

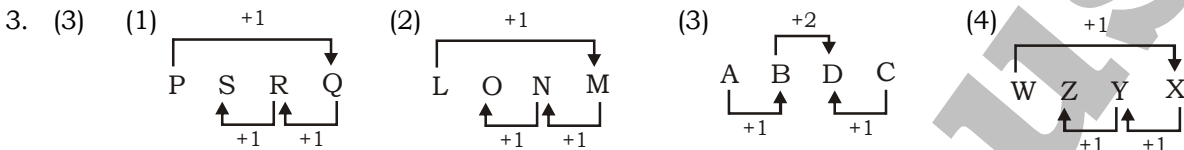
SSC MOCK TEST - 413 (SOLUTION)

1. (1) As, $169 \Rightarrow 1^2 + 6^2 + 9^2 = 118$

And, $225 \Rightarrow 2^2 + 2^2 + 5^2 = 33$

Similarly, $144 \Rightarrow 1^2 + 4^2 + 4^2 = 33$

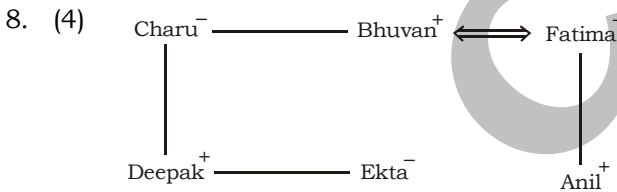
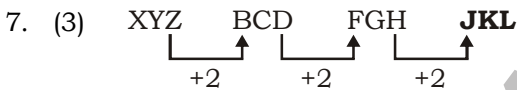
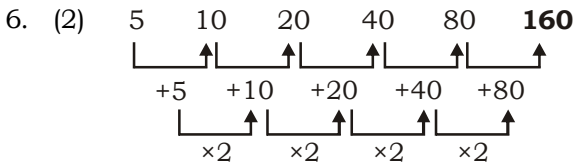
2. (3) Action is related to Reaction, in the same way Stimulus is related to Response.



4. (3) Except Tapti, others are East flowing river.

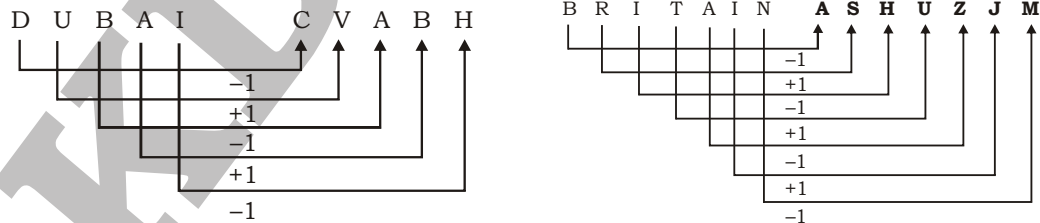
5. (2) As, CHIMERA $\Rightarrow 3 + 8 + 9 + 13 + 5 + 18 + 1 = 57 \Rightarrow 57 \times 7$ (No. of letters) = 399

Similarly, SPECIES $\Rightarrow 19 + 16 + 5 + 3 + 9 + 5 + 19 = 76 \times 7$ (No. of letters) = 532



9. (3) As,

Similarly,



10. (1) As, $6^3 = 216 \Rightarrow \frac{216}{3} = 72$

Similarly, $9^3 = 729 \Rightarrow \frac{729}{3} = 243$

11. (2) lmno/nopq/pgrs/rstu

12. (2) **In first column,**

$$30 \times 5 - 125 = 25$$

In second column,

$$40 \times 5 - 140 = 60$$

In third column,

$$? \times 5 - 160 = 140$$

$$? \times 5 = 140 + 160$$

$$? = \frac{300}{5} = 60$$

13. (4) $26 + 42 \div 7 \times 12 - 14 = -32$

After Changing the signs - and +,

$$26 - 42 \div 7 \times 12 + 14 = -32$$

$$26 - 6 \times 12 + 14 = -32$$

$$26 - 72 + 14 = -32$$

$$40 - 72 = -32$$

$$-32 = -32$$

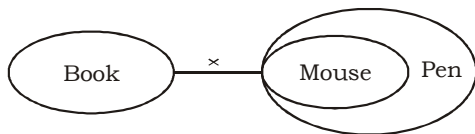
14. (3)

15. (4) 3. Mukherjee Nagar → 1. Delhi → 4. North India → 2. India → 5. Asia

16. (3) In numbers 7 will appear 11 times in numbers 7, 17, 27, 37, 47, 57, 67, 77, 87 and 97 (two times in 77) and 9 times in numbers 70, 71, 72, 73, 74, 75, 76, 78 and 79.

Hence it will appear in total 20 times in numbers 1 to 100.

17. (1)



I. True II. False III. False

Hence, only conclusion I follows.

18. (1)

19. (2) $L > M$ (i)

$L > A > M$ (ii)

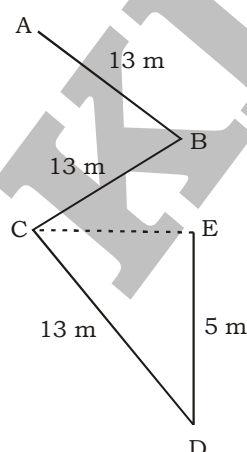
$M > H > B$ (iii)

Combine (i), (ii) and (iii),

$L > A > M > H > B$

Hence, B is youngest.

20. (2)



In $\triangle CDE$,

$$CE = \sqrt{CD^2 - DE^2} = \sqrt{13^2 - 5^2}$$

$$= \sqrt{169 - 25} = \sqrt{144} = 12 \text{ m}$$

Hence, C is in the West direction of E at a distance of 12 m.

21. (2) 22. (2) 23. (1) 24. (1) 25. (2)
26. (3) Sutlej River, Ancient Greek Zaradros, Sanskrit Shutudri or Shatadru, longest of the five tributaries of the Indus River that give the Punjab (meaning "Five Rivers") its name. It rises on the north slope of the Himalayas in Lake La'nga in southwestern Tibet, at an elevation above 15000 feet (4600 metres).
27. (3) Constitution of India was adopted in 1950, in which article 370 provides that provisions of Indian constitution may apply with some exceptions and modifications in the state of J&K.
29. (3) Carbon-14 decays into nitrogen-14 through beta decay.
30. (3) The gluteus maximus is the largest muscle in the human body.
33. (1) First-ever Indian woman to win an Olympic medal, Karnam Malleswari brought won a bronze medal in the weightlifting 69kg women's category of Sydney Olympics.
34. (3) In humans, each cell normally contains 23 pairs of chromosomes, for a total of 46. Twenty-two of these pairs, called autosomes, look the same in both males and females. The 23rd pair, the sex chromosomes, differ between males and females.
35. (3) A Chinese research group has initiated the construction of an enormous neutrino telescope in the South China Sea called Tropical Deep-sea Neutrino Telescope (Trident), which is named Hailing (Ocean Bell) in Chinese.
36. (4) Mangal Pandey was arrested and sentenced to death after he attacked British officers in Barrackpore on 29 March 1857.
37. (4) Nepanagar is an industrial township in Burhanpur district in the Indian state of Madhya Pradesh. Nepanagar is famous for its newsprint paper mill, Nepa Mills Limited (earlier known as The National News Print Ltd).
38. (3) Prosperity in the Gupta Empire initiated a period known as the Golden Age of India, marked by extensive inventions and discoveries in science, technology, engineering, art, dialectic, literature, logic, mathematics, astronomy, religion, and philosophy.
41. (2) The Excise duty is a tax on production/manufacture of goods within the country. Excise duty is an indirect tax levied on those goods which are manufactured in India and are meant for home consumption. It is a tax on manufacturing, which is paid by a manufacturer, who passes its incidence on to the customers.
44. (2) Most resistance wire heating elements usually use nichrome 80/20 (80% Nickel, 20% Chromium) wire, ribbon, or strip. Nichrome 80/20 is an ideal material, because it has relatively high resistance and forms an adherent layer of chromium oxide when it is heated for the first time.
46. (2) Lysosomes are known as 'suicidal bags' of the cell because they contain hydrolytic enzymes and these hydrolytic enzymes digest all cell debris."
47. (1) Maharana Pratap Sagar, in India, otherwise called Pong Reservoir or Pong Dam Lake was made in 1975, by building the most elevated earthfill dam in India on the Beas River in the wetland zone of the Siwalik Hills of the Kangra region of the province of Himachal Pradesh.
50. (4) The Union Education Ministry has recently issued instructions to the States to initiate the implementation of the Automated Permanent Academic Account Registry, abbreviated as 'APAAR.'

51. (1) Let the total work be 240 units.

$$\text{Work done by A in 1 day} = \frac{240}{16} = 15$$

$$\text{Work done by B in 1 day} = \frac{240}{24} = 10$$

$$\text{Work done by C in 1 day} = \frac{240}{30} = 8$$

$$\text{Units of work done in first 3 days by A, B and C together} = 15 + 15 + (15 + 10 + 8) = 63$$

$$\text{Units of work done in first 9 days by A, B and C together} = 63 \times 3 = 189$$

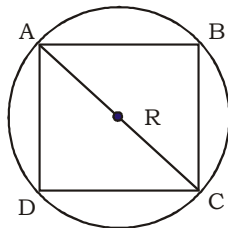
$$\text{Remaining work} = 240 - 189 = 51$$

$$\text{Work done by A in next 2 days} = 30$$

$$\text{Now, remaining work} = 51 - 30 = 21$$

$$\therefore \text{Required time} = 9 + 2 + \frac{21}{63} = 11\frac{1}{3} \text{ days}$$

52. (2)



Let the side of the square ABCD be S m and radius of garden be R m.

$$\text{Perimeter of circular garden} = \frac{1254}{9.5} = 132 \text{ m}$$

$$\text{Radius of circular garden} = \frac{132 \times 7}{22 \times 2} = 21 \text{ m}$$

$$\text{Diagonal of square} = \text{Diameter of garden} \quad \sqrt{2} \times S = 2 \times 21$$

$$S = \frac{42}{\sqrt{2}} \text{ m}$$

$$\therefore \text{Area of square} = (\text{side})^2 = \left(\frac{42}{\sqrt{2}}\right)^2 = 441 \text{ m}^2$$

53. (4) Let the age of P and R be x years and 2x years respectively.

$$\text{Q's father age} = (x + 2x) = 3x \text{ years}$$

$$\text{Age of Q} = \frac{3x}{2} \text{ years}$$

$$\text{Total ages of P, Q and R} = 24 \times 3 = 72 \text{ years}$$

ATQ,

$$x + 2x + \frac{3x}{2} = 72$$

$$9x = 72 \times 2$$

$$x = \frac{72 \times 2}{9} = 16 \text{ years}$$

$$\therefore \text{Age of Q} = 1.5x = 1.5 \times 16 = 24 \text{ years}$$

54. (2) Let the Priyesh has ₹ x.
Manish has ₹(2400 - x)
ATQ,

$$(2400 - x) \times \frac{5}{16} = x \times \frac{7}{15} + 189$$

$$750 - \frac{5x}{16} = \frac{7x}{15} + 189$$

$$\frac{7x}{15} + \frac{5x}{16} = 750 - 189$$

$$\frac{112x + 75x}{240} = 561$$

$$187x = 561 \times 240$$

$$x = \frac{561 \times 240}{187} = ₹ 720$$

Manish has = 2400 - 720 = ₹ 1680

∴ Required ratio = 720 : 1680 = 3 : 7

55. (3) Let the CP of 100 gram of sugar be ₹100.

$$\text{MP of 100 gram sugar} = 100 \times \frac{152}{100} = ₹152$$

$$\text{SP of 100 gram sugar} = 152 \times \frac{80}{100} = ₹121.60$$

While selling he cheats the customer by giving 12% less in weight. i.e. he sold 88 gram instead of 100 gram.

$$\therefore \text{Overall profit\%} = \left(\frac{121.60 - 88}{88} \times 100 \right) \% = 38.18\% \approx 38\%$$

$$56. (4) \quad \frac{9}{11} + \left\{ \frac{7}{11} - \left(\frac{13}{22} - \frac{1 - \frac{5}{11}}{2} \times \frac{1}{2} \right) \right\} = \frac{9}{11} + \left\{ \frac{7}{11} - \left(\frac{13}{22} - \frac{11 - 5}{2} \times \frac{1}{2} \right) \right\}$$

$$= \frac{9}{11} + \left\{ \frac{7}{11} - \left(\frac{13}{22} - \frac{6}{22} \times \frac{1}{2} \right) \right\} = \frac{9}{11} + \left\{ \frac{7}{11} - \left(\frac{26 - 6}{44} \right) \right\}$$

$$= \frac{9}{11} + \left\{ \frac{7}{11} - \frac{20}{44} \right\} = \frac{9}{11} + \left\{ \frac{28 - 20}{44} \right\}$$

$$= \frac{9}{11} + \frac{8}{44} = \frac{36 + 8}{44} = \frac{44}{44} = 1$$

57. (1) A(-3, 4) B(5, 6)

$$O(x, y) = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right), \text{ where, } x_1 = -3, x_2 = 5, y_1 = 4 \text{ and } y_2 = 6$$

$$O(x, y) = \left(\frac{-3 + 5}{2}, \frac{4 + 6}{2} \right)$$

$$O(x, y) = (1, 5)$$

58. (2) $\sin^8 x + \cos^8 x - 1 = 0$
 $\sin^2 x + \cos^2 x - \sin^8 x - \cos^8 x = 0$
 $\sin^2 x (1 - \sin^6 x) + \cos^2 x (1 - \cos^6 x) = 0$
 $\sin^2 x (1 - \sin^2 x) (1 + \sin^2 x + \sin^4 x) + \cos^2 x (1 - \cos^2 x) (1 + \cos^2 x + \cos^4 x) = 0$
 $\sin^2 x \cos^2 x (1 + \sin^2 x + \sin^4 x) + \sin^2 x \cos^2 x (1 + \cos^2 x + \cos^4 x) = 0$
 $\sin^2 x \cos^2 x (1 + \sin^2 x + \sin^4 x + 1 + \cos^2 x + \cos^4 x) = 0$
 $\sin^2 x \cos^2 x (3 + \sin^4 x + \cos^4 x) = 0$
 $\sin^2 x \cos^2 x (3 + 1 - 2\sin^2 x \cos^2 x) = 0$
 $\sin^2 x \cos^2 x (4 - 2 \sin^2 x \cos^2 x) = 0$

since, $\theta = 0$ or $\frac{\pi}{2}$

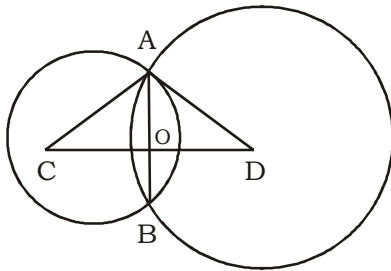
$\sin^2 x \cos^2 x \neq 0$

So, $4 - 2 \sin^2 x \cos^2 x = 0$

$2\sin^2 x \cos^2 x = 4$

$\therefore \sin^2 x \cos^2 x = \frac{4}{2} = 2$

59. (2)



Here, $AB = 8$ cm

$OA = OB = 4$ cm

In $\triangle AOC$,

$OC^2 = AC^2 - AO^2$

$OC = \sqrt{6^2 - 4^2} = \sqrt{36 - 16} = \sqrt{20}$ cm

In $\triangle AOD$,

$OD^2 = AD^2 - AO^2$

$OD = \sqrt{8^2 - 4^2} = \sqrt{64 - 16} = \sqrt{48}$ cm

Hence, $CD = OC + OD = \sqrt{20} + \sqrt{48}$

$= 2\sqrt{5} + 4\sqrt{3} = 2(\sqrt{5} + 2\sqrt{3})$ cm

60. (4) Let the numbers be $83a$ and $83b$ respectively.

$83a + 83b = 1245$

$a + b = \frac{1245}{83} = 15$

Possible value of $(a, b) = (11, 4), (7, 8), (2, 13)$

Only $(7, 8)$ satisfy the value.

Now, $a = 83 \times 7 = 581$ and $b = 83 \times 8 = 664$

$\therefore \frac{1}{a} + \frac{1}{b} = \frac{1}{581} + \frac{1}{664} = \frac{8+7}{83 \times 7 \times 8} = \frac{15}{4648}$

61. (3) Distance = $\frac{60 \times 50}{60 - 50} \times \frac{15 + 20}{60} = \frac{3000}{10} \times \frac{35}{60} = 175 \text{ km}$

So, the time taken to cover 175 km at 60 km/hr = $\frac{175}{60} = \frac{35}{12}$ hours

Actual time is 15 minutes earlier than $\frac{35}{12}$ hours = $\frac{35}{12} + \frac{15}{60} = \frac{175 + 15}{60} = \frac{190}{60} = \frac{19}{6}$ hours

∴ Speed of car to reach on actual time = $\frac{175}{\frac{19}{6}} \times 6 = 55 \frac{5}{19} \text{ km/hr}$

62. (1) The rate of interest which is charged = $20 - 20 \times \frac{20}{100} = 16\%$

The sum after three years = $30000 \left(1 + \frac{16}{100}\right)^3$

= $30000 \times \frac{116}{100} \times \frac{116}{100} \times \frac{116}{100} = ₹46826.88$

63. (3) $(24M + 30W) = (4M + 8W) \times 4$

$24M + 30W = 16M + 32W$

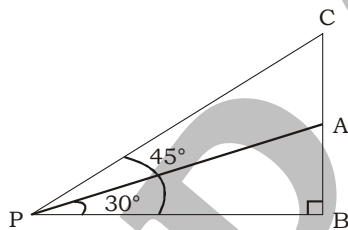
$8M = 2W$

$\frac{M}{W} = \frac{2}{8} = \frac{1}{4}$

Total work = $(4 \times 1 + 8 \times 4) \times 4 = 36 \times 4 = 144$

∴ Required number of women = $\frac{144}{4} = 36$ women

64. (2)



Let AB is the building and AC is the flag.

AB = 15 meters

$\angle APB = 30^\circ$ and $\angle CPB = 45^\circ$

In $\triangle APB$,

$\tan 30^\circ = \frac{AB}{PB}$

$\frac{1}{\sqrt{3}} = \frac{15}{PB}$

PB = $15\sqrt{3}$ m

In $\triangle CPB$,

$$\tan 45^\circ = \frac{BC}{PB}$$

$$1 = \frac{BC}{PB} = \frac{AC + AB}{PB}$$

$$PB = AB + AC$$

$$15\sqrt{3} = 15 + AC$$

$$AC = 15\sqrt{3} - 15 = 15(\sqrt{3} - 1) \text{ m}$$

65. (4) $x = y = 448$ and $z = 449$

$$x^3 + y^3 + z^3 - 3xyz = \frac{1}{2}(x + y + z)[(x - y)^2 + (y - z)^2 + (z - x)^2]$$

$$= \frac{1}{2}(448 + 448 + 449)[(448 - 448)^2 + (448 - 449)^2 + (449 - 448)^2]$$

$$= \frac{1}{2} \times 1345[0 + 1 + 1] = \frac{1}{2} \times 1345 \times 2 = 1345$$

66. (4) Let the total income be 100.

$$\text{Saving} = 100 \times \frac{28}{400} = ₹28$$

$$\text{Expenditure} = 100 - 28 = ₹72$$

$$\text{Spent on rent} = \frac{72}{9} \times 4 = ₹32$$

ATQ,

$$₹32 \rightarrow 10800$$

$$₹100 \rightarrow \frac{10800}{32} \times 100 = ₹33750$$

$$\therefore \text{Annual income} = 33750 \times 12 = ₹405000$$

67. (2) $\frac{7 + \sqrt{5}}{7 - \sqrt{5}} - \frac{7 - \sqrt{5}}{7 + \sqrt{5}} = a + \frac{7}{11}\sqrt{5}b$

$$\frac{(7 + \sqrt{5})^2 - (7 - \sqrt{5})^2}{49 - 5} = a + \frac{7}{11}\sqrt{5}b$$

$$\frac{49 + 5 + 14\sqrt{5} - 49 - 5 + 14\sqrt{5}}{44} = a + \frac{7}{11}\sqrt{5}b$$

$$\frac{28\sqrt{5}}{44} = a + \frac{7}{11}\sqrt{5}b$$

$$\frac{7}{11}\sqrt{5} = a + \frac{7}{11}\sqrt{5}b$$

$$\therefore a = 0 \text{ and } b = 1$$

68. (1) Let the amount invested by A be ₹ x.
Ratio of profit = $x \times 12 : 15000 \times 8 = x : 10000$
ATQ,

$$\frac{x}{x + 10000} \times 10500 = 3500$$

$$\frac{x}{x + 10000} = \frac{3500}{10500}$$

$$\frac{x}{x + 10000} = \frac{1}{3}$$

$$3x = x + 10000$$

$$2x = 10000$$

$$\therefore x = ₹ 5000$$

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

$$x + \frac{1}{x} = 2 \quad \dots\dots(i)$$

Squaring both sides,

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

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

Now,

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

$$= 2(2 - 1) = 2 \times 1 = 2$$

70. (1) Let the share of A and B be ₹ x and ₹(5204 - x) respectively.
ATQ,

$$x \left(1 + \frac{4}{100}\right)^7 = (5204 - x) \left(1 + \frac{4}{100}\right)^9$$

$$\frac{x}{5204 - x} = \left(1 + \frac{4}{100}\right)^2$$

$$\frac{x}{5204 - x} = \frac{676}{625}$$

$$625x = 676 \times 5204 - 676x$$

$$1301x = 676 \times 5204$$

$$x = \frac{676 \times 5204}{1301} = ₹ 2704$$

$$\therefore \text{B's share} = 5204 - 2704 = ₹ 2500$$

71. (3) Required number of employees = $80000 \times \frac{10}{100} \times \frac{1}{10} + 80000 \times \frac{12}{100} \times \frac{5}{6}$
 $= 800 + 8000 = 8800$

72. (3) Number of male employees in department E = $80000 \times \frac{36}{100} \times \frac{8}{9} = 25600$

Number of employees living in Delhi from department A = $80000 \times \frac{10}{100} \times \frac{1}{10} = 800$

\therefore Required % = $\left(\frac{25600}{800} \times 100 \right) \% = 3200\%$

73. (2) Total number of male employees working in department B and D together

$$= 80000 \times \left(\frac{22}{100} \times \frac{13}{22} + \frac{20}{100} \times \frac{3}{5} \right)$$

$$= 80000 \times \left(\frac{13}{100} + \frac{12}{100} \right)$$

$$= 80000 \times \frac{25}{100} = 20000$$

Total number of female employees working together in department A and E together

$$= 80000 \times \left(\frac{10}{100} \times \frac{3}{10} + \frac{36}{100} \times \frac{1}{9} \right)$$

$$= 80000 \times \left(\frac{3}{100} + \frac{4}{100} \right)$$

$$= 80000 \times \frac{7}{100} = 5600$$

\therefore Required ratio = $20000 : 5600 = 25 : 7$

74. (4) Required number of employees

$$= 80000 \left(\frac{10}{100} \times \frac{9}{10} + \frac{22}{100} \times \frac{19}{22} + \frac{12}{100} \times \frac{1}{6} + \frac{20}{100} \times \frac{3}{4} + \frac{36}{100} \times \frac{13}{18} \right)$$

$$= 80000 \left(\frac{9}{100} + \frac{19}{100} + \frac{2}{100} + \frac{15}{100} + \frac{26}{100} \right) = 80000 \times \frac{71}{100} = 56800$$

75. (4) Required number of employees = $80000 \times \frac{46}{100} = 36800$

MEANINGS IN ALPHABETICAL ORDER

Adversary	one's opponent in a contest, conflict, or dispute	विरोधी
Asylum	the protection granted by a nation to someone who has left their native country as a political refugee	शरणस्थल
Barren	(of land) too poor to produce much or any vegetation	बांझ
Bedlam	a scene of uproar and confusion	हंगामा
Contestant	a person who takes part in a contest or competition	प्रतियोगी
Denounce	publicly declare to be wrong or evil	आरोप लगाना
Disgusted	feeling or expressing revulsion or strong disapproval	निराश
Fertile	(of soil or land) producing or capable of producing abundant vegetation or crops	उपजाऊ
Fruitful	(of a tree, plant, or land) producing much fruit; fertile	फलदायक
Intruder	a person who intrudes, especially into a building with criminal intent	घुसेड़नेवाला
Jockey	a person who rides in horse races, especially as a profession	घुड़दौड़ का सवार
Novice	a person new to or inexperienced in a field	नौसिखिया
Opponent	someone who competes against or fights another in a contest, game, or argument; a rival or adversary	प्रतिद्वंदी
Sanatorium	an establishment for the medical treatment of people who are convalescing or have a chronic illness	सेहतगाह
Screw	a short, slender, sharp-pointed metal pin with a raised helical thread running around it and a slotted head, used to join things together by being rotated so that it pierces wood	पेच
Virtuous	having or showing high moral standards	धार्मिक

SSC MOCK TEST - 413 (ANSWER KEY)

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

76. (2) Replace 'justice' with 'injustice'
77. (1) Replace 'a wiser' with 'as wise' (competent- capable, सक्षम)
90. (1) The correct spelling of 'Presure' is 'Pressure'.
91. (2) The correct spelling of 'Refrence' is 'Reference'.