SSC MOCK TEST - 247 (SOLUTION)

1. (B) N J M P : P L O R :: R T V X : T V X Z

    (with +2 relationships shown between letters)
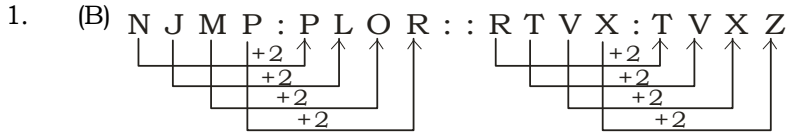
2. (C) There are two vowels in Monday, while there are three vowels in Tuesday.

3. (A) 63 : 9 :: **86** : 14
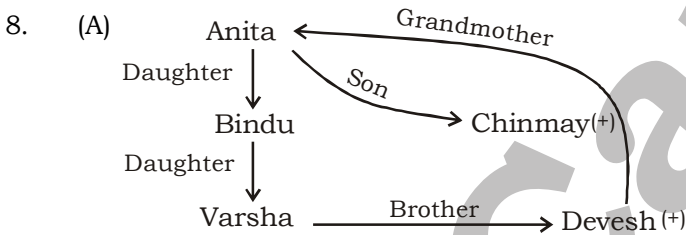
    6+3=9   8+6=14

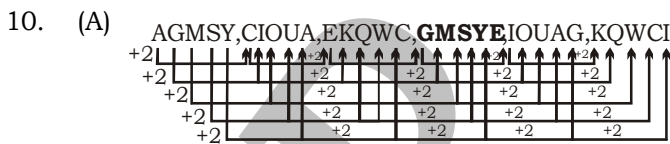4. (A) (A) R P N +2   (B) W S U +2   (C) H D F +2   (D) L H J +2
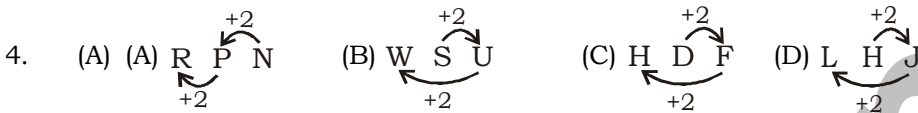
5. (C) Bat is a mammal, while others are birds.

6. (A) Except option (A), first digit is divided by second digit.

7. (B) $\dfrac{Catalogue}{3}$ $\dfrac{Catapult}{1}$ $\dfrac{Catastrophe}{5}$ $\dfrac{Catenation}{4}$ $\dfrac{Cathedral}{2}$

8. (A)

    Anita — Grandmother
    Daughter ↓
    Bindu — Son → Chinmay(+)
    Daughter ↓
    Varsha — Brother → Devesh (+)

9. (D) 4   9   20   43   90   185

    ×2+1   ×2+2   ×2+3   ×2+4   ×2+5

10. (A) AGMSY, CIOUA, EKQWC, **GMSYE**, IOUAG, KQWCI

    (+2 relationships shown)

11. (C) Number of students who passed = 14 + 27 – 1 = 40

    Number of students who failed = 6

    Required total number of students = 40 + 6 = 46

12. (D)

3	15	4	3 × 4 + 3 = 15
7	38	5	7 × 5 + 3 = 38
3	?	5	3 × 5 + 3 = 18

13. (D)

    49   5   64   6   81   **7**

    7^2 8^2 9^2

    +1   +1   +1

14. (C)
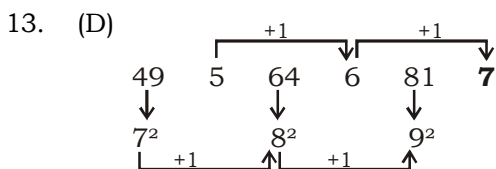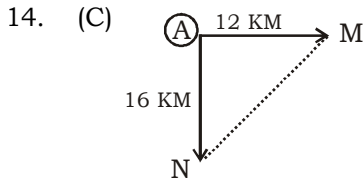
$MN = \sqrt{(AM)^2 + (AN)^2} = \sqrt{(12)^2 + (16)^2} = \sqrt{144 + 256}$

$= \sqrt{400} = 20$ km

15. (B)

$$\begin{array}{cccccccc} N & A & R & G & R & U & E & D \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 \end{array} \rightarrow \begin{array}{cccccccc} G & R & A & N & D & E & U & R \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ 4 & 3 & 2 & 1 & 8 & 7 & 6 & 5 \end{array}$$

Similarly,

$$\begin{array}{cccccccc} S & E & R & P & E & V & R & E \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 \end{array} \rightarrow \begin{array}{cccccccc} P & R & E & S & E & R & V & E \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ 4 & 3 & 2 & 1 & 8 & 7 & 6 & 5 \end{array}$$
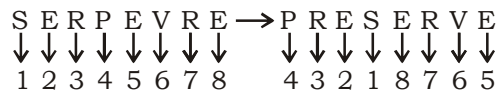
16. (B) Let present age of mother = x years

present age of daughter = y years

$x = y^2$ ....(i) (given)

After 5 years

then, $x + 5 = 3(y + 5)$ ....(ii)

By equation (i) and (ii),

$3 (y + 5) - 5 = y^2$

$y^2 - 3y - 10 = 0$

$(y - 5) (y + 2) = 0$
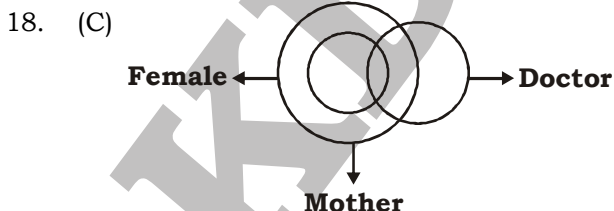
$y = 5$

So, $x = y^2 = 5^2 = 25$

Age of mother = 25 years

17. (A) Time when the hands coincide $= \dfrac{60}{11} \times H$

$= \dfrac{60}{11} \times 6 = \dfrac{360}{11} = 32\dfrac{8}{11}$ minute.

18. (C)

19. (A) $2 \times 5 - 6 + 2 = 6$

$10 - 6 + 2 = 6$

$12 - 6 = 6$ (which is true)

20. (C)

21. (B) ENCOUNTER

22. (D)   23. (D)   24. (A)

25. (C)

26. (D) Copper was the first metal to be used by the Indus people. Bronze, an alloy of copper and tin, was used by the Indus people. Importance of bronze can be ascertained from the fact that the Harappan civilization is called as Bronze-Age civilization. Silver was used by the Indus people and Gold was also known to them. But Iron was unknown to Indus people.

27. (A) Units of Measurement of Distance Between Celestial Bodies is light year. It is the distance covered by light in one year in vacuum travelling at a speed of 3×105 km/sec.

28. (B) The highest mountain peak of Europe is Mount Elbrus in the Caucasus. Mount Blanc is the highest peak of Alps, located in France. Mount Everest is the world's highest peak, lies in Nepal. The highest point of the African continent, Mount Kilimanjaro, lies in Tanzania. The highest point of the Europe is Moun Mckinley, lies in Alaska.

29. (D) The states have common boundary with Bangladesh are West Bengal, Assam, Meghalaya and Tripura.

32. (B) The International Astronomical Union has named an asteroid after Indian classical singer Pandit Jasraj, the first Indian musician to have minor planet named after him, which is located between Mars and Jupiter.

33. (B) This is due to the greater centrifugal force resulting from the higher speed.

34. (B) Thiokol is a variety of synthetic rubber, Drikold is the trade name of dry ice, Perhydrol is the trade name of hydrogen peroxide and Mannitol is hexahydric alcohol.

37. (D) COBOL is suited for Business applications.

38. (B) The North Atlantic Treaty Organisation (NATO), also called the (North) Atlantic Alliance, is an inter-governmental military alliance based on the North Atlantic Treaty.

40. (D) Nagaland has levied a cess of ₹ 5 per litre for diesel and Rs 6 for petrol and motor spirit, from the night of April 28, 2020.

43. (A) Sandstone and shale are the two sedimentary rocks which form quartzite and schists respectively after undergoing metamorphism. Gneiss is a metamorphic rock formed from granite, an igneous rock.

44. (D) The velocity of sound in air increases with temperature.

45. (C) A chemical change is a permanent change which is irreversible and there is change in composition of the reactants i.e. new substances are always formed. Sublimation of iodine is only a physical change.

50. (D) According to Article-54, Lok Sabha, Rajya Sabha and State Assemblies constitute together the electoral college to elect the President. But only Lok Sabha and Rajya Sabha are involved in impeachment (Article-61).

51. (D)

Let total capacity   Efficiency

A → 8   3

B → 4   24   6

C → 6   –4   (as C is emptying pipe)

Now (A + B + C) 1 hr work = (3 + 6 – 4) = 5 unit

Required time to fill the tank by all the pipes together = $\dfrac{24}{5}$ hr $= 4$ hr 48 min

52. (A) HCF of $\dfrac{12}{7}, \dfrac{15}{16}, \dfrac{21}{4} = \dfrac{\text{HCF of} \left(12, 15, 21\right)}{\text{LCM of} \left(7, 16, 4\right)} = \dfrac{3}{112}$

53. (A) Let income of B = 100

A's income = 75

C's income = $75 \times \dfrac{116}{100} = 87$

A	B	C
75	100	87

C's income is more than A's income.

∴ Required more percentage = $\dfrac{87-75}{75} \times 100 = \dfrac{12 \times 100}{75} = 16\%$ more

54. (B) As $(x + 3)$ is a father of $F(x) = x^3 + 3x^2 + 2x + K$

$F(-3) = 0$

$F(-3) = (-3)^3 + 3(-3)^2 + 2(-3) + K = 0$

$-27 + 27 - 6 + K = 0$

$K = 6$

55. (B) $x^2 - 2x + 1 = 0$

$x^2 + 1 = 2x$

Dividing both side by x,

$\left(x + \dfrac{1}{x}\right) = 2$ ....(i)

Now, $(x^2 + x^{-2})(x^3 + x^{-3})$

$\left(x^2 + \dfrac{1}{x^2}\right)\left(x^3 + \dfrac{1}{x^3}\right)$

Squaring both side of equation (i),

$x^2 + \dfrac{1}{x^2} + 2 \times x \times \dfrac{1}{x} = 4$

$x^2 + \dfrac{1}{x^2} = 4 - 2 = 2$

Cubing both sides of equation (i) we get,

$x^3 + \dfrac{1}{x^3} + 3 \times x \times \dfrac{1}{x}\left(x + \dfrac{1}{x}\right) = 8$

$x^3 + \dfrac{1}{x^3} + 6 = 8$

$x^3 + \dfrac{1}{x^3} = 2$

∴ $\left(x^2 + \dfrac{1}{x^2}\right)\left(x^3 + \dfrac{1}{x^3}\right) = 2 \times 2 = 4$

56. (B) Let C.P fo article = ₹ x

According to question,

$\dfrac{x-36}{x} \times 100 = \dfrac{84-x}{x} \times 100$

$100x - 3600 = 8400 - 100x$

$200x = 8400 + 3600$

$200x = 12000$

$x = 60$

∴ C.P = ₹ 60

S.P = ₹ 36

Loss% = $\dfrac{24}{60} \times 100 = 40\%$
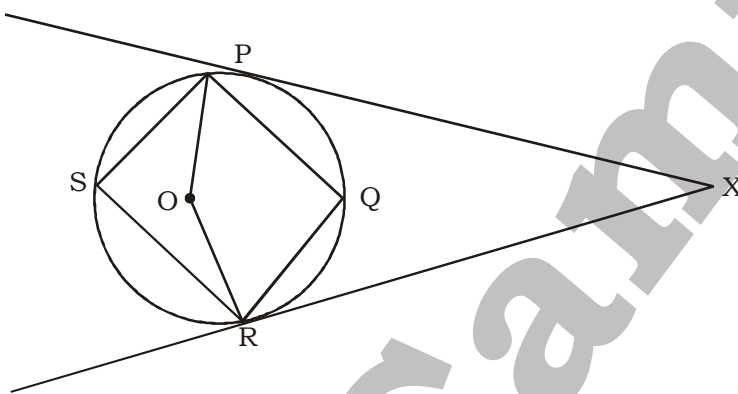
57. (A) $\dfrac{P}{SI} = \dfrac{12}{5}$

Let principle = 12

S.I for 5 years = 5

S.I for 1 years = $\dfrac{5}{5} = 1$

Rate = $\dfrac{S.I}{Principle} \times 100 = \dfrac{1}{12} \times 100 = \dfrac{25}{3}\% = 8\dfrac{1}{3}\%$

58. (A)

Let O be the centre of circle

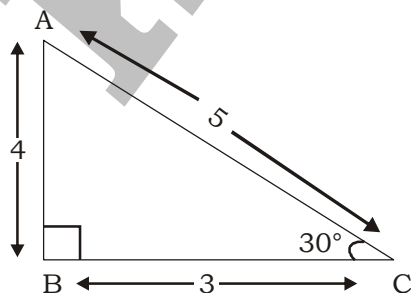$\angle PQR = 106°$

$\angle PQR + \angle PSR = 180°$

$\angle PSR = 180° - 106° = 74°$

$\angle POR = 2\angle PSR$

$\angle POR = 2 \times 74 = 148°$

$\angle POR + \angle PXR = 180°$

$\angle P \times R = 180° - 148° = 32°$

59. (D)

$\sin \theta = 0.8 = \dfrac{8}{10} = \dfrac{4}{5} = \dfrac{P}{H}$

According to question,

P = 4, H = 5, B = 3

$B = \sqrt{(H)^2 - (P)^2} = \sqrt{(5)^2 - (4)^2} = \sqrt{25 - 16} = \sqrt{9} = 3$

$\dfrac{8 \operatorname{cosec} \theta - 5 \cos \theta + 1}{\sin \theta + \cos \theta - 1} = \dfrac{8 \times \dfrac{5}{4} - 5 \times \dfrac{3}{5} + 1}{\dfrac{4}{5} + \dfrac{3}{5} - 1}$

$= \dfrac{10 - 3 + 1}{\dfrac{4 + 3 - 5}{5}} = \dfrac{8}{\dfrac{2}{5}} = \dfrac{8 \times 5}{2} = 20$

60. (A) Ratio of initial investments of A, B and C = 16 : 30 : 25

Now, ratio of total investment of A, B, and C at the end of the year

= (16 × 4 + 24 × 8) : (30 × 4 + 24 × 8) : (25 × 12)

= (64 + 192) : (120 + 192) : 300

= 256 : 312 : 300

= 64 : 78 : 75

Share of A = $\left(\dfrac{64}{64 + 78 + 75} \times 86800 \right) = \left(\dfrac{64}{217} \times 86800 \right)$

= ₹ 25,600

61. (C) Average of 21 numbers = 25

Sum of 21 numbers = 25 × 21 = 525

Average of first 11 numbers = 21

Sum of first 11 numbers = 21 × 11 = 231

Average of last 11 numbers = 28

Sum of last 11 numbers = 28 × 11 = 308

11th number = (231 + 308) - 525 = 539 - 525 = 14

Sum of remaining 20 numbers = 525 - 14 = 511

Average of remaining 20 numbers = $\dfrac{511}{20}$ = 25.55

62. (B) Cost price = ₹ 600

Selling price = ₹ 600 + 10% of ₹ 600 = ₹ 660

Discount = 20%

Marked price = $\dfrac{\text{Selling price} \times 100}{100 - \text{diccount\%}} = \dfrac{660 \times 100}{100 - 20} = \dfrac{660 \times 100}{80}$

= 165 × 5 = ₹ 825

63. (D) Let the radius and slant height of cone be r cm and l cm respectively.

Area of base = πr^2

Curved surface area of cone = $\pi r l$

ATQ,

$2.6\ \pi r^2 = \pi r l$

$l = 2.6 r$

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

$24 = \sqrt{(2.6\, r)^2 - r^2}$
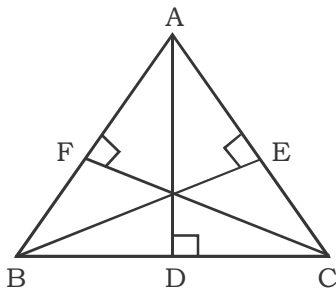
$24 = \sqrt{6.76 r^2 - r^2}$

$24 = 2.4 r$

∴ $r = 10$ cm

$l = (2.6 \times 10)$ cm = 26 cm

Total surface area of cone = $\pi r(r + l)$

= $\pi \times 10(26 + 10) = 360\ \pi$ cm^2

64. (C)

As we know that $\triangle$ABC is an equilateral triangle

Height = $\dfrac{\sqrt{3}}{2} \times$ side

BE = $\dfrac{\sqrt{3}}{2} \times$ AC

Squaring both sides,
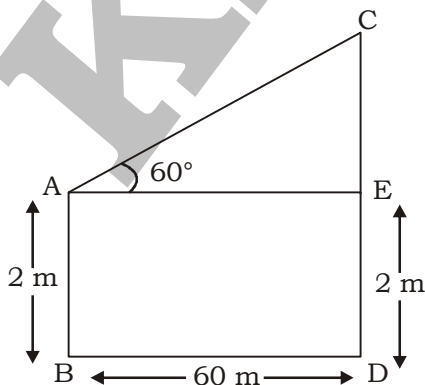
BE^2 = $\dfrac{3}{4} \times$ AC^2

4BE^2 = 3AC^2

∴ 3AC^2 = 4BE^2

65. (A)

Let height of man be AB and height of pole be CD

AB =ED = 2 m

AE = BD = 60 m

$\angle CAE = 60°$

In $\triangle ACE$,

$\tan 60° = \dfrac{CE}{AE}$

$\sqrt{3} = \dfrac{CE}{60}$

$CE = 60\sqrt{3} = (60 \times 1.732)\,m = 103.920\,m$

Height of the pole = (103.92 + 2) = 105.92 m

66. (D) Speed of person in upstream $= \dfrac{20}{2} = 10\,km/h$

Speed of person in downstream $= \dfrac{50}{2.5} = 20\,km/h$

Speed of person in still water = $\dfrac{\text{upstream speed} + \text{downstream speed}}{2}$

$= \left(\dfrac{20+10}{2}\right) km/h = 15 km/h$

Time taken by person to cover a distance of 60 km in still water $= \left(\dfrac{60}{15}\right) hours = 4\,hours$

67. (B) Let the side of triangle be 20x, 21x and 29x respectively.

Perimeter of triangle = sum of sides

ATQ,

20x + 21x + 29x = 1050

70x = 1050

$\Rightarrow x = \dfrac{1050}{70}$

$\therefore$ x = 15

Sides of triangle are (20 ×15), (21 × 15) and (29 × 15)

= 300 m, 315 m and 435 m

300, 315 and 435 is a triplet.

$\therefore$ Area of triangle $= \left(\dfrac{1}{2} \times 300 \times 315\right) m^2 = 47250\,m^2$

10000 m² = 1 hectare

47250 m² $= \dfrac{1}{10000} \times 47250 = 4.725$ hectare

68. (B) $\dfrac{p}{q} = \dfrac{r}{s} \qquad \Rightarrow \qquad \dfrac{p}{r} = \dfrac{q}{s}$

$\dfrac{xp + yr}{xq + ys} = \dfrac{r\left(x\dfrac{p}{r} + y\right)}{s\left(x\dfrac{q}{s} + y\right)} = \dfrac{r}{s}\dfrac{\left(x\dfrac{p}{r} + y\right)}{\left(x\dfrac{q}{s} + y\right)} \qquad \left\{\because \dfrac{p}{r} = \dfrac{q}{s}\right\}$

$= \dfrac{r}{s}$

69. (B) $\dfrac{1}{2} + \dfrac{1}{8} + \dfrac{1}{24} + \dfrac{1}{48} + \dfrac{1}{80} + \dfrac{1}{120} + \dfrac{1}{168}$

$= \dfrac{1}{1 \times 2} + \dfrac{1}{2 \times 4} + \dfrac{1}{4 \times 6} + \dfrac{1}{6 \times 8} + \dfrac{1}{8 \times 10} + \dfrac{1}{10 \times 12} + \dfrac{1}{12 \times 14}$

$= \dfrac{1}{2} + \dfrac{1}{2}\left[\left(\dfrac{1}{2} - \dfrac{1}{4}\right) + \left(\dfrac{1}{4} - \dfrac{1}{6}\right) + \left(\dfrac{1}{6} - \dfrac{1}{8}\right) + \left(\dfrac{1}{8} - \dfrac{1}{10}\right) + \left(\dfrac{1}{10} - \dfrac{1}{12}\right) + \left(\dfrac{1}{12} - \dfrac{1}{14}\right)\right]$

$= \dfrac{1}{2} + \dfrac{1}{2}\left[\dfrac{1}{2} - \dfrac{1}{14}\right]$

$= \dfrac{1}{2} + \dfrac{1}{2}\left[\dfrac{7 - 1}{14}\right] = \dfrac{1}{2} + \dfrac{3}{14} = \dfrac{7 + 3}{14} = \dfrac{10}{14} = \dfrac{5}{7}$

70. (A) Points A, B and C are collinear so, slope of AB = Slope of AC

Slope of line = $\dfrac{y_2 - y_1}{x_2 - x_1}$

$\dfrac{x - 3}{5 - 2} = \dfrac{7 - 3}{6 - 2}$

$\dfrac{x - 3}{3} = 1$

x = 3

∴ x = 6

71. (D)

Days	Work	Efficiency
A + B → 24		5
B + C → 30	120	4
C + A → 40		3

Efficiency of A + B + B + C + C + A = 5 + 4 + 3

2(A + B + C) = 12

(A + B + C) = 6

Required number of days to complete the work by A, B and C together = $\dfrac{120}{6}$ days = 20 days

72. **(B)** Total number of students in Arts stream = 20% of 5000 = 1000

Number of girls student in Arts stream $= \left(\dfrac{108}{360} \times 1500\right) = 450$

Number of boys student in Arts stream = (1000 - 450) = 550

∴ Required ratio = 550 : 450 = 11 : 9

73. **(B)** Total number of student in Engineering stream = 30% of 5000

$= \dfrac{30}{100} \times 5000 = 1500$

Total number of girls student in Engineering stream $= \left(\dfrac{36}{360} \times 1500\right) = 150$

Total number of boys student in Engineering stream = 1500 - 150 = 1350

Required percentage $= \left(\dfrac{1350}{1500} \times 100\right)\% = 90\%$

74. **(C)** Total number of boys student in Management and Science streams together

$= \left(5000 \times \dfrac{15}{100} - 1500 \times \dfrac{54}{360}\right) + \left(5000 \times \dfrac{20}{100} - 1500 \times \dfrac{90}{360}\right)$

$= (750 - 225) + (1000 - 375) = 525 + 625 = 1150$

Total number of boys student in Commerce and Engineering streams together

$= \left(5000 \times \dfrac{15}{100} - 1500 \times \dfrac{72}{360}\right) + \left(5000 \times \dfrac{30}{100} - 1500 \times \dfrac{36}{360}\right)$

$= (750 - 300) + (1500 - 150) = (450 + 1350) = 1800$

Required less % $= \left(\dfrac{1800 - 1150}{1800} \times 100\right)\%$

$= \left(\dfrac{650}{1800} \times 100\right)\% \approx 36\%$

75. **(B)** Total number of students in Management and Commerce streams together

$= 5000 \times \left(\dfrac{15 + 15}{100}\right) = 1500$

Total number of students in Arts stream $= 5000 \times \dfrac{20}{100} = 1000$

Value of x = (1500 - 1000) = 500

∴ x lies between 450 and 550.

MEANINGS IN ALPHABETICAL ORDER

Allegory	a story, poem, or picture that can be interpreted to reveal a hidden meaning, typically a moral or political one	रूपक कथा, जिसमें एक (एक नैतिक या राजनीतिक) अर्थ छुपा हुआ होता है
Astonish	surprise or impress (someone) greatly	चकित करना
Clown	a comic entertainer, especially one in a circus, wearing a traditional costume and exaggerated makeup	विदूषक
Constructive	serving a useful purpose	रचनात्मक
Contagious	likely to spread to and affect others	संक्रामक
Dauntless	showing fearlessness and determination	निडर
Dilemma	A dilemma is a difficult situation in which you have to choose between two or more alternatives	दुविधा
Dogma	an established opinion	मत, नीति
Evocative	bringing strong images, memories, or feelings to mind	विचारोत्तेजक
Evoke	to call or summon up (a memory, feeling, etc)	कोई स्मृति या भावना पैदा करना
Hindrance	a thing that provides resistance, delay, or obstruction to something	रूकावट
Intuition	the ability to understand something immediately, without the need for conscious reasoning	सहज बोध
Lethargic	sluggish and apathetic	सुस्त
Narrative	a spoken or written account of connected events; a story	वर्णन, विवरण
Nefarious	wicked or criminal	कुटिल
Nostalgia	a sentimental longing or wistful affection for the past	अतीत के प्रति एक भावुक लालसा या प्रेमपूर्ण स्नेह
Parable	a short story that uses familiar events to illustrate a religious or ethical point	एक छोटी कहानी जो एक धार्मिक या नैतिक बिंदु को चित्रित करती है
Prerogative	a right or privilege exclusive to a particular individual or class	विशेषाधिकार
Reproach	to express disapproval or disappointment	झिड़कना, डांटना
Spectre	a ghost or apparition	काली छाया
Steadfast	resolutely or dutifully firm and unwavering	दृढ़
Suppliant	a person making a humble plea to someone in power or authority	विनती करने वाला
Sycophant	a person who acts obsequiously toward someone important in order to gain advantage	चापलूस
Venerate	regard with great respect; revere	आदर करना
Vigorously	in a way that involves physical strength, effort, or energy	जोर से
Welfare	the health, happiness, and fortunes of a person or group	खुशहाली

SSC MOCK TEST - 247 (ANSWER KEY)

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

76. (A) Since both the action happened in the past, one after another, the first action shall be in Past Perfect Tense.

Here, in this inverted form of sentence, 'Did' should be replaced by 'had'.

77. (C) Replace 'suddenly' by an adjective 'sudden'.

85. (B) A conditional sentence takes following form:

(i) if + sub + had + v_3, sub + would have + v_3 + ...

or

(ii) Had + sub + v_3, sub + would have + v_3 + ...

86. (D) Since the Reporting verb is in Past Tense, 'would' should be used in Indirect Speech.

89. (B) The correct spelling of 'Nostelgia' is 'Nostalgia'.

90. (B) The correct spelling of 'Hinderence' is 'Hindrance'.