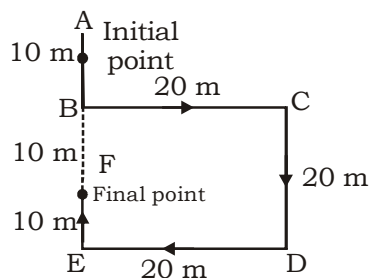


(A to B, B to C, C to D, D to A).

Clearly, she is finally moving in the direction DA i.e. **North east**.

26. (C) Let ascent of the monkey in 1 hour
 $= (30 - 20) = 10$ feet.
 So, the monkey ascends 90 feet in 9 hours
 i.e., 5 p.m.
 Clearly, in the next 1 hour i.e., till **6 p.m.**
 the monkey ascends remaining 30 feet to
 touch the flag.
27. (C) The order is:
 Literary $\frac{23}{11}$ Literature $\frac{23}{11}$ **Litter** $\frac{23}{11}$ Little $\frac{23}{11}$
 Littoral
28. (B) Number of persons between Arun and
 Mukesh
 $= 50 - (10 + 25) = 15$
 Since Maha lies in middle of these 15
 persons, so Maha's position is 8th from Arun
 i.e. **18th** from the front.
29. (A) Given:- $9 \div 8 \times 7 + 5 - 10$
 After replacing the signs as per the given
 details.
 $9 - 8 \div 7 \times 5 + 10$
 $= 9 - \frac{8}{7} \times 5 + 10$
 $= 9 - \frac{40}{7} + 10$
 $= 19 - \frac{40}{7} = \frac{133 - 40}{7} = \frac{93}{7} = \mathbf{13.3}$
30. (B) $25 + 20 = \mathbf{45}$
31. (B) $5 \times 1 = 5, 6 \times 1 = 6, 5 + 6 = 11$
 $6 \times 4 = 24, 3 \times 2 = 6, 24 + 6 = 30$
 $3 \times 5 = 15, 4 \times 3 = 12$
 So, missing number = $15 + 12 = \mathbf{27}$
32. (B) $3 \times 4 + \mathbf{3} = 15$
 $7 \times 5 + \mathbf{3} = 38$
 So, missing number = $3 \times 5 + \mathbf{3} = \mathbf{18}$
33. (A) $\mathbf{2} \times 9 + \mathbf{3} \times 17 = 18 + 51 = 69.$
 $\mathbf{2} \times 13 + \mathbf{3} \times 11 = 26 + 33 = 59.$
 Let the missing number in the first row be x .
 Then, $\mathbf{2}x + 3 \times 13 = 49$ or $2x = 10$ or $x = \mathbf{5}$
34. (D) $17 - 11 = 25 - 19 = 6.$
 $12 - 6 = 34 - 28 = 6.$
 Let the missing number in the third column
 be x .
 Then, $x - 8 = 19 - 11 = 8$ or $x = \mathbf{16}$
35. (A) $2 \times 1 + 1 = 3$
 $14 \times 7 + 7 = 105$
 Let the missing number in the third column
 be x .
 Then, $x \times 9 + 9 = 117 = 9x = 108$ or $x = \mathbf{12}$

36. (B)



The movements of Surya from A to F are as
 shown in Fig.

Clearly, Surya's distance from starting point
 A

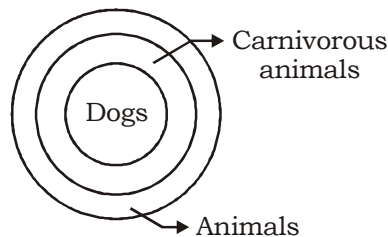
$$\begin{aligned}
 &= AF = (AB + BF) \\
 &= AB + (BE - EF) \\
 &= AB + (CD - EF) \\
 &= [10 + (20 - 10)] = (10 + 10) \text{ m} = 20 \text{ m.}
 \end{aligned}$$

Also, F lies to the South of A.

So, Surya is **20 metres to the south** of his
 starting point

37. (B) Clearly, nine days ago, it was Thursday
 which means today is **Saturday**.

38. (A)



All the dogs belong to animals in which some
 dogs are flesh eater but not all.

39. (D) Clearly, while counting the numbers
 associated to the thumb will be 1,9,17,25,
 i.e., numbers of the form $(8n + 1)$.

$$\text{Since, } 2016 = 252 \times 8 + 0$$

So, 2017 shall correspond to the thumb and
 2016 to the **index finger**.

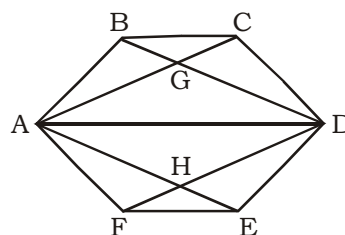
40. (B) 1.12.1991 is the first Sunday of December
 1991. So, 3.12.1991 is the first Tuesday of
 the month.

Clearly, 10.12.1991, 17.12.1991, 24.12.1991
 and 31.12.1991 are also Tuesdays.

So, **24.12.1991** is the fourth Tuesday.

41. (D)

42. (D) The figure may be marked as shown
 below.



- The quadrilaterals in the figure are ABCD, ABDE, ABDF, ABDH, CDHA, CDEA, CDFA, DEAG, DEFA, FAGD and AGDH.
- The number of quadrilaterals in the figure is **11**.
43. (C) In a usual dice, the sum of the numbers on any two opposite faces is always 7. Thus, 1 is opposite to 6, 2 is opposite to 5 and 3 is opposite to 4.
Consequently, when 4, 3, 1 and 5 are the numbers on the top faces, then 3, 4, 6 and 2 respectively are the numbers on the faces touching the ground. The sum of these numbers = $3 + 4 + 6 + 2 = 15$.
44. (C) **1, 6, 8** are figures composed of straight lines as well as curve.
3, 7, 9 are closed figures shaded by oblique line segments.
2, 4, 5 are figures composed of straight lines only.
45. (C)
46. (A)
47. (D)
48. (D) Go on subtracting 24, 21, 18, 15, 12, 9 from the numbers to get the next number.
 $190 - 24 = 166$
 $166 - 21 = 145$
 $145 - 18 = 127$ [Here, 128 is placed instead of 127]
 $127 - 15 = 112$
 $112 - 12 = 100 \dots$ and so on.
Therefore, **128** is wrong.
49. (A) Word: MISUNDERSTAND
Let's check all the options:
(A) **TENT** It can't be formed as it requires 2 T's.
(B) SEND It can be formed.
(C) SENT It can be formed.
(D) MEND It can be formed.
50. (D)
51. (D) Fred Riggs is the father of Comparative Public Administration. He is well known for his works in Comparative Public Administration specially Riggsian Model.
52. (D) Cotopaxi is an active volcano in the Andes Mountains, Ecuador, in South America. It is the second highest summit in Ecuador, reaching a height of 5,897 m (19,347 ft).
54. (C) The National Hydro Power Corporation (NHPC) is developing the 2,000 MW Lower Subansiri Hydro Power project in Dhemaji district of Assam. Subansiri Lower Hydro Electric Project is the biggest under construction hydroelectric power project in India, which is on the Subansiri river that flows through Arunchal Pradesh and Assam.
58. (D) Somyajeet Ghosh has become the youngest national Table Tennis Champion. The 19 year old Ghosh defeated six time champion Achanta Sharath Kamal.
60. (C) Bangladesh and India share a 4,096-kilometer long international boundary, the fifth-longest land border in the world. West Bengal with 2,217 km share longest boundary with Bangladesh. Other states include 262 km with Assam, 856 km with Tripura, 180 km with Mizoram, 443 km with Meghalaya.
61. (B) Patiala House court, one of the six district courts in New Delhi, switched to e-stamping process. The move is aimed at ensuring hassle-free transactions and keeping a check on fraudulent practices. The e-stamping facility, which was introduced in April 2008, is now available in all denominations.
64. (B) Human Rights Day is celebrated annually across the world on 10th December. The date was chosen to honour the United Nations General Assembly's adoption and proclamation, on 10th December 1948, of the Universal Declaration of Human Rights (UDHR), the first global enunciation of human rights and one of the first major achievements of the new United Nations. This year the objective of the human rights day is to highlight the rights of all people, including women, minorities, persons with disabilities and marginalised people as well as to make their voices heard in decision making processes.
67. (B) Oil and Natural Gas Corporation (ONGC) has joined hands with Japan's largest oil and gas company Inpex Corporation for development of its Krishna Godavari basin deep-sea block. Inpex has acquired 26 per cent stake in ONGC's block.
68. (C) India's first sunken museum will be set up at the World Heritage Site of Humayun's Tomb in New Delhi. The interactive museum will open to the public in early 2018 and will display a mix of artifacts that have been locked up in the reserve collections of the National Museum, National Archives and museums of the Archaeological Survey of India (ASI). It will focus on bringing alive the 7-centuries of pluralistic cultural traditions and architectural history of the Nizamuddin area.

70. (D) $^{35}_{17}$ Pyrometer - used to determine the density and coefficient of expansion of liquids.
 $^{35}_{17}$ Polygraph - used to record changes in heartbeat, blood-pressure and respiration.
 $^{35}_{17}$ Photometer - used to compare luminous intensity of the source of light.
71. (A) The Indian Institute of Astrophysics (IIA), has zeroed in on Ladakh as the probable destination for the world's largest solar telescope. National Large Solar Telescope built by IIA at an expected cost of Rs 150 crore is planned for completion in 2017. The proposed telescope, which will be used to observe the Sun during the day needs long hours of sunshine and clear visibility conditions. The device will help Indian scientists carry out "cutting edge research" aimed at studying the Sun's atmosphere.
72. (B) The Chhattisgarh government has taken the initiative to pass the first Food Security Act.
74. (D) Dutee Chand, an Indian professional sprinter, has recently qualified for 2016 Rio Olympics in the women's 100 metre event at the 26th International Meeting at G.Kosanov Memorial in Almaty, Kazakhstan. With this, she became the first Indian woman to qualify for the event since qualification started for the event.
75. (A) Starting of his six-decade literary career as a bohemian poet and editor of Kritibas, a monthly poetry magazine, Sunil Gangopadhyay wrote his first novel, Athmo Prakash (Self-Revelation). Two of the most critically acclaimed films of legendary filmmaker Satyajit Ray - Pratidwandi and Aranyer Din Ratri - were based on novels written by him.
76. (A) Rabindranath Tagore was Asia's first Nobel Prize winner. He was awarded the Nobel prize for literature in 1913 for his book Gitanjali.
77. (B) Galaxy NGC 1277 is a small, flattened galaxy that contains one of the most massive central black holes ever found. At 17 billion solar masses, the black hole weighs an extraordinary 14% of the total galaxy mass.
78. (C) National energy conservation day is celebrated every year all over the India on 14th of December.
79. (D) The temperature range of a mercury thermometer depends on its design, but the absolute limits would be from approximately -39 to +357 degrees centigrade, which are the melting and boiling points of mercury.
80. (B) Haryana Government has launched a Scheme titled "Mahatma Gandhi Gramin Basti Yojna" on 2nd October, 2008 to allot free 100 sq. yards residential plots to the eligible BPL families, Scheduled Castes' families, Backward Classes (Category A) families in all the villages of the State.
82. (A) Iltutmish, the Sultan of Delhi, was contemporary of Mongol leader Chengiz Khan. In 1221 A.D, there was a danger of expected attack of Chengiz Khan on Delhi.
86. (B) Hooke's Law states that the restoring force of a spring is directly proportional to a small displacement.
 $F = k.x$
87. (B) Parshvanath was the twenty third Jain Tirthankar. He was a kshatriya and son of Ashvasena, king of Banaras (Varanasi).
88. (B) Aurangzeb stopped the engraving of Kalma on coins, forbade the Parsis to celebrate their festival Navroz, released an order to ban the music everywhere and arrest those who listen to the music. He reintroduced Jizya.
89. (A) Methanol (CH_3OH) is also known as Wood Alcohol. It is a solvent in many chemical processes and is a component of automobile antifreeze.
92. (D) Alpha emission $^a_b X \frac{3}{4} \frac{3}{4} \textcircled{R} \frac{a-4}{b-2} Y$
 Beta emission $^a_b X \frac{3}{4} \frac{3}{4} \textcircled{R} \frac{a}{b+1} Y$
 $^{236}_{92} U \frac{3}{4} \frac{3}{4} \textcircled{R} \frac{224}{86} U \frac{3}{4} \frac{3}{4} \textcircled{R} \frac{224}{87} U$
95. (B) Tritium, ^3_1H
 Protons = 1
 Neutrons = 3 - 1 = 2
99. (D) Red, Green, Blue are primary colours. All the colours can be produced by mixing them in different proportions.
101. (C) Let the total votes be N
 $75\% = \frac{3}{4}, 2\% = \frac{1}{50}$
 $N \times \frac{3}{4} \times \frac{3}{4} \times \frac{1}{50} = 9261$
 $\square N = \frac{(21 \cdot 21 \cdot 21)}{3 \cdot 7 \cdot 7 \cdot 3} \times 16 \times 50$
 $N = 16800$
102. (D) Quantity of milk in the last
 $= 81 \frac{27}{81} - \frac{27}{81} = 81 \frac{1}{3} - \frac{1}{3}$
 $= 81 \times \frac{2}{3} \times \frac{2}{3} = 36$

Quantity of water in the last
= 81 - 36 = 45

□ Ratio = $\frac{36}{45} = \frac{4}{5} = 4 : 5$

103. (C) LCM of 4, 5, 6, 7 and 8 = 840
Let required number be 840K + 2 which is multiple of 13.

□ Required number
= 840 × 3 + 2
= 2520 + 2 = 2522

104. (B) If a + b + c = 0, then a³ + b³ + c³ = 3abc
Here, 0.111 + 0.222 + (-0.333) = 0
= -3 × 0.111 × 0.222 × 0.333
= -(0.333)² × 0.222

□ Expression
= [-(0.333)² × 0.222 + (0.333)² × 0.222]³ = 0

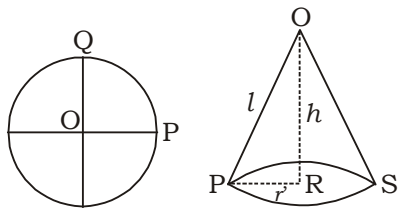
105. (B) ∠OCX = 45° (ABCD is a square & AC bisects ∠BCD)

∠COD + ∠COX = 180°
⇒ ∠COX = 180° - ∠COD = 180° - 105° = 75°

In ΔOCX
∠OCX + ∠COX + ∠OXC = 180°

⇒ 45° + 75° + ∠OXC = 180°
⇒ ∠OXC = 180° - 120° = 60°
⇒ x = 60°

106. (B) The quadrant POQ of the circle is folded in such a way that the arc PQ form the base of the cone. Radii OP and OQ form slant height of the cone and they will coincide.



Arc PQ = $\left(\frac{1}{4}\right) 2\pi r$

= $\frac{1}{4} \times 2 \times \frac{22}{7} \times 14 \text{ cm} = 22 \text{ cm}$

Circumference of the base of the cone = Arc PQ.
or, $2\pi r' = 22$ (where r' = radius of the base of the cone)

or, $r' = \frac{22}{2\pi} = \frac{22}{2 \times \frac{22}{7}} = \frac{7}{2} \text{ cm}$

Slant height of the cone,
OP = radius of the circle
or, l = 14 cm
Height of the cone,

$h = \sqrt{(l)^2 - (r')^2}$

or, $h = \sqrt{(14)^2 - \left(\frac{7}{2}\right)^2} = \sqrt{\frac{735}{4}} \text{ cm}$

= $\frac{1}{2} \sqrt{735} \text{ cm}$

Volume of the cone = $\frac{1}{3} \pi (r')^2 h$

= $\frac{1}{3} \times \frac{22}{7} \times \left(\frac{7}{2}\right)^2 \times \frac{\sqrt{735}}{2} \text{ cm}^3$

= $\frac{77}{12} \sqrt{735} \text{ cm}^3 = 174 \text{ cm}^3$ (Approx.)

107. (A) The digit in unit's place = unit's digit in the product 1 × 2 × 3 × ... × 9 = 0

108. (A) $5 \tan \theta = 4 \Rightarrow \tan \theta = \frac{4}{5} = \frac{\text{Perpendicular}}{\text{Base}}$

Now, $\frac{5 \sin \theta - 3 \cos \theta}{5 \sin \theta + 3 \cos \theta} = \frac{5 \tan \theta - 3}{5 \tan \theta + 3}$

= $\frac{5 \times \frac{4}{5} - 3}{5 \times \frac{4}{5} + 3} = \frac{1}{7}$

109. (B) Monthly income of P & Q = ₹ 10,100
Monthly income of Q & R = ₹ 12,500
Monthly income of P & R = ₹ 10,400

Monthly income of 2(P + Q + R) = ₹ 33,000

□ income of (P + Q + R) = ₹ 16500

□ income of P = 16500 - 12500 = ₹ 4000

110. (D) $246 = P \left[\frac{1 + \frac{5}{100} \frac{\delta}{\delta} - 1}{\frac{\delta}{\delta}} \right]$

□ $246 = P \left[\frac{21 \frac{\delta}{\delta} - 1}{20 \frac{\delta}{\delta}} \right]$

□ $246 = P \left[\frac{441 - 400 \frac{\delta}{\delta}}{400 \frac{\delta}{\delta}} \right]$

□ $246 = \frac{41P}{400} = P = \frac{246 \times 400}{41}$

□ ₹ 2400

□ S.I = $\frac{P \times T \times R}{100} = \frac{2400 \times 3 \times 6}{100} = ₹ 432$

111. (A) $\frac{x}{y} + \frac{y}{x} = -2 \Rightarrow \frac{x^2 + y^2}{xy} = -2$

⇒ $x^2 + y^2 = -2xy$

⇒ $x^2 + y^2 + 2xy = 0$

$$\Rightarrow (x + y)^2 = 0$$

$$\Rightarrow x + y = 0$$

$$\therefore x^3 + y^3 + 3xy(x + y) = (x + y)^3 = 0$$

112. (B) $q(p^2 - 1)$

$$= (\sec\theta + \operatorname{cosec}\theta) \{(\sin\theta + \cos\theta)^2 - 1\}$$

$$= \left(\frac{1}{\cos\theta} + \frac{1}{\sin\theta} \right) \{\sin^2\theta + \cos^2\theta + 2\sin\theta\cos\theta - 1\}$$

$$= \left(\frac{\sin\theta + \cos\theta}{\cos\theta\sin\theta} \right) (1 + 2\sin\theta\cos\theta - 1)$$

$$= \left(\frac{\sin\theta + \cos\theta}{\cos\theta\sin\theta} \right) (2\sin\theta\cos\theta)$$


$$= 2(\sin\theta + \cos\theta) = 2p$$

113. (D) Speed : Time

$$\begin{array}{l} \text{Actual} \rightarrow 5 \quad 4 \\ \text{New} \rightarrow 4 \quad 5 \end{array} \Big)^{+1}$$

$$1 \text{ unit} = 15 \text{ min}$$

$$\text{Actual time} = 60 \text{ min}$$

114. (C) Fill pipe = 4 min 

$$L + \text{Fill} = 16 \text{ min}$$

$$\text{Capacity of leak pipe} = 3 \text{ unit}$$

$$\square \text{ Required time} = \frac{16}{3}$$

$$\square 5\frac{1}{3} \text{ min}$$

115. (A) Let the length of the side of the chess board be x cm. Then

$$\text{Area of 64 equal squares} = (x - 4)^2$$

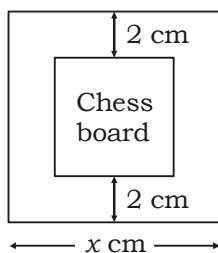
$$\therefore (x - 4)^2 = 64 \times 6.25$$

$$\Rightarrow x^2 - 8x + 16 = 400$$

$$\Rightarrow x^2 - 8x - 384 = 0$$

$$\Rightarrow x^2 - 24x + 16x - 384 = 0$$

$$\Rightarrow (x - 24)(x + 16) = 0 \Rightarrow x = 24 \text{ cm}$$



Hence option (A) is true.

116. (A) Let the initial speed of the train be x km/h and distance be d km

Condition (i) difference in time

$$1 \text{ unit} = 2 \text{ hr } 20 \text{ min}$$

$$2 \text{ unit} = 4 \text{ hr } 40 \text{ min}$$

Condition (ii)

$$1 \text{ unit} = 2 \text{ hr } 32 \text{ min}$$

$$2 \text{ unit} = 5 \text{ hr } 4 \text{ min}$$

$$\text{difference in time} = 24 \text{ min}$$

$$\text{Speed} = \frac{d}{T} = \frac{18}{24}$$

$$\text{Speed} = \frac{18}{24} \times 60 = 45 \text{ km/hr}$$

$$\text{distance} = T \times V = 45 \times 4 + \frac{20}{60}$$

$$= 45 \times \frac{14}{3} = 210 \text{ km}$$

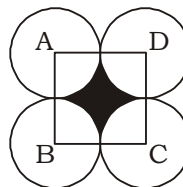
$$\square \text{ total distance} = 300 \text{ km}$$

117. (B) $10\% = \frac{1}{10}$

Loan	Instalment
10×11	11×11
100	121
210	121

$$\square \text{ Required sum} = ₹ 121$$

118. (B)



Area of the shaded region

$$= \text{Area of square of side } 6 \text{ cm} -$$

$$4 \times \text{area right angled sector}$$

$$= 36 - 4 \times \frac{\pi \times 3^2}{4}$$

$$= 36 - 9\pi = 9(4 - \pi) \text{ sq. cm}$$

119. (D) $x : y : z$

$$3 \times 3 : 4 \times 3$$

$$3 \times 4 : 4 \times 4$$

$$9 : 12 : 16$$

$$\square \frac{x + y + z}{3z} = \frac{9 + 12 + 16}{3 \times 16} = \frac{37}{48}$$

120. (C) $\frac{\sin 2\theta + \sin \theta}{\cos 2\theta + \cos \theta + 1} = \frac{2\sin \theta \cdot \cos \theta + \sin \theta}{2\cos^2 \theta - 1 + \cos \theta + 1}$

$$= \frac{\sin \theta(2\cos \theta + 1)}{2\cos^2 \theta + \cos \theta} = \frac{\sin \theta(2\cos \theta + 1)}{\cos \theta(2\cos \theta + 1)} = \frac{\sin \theta}{\cos \theta}$$

$$= \tan \theta$$

121. (B) In condition-I
Let the principal be x
Amount = $3x$
□ Interest = $2x$
Time = 20 years

$$\square I = \frac{PRT}{100} \quad \square 2x = \frac{x \cdot R \cdot 20}{100}$$

$$\square R = 10\%$$

In condition-II

$$I = x$$

$$P = x$$

$$R = 10$$

$$T = ?$$

$$\square I = \frac{PRT}{100} \quad \square x = \frac{x \cdot 10 \cdot T}{100}$$

$$\square T = 10 \text{ years}$$

122. (A) Required time = $\frac{x}{(y-x)} \times t$

$$= \frac{40}{(50-40)} \times \frac{1}{2} = 2 \text{ hrs}$$

123. (C) Here interior angle - exterior angle = 60°

$$\frac{(n-2) \times 180}{n} - \frac{360}{n} = 60$$

$$\frac{1}{n} [(n-2) \times 180 - 360] = 60$$

$$\frac{1}{n} [180n - 360 - 360] = 60$$

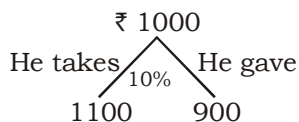
$$\frac{1}{n} [180n - 720] = 60$$

$$180n - 720 = 60n$$

$$120n = 720$$

$$n = \frac{720}{120} = 6$$

124. (B) C.P of article be



$$\square \text{Profit \%} = \frac{200}{900} = 22\frac{2}{9}\%$$

125. (C) $\frac{x + \frac{1}{x}}{2} = V$

$$\Rightarrow x + \frac{1}{x} = 2V$$

Required average

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

$$= \frac{4V^2 - 2}{2} = 2V^2 - 1$$

126. (C) $\frac{5}{1400} \times (6m + 5c) = \frac{8}{3040} \times (8m + 7c)$
 $2m = 3c$

$$\frac{5}{1400} \times (6m + 5c) = \frac{D}{720} \times (4m + 3c)$$

$$\frac{5}{1400} \times (9c + 5c) = \frac{D}{720} \times (6c + 3c)$$

$$D = 4 \text{ days}$$

127. (A) $10\% = \frac{1}{10}$, $25\% = \frac{1}{4}$

$$SP_1 + SP_2 = 1710 \text{ [Given]}$$

	Ist	:	IInd
CP	10	:	4×2
SP	9	:	5×2
P/L	-1	:	$+1 \times 2$

Total selling price = $(9 + 10) = 19$ units

ATQ,

$$19 \text{ units} = 1710$$

$$1 \text{ unit} = \frac{1710}{19} = ₹ 90$$

$$\text{Total profit} = (2 - 1) \times 90 = ₹ 90$$

128. (C) $23\% = \frac{23}{100}$

Before	After
100	77
↓ $\times 20$	↓ $\times 20$
<u>2000</u>	1540

129. (C) $\therefore 1 + 2 + 3 + \dots + n = \frac{n(n+1)}{2}$

$$\square 1 + 2 + 3 + \dots + 25$$

$$= \frac{25(25+1)}{2} = 25 \times 13$$

Hence, 13 is a factor of required sum.

130. (B) $5^{\sqrt{x}} + 12^{\sqrt{x}} = 13^{\sqrt{x}}$

We know that $5^2 + 12^2 = 13^2$

[Pythagorean Triplet]

$$\therefore \sqrt{x} = 2 \Rightarrow x = 2^2 = 4$$

131. (C) $\frac{T_3 - T_5}{T_1} = \frac{\sin^3 \theta + \cos^3 \theta - (\sin^5 \theta + \cos^5 \theta)}{\sin \theta + \cos \theta}$

$$= \frac{(\sin^3 \theta - \sin^5 \theta) + (\cos^3 \theta - \cos^5 \theta)}{\sin \theta + \cos \theta}$$

$$= \frac{\sin^3 \theta(1 - \sin^2 \theta) + \cos^3 \theta(1 - \cos^2 \theta)}{\sin \theta + \cos \theta}$$

$$= \frac{\sin^3 \theta \cdot \cos^2 \theta + \cos^3 \theta \cdot \sin^2 \theta}{\sin \theta + \cos \theta}$$

$$= \frac{\sin^2 \theta \cdot \cos^2 \theta(\sin \theta + \cos \theta)}{(\sin \theta + \cos \theta)}$$

$$= \sin^2 \theta \cdot \cos^2 \theta$$

132. (B) As $BC \parallel AD$ and the diagonals of a trapezium divide each other proportionally.

So, $\frac{AO}{OC} = \frac{BO}{OD}$

$$\Rightarrow \frac{3x-1}{5x-3} = \frac{2x+1}{6x-5}$$

$$\Rightarrow (3x-1)(6x-5) = (5x-3)(2x+1)$$

$$\Rightarrow 18x^2 - 15x - 6x + 5$$

$$= 10x^2 + 5x - 6x - 3$$

$$\Rightarrow 8x^2 - 20x + 8 = 0$$

$$\Rightarrow 4x^2 - 10x + 4 = 0$$

$$\Rightarrow 4x^2 - 8x - 2x + 4 = 0$$

$$\Rightarrow 4x(x-2) - 2(x-2) = 0$$

$$\Rightarrow (4x-2)(x-2) = 0$$

$$\Rightarrow x = \frac{1}{2} \text{ or } x = 2$$

But as $x = \frac{1}{2}$ will make OC negative

$$\therefore x = 2$$

133. (C) $A \rightarrow 60$ $\left\{ \begin{array}{l} \text{---} 2 \\ \text{---} 120 \\ \text{---} 3 \end{array} \right.$

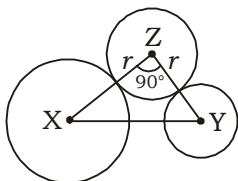
$B \rightarrow 40$

15 days work of $a + b = 45$

□ Remaining work = 75

□ Required time = $\frac{75}{2} = 37\frac{1}{2}$ days

134. (D)



$$\angle XZY = 90^\circ$$

$$XY = (9 + r) \text{ cm,}$$

$$YZ = (r + 2) \text{ cm}$$

$$XY = 17 \text{ cm}$$

$$\therefore XY^2 = XZ^2 + ZY^2$$

$$\Rightarrow 17^2 = (9 + r)^2 + (r + 2)^2$$

$$\Rightarrow (r - 6)(r + 17) = 0$$

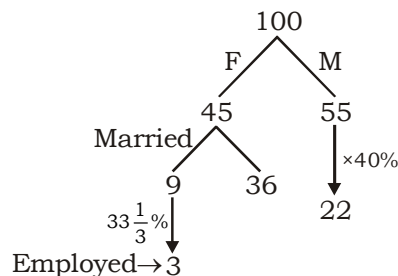
$$\Rightarrow r = 6 \text{ cm}$$

135. (D)

No. of appear students	No. of passed students
A \rightarrow 100	70
B \rightarrow 120	105

□ Required % = $\frac{105}{120} \times 100 = 87.5\%$

136. (B) Let the total population be



□ Total unemployed population = 75%

137. (A) $\sin^2 30^\circ \cos^2 45^\circ + 5 \tan^2 30^\circ + \frac{3}{2} \sin^2 90^\circ - 3 \cos^2 90^\circ$

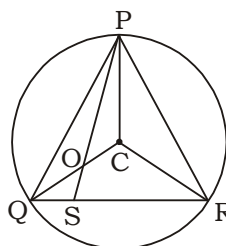
$$= \left(\frac{1}{2}\right)^2 \times \left(\frac{1}{\sqrt{2}}\right)^2 + 5 \times \left(\frac{1}{\sqrt{3}}\right)^2 + \frac{3}{2} \times 1 - 3 \times 0$$

$$= \frac{1}{4} \times \frac{1}{2} + 5 \times \frac{1}{3} + \frac{3}{2}$$

$$= \frac{1}{8} + \frac{5}{3} + \frac{3}{2} = \frac{3 + 40 + 36}{24}$$

$$= \frac{79}{24} = 3\frac{7}{24}$$

138. (B)



$$\angle PQS = 60^\circ$$

$$\angle QCR = 130^\circ$$

$$\therefore \angle QPR = \frac{1}{2} \times 130^\circ = 65^\circ$$

$$\Rightarrow \angle QRP = 180^\circ - 60^\circ - 65^\circ = 55^\circ$$

In ΔRPS

$$\angle PSR + \angle PRS + \angle RPS = 180^\circ$$

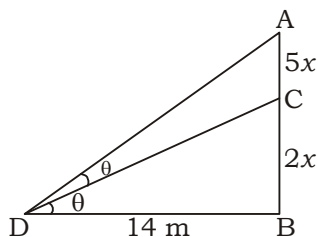
$$90^\circ + 55^\circ + \angle RPS = 180^\circ$$

$$\angle RPS = 35^\circ$$

139. (D) Let $BC = 2x$, then $CA = 5x$

$$\therefore AB = 7x$$

According to question



$\angle ADC = \angle CDB = \theta$ and $BD = 14$ m

In $\triangle BDC$, $\tan \theta = \frac{BC}{BD} = \frac{2x}{14} = \frac{x}{7}$

In $\triangle ABD$, $\tan 2\theta = \frac{AB}{BD} = \frac{7x}{14} = \frac{x}{2}$

$$\Rightarrow \frac{2 \tan \theta}{1 - \tan^2 \theta} = \frac{x}{2}$$

$$\Rightarrow \frac{2 \left(\frac{x}{7} \right)}{1 - \left(\frac{x}{7} \right)^2} = \frac{x}{2}$$

$$\Rightarrow \frac{2x \times 7}{49 - x^2} = \frac{x}{2} \Rightarrow 49 - x^2 = 28$$

$$\Rightarrow x^2 = 21 \Rightarrow x = \sqrt{21}$$

\therefore height of the pole = $AB = 7x = 7\sqrt{21}$ m

140. (A) $x - y = k$, $x + y = 7k$
 $\Rightarrow x = 4k$, $y = 3k$

$$\frac{xy}{4} = k$$

$$\frac{4k \cdot 3k}{4} = k$$

$$\Rightarrow k = \frac{1}{3}$$

$$xy = 4k = 4 \times \frac{1}{3} = \frac{4}{3}$$

141. (D) Let the radius of bigger and smaller cylinder be r_1 and r_2 respectively.

$$24\sqrt{2}h(r_1 - r_2) = 44 \quad \dots(i)$$

$$4\sqrt{2}h(r_1^2 - r_2^2) = 99 \quad r_1 = ?$$

From equation (i)

$$r_1 - r_2 = \frac{44}{2\sqrt{2}h} = \frac{44}{2 \cdot \frac{22}{7} \cdot 14} = \frac{1}{2}$$

Also, $\frac{22}{7} \times 14 (r_1 + r_2) (r_1 - r_2) = 99$

$$44(r_1 + r_2) \frac{1}{2} = 99$$

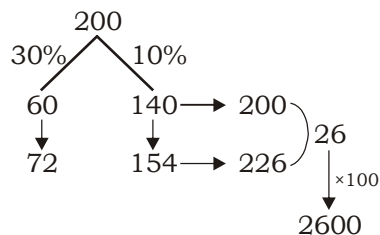
$$r_1 + r_2 = \frac{99}{22} = \frac{9}{2}$$

We have, $r_1 + r_2 = \frac{9}{2}$

$$\begin{aligned} r_1 - r_2 &= \frac{1}{2} \\ \frac{2r_1}{2} &= \frac{10}{2} \\ \square r_1 &= 5 \text{ cm} \end{aligned}$$

142. (A) Required C.P = $\frac{(30+10)}{10} \times 600$
 $= ₹ 2400$

143. (D) Total articles



- Total cost of 200 articles
- 200×100
- 20000

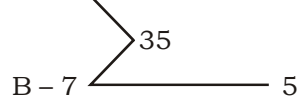
- C.P of 1 article = $\frac{20000}{200} = ₹ 100$

144. (D) Volume of prism = Area of base \times height

$$\Rightarrow 366 = \frac{1}{2} \times 4 \times 28 \times h$$

$$\Rightarrow h = \frac{366}{56} = 6.53 \text{ cm}$$

145. (A) A - 5 7



Total work in 1 cycle = 12 units in 2 days

total time taken by

A and B = $5\frac{4}{5}$ days

146. (C) Shampoos

$$= \frac{\text{₹}(12.21 - 7.88)}{7.88} \cdot 100\% = 54.95\% \gg 55\%$$

147. (C)

148. (B) Percentage = $\frac{\text{₹}(48.17 - 37.76)}{37.76} \cdot 100\%$
 $= 27.57\%$

149. (D) Percentage = $\frac{\text{₹}(7.88 - 5.01)}{7.88} \cdot 100\%$
 $= 36.42\%$

150. (A) Required ratio will be

$$= \frac{37.16}{14.97} = 2.5$$

$$= \frac{5}{2} = 5 : 2$$

MEANINGS IN ALPHABETICAL ORDER

Word	Meaning in English	Meaning in Hindi
Acoustics	Of or relating to sound	ध्वनि संबंधित
Annihilation	the complete destruction	विनाश, प्रलय
Brink (of something)	almost in a very new, dangerous or exciting situation	कगार, किनारा
Bucolic	of or relating to the pleasant aspects of the countryside and country life.	ग्रामीण, गाँव से संबंधित
Calumny	a false accusation of an offense or a malicious misrepresentation of someone's words or actions	मिथ्या आरोप
Catastrophe	an event causing great and often sudden damage or suffering; a disaster.	तबाही, आपदा
Catharsis	The act of purging of emotional tensions	भावनात्मक क्रोध के मुक्ति की अभिव्यक्ति
Confrontation	a hostile or argumentative meeting or situation between opposing parties.	मतभेद, विवाद
Designate	Chosen for a particular job	मनोनीत करना
Despicable	deserving hatred and contempt	घृणा के योग्य
Emigration	the act of leaving your own country to go and live permanently in another country	अपने देश से दूसरे देश में स्थायी रूप से बसना
Endurance	the fact or power of enduring an unpleasant or difficult process or situation without giving way.	सहनशीलता
Enigma	a person or thing that is mysterious, puzzling, or difficult to understand.	रहस्य, पहेली
Exodus	a mass departure of people, especially emigrants	एक बड़ी भीड़ का कहीं से कूच करना
Extremity	the extreme degree or nature of something	चरम सीमा
Extricate	To free or remove (someone or something) from something (such as a trap, accusation or a difficult situation)	छुड़ाना, मुक्त करना
Extrinsic	not part of the essential nature of someone or something	अनावश्यक
Extrovert	an outgoing, overtly expressive person	बहिर्मुखी इंसान
Extrovert	an outgoing, overtly expressive person	बहिर्मुखी इंसान
Foreordain	(of God) destine (someone) for a particular fate or purpose	नियति बनाना
Foresight	the ability to predict or the action of predicting what will happen or be needed in the future.	दूरदर्शिता
Implicate	To show that someone or something is closely connected to or involved in something (such as a crime)	फँसाना
Incalculable	too great to be calculated or estimated.	बेहिसाब
Inevitable	certain to happen; unavoidable	अवश्यंभावी, जिसे टाला ना जा सके
Inhibit	hinder, restrain, or prevent (an action or process).	रोकना

Irrepressible	not able to be controlled or restrained.	अदम्य, जिसे रोका नहीं जा सके
Migration	movement from one part of something to another	स्थानांतरण
Mortgaging	To put something at risk	जोखिम में डालना
Nemesis	punishment or defeat that is deserved and cannot be avoided	दण्ड, सजा
Obituary	a notice of a death, especially in a newspaper, typically including a brief biography of the deceased person	निधन सूचना, शोक संदेश
Ouija	Representation of spirit acts	आत्माओं का आमंत्रण
Paronym	A word that is a derivative of another and has a related meaning	व्युत्पन्न शब्द
Philanderer	A person who readily or frequently enters into casual sexual relationships	व्यभिचारी
Poised	having a composed and self-assured manner.	संतुलित
Precariously	dangerously likely to fall or collapse	अनिश्चित रूप से
Purgation	The action of causing something to leave the body	शुद्धिकरण
Razor's edge	a difficult situation where any mistake may be very dangerous	एक अत्यंत मुश्किल एवं खतरनाक परिस्थिति
Sardonic	grimly mocking or cynical	हास्यपूर्ण, निंदापूर्ण
Serenade	a gentle piece of music in several parts, usually for a small group of instruments.	कोई प्रेम धुन
Silver lining	positive side of a difficult situation	सकारात्मक पक्ष, उम्मीद की किरण
Sojourn	A temporary stay	थोड़े समय के लिए कहीं पर ठहरना
Stockpiles	a large accumulated stock of goods or materials	जखीरा
Tamper	interfere with (something) in order to cause damage or make unauthorized alterations.	हस्तक्षेप करना
Traitor	a person who betrays a friend, country, principle, etc.	गद्दार, द्रोही
Under-dog	a competitor thought to have little chance of winning a fight or contest.	अप्रत्याशित विजयी
Unflinching	not showing fear or hesitation in the face of danger or difficulty.	बेधड़क, निडर
Unobtrusive	not conspicuous or attracting attention	अत्यन्त कम महत्व का
Vanish	disappear suddenly and completely	विलुप्त हो जाना
Wrath	Intense anger	क्रोध, गुस्सा

SSC MOCK TEST - 54 (ANSWER KEY)

- | | | | | | | | |
|---------|---------|---------|----------|----------|----------|----------|----------|
| 1. (C) | 26. (C) | 51. (D) | 76. (A) | 101. (C) | 126. (C) | 151. (A) | 176. (C) |
| 2. (C) | 27. (C) | 52. (D) | 77. (B) | 102. (D) | 127. (A) | 152. (B) | 177. (A) |
| 3. (D) | 28. (B) | 53. (B) | 78. (C) | 103. (C) | 128. (C) | 153. (C) | 178. (D) |
| 4. (B) | 29. (A) | 54. (C) | 79. (D) | 104. (B) | 129. (C) | 154. (C) | 179. (B) |
| 5. (C) | 30. (B) | 55. (A) | 80. (B) | 105. (B) | 130. (B) | 155. (A) | 180. (B) |
| 6. (A) | 31. (B) | 56. (A) | 81. (C) | 106. (B) | 131. (C) | 156. (C) | 181. (B) |
| 7. (B) | 32. (B) | 57. (A) | 82. (A) | 107. (A) | 132. (B) | 157. (B) | 182. (D) |
| 8. (B) | 33. (A) | 58. (D) | 83. (D) | 108. (A) | 133. (C) | 158. (C) | 183. (A) |
| 9. (A) | 34. (D) | 59. (C) | 84. (A) | 109. (B) | 134. (D) | 159. (D) | 184. (D) |
| 10. (C) | 35. (A) | 60. (C) | 85. (B) | 110. (D) | 135. (D) | 160. (B) | 185. (D) |
| 11. (A) | 36. (B) | 61. (B) | 86. (B) | 111. (A) | 136. (B) | 161. (A) | 186. (C) |
| 12. (C) | 37. (B) | 62. (C) | 87. (B) | 112. (B) | 137. (A) | 162. (B) | 187. (A) |
| 13. (D) | 38. (A) | 63. (B) | 88. (B) | 113. (D) | 138. (B) | 163. (D) | 188. (C) |
| 14. (A) | 39. (D) | 64. (B) | 89. (A) | 114. (C) | 139. (D) | 164. (C) | 189. (B) |
| 15. (A) | 40. (B) | 65. (C) | 90. (C) | 115. (A) | 140. (A) | 165. (D) | 190. (B) |
| 16. (D) | 41. (D) | 66. (D) | 91. (A) | 116. (A) | 141. (D) | 166. (D) | 191. (B) |
| 17. (A) | 42. (D) | 67. (B) | 92. (D) | 117. (B) | 142. (A) | 167. (C) | 192. (A) |
| 18. (D) | 43. (C) | 68. (C) | 93. (C) | 118. (B) | 143. (D) | 168. (A) | 193. (C) |
| 19. (C) | 44. (C) | 69. (B) | 94. (C) | 119. (D) | 144. (D) | 169. (A) | 194. (D) |
| 20. (C) | 45. (C) | 70. (D) | 95. (B) | 120. (C) | 145. (A) | 170. (A) | 195. (A) |
| 21. (B) | 46. (A) | 71. (A) | 96. (D) | 121. (B) | 146. (C) | 171. (A) | 196. (C) |
| 22. (A) | 47. (D) | 72. (B) | 97. (C) | 122. (A) | 147. (C) | 172. (B) | 197. (A) |
| 23. (A) | 48. (D) | 73. (C) | 98. (B) | 123. (C) | 148. (B) | 173. (D) | 198. (D) |
| 24. (D) | 49. (A) | 74. (D) | 99. (D) | 124. (B) | 149. (D) | 174. (B) | 199. (C) |
| 25. (A) | 50. (D) | 75. (A) | 100. (B) | 125. (C) | 150. (A) | 175. (C) | 200. (B) |

151. (A) Sentence starting with 'No sooner', shall be in inverted form, i.e, Did+ Sub+ V₁+ thus, change it into 'No sooner did the teacher enter'.
152. (B) This is an example of conditional sentences. When two actions take place one after the other in future and the second depends on the first action, the first action is in simple present tense and the second is in simple future tense. Thus, it should be 'When he meets him'.
153. (C) Add 'the' before 'habit'. A part of a sentence containing Noun + of + Noun takes 'the' before the first noun.
154. (C) Replace 'as well' by 'also', since 'not only but also' is a co-relative conjunction.
155. (A) Replace 'such' by 'those'.
156. (C) 'Befell' is used only with the third person. If something **befalls** somebody, it means 'something unpleasant happen to somebody'.
157. (B) 'To lay the table' means 'to serve food'.
159. (D) **Knock** somebody **down** means 'to hit somebody and make them fall on the ground'.
160. (B) **Fell** means 'to make somebody/ something fall to the ground'.
174. (B) 'Praise' is an uncountable noun.
175. (C) 'Love' doesn't take V₁+ ing form as a verb. 'Loving' comes often as a noun.
176. (C) This sentence is an example of present tense. Thus, it will take 'have'.
178. (D) **count on** somebody' means 'to trust somebody'.
179. (B) Writing ten letters is not a continuing activity. Thus, it should follow present perfect tense form.
181. (B) This sentence is in past tense. Thus, can shall be changed into 'could'.

Note:- If you face any problem regarding result or marks scored, please contact 9313111777

Note:- If your opinion differs regarding any answer, please message the mock test and question number to 8860330003