SSC MOCK TEST - 255 (SOLUTION)

1. (C) As,

$X_{24}\ D_4 \xrightarrow{24 \times 4} 9\ 6 \rightarrow I\ F$

Similarly,

$L_{12}\ F_6 \xrightarrow{12 \times 6} 7\ 2 \rightarrow G\ B$

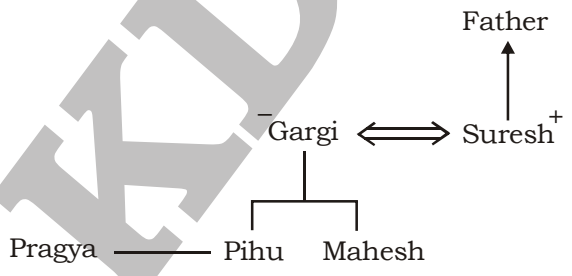
2. (D) As,

$3 \xrightarrow{+3} 6$
$5 \xrightarrow{+3} 8$
$2 \xrightarrow{+3} 5$

Similarly,

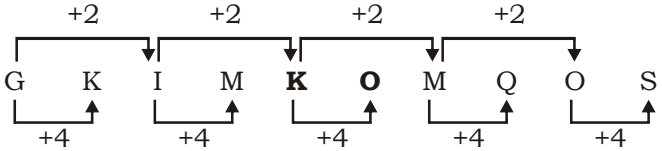
$4 \xrightarrow{+3} 7$
$3 \xrightarrow{+3} 6$
$5 \xrightarrow{+3} 8$

3. (C) Glucometer is an instrument use to measure the blood sugar, while Anemometer is an instrument use to measure the speed of wind.
4. (D) Moscow, Lima and Vienna is capital of Russia, Peru and Austria respectively, while Osaka is a city of Japan.
5. (D) Gram, Wheat and Barley is a Rabi crops, while Rice is a Kharif crop.
6. (B) Except option (B), the difference of 1st and 3rd digit is even.
7. (C) 5. Marble → 4. Marker → 3. Market → 2. Marvel → 1. Master
8. (D)



Hence, Suresh's father is paternal grandfather of Pragya.

9. (D)



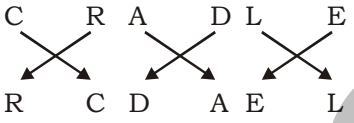
10. (C) $8 \times 1 + 1 = 9$
$9 \times 1.5 + 1.5 = 15$
$15 \times 2 + 2 = 32$
$32 \times 2.5 + 2.5 = 82.5$
$82.5 \times 3 + 3 =$ **250.5**

11. (B) From figure I and III letters X, Z and T are on adjacent face of letter Y. So, opposite face of letter Y will be U or V.
Now, from figure I and II. After repeating one step of figure in anticlock wise and compare obtained figure to figure III, then letter V will be opposite of letter Y.

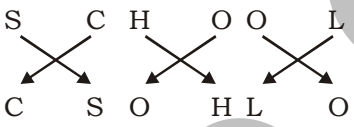
12. (A) As,
$$\frac{4 \times 6}{3} = 8$$
Similarly,
$$\frac{16 \times \mathbf{1}}{2} = 8$$

13. (C) $1 + 1 + 1 + 2 + 2 = 7$
$1 + 1 + 2 + 2 = 6$
$1 + 2 + 2 = 5$
$2 + 2 = 4$
From above solution it is clear that the sum of all the boxes is decreasing from last end and thus 3 should be come in first box.

14. (C) As,



Similarly,

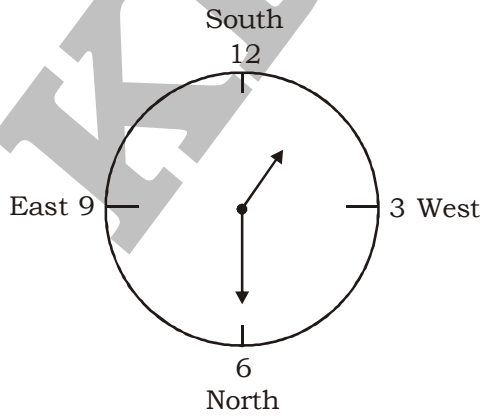


15. (D) All the things are different from each other. Hence option (D) is correct.

16. (C) bcda/cdab/dabc/abcd

17. (B) There are 16 squares in the given figure.

18. (D)



Hence, the hour hand will be in South-West direction.

19. (D) Let at 3 : x O'clock will the hand of a clock be coincident.
ATQ,

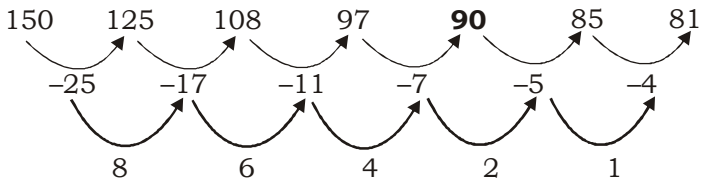
$$x \times \frac{11}{2} - 3 \times 30 = 0$$

$$\frac{11x}{2} - 90° = 0$$

$$11x = 180°$$

$$x = \frac{180}{11} = 16\frac{4}{11} \text{ minute}$$

20. (C)



21. (B) $91 - 7 \div 4 + 2 \times 3$
After changing the signs we have,
$91 \div 7 - 4 \times 2 + 3 = 13 - 4 \times 2 + 3$
$= 13 - 8 + 3 = 16 - 8 =$ **8**

22. (B)

23. (D) After reading the question, we have :
B + 8 = C – (i)
A – 8 = C – 3 – (ii)
A + 6 = 2D – (iii)
B + D = 50 – (iv)
Putting C = A – 5 from (ii) into (i), we have :
B + 8 = A – 5 or A – B = 13 – (v)
Putting D = 50-B from (iv) into (iii), we have :
A + 6 = 100 – 2B or A + 2B = 94 –(vi)
Solving (v) and (vi), we get
B = 27 and A = 40

24. (B)

25. (C)

27. (A) In Rajkot Satyagraha campaigns, Mahatma Gandhi did not participate directly.

28. (C) The most relevant condition for presence of life on Mars is occurrence of ice caps and frozen water.

30. (B) The Godavari is the largest river system of the Peninsular India and is next only to the Ganga and the Indus systems regarding sanctity, picturesqueness and utility and is held in reverence as Vridha Ganga or Dakshin Ganga. Its total length is 1465 kilometres. The source of this river is in the Trimbak Plateau of North Sahyadri near Nasik, in Maharashtra, which is only 80 km from the shore of the Arabian Sea. From its source it flows eastwards in a narrow rocky bed upto Nashik, but the river valley opens out below this point. It receives a large number of tributaries both from the left as well as from the right. But the left bank tributaries are more in number and large in size than the right bank tributaries. The Manjra (724 km) is the only important right bank tributary. The Penganga, the Wardha, the Wainganga, the Indravati and the Sabari are important left bank tributaries.

31. (D) The Planning Commission is not a creature of the Constitution. This extra-Constitutional, non-statutory body was, in fact, set up by a resolution of the Union Cabinet. Prime Minister Jawaharlal Nehru was himself the Commission's first Chairman.

32. (B) The Mumbai headquartered company has named Urjit Patel for a term of five years with effect from August 1, 2020. He served as the 24th governor of the RBI from September 2016 to December 2018.

33. (B) Cohesion refers to attraction between molecules of the same kind while adhesion refers to attraction between different kinds of molecules.

34. (B) Milk is a mixture of lactose and milk-sugar.

37. (B) Territorial Jurisdiction of the Guwahati Government: Asam, Manipur, Meghalaya, Nagaland, Tripura, Mizoram and Arunachal Pradesh

40. (A) If the velocities of sound in air at temperatures t°1 C and t°2 C are V1 and V2 then we have the relation $\frac{V_1}{V_2} = \frac{273 + t_1}{273 + t_2}$.

41. (A) Tropic of Cancer is an imaginary line, at an angle of 23.50 degrees North from the Equator, that passes through the middle of India.

43. (D) Article-94

44. (C) Heat always flows from a body at higher temperature to a body at a lower temperature.

45. (D) The permanent hardness of water is due to presence of bicarbonate, chloride and sulphates of calcium and magnesium. Hard water is therefore salty and not good for drinking. It does not produce lather with soaps or detergents. When boiled, in the boilers, the salts of calcium and magnesium are deposited on the walls of the boilers which are harmful. Also hard water is not suitable for irrigation as it blocks the Xylem tissues' of the plants and stops the growth of the plant.

46. (C) UN Climate Change Conference, known as COP25 gets underway in the Spanish capital, Madrid, under the Presidency of Chile from 2-13 December 2019.

49. (B) The water-soluble vitamins include ascorbic acid (vitamin C), thiamin, riboflavin, niacin, vitamin B6 (pyridoxine, pyridoxal, and pyridoxamine), folacin, vitamin B12, biotin, and pantothenic acid.

50. (B) A supernova is the explosion of a star. It is the largest explosion that takes place in space.

51. (C) Let three digit number = 100x + 10y + z

Number after changing last two digit = 100x + 10z + y

ATQ,

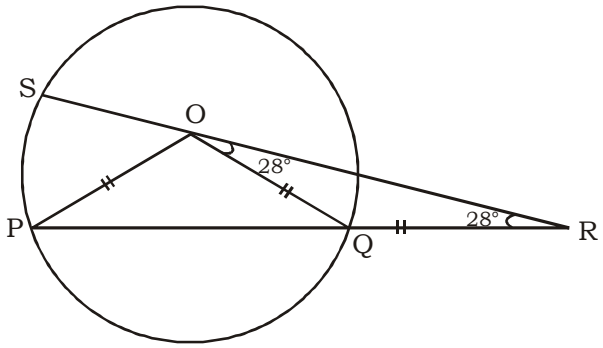
100x + 10z + y - (100x + 10y + z) = 72

100x + 10z + y - 100x – 10y - z = 72

9z - 9y = 72

$(z - y) = \frac{72}{9} = 8$

52. (C)



$\angle OQP = \angle QRO + \angle QOR$ [Exterior angle]

$\angle OQP = 28° + 28° = 56°$

$\angle OQP = \angle OPQ$ [OP = OQ]

$\angle OPQ = 56°$

$\angle POQ = 180° - 56° - 56° = 68°$

$\angle POS = 180° - 68° - 28° = 84°$

53. (B) Circumference of circle = $2\pi r$

ATQ,

$2\pi r - r = 111$

$r(2\pi - 1) = 111$

$$r\left(2 \times \frac{22}{7} - 1\right) = 111$$

$$r\left(\frac{44 - 7}{7}\right) = 111$$

$$r = \frac{111 \times 7}{37} = 21$$

Area of circle = $\pi r^2 = \frac{22}{7} \times 21 \times 21 = 1386\,cm^2$

54. (B) Let the length of second train is x m.

Relative speed = (41 + 31) km/hr

ATQ,

$$(41 + 31) \times \frac{5}{18} \times 20 = (198 + x)$$

$400 = (198 + x)$

$x = 400 - 198 = 202$ m

55. (C) Volume of sphere $= \frac{4}{3} \times \pi r^3 = \frac{4}{3} \times \pi \times 6 \times 6 \times 6$

Volume of right circular cylinder $= \pi r^2 h = \pi \times 8 \times 8 \times h$

ATQ,

$$\frac{4}{3} \times \pi \times 6 \times 6 \times 6 = \pi \times 8 \times 8 \times h$$

$$h = \frac{4 \times 6 \times 6 \times 6}{3 \times 8 \times 8}$$

$$h = \frac{9}{2} = 4.5 \text{ cm}$$

56. (C) For

$3(x - 1)^2 + (y - 3)^2 - 2(x - 2)^2$ to be minimum, $(y - 3)^2$ should be 0.

Minimum value of $(y - 3)^2 = 0$

$y = 3$

So,

$3(x - 1)^2 + 0 - 2(x - 2)^2$

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

$3x^2 + 3 - 6x - 2x^2 - 8 + 8x$

$= x^2 - 5 + 2x$

We know that minimum value of $ax^2 + bx + c = c - \frac{b^2}{4a}$

Here,

$a = 1, b = 2, c = -5$

Required minimum value $= -5 - \frac{(2)^2}{4 \times 1} = -5 - 1 = -6$

57. (A) Ratio of efficiency of Ankit, Amar and Anil = 3: 1 : 2

Total work = 6 × 6 = 36 unit

Work completed in 6 days by Ankit and Anil is 6 × 5 = 30 unit

Remaining work = 36 - 30 = 6 unit

Time taken by Amar to complete remaining work $= \frac{6}{1} = 6$ days

58. (C) The number of families whose monthly expenditure on food is ₹ 1600 or more but less than ₹ 3500 = 18 + 33 + 40 + 55 = 146

59. (B) Total number of families whose monthly expenditure below on food is ₹ 3500

= 18 + 23 + 40 = 81

Total number of families whose monthly expenditure on food is above ₹ 3500

= 50 + 43 + 41 + 28 = 162

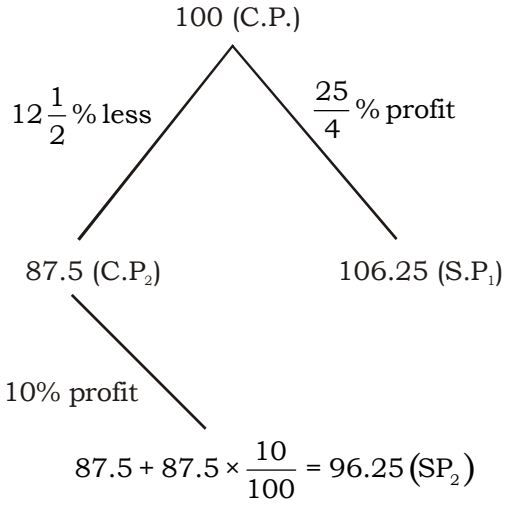
Required Ratio = 81 : 162 = 1 : 2

60. (B) Total number of families whose monthly expenditure on food is ₹ 2800 or more, but below ₹ 4500 = 40 + 55 + 68 + 50 + 43 = 256

Total number of families whose monthly expenditure on food are ₹ 3200 or more but below ₹ 4800 = 55 + 68 + 50 + 43 + 41 = 257

$$\text{Required less\%} = \left(\frac{1}{257} \times 100\right) = 0.38\%$$

61. (D) Let CP of the article = 100 unit



$$87.5 + 87.5 \times \frac{10}{100} = 96.25\,(SP_2)$$

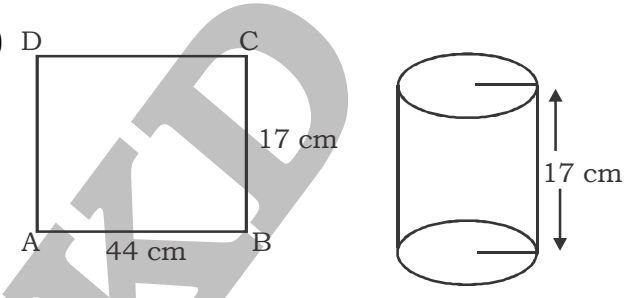
Difference = 106.25 - 96.25 = 10

10 unit = 16

$$1 \text{ unit} = \frac{16}{10}$$

$$100 \text{ unit} = \frac{16}{10} \times 100 = ₹\ 160$$

62. (A)



Circumference of circle = $2\pi r$

$2\pi r = 44$

$$\frac{2 \times 22}{7} \times r = 44$$

r = 7cm

$$\text{Volume of cylinder} = \pi r^2 h = \frac{22}{7} \times 7 \times 7 \times 17 = 2618\,cm^3$$

63. (B) $\sqrt{3}\tan\theta = 2\sin\theta$

$$\sqrt{3}\,\frac{\sin\theta}{\cos\theta} = 2\sin\theta$$

$$\frac{\sqrt{3}}{\cos\theta} = 2$$

$$\cos\theta = \frac{\sqrt{3}}{2}$$

$$\theta = \cos^{-1}\left(\frac{\sqrt{3}}{2}\right)$$

$$\theta = 30°$$

$$\sin\theta = \sin 30° = \frac{1}{2}$$

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

$$= \frac{1}{4} - \frac{3}{4} = \frac{1-3}{4} = \frac{-2}{4} = \frac{-1}{2}$$

64. (B) P = ₹ 6250

$$\text{Time} = 1\frac{1}{3}\text{ years} = 12 + \frac{12}{3}\text{ month} = 16\text{ month}$$

Time = 2 × 8 months

r = 24% p.a = 16% compounded 8-monthly

So,

$$P\left[\left(1+\frac{r}{100}\right)^n - 1\right]$$

$$= 6250\left[\left(1+\frac{16}{100}\right)^2 - 1\right] = 6250\left[\left(\frac{9}{5}\right)^2 - 1\right]$$

$$= 6250\left[\frac{81}{25} - 1\right] = 6250 \times \left[\frac{81-25}{25}\right]$$

= 250 × 56 = ₹ 14000

65. (D) LCM of 10, 12, 15, 18

2	10, 12, 15, 18
3	5, 6, 15, 9
5	5, 2, 5, 3
	1, 2, 1, 3

LCM of 10, 12, 15, 18 = 2 × 3 × 5 × 2 × 3 = 180

Now, x must be multiple of 180

So, $x = 180y$

$x = 36 \times 5y$

For x to be a perfect square, y = 5

$x = 36 \times 25 = 900$

Now,

$$72 \overline{)\ 900\ (\ 12} \quad 72 \quad 180 \quad 144 \quad 36$$

Remainder = 36

66. (A) Let MP be ₹ 100

$$CP = = 100 \times 66\frac{2}{3}\% = 100 \times \frac{200}{3 \times 100} = ₹\frac{200}{3}$$

$$SP = 100 - 100 \times \frac{25}{3 \times 100} = 100 - \frac{25}{3} = ₹\ \frac{275}{3}$$

$$\text{Profit\%} = \frac{SP - CP}{CP} \times 100$$

$$= \frac{\frac{275}{3} - \frac{200}{3}}{\frac{200}{3}} \times 100 = \frac{25 \times 3 \times 100}{200} = 37\frac{1}{2}\%$$

67. (C) $\frac{a^6 + a^4 + a^2 + 1}{a^3} = a^3 + a + \frac{1}{a} + \frac{1}{a^3}$

$a^3 + \frac{1}{a^3} + a + \frac{1}{a}$

If $a = 2 + \sqrt{3}$

$$\frac{1}{a} = \frac{1}{2+\sqrt{3}} \times \frac{2-\sqrt{3}}{2-\sqrt{3}}$$

$$\frac{1}{a} = 2 - \sqrt{3}$$

$$a + \frac{1}{a} = 2 + \sqrt{3} + 2 - \sqrt{3} = 4$$

$$a^3 + \frac{1}{a^3} = (4)^3 - 4 \times 3$$

$$a^3 + \frac{1}{a^3} = 64 - 12 = 52$$

$$\left(a^3 + \frac{1}{a^3}\right) + \left(a + \frac{1}{a}\right) = 52 + 4 = 56$$

68. (B) Let quantity of milk and water in solution is 5x : 3x.
ATQ,

$$\frac{5x - 10 \times \frac{5}{8}}{3x - 10 \times \frac{3}{8} + 10} = \frac{10}{11}$$

$$\frac{\frac{40x - 50}{8}}{\frac{24x - 30 + 80}{8}} = \frac{10}{11}$$

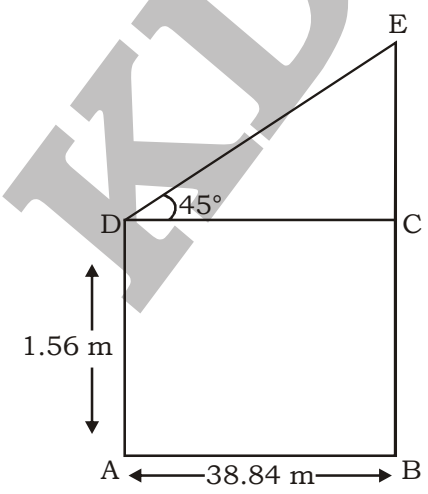
$$\frac{40x - 50}{24x + 50} = \frac{10}{11}$$

$440x - 550 = 240x + 500$
$440x - 240x = 500 + 550$
$200x = 1050$

$$x = \frac{1050}{200} = 5.25$$

Total quantity of solution = 5x + 3x = 8x
= 8 × 5.25 = 42 litre

69. (D)



AB = CD

In ΔEDC,

$$\tan 45° = \frac{EC}{DC}$$

$$1 = \frac{EC}{38.84}$$

EC = 38.84

Height of pole = 38.84 + 1.56 = 40.4 m

70. (A) (a - b) = 2

Cubing both sides,

$(a - b)^3 = (2)^3$

$a^3 - b^3 - 3ab(a - b) = 8$

$152 - 3ab(2) = 8$

$-6ab = -144$

$ab = 24$

$a^3 - b^3 = 152$

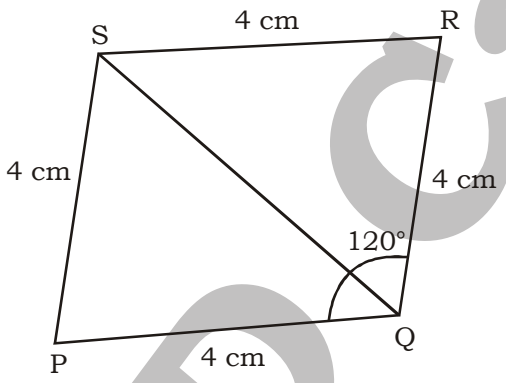
Squaring both sides,

$(a^3 - b^3)^2 = (152)^2$

$a^6 + b^6 - 2a^3b^3 = 23104$

$a^6 + b^6 = 23104 + 2(24)^3 = 50,752$

71. (A)



PQ = QR = RS = PS = 4 cm

$\angle PQR = 120°$

We know that sum of adjacent angle of rhombus is 180°

$\angle PQR + \angle QRS = 180°$

$\angle QRS = 180° - 120° = 60°$

Using cosine rule in ΔQRS,

$QS^2 = QR^2 + RS^2 - 2 \times QR \times QS \times \cos \angle QRS$

$QS^2 = 4^2 + 4^2 - 2 \times 4 \times 4 \times \cos 60°$

$QS^2 = 32 - 16$

$QS = \sqrt{16} = 4$ cm

72. (C) Let the ten successive numbers are x, x + 1, x + 2, x + 3, x + 4, x + 5, x + 6, x + 7, x + 8 and x + 9.
ATQ,

$$\frac{x+x+1+x+2+x+3+x+4+x+5+x+6+x+7+x+8+x+9}{10} = 7.5$$

$10x + 45 = 75$

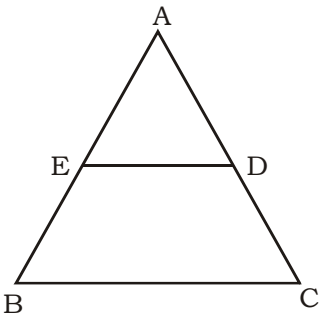
$x = \frac{30}{10} = 3$

Smallest number = 3

Largest number = 3 + 9 = 12

Average of smallest and largest number = $\frac{3+12}{2} = 7.5$

73. (B)



Let the $\angle A, \angle B$ and $\angle C$ be 3x°, 4x° and 5x° respectively.

We know that sum of angles of triangle is 180°.

$3x° + 4x° + 5x° = 180°$

$12x = 180°$

$x = \frac{180}{12} = 15°$

$\angle A = 3x = (3 \times 15) = 45°$

$\angle B = 4x = (4 \times 15) = 60°$

$\angle C = 5x = (5 \times 15) = 75°$

$\because$ DE||CB

$\angle ABC = \angle AED$ (Alternate angle)

$\therefore$ $\angle AED = 60°$

74. (C) $\left[\frac{\sin^2 26^\circ + \sin^2 64^\circ}{\cos^2 28^\circ + \cos^2 62^\circ} + \cos^2 78^\circ + \sin 78^\circ \cos 12^\circ\right]$

$= \frac{\sin^2 26^\circ + \sin^2 (90^\circ - 26^\circ)}{\cos^2 28^\circ + \cos^2 (90^\circ - 28^\circ)} + \cos^2 78^\circ + \sin 78^\circ \cos (90^\circ - 78^\circ)$

$= \frac{\sin^2 26^\circ + \cos^2 26^\circ}{\cos^2 28^\circ + \sin^2 28^\circ} + \cos^2 78^\circ + \sin 78^\circ . \sin 78^\circ$ $\left[\because \cos(90^\circ - \theta) = \sin\theta \right.$ $\left. \sin(90^\circ - \theta) = \cos\theta\right]$

$= \frac{1}{1} + \cos^2 78^\circ + \sin^2 78^\circ$ $\left[\because \sin^2\theta + \cos^2\theta = 1\right]$

$= 1 + 1 = 2$

75. (C) ATQ,

7% of P + 3% of Q = $\frac{3}{2}[4\%$ of P+ 6% of Q$]$

$\frac{7P}{100} + \frac{3Q}{100} = \frac{3}{2}\left[\frac{4P}{100} + \frac{6Q}{100}\right]$

$7P + 3Q = \frac{3}{2}[4P + 6Q]$

$7P + 3Q = 6P + 9Q$

$P = 6Q$

$\frac{Q}{P} = \frac{1}{6} = 1 : 6$

MEANINGS IN ALPHABETICAL ORDER

Abate	(of something perceived as hostile, threatening, or negative) become less intense or widespread	कम करना
Absenteeism	the practice of regularly staying away from work or school without good reason	अनुपस्थिति
Assimilate	take in (information, ideas, or culture) and understand fully	आत्मसात् करना
Barren	(of land) too poor to produce much or any vegetation	बंजर
Cajolement	flattery or gentle persuasion	फुसलाना
Cease	bring or come to an end	समाप्त होना
Confession	a formal statement admitting that one is guilty of a crime	अपराध-स्वीकृति
Confiscate	take or seize (someone's property) with authority	जब्त करना
Conviction	a firmly held belief or opinion	धारणा
Cripple	cause someone to become unable to walk or move properly	पंगु बनाना
Dogmatism	the expression of an opinion or belief as if it were a fact	सिद्धांतवादिता
Exemptions	the process of freeing or state of being free from an obligation or liability imposed on others	छूट
Grapple	engage in a close fight or struggle without weapons	हाथापाई करना
imperialism	a policy of extending a country's power and influence through diplomacy or military force	साम्राज्यवाद
Leisure	free time	अवकाश
Pious	devoutly religious	धार्मिक
Scruple	hesitate or be reluctant to do something	संदेह करना
Smoldering	the process of burning slowly with smoke but no flame	सुलगनेवाला
Stipple	to engrave by means of dots	बिंदुओं में रंगना या अंकित करना
Temperate	showing moderation or self-restraint	संयमी
Temporal	relating to time	
Tempo̱rary	lasting for only a limited period of time	अल्पकालिक
Transparent	(of a material or article) allowing light to pass through so that objects behind can be distinctly seen	पारदर्शी
Vulnerability	the quality or state of being exposed to the possibility of being attacked or harmed, either physically or emotionally	संवेदनशीलता

SSC MOCK TEST - 255 (ANSWER KEY)

1.	(D)	26.	(A)	51.	(C)	76.	(A)
2.	(D)	27.	(A)	52.	(C)	77.	(A)
3.	(C)	28.	(C)	53.	(B)	78.	(C)
4.	(A)	29.	(C)	54.	(B)	79.	(C)
5.	(D)	30.	(B)	55.	(C)	80.	(B)
6.	(A)	31.	(D)	56.	(C)	81.	(A)
7.	(B)	32.	(B)	57.	(A)	82.	(A)
8.	(D)	33.	(B)	58.	(C)	83.	(D)
9.	(D)	34.	(B)	59.	(B)	84.	(A)
10.	(C)	35.	(B)	60.	(B)	85.	(D)
11.	(C)	36.	(B)	61.	(D)	86.	(D)
12.	(A)	37.	(B)	62.	(A)	87.	(C)
13.	(C)	38.	(B)	63.	(B)	88.	(C)
14.	(C)	39.	(A)	64.	(B)	89.	(A)
15.	(D)	40.	(A)	65.	(D)	90.	(A)
16.	(C)	41.	(A)	66.	(A)	91.	(D)
17.	(B)	42.	(D)	67.	(C)	92.	(C)
18.	(D)	43.	(D)	68.	(B)	93.	(D)
19.	(D)	44.	(C)	69.	(D)	94.	(A)
20.	(C)	45.	(D)	70.	(A)	95.	(B)
21.	(B)	46.	(C)	71.	(A)	96.	(A)
22.	(B)	47.	(D)	72.	(C)	97.	(B)
23.	(D)	48.	(B)	73.	(B)	98.	(C)
24.	(B)	49.	(B)	74.	(C)	99.	(D)
25.	(C)	50.	(B)	75.	(C)	100.	(C)

76. (A) Sentence starting with 'never' takes an inversion form. Rephrase it as 'Never have I....'

77. (A) 'Condition' takes 'for', not 'of'.

86 (D) No improvement

87. (C) 'Unless' is used, when the condition is set, and 'Until' is used up to a particular point in time.

90. (D) The correct spelling is 'Leisure'.

91. (D) The correct spelling is 'Dominant'.