

(MAT Solution)

1. (4)

Sol. Odd one out is k - 1333 as B - 2^3 , J - 10^3 , G - 7^3

2. (3)

Sol. Mercury is odd one out as it is in liquid form

3. (2)

Sol. KOSW is odd one out, as in other three options a pattern is followed i.e. two letters are added in the letter to get next letter, but in KOSW this pattern is not followed

$$D \xrightarrow{E,F} G \xrightarrow{H,I} J \xrightarrow{K,L} M$$

4. (2)

Sol. In figure (2), two adjacent triangles are not filled, but in remaining figures 2 adjacent triangles are filled, so Fig (2) is odd one out

5. (3)

Sol. In figure (3) total no. of lines are 4 but in other three figures there are 3 lines to form the figure so fig (3) is odd one out.

6. (3)

Sol. Figure 3 is odd one out

7. (2)

Sol. In figure (2) the figure is not divided into two equal parts but in other figures the figure is divided into two equal parts.

8. (3)

Sol. Parliament is the head in Britain & congress is in United States of America

9. (1)

Sol. $6 : 222 :: 8 : ?$

$$6^3 + 6 = 222$$

$$8^3 + 8 = 520$$

10. (4)

$$\text{Sol. } \begin{array}{cccc} +2 \downarrow & +1 \downarrow & +2 \downarrow & +1 \downarrow \\ \begin{array}{c} C \\ F \end{array} & \begin{array}{c} E \\ G \end{array} & \begin{array}{c} J \\ M \\ S \end{array} & \begin{array}{c} P \\ +1 \end{array} \end{array} \quad \begin{array}{cccc} +2 \downarrow & +1 \downarrow & +2 \downarrow & +1 \downarrow \\ \begin{array}{c} F \\ I \end{array} & \begin{array}{c} K \\ M \end{array} & \begin{array}{c} R \\ U \end{array} & \begin{array}{c} U \\ W \end{array} \end{array}$$

↓
Similarly

11. (1)

Sol. Figure (1) will follow the sequence

12. (2)

Sol. Figure (2) will follow the sequence

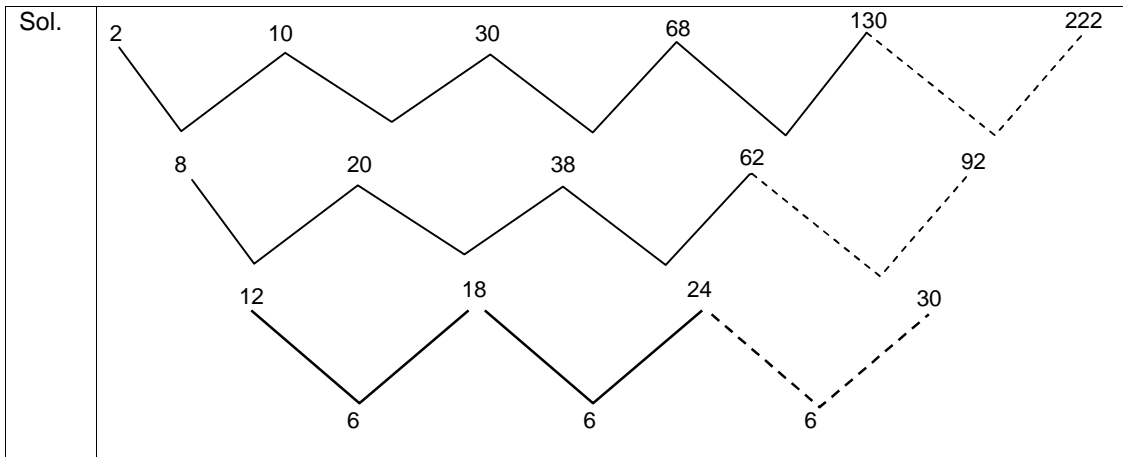
13. (4)

Sol. Figure (4) will follow the sequence

14. (1)

Sol. Figure (1) will follow the sequence

15. (3)

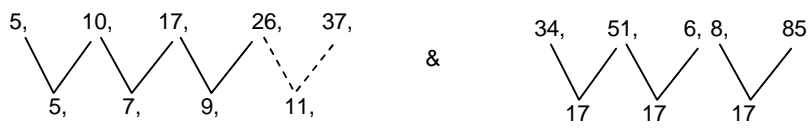


16. (2)

Sol. It is compound series of two different series
 6, 12, 20, 30, ? & 2, 6, 12, 20, ?
 so answers will be 42 & 30

17. (3)

Sol. It is a compound series of two different series



∴ series will be
 5, 34, 10, 51, 17, 68, 26, 85, 37

18. (1)

Sol. Figure (1) will follow the given sequence as

- is showing anti clock wise movement
- Δ is showing anti clock wise movement
- Arrow is showing clockwise movement

Based on above information figure (1) follows the sequence .

19. (4)

Sol. Figure (4) will follow the given sequence

20. (2)

Sol. Figure (2) will follow the given sequence

21. (1)

Sol. Figure (1) will follow the given sequence

From the above in formation codes of the letter are

- P - 5
- O - 6
- R - 4
- E - 3
- J - 2
- S - 7
- L - 1
- V - 9

22. (3)

Sol. Code of OPR is 654

23. (1)

Sol. Code of SLV is 719

24. (4)

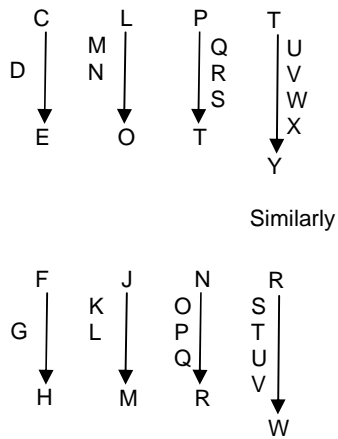
Sol. Code of EJL is 321

25. (2)

Sol. Code of RES is 437

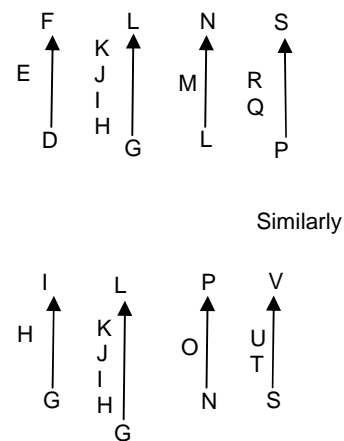
26. (3)

Sol.



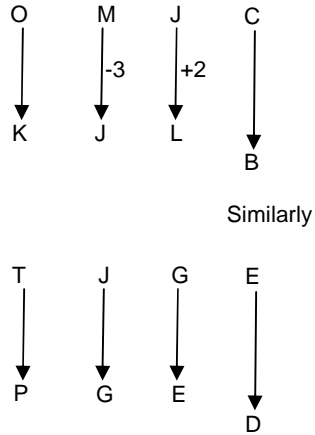
27. (2)

Sol.



28. (1)

Sol.



29. (2)

Sol. From the option

M Q B A T | M Q B A I | M O B A T

30. (4)

Sol. From the option

N T P C | N I P C | N I P C

31. (3)

Sol. From the options

I L M C | I L M C | T L M C

32. (1)

Sol. K B C | K B C | K B C

33. (3)

Sol. B M C K | B M C K | B M C K.

34. (1) $\div + =$

Sol. Form options, $24 \div 6 + 2 = 6$ [BODMAS RULE]

$$4 + 2 = 6$$
$$\text{LHS} = \text{RHS}$$

35. (4) $\times - =$

Sol. $3 \times 5 - 7 = 8$ [BODMAS]

$$15 - 7 = 8$$
$$8 = 8$$

36. (2)

Sol. $24 \div 6 + 2 = 6$

$$4 + 2 = 6$$

[BODMAS]

$$6 = 6$$

37. (3) $\times + =$

Sol. $6 \times 4 + 5 = 29$

$$24 + 5 = 29$$

[BODMAS]

$$29 = 29$$

38. (1) $- + =$

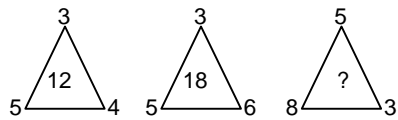
Sol. $17 - 7 + 3 = 13$

$17 - 4 = 13$ [BODMAS]

$13 = 13$

39. (4)

Sol.



In all figures 5 is common. eliminating 5 & product of other two no 5 is middle one.

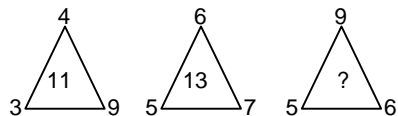
$4 \times 3 = 12$

$\Rightarrow 8 \times 3 = 24$

$6 \times 3 = 18$

40. (3)

Sol.



Adding all digits on corners & subtracting 5 from all we get middle value.

$9 + 4 + 3 = 16 - 5 = 11$

$7 + 5 + 6 = 18 - 5 = 13$

$9 + 6 + 5 = 20 - 5 = 15$

41. (2)

Sol. Adding all digits on corners & subtracting 9 from all we get middle value.

$7 + 7 + 3 = 17 - 9 = 8$

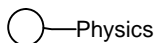
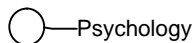
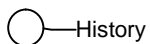
$4 + 3 + 6 = 13 - 9 = 4$

$6 + 8 + 5 = 19 - 9 = 10$

42. (4)

Sol.

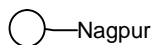
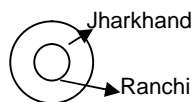
All three subjects are different from each other



43. (4)

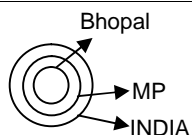
Sol.

Ranchi is in Jharkhand, But Nagpur does not belong to any of both.



44. (2)

Sol.



45 - 47 Table

	RADHA	SUMAN	SEETA	GEETA	REETA
MONDAY	✓	✓	×	✓	×
TUESDAY	×	✓	×	×	×
WEDNESDAY	✓	✓	✓	✓	✓
THURSDAY	×	✓	✓	✓	✓
FRIDAY	×	✓	×	×	✓
SATURDAY	×	×	×	✓	×
SUNDAY	-	-	-	-	-

From the given table.

45. (2)

Sol. Wednesday

46. (2)

Sol. Four

47. (2)

Sol. Seeta – Reeta

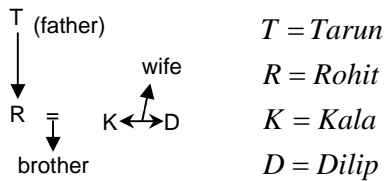
48. (1)

Sol. 7 rank from top & 26th from bottom means.

$$7 + 26 - 1 = 32$$

49. (2)

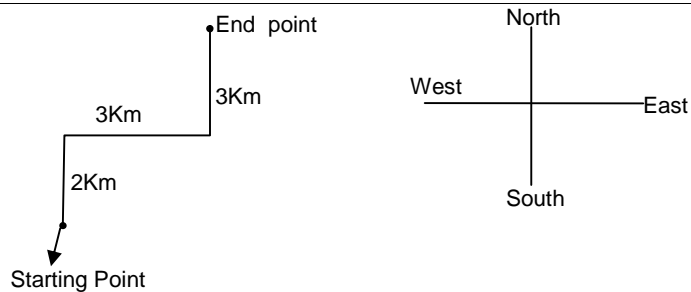
Sol.



Hence from diagram Relation is Brother in Law

50. (3)

Sol.



Hence person is facing North.

(English - Solution)

51. (2)
Sol. Refer to line 1 (Para. 2) 'After point'.
52. (3)
Sol. Refer to line 3 'when he was ..across.
53. (1)
Sol. Ref. to line 2 and 3, 'he triedahead of him'
54. (2)
Sol. Refer to line 4 (Para. 2) 'ice it'
55. (4)
Sol. Refer to last line (Para. 2) Then at last out'
56. (1)
Sol. Refer to line 1 (Para. 1) 'Every readerthings.
57. (1)
Sol. Refer to line 3 to 5 (Para. 1) 'seeing is active. Onceprogress
58. (3)
Sol. Refer to line 1 and last (Para. 2)
59. (4)
Sol. Refer to line 4 and 5 (Para. 5)
60. (4)
Sol. logical inference makes (4) the correct option
61. (3)
Sol. Option (3) is logically correct
62. (1)
Sol. Option (1) is logically correct
63. (4)
Sol. Option (4) is correct according to the logical sequence
64. (3)
Sol. The paragraph talks about Nigel's mother
P – tells about his father & mother's death
Q - refers to him mother-
65. (2)
Sol. Fits is the best
66. (2)
Sol. Preposition 'by' after the blank and logic suggests (2) as the correct option.
67. (1)
Sol. Fits is the best
68. (2)
Sol. Fits in the best
69. (4)
Sol. Fits in the best
70. (3)
Sol. Fits in the best

71. (2)
Sol. Fits in the best
72. (3)
Sol. Fits in the best
73. (3)
Sol. Option (2) is the most appropriate choice
74. (4)
Sol. Fits in the best
75. (1)
Sol. Fits in the best
76. (3)
Sol. Fits in the best
77. (1)
Sol. Fits in the best
78. (2)
Sol. Fits in the best
79. (4)
Sol. Fits in the best
80. (1)
Sol. Fits in the best
81. (1)
Sol. fits in the best however, option 1 is mis printed. 'correct – lift
82. (2)
Sol. Fits in the best
83. (3)
Sol. Fits in the best
84. (2)
Sol. means to search which is the best option.
looked out - to be careful / watchful
looked for – means to search which is the best option
looked up – to search for and find / to visit / to become better
looked into – to inquire
85. (4)
Sol. Fits in the best
86. (1)
Sol. 'think over' - to ponder or consider
87. (2)
Sol. broken down - failed to function / ceased to be useful.
88. (2)
Sol. Option (2) is the most suitable
89. (1)
Sol. Showing quiet and gentle nature, Therefore option (1) is correct

90. (4)

Sol. Option (2) is the most suitable

(SAT Solution)

91. (1)

Sol. $\Delta.P.E = mgh$
 $= 20 \times 9.8 \times \frac{50}{100}$
 $= 98J$

92. (1)

Sol. In general material used is copper

93. (3)

Sol. $\Delta Q = mc\Delta t$
 $1cal = 1g \times 0.093 \times \Delta t$
 $\Delta t = \frac{1}{0.093} \approx 10$

94. (4)

Sol. $f =$ no of oscilation in one sec.

$$f = \frac{20}{2.5} = 8Hz$$

95. (1)

Sol. $1hp = 746$ watt.

$$\Rightarrow 1hp = \frac{746 \times 1000}{1000} \text{ watt.}$$

$$\Rightarrow 1k \text{ watt} = \frac{1000}{746} hp = 3.46 \text{ hp}$$

96. (2)

Sol. fact – based

97. (1)

Sol. The solution since becomes colourless since Zn has replaced Cu from $CuSO_4$ and thus is a substitution Reaction.

98. (3)

Sol. Conceptual

99. (4)

Sol. Conceptual

100. (1)

Sol. Launch by Russia on 4th oct. 1957

101. (4)

Sol. it is the 15th saturn's non satellite.

102. (2)

Sol. $\frac{-v}{u} = -5 \Rightarrow v = 5u$

$$\frac{1}{5u} + \frac{1}{u} = \frac{1}{-10}$$

$$u = \frac{-60}{5} = -12cm$$

103. (1)

Sol. International unit of atomic weight is carbon – 12 isotope.

104. (4)

Sol. All the isotopes of U-234, U-235 and U-238 are radioactive .

U – 234 has a half life of 2.45×10^5 yrs

U – 235 has a half life of 7.04×10^8 yrs

U – 238 has a half life of 4.46×10^9 yrs

105. (1)

Sol. Atomic No – 19 No. of electrons = 19

 No. of protons = 19

Mass No – 39

No. of neutrons = Mass No – Atomic No

$$= 39 - 19$$

$$= 20$$

106. (1)

Sol. Mass % of Nitrogen in N_2O_3 is

$$= \frac{28}{76} \times 100$$

$$= 36.84\%$$

107. (3)

Sol. The chloride of the metal M is MCl_3 valency of the metal is 3.

Atomic weight = valency \times Equivalent weight

$$= 3 \times 9$$

$$= 27$$

108. (3)

Sol. Atomic weight = valency \times Equivalent weight

$$\text{Valency} = \frac{\text{At.wt}}{\text{Eq.wt}} = \frac{30}{10} = 3.$$

109. (2)

Sol. According to Dulong and Petit & Law

At. weight \times specific heat 6.4

At. wt = 6.4 / specific heat

$$= \frac{6.4}{0.1}$$

$$= 64$$

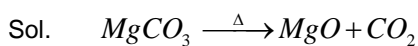
110. (1)

Sol. The No. of molecules in 1 mole in any gas is 6.023×10^{23} i.e. Avogadro's no.

111.

Sol. Question in complete

112. (2)



84 gm 40 gm

84 gm of $MgCO_3$ on decomposition gives - 40 gm MgO

$$5 \text{ gm of } MgCO_3 \text{ on decomposition gives } = \frac{40}{84} \times 5 \\ = 2.38 \text{ gm}$$

113. (2)

Sol. Valency of Cr in $Cr PO_4$ is 3.

PO_4^{-3} thus Cr will be + 3

114. (1)

Sol. Quinaine (Spelling in wrong)

Quinine, drug obtained from cinchona bark is used chiefly in the treatment of malaria.

115. (3)

Sol. Nocturnal (active at night)

There are many birds that are active nocturnally. Some birds, like owls and nighthawks are predominantly nocturnal.

116. (4)

Sol. The normal core body temperature of healthy, resting adult human being is 37.0 degrees celsius. (37°C)

117. (2)

Sol. Budding is a form of asexual reproduction in which a new individual is produced as an outgrowth (bud) of the parent, held for sometime, later released as an independent identical copy of the parent. Budding is seen in unicellular fungi like 'yeasts' and cnidarians like *Hydra*.

118. (3)

Sol. Species is a genetically closed system because its members do not interbreed with members of other species. It is lowest or basic taxonomic category.

119. (4)

Sol. Micronutrients are those essential elements which are required in quantity of less than 1 milligram/ gram of dry matter. They are eight in number - Fe, Mn, Zn, Cu, Ho, B, Cl and Ni.

120. (2)

Sol. Penciline (wrong spelling)

Penicillin is a group of antibiotics derived from penicillium fungi.

121. (1)

Sol. Cotton is a soft, fluffy staple fiber that grows in a ball or protective capsule, around the seeds of cotton.

122. (1)

Sol. Vessels occur regularly only in angiosperms. Pinus is a coniferous gymnosperm.

123. (2)

Sol. Heparin is used to treat and prevent blood clots in veins, arteries or lungs.

124. (4)

Sol. Phytochrome is a photoreceptor, pigment that flowering plants (Angiosperm) use to detect and absorb light for regulation of seed germination and flowering.

125. (1)
Sol. Vent (wrong spelling)
Went 1928 collected the growth stimulating substance in agar jelly. He discovered that the hormone travelled basipetally (from tip towards the base.) The growth promoting substance was named by him as 'auxin'.
126. (2)
Sol. The first governor of the Portuguese in India was Francis-de-Almeida (1503 – 1509)
127. (3)
Sol. The battle of Plassi was fought between east India company (Britain) under clive & Sirajjudaullah, the Nawab of Bengal on 23rd June. 1757.
128. (3)
Sol. Rani Laxmi bai is associated with city Jhansi
129. (1)
Sol. Rajaram Mohan Roi founded the Brahma Samaj on 1828.
130. (2)
Sol. Lord Buddha is also known as 'light of Asia'.
131. (4)
Sol. Gandhi ji wrote the book 'My experiment' with Truth.
132. (1)
Sol. Kabir with other 11 were disciples of Ramananda
133. (1)
Sol. In Lahore session of Dec. 1929, President J.L. Nehru declared the attainment of complete Independence as the ultimate goal by Indian National congress.
134. (2)
Sol. The Cabinet Mission arrived on 24th Mar, 1946 in Indian & published its plan on May 16, 1946.
135. (3)
Sol. Bhagat Singh coined the slogan 'Inquilab Zindabad' & used first time in Assembly Hall.
136. (2)
Sol. indira Point is the Southern most point in India.
137. (1)
Sol. Gujarat has the longest coast line in India.
138. (3)
Sol. Hirakund Dam is constructed on Mahanadi River
139. (2)
Sol. 'The Vally of flowers' lies in Uttarakhand.
140. (3)
Sol. The minimum rainfall place in India is 'Jaisalmer'.
141. (3)
Sol. Laterite soil is found in Kerala.
142. (2)
Sol. Damador is tributary of river Hngli.
143. (4)
Sol. 'Titan' is the largest moon/ satellite of 'Salun .
144. (3)
Sol. The longest river of the world is 'Nile'

145. (1)
Sol. China has the largest population in the world.
146. (4)
Sol. On first day session on 9th Dec. 1946. Dr. Sachihidanand Sinha was elected President but on 11th Dec, 1946 Dr. Rajendra Prasad was elected President . Dr. Ambedkar was President of Drafting committee.
147. (4)
Sol. Indian Parliament consists of Lok Sabha, Rajya Sabha and President.
148. (1)
Sol. Maximum 2 Anglo-Indians can be nominated to Lok-Sabha
149. (3)
Sol. Constitution of India was adopted by constituent Assembly on 26th Nov, 1949.
150. (2)
Sol. The chairman of Planning commission is Prime Minister.
151. (3)
Sol. The maximum strength of Lok Sabha has been fixed 550.
152. (2)
Sol. The vacancy of the office of President must be filled up with in 6 months (Art. 62)
153. (1)
Sol. India is a secular state is encunciated in 'Preamble of the constitution. It was added by 42nd Amendment in 1976.
154. (4)
Sol. New York has the headquarter of UNO.
155. (3)
Sol. The first summit of SAARC was held at Dhaka in 7-8 Dec, 1985
156. (3)
Sol. Economic Planning is a subject of concurrent list.
157. (2)
Sol. 'Twenty Point Economic Programme' was first launced in year 1975.
158. (1)
Sol. 'ADHAR' is a programme to provide unique identity to the Indian residents.
159. (2)
Sol. 12th, 5 year Plan is from 2012 – 2017
160. (4)
Sol. The standard of living in a country is represented by per Capita income'.
161. 2
Sol. $r + s = 5$
 $rs = k$
 $r - s = 1$
 $(r - s)^2 = 1$
 $(r + s)^2 - 4rs = 1$
 $25 - 4k = 1$
 $24 = 4k$
 $k = 6$

162. 2

Sol. $(-2)^2 + 9(-2) + 2b = 0$

$$-29 + 2b = -4$$

$$a - b = 2$$

$$a + b = 4$$

$$a = 3, b = 1$$

163. 2

Sol. $1^3 + 2^3 + \dots + 9^3 = 2025$

$$\Rightarrow (0.11)^3 + (0.22)^3 + \dots + (0.99)^3$$

$$\Rightarrow (0.11)^3 [1^3 + 2^3 + \dots + 9^3]$$

$$\Rightarrow 0.001331 \times 2025 = 2.695275$$

164. 2

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

Squaring both sides

$$\tan^2 \theta + \frac{1}{\tan^2 \theta} + 2 = 4$$

$$\tan^2 \theta + \frac{1}{\tan^2 \theta} = 2$$

165. (1)

Sol. $\sec 2A = \operatorname{cosec} (A - 42^\circ)$

$$\cos ec (90 - 2A) = \cos es (A - 42^\circ)$$

$$90 - 2A = A - 42$$

$$3A = 132$$

$$A = 44^\circ$$

166. (3)

Sol. $\frac{\cos \theta - \sin \theta}{\cos \theta + \sin \theta} = \frac{1 - \sqrt{3}}{1 + \sqrt{3}}$

$$\frac{1 - \tan \theta}{1 + \tan \theta} = \frac{1 - \sqrt{3}}{1 + \sqrt{3}}$$

By comparison

$$\theta = 60^\circ$$

167. (2)

Sol. $\cot \theta + \cos ec \theta = 2$ (1)

$$\cos ec^2 \theta - \cot^2 \theta = 1$$

$$\operatorname{cosec} \theta - \cot \theta = \frac{1}{2}$$
(2)

adding (1) & (2)

$$2 \cos ec \theta = \frac{5}{2}$$

$$\cos ec \theta = \frac{5}{4}$$

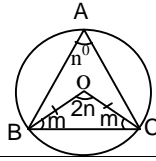
$$\cos \theta = \frac{3}{5}$$

$$\frac{1 + \cos \theta}{1 - \cos \theta} = \frac{1 + \frac{3}{5}}{1 - \frac{3}{5}} = \frac{8}{2} = 4$$

168. (1)

Sol.

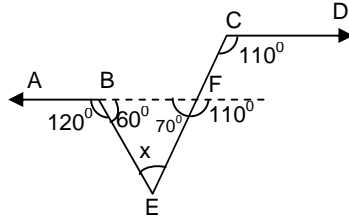
$$\begin{aligned} \text{In } \triangle OBC \\ m+m+2n=180 \\ m+n=90^\circ \end{aligned}$$



169. (2)

Sol.

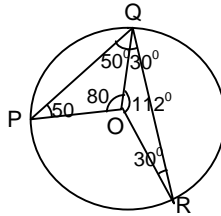
$$\begin{aligned} \text{In } \triangle BEF \\ 60 + x + 70 = 180 \\ x = 50 \end{aligned}$$



170.

Sol.

$$\begin{aligned} \angle PQR = 50 + 30 \\ = 80 \end{aligned}$$



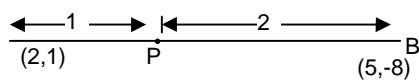
171. (1)

Sol.

$$\begin{aligned} \frac{x_1 + x_2 + x_3 + \dots + x_n}{n} \\ \sum_{i=1}^n (x_i - \bar{x}) = (x_1 + x_2 + x_3 + \dots + x_n) - n \bar{x} \\ = n\bar{x} - n\bar{x} = 0 \end{aligned}$$

172. (1)

Sol.



$$P \left(\frac{1 \times 5 + 2 \times 2}{1 + 2}, \frac{1 \times (-8) + 2 \times 1}{1 + 2} \right)$$

$$P(3, -2)$$

P lies on the line $2x + y + k = 0$

$$\therefore 2(3) - 2 + k = 0$$

$$k = -4$$

173.

Sol.

Circumference of base of cylinder = $2\pi r = 2 \times \pi \times 5 = 10\pi \text{ cm}$

$$\text{Total round of wire around the cylinder} = \frac{1.2 \times 100}{3/10} = 400$$

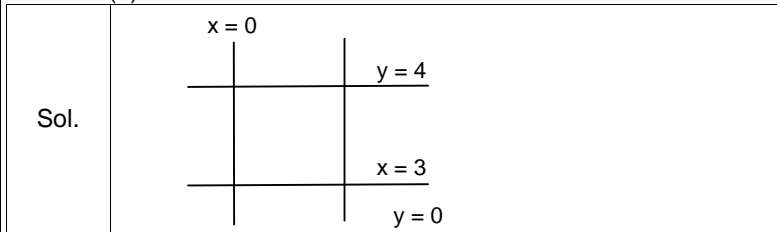
$$\therefore \text{length of wire} = 400 \times 10\pi = 4000\pi \text{ cm}$$

$$4000 \times 3.14 = 12560 \text{ cm or } 125.6 \text{ m}$$

174. (2)

Sol.

175. (4)



176. (4)

Sol. $2^{x-1} + 2^{x+1} = 320$

$$\frac{2^x}{2} + 2^x \times 2 = 320$$

$$2^x \times \left(\frac{1}{2} + 2\right) = 320$$

$$2^x \times \frac{5}{2} = 320$$

$$2^x = 128 = 2^7$$

$$x = 7$$

177.

Sol. $x + \frac{1}{x} = 2$

$$\left(\sqrt{x}\right)^2 + \left(\frac{1}{\sqrt{x}}\right)^2 + 2\sqrt{x} \cdot \frac{1}{\sqrt{x}} = 2 + 2$$

$$\left(\sqrt{x} + \frac{1}{\sqrt{x}}\right)^2 = 4$$

$$\sqrt{x} + \frac{1}{\sqrt{x}} = 2$$

178. (4)

Sol. $(2)^2 - 5(2) + P = 0$

$$P = 6$$

179. (4)

Sol. altitude = x cm

Base = (x + 4) cm

hypotenuse = (x + 8) cm

$$(x+8)^2 = (x+4)^2 + x^2$$

$$x^2 - 8x - 48 = 0$$

$$x^2 - 12x + 4x - 48 = 0$$

$$(x-12)(x+4) = 0$$

$$x = 12$$

180. (2)

Sol. $x^2 + y^2 = (x + y)^2 - 2xy = 8^2 - 2 \times 15 = 34$