129.A	130.A OR B
131.D	132.C	133.C	134.C	135.A
136.B	137.C	138.A	139.B	140.C
141.A	142.B	143.A	144.D	145.B
146.C	147.C	148.B	149.C	150.B
151.D	152.A	153.B	154.C	155.C
156.A	157.B	158.A	159.C	160.C
161.C	162.B	163.D	164.A	165.C
166.C	167.D	168.B	169.C	170.A
171.C	172.B	173.C	174.B	175.D
176.C	177.B	178.A	179.C	180.A