

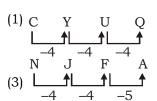
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# SSC MOCK TEST - 457 (SOLUTION)

As,  $22 \Rightarrow 22 \times (2 + 2) = 88$ 1. (1)

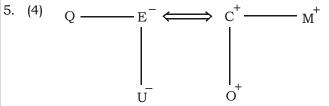
Similarly,  $17 \Rightarrow 17 \times (1 + 7) = 136$ 

- 2. (1) Depression is related to Mood, while Insomnia is related to Sleep.
- 3. (3)



$$(2) \begin{array}{c|cccc} T & P & L & H \\ \hline & -4 & -4 & -4 \end{array}$$

- 4. (2) Except Weight, others are related to each other.



Hence, O is the Nephew of Q.

6. (1)  $12 + 2^2 = 16$ 

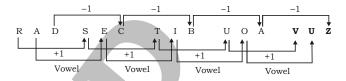
$$16 + 3^2 = 25$$

$$25 + 4^2 = 41$$

$$41 + 5^2 = 66$$

$$66 + 6^2 = 102$$

7. (2)



As, PRINT  $\Rightarrow$  16 + 18 + 9 + 14 + 20 = 77  $\Rightarrow$  7 - 7 = 0 8. (2)

And, MAGICIAN  $\Rightarrow$  13 + 1 + 7 + 9 + 3 + 9 + 1 + 14 = 57  $\Rightarrow$  7 - 5 = 2

Similarly, PLANET  $\Rightarrow 16 + 12 + 1 + 14 + 5 + 26 = 68 \Rightarrow 8 - 6 = 2$ 

As,  $82 \Rightarrow (8 + 2) \times (8 - 2) = 60$ 

$$60 \Rightarrow (6 + 0) \times (6 - 0) = 36$$

Similarly,

$$95 \Rightarrow (9 + 5) \times (9 - 5) = 56$$

$$56 \Rightarrow (5 + 6) \times (5 - 6) = -11$$

- 10. (1) L<u>N</u>UAPZ/LN<u>U</u>APZ/L<u>N</u>U<u>A</u>PZ
- 11. (2)

12. (4) In first column,

$$\sqrt{225} - \sqrt{169} = 2 \Rightarrow (2)^3 = 8$$

In second column,

$$\sqrt{361} - \sqrt{256} = 3 \Rightarrow (3)^3 = 27$$

In third column,

$$\sqrt{576} - \sqrt{225} = 9 \Rightarrow (9)^3 = 729$$

42 \* 7 \* 64 \* 11 \* 6 \* 4 13. (3)

Put the sign,

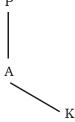
$$42 \div 7 + 64 - 11 \times 6 = 4$$

$$6 + 64 - 66 = 4$$

$$70 - 66 = 4$$

$$4 = 4$$

14. (4)



Hence, K is in the South-East of K.

- 5. Fradud  $\rightarrow$  2. Freedom  $\rightarrow$  1. Freeze  $\rightarrow$  6. Fringe  $\rightarrow$  3. Fryer 15. (1)
- 16. (4) Let the age of M, 4 years ago be x years.

Age of A, 7 years from now = x years

Present age of M = (x + 4)years

Present age of A = (x + 7)years

Average age of A and M, 10 years from now =  $\frac{(x+4+10+x+7+10)}{2}$ 

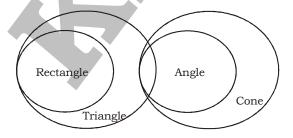
$$33.5 = \frac{2x + 31}{2}$$

$$2x + 31 = 67$$

$$x = \frac{67 - 31}{2} = 18 \text{ years}$$

Present age of A = 18 + 7 = 25 years *:*.

17. (1)



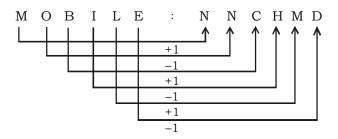
I. True II. False III. True Hence, only conclusions I and III follow.

18. (4)

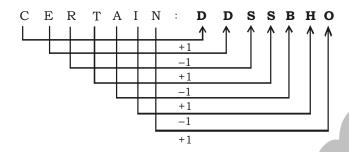


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19. (2) As,



Similarly,



20. (1) The year 2004 is a leap year. So, it has 2 odd days.

But, Feb 2004 not included because we are calculating from March 2004 to March 2005. So it has 1 odd day only.

The day on 6<sup>th</sup> March, 2005 will be 1 day beyond the day on 6<sup>th</sup> March, 2004.

Similarly,

Given that, 6<sup>th</sup> March, 2005 is Monday."6th March, 2004 is Sunday (1 day before to 6<sup>th</sup> March, 2005).

21. (2) As,



- 22. (1) 23. (3) 24. (4) 25. (3)
- 27. (3) Gandhi and Irwin signed a pact on March 5, 1931, which is popularly known as Gandhi-Irwin Pact. The Congress at its Karachi Session ratified this pact in March 1931. Regarding Gandhi-Irwin pact, Jawaharlal Nehru remarks, 'This is the way the world ends, not with a bang, but a whimper'.
- 29. (4) The Beas is an important tributary of the Indus, originating from the Beas Kund near the Rohtang Pass at an elevation of 4000 m above the mean sea level. The river flows through the Kullu Valley and forms gorges at Kati and Largi near in the Dhaoladhar Range. It enters the Punjab plains near Pong. Thereafter, it takes a south-westerly direction and meets the Sutlej River at Harike.
- 30. (2) In the 1920s, Earth's age crept up toward 3 billion years, making it for a time even older than the universe, which was then estimated to be about 1.8 billion years old. The best estimate for Earth's age is based on radiometric dating of fragments from the Canyon Diablo iron meteorite.



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- 32. (3) When a mountain range lies in the path of the rain-bearing wind, it causes the wind to rise along its slope. As a result, it cools and gets saturated. Further cooling due to its ascent leads to rainfall. This type of rainfall is known as Relief Rainfall or Orographic Rainfall. The windward side of the mountain gets heavy rainfall. On the leeward side, air descends and gets warmer. It gives very little rainfall. The leeward side of\*the mountain is called Rain-Shadow Region. In India, the western part of Western Ghats receives heavy rainfall but the eastern part falls in the rainshadow region.
- 34. (3) Krishnadeva Raya was the greatest of all the Vijayanagar rulers.
- 35. (1) A two-day national symposium, Exercise AIKYA, was held by the National Disaster Management Authority and the Army Southern Command in Chennai. It aimed to improve disaster preparedness and foster collaboration among key stakeholders.
- 37. (4) The per capita income in India was Rs. 20 in 1867-68, was ascertained for the first time by DadabhaiNaoroji. The average income earned per person in a particular area in a specific year is called as Per Capita Income.
- 38. (4) The Kushan period is considered the Golden Period of Gandhara. Peshawar Valley and Taxila are littered with ruins of stupas and monasteries of this period. Gandharan art flourished and produced some of the best pieces of sculpture from the Indian subcontinent.
- 40. (3) Glass articles must be annealed before use, otherwise they will become exceedingly brittle and may crumble to pieces when cut.
- 42. (1) Apsara is the oldest Indian research reactor. The reactor was designed by the Bhabha Atomic Research Centre and built with assistance from the United Kingdom.
- 44. (3) These reflected wavelengths of light reach our eyes and we perceive them. Therefore the colour we see of an opaque object is due to the light waves that it reflects.
- 45. (3) The construction of rock caves continued as in the Mauryan period. However, this period saw the development of Viharas and Chaitya halls.
- 47. (2) The longitude of other places is measured as the angle east or west from the Prime Meridian, ranging from 0° at the Prime Meridian to +180° eastward and ?180° westward.
- 48. (3) Flint glass has a high refractive index. So it is used to make optical instruments.
- 50. (3) World Arabic Language Day is observed on 18 December to honour the language, which is spoken by over 400 million people globally.
- 51. (4)  $(a + b c + d)^{2} (a b + c d)^{2}$   $= [(a + b) (c d)]^{2} [(a b) + (c d)]^{2}$   $= (a + b)^{2} + (c d)^{2} 2(a + b) (c d) [(a b)^{2} + (c d)^{2} + 2(a b) (c d)]$   $= a^{2} + b^{2} + 2ab + c^{2} + d^{2} 2cd 2ac + 2ac 2bc + 2bd (a^{2} + b^{2} ab + c^{2} + d^{2} 2cd + 2ac 2ad 2bc + 2bd)$  = 4ab + 4ad 4ac = 4a(b + d c)
- 52. (2) Principal = ₹15000

Time = 
$$2\frac{5}{7}$$
 years

Amount = 
$$P\left(1 + \frac{R}{100}\right)^T$$

$$=15000 \left(1+\frac{7}{100}\right)^2 \left(1+\frac{7\times\frac{5}{7}}{100}\right)$$

$$=15000 \times \frac{107}{100} \times \frac{107}{100} \times \frac{21}{20} = ₹18032.175$$

: CI = 18032.175 - 15000 = ₹3032.175



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53. (3) Average marks of top 5 students = 
$$\frac{86 \times 40 - 85 \times 35}{5}$$

$$=\frac{3440-2975}{5}=\frac{465}{5}=93$$

54. (1) Let a two digit number be 
$$10x + y$$
 when its digits reversed, two digit number will be  $x + 10y$ ,

difference = 
$$\frac{10x + y - (x + 10y)}{10}$$
 = 3.6

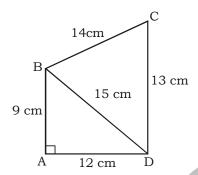
$$9(x-y) = 3.6 \times 10$$

$$x - y = 4$$

55. (4) 
$$B + C = 3A$$
 and  $A + C = 4B$ 

Ratio of their work A : B : C = 5 : 4 : 11

Time taken by A alone = 
$$\frac{24 \times 20}{5}$$
 = 90 days



$$BD^2 = 9^2 + 12^2 = 225$$

$$BD = 15cm$$

$$ar(\Delta BCD) = \sqrt{21(21-14)(21-15)(21-13)} = \sqrt{21\times7\times6\times8} = 84 \text{ cm}^2$$

Area of the base = ar(
$$\triangle$$
BAD) + ar( $\triangle$ BCD) =  $\frac{1}{2} \times 9 \times 12 + 84 = 138 \text{ cm}^2$ 

Height of the prism = 
$$\frac{\text{Volume}}{\text{area of the base}} = \frac{2070}{138} = 15 \text{ cm}$$

Lateral surface area = P. of the base  $\times$  height =  $48 \times 15 = 720 \text{ cm}^2$ 

57. (1) Let the time of meet = 
$$t$$
 h

$$A \xrightarrow{450 \text{ km}} \xrightarrow{} E$$

$$15 \text{ km/h} \qquad 20 \text{ km/h}$$

Now, 
$$15\left(t - \frac{20}{60}\right) + 20t = 450$$

$$t = 13h$$

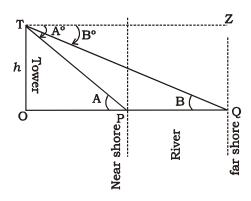
Distance from A = 
$$15(13 + \frac{1}{3}) = 190 \text{ km}$$



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58. (4) Let OT = height of tower = h metres

PQ = width of the river



Where,

P = point of the near shore to tower.

Q = point of the far shore to the tower.

$$\angle ZTA = A^{\circ}$$
 (angle of depression)

$$\angle ZTQ = B^{\circ}$$
 (angle of depression)

Then,

$$\angle$$
 ZTA =  $\angle$  TPO = A°

$$\angle ZTQ = \angle TQO = B^{\circ}$$

Now,

In 
$$\triangle TOP$$
, tan A =  $\frac{h}{OP}$ 

$$OP = h \cot A$$

In 
$$\triangle TQO$$
,  $\tan B = \frac{h}{OQ} = \frac{h}{OP + OQ}$  .....(ii)

From (i) and (ii),

$$PQ = h(\cot B - \cot A)$$

Number of days taken by A = 12

Number of days taken by B = 18 and

Number of days taken by C = 6

1 day's work of (A + B) = 
$$\frac{5}{36}$$

1 day's work of (B + C) = 
$$\frac{8}{36}$$

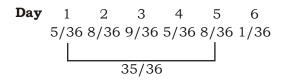
1 day's work (C + A) = 
$$\frac{9}{36}$$



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In 5 days total work done =  $\frac{35}{36}$ 

Now, the rest of work  $\left(i.e.\frac{1}{36}\right)$  is done by AC.

Number of days taken by AC for the rest of the work =

There, total time taken to complete the work =  $5 + \frac{1}{9} = 5\frac{1}{9}$  days

60. (1) Let no. of persons buying the tickets on the three days are 2x, 5x, 13x respectively.

Number of total tickets bought = 20x

Then from question,

Total cost of tickets =  $15 \times 2x + 7.5 \times 5x + 2.5 \times 13x$ = (30 + 37.5 + 32.5)x = (100.0)x = ₹100x

Average cost of ticket per person =  $\frac{100x}{20x}$  = ₹ 5

Let the age's of three children be  $x_1$ ,  $x_2$  and  $x_3$  years 61. (4) Then,

$$\frac{x_1 + x_2 + x_3}{3} = \frac{20}{100} \left( \frac{26 + x_3}{2} \right)$$

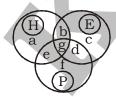
$$\frac{x_1 + x_2 + x_3}{3} = \frac{26 + x_3}{10} \qquad \dots (i)$$

Also,

$$M + x_1 = 39$$
 ..... (ii)

From Equation (i) and (ii), we cannot determine the value of  $x_2$ .

Given, b + c + d + g = 2362. (4)



$$a + b + g + e = 15$$

$$e + f + g + d = 18$$

and 
$$a + b + c + d + e + f + g = 50$$

Solving Equation (i), (ii),. (iii) and (iv)

$$b = 3, f = 6, d = 6, c = 9$$
and  $g = 5$ 



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63. (3) Mangoes of ₹ 20 are available for ₹ 19.

Hence, discount = 
$$\left(\frac{1}{20} \times 100\right)\% = 5\%$$

If one gets mangoes of ₹ 20 for ₹ 18, then discount =  $\left(\frac{2}{20} \times 100\right)\% = 10\%$ 

- Required integer =  $\left(\frac{2}{20} \times 27\right) = 2.7 \approx 3$
- 64. (3) If the time taken by B to complete the work be x days. Time taken by A to complete the work = (x + 5) days ATQ,

$$\frac{1}{x} + \frac{1}{x - 5} = \frac{9}{100}$$

$$\frac{x - 5 + x}{x^2 - 5x} = \frac{9}{100}$$

$$9x^2 - 45x = 200x - 500$$

$$9x^2 - 245x + 500 = 0$$

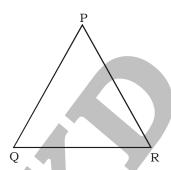
$$9x^2 - 225x - 20x + 500 = 0$$

$$9x(x - 25) - 20(x - 25) = 0$$

$$(9x - 20)(x - 25) = 0$$

$$x = 25$$
, because  $x \neq \frac{20}{9}$ 

- Time taken by B to complete the work alone is 25 days.
- 65. (4)



$$\angle P + \angle Q = 145^{\circ}$$

$$\angle R = 180^{\circ} - 145^{\circ} = 35^{\circ}$$

$$\angle R + 2\angle Q = 180^{\circ}$$

$$2\angle Q = 180^{\circ} - 35^{\circ} = 145^{\circ}$$

$$\angle Q = \frac{145^{\circ}}{2} = 72.5^{\circ} = \angle P = \angle Q = \angle R$$

RP > PQ



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Volume of rectangular block =  $21 \times 77 \times 24 \text{ cm}^3$ 66. (1) Let the radius of sphere be r cm,

$$\frac{4}{3}\pi r^3 = 21 \times 77 \times 24$$

$$r^3 = \frac{21 \!\times\! 77 \!\times\! 24 \!\times\! 3 \!\times\! 7}{4 \!\times\! 22}$$

$$r^3 = 3^3 \times 7^3$$

$$r = 3 \times 7 = 21 \text{ cm}$$

 $\underline{\left[2\sin\left(45^{\circ}+\theta\right).\sin\left(45^{\circ}-\theta\right)\right]}$ 67. (1)

$$=\frac{\left[2\sin 45^{\circ}\cos \theta+\cos 45^{\circ}\sin \theta\right].\left[\sin 45^{\circ}\cos \theta-\cos 45^{\circ}\sin \theta\right]}{\cos 2\theta}$$

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

$$= 2 \times \frac{1}{2} \times \frac{\cos^2 \theta - \sin^2 \theta}{\cos^2 \theta - \sin^2 \theta} = 2$$

68. (3) Let the length of each train be x m.

Speed of first train = 
$$\frac{x}{24}$$
 m/s

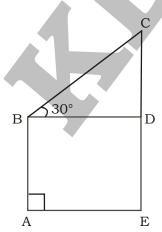
Speed of second train = 
$$\frac{x}{16}$$
 m/s

ATQ,

$$\frac{\frac{x+x}{x} + \frac{x}{16}}{\frac{2x+3x}{48}} = \frac{2x}{48}$$

$$= \frac{2x}{5x} \times 48 = 19.2 \text{ seconds}$$

69. (2)





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Let AB is the observer and CE is thw tower.

$$AB = DE = 1.4 \text{ m}$$

BD = AE = 
$$25\sqrt{3}$$
 m

In ABCD,

$$\tan 30^\circ = \frac{\text{CD}}{\text{BD}}$$

$$\frac{1}{\sqrt{3}} = \frac{\text{CD}}{25\sqrt{3}}$$

$$CD = 25 \text{ m}$$

Now, 
$$CE = CD + DE = 25 + 1.4 = 26.4 \text{ m}$$

Height of tower = 26.4 m

70. (4) 
$$x = \frac{2\sqrt{6}}{\sqrt{3} + \sqrt{2}} \times \frac{\sqrt{3} - \sqrt{2}}{\sqrt{3} - \sqrt{2}}$$

$$x = 2\sqrt{18} - 2\sqrt{12} = 6\sqrt{2} - 4\sqrt{3}$$
 .....(i)

$$\therefore \frac{x+\sqrt{2}}{x-\sqrt{2}} + \frac{x+\sqrt{3}}{x-\sqrt{3}}$$

$$= \frac{6\sqrt{2} - 4\sqrt{3} + \sqrt{2}}{6\sqrt{2} - 4\sqrt{3} - \sqrt{2}} + \frac{6\sqrt{2} - 4\sqrt{3} + \sqrt{3}}{6\sqrt{2} - 4\sqrt{3} - \sqrt{3}}$$
 [From (ii)]

$$=\frac{7\sqrt{2}-4\sqrt{3}}{5\sqrt{2}-4\sqrt{3}}+\frac{6\sqrt{2}-3\sqrt{3}}{6\sqrt{2}-5\sqrt{3}}$$

$$= \frac{\left(84 - 35\sqrt{6} - 24\sqrt{6} + 60\right) + \left(60 - 15\sqrt{6} - 24\sqrt{6} + 36\right)}{60 - 25\sqrt{6} - 24\sqrt{6} + 60}$$

$$=\frac{240-98\sqrt{6}}{120-49\sqrt{6}}=\frac{2(120-49\sqrt{6})}{120-49\sqrt{6}}=2$$

71. (4) Let the total number of employees be 100.

Number of male employees = 40

Number of female employees = 100 - 40 = 60

Number of male employees, who earn more than ₹ 25,000 = 75% of  $40 = \frac{75}{100} \times 40 = 30$ 

Total number of employees, who earn more than ₹ 25,000 = 45% of  $100 = \frac{45}{100} \times 100 = 45$ 

Number of female employees, who earn more than ₹ 25,000 = 45 - 30 = 15

Number of female employees, who earn less than ₹ 25,000 = 60 - 15 = 45

Required fraction =  $\frac{45}{60} = \frac{3}{4}$ 



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72. (1) Required % decrease = 
$$\left(\frac{900 - 800}{900} \times 100\right)$$
% =  $\left(\frac{100}{900} \times 100\right)$ % =  $\frac{100}{9}$ % =  $11\frac{1}{9}$ %

73. (3) Required % increase = 
$$\left(\frac{1200 - 600}{600} \times 100\right)$$
% =  $\left(\frac{600}{600} \times 100\right)$ % = 100%

74. (4) In 2003-04, % increase = 
$$\left(\frac{200}{400} \times 100\right)$$
% = 50%

In 2004-05, % increase = 
$$\left(\frac{300}{600} \times 100\right)$$
% = 50%

In 2006-07, % increase = 
$$\left(\frac{200}{800} \times 100\right)$$
% = 25%

In 2007-08, % increase = 
$$\left(\frac{200}{1000} \times 100\right)$$
% = 20%

75. (1) Required % increase = 
$$\left(\frac{1000 - 400}{400} \times 100\right)$$
% =  $\left(\frac{600}{400} \times 100\right)$ % = 150%



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### **MEANINGS IN ALPHABETICAL ORDER**

Assiduous hardworking or diligent

Audacious bold and fearless साहसी, निर्भिक

Break the ice to start conversation बात-चीत का पहल करना

Diagnosing identify the nature of (an illness or other रोग की पहचान करना

problem) by examination of the symptoms

Epithet A term used as a descriptive substitute for उपाधि

the name or title of a person

Exemplary providing a good example for people to follow अनुकरणीय

Generosity the quality of being kind and generous उदारता

Imbibe to take in आत्मसात

Omnipotent having unlimited power सर्वशक्तिमान

Paucity scarcity

Retaliate make an attack or assault in return for a बदला लेना

similar attack

Transient lasting only for a short time; impermanent क्षणिक



मेहनती, परिश्रमी

कमी



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# SSC MOCK TEST - 457 (ANSWER KEY)

1. (1)       26. (2)         2. (1)       27. (3)         3. (3)       28. (1)         4. (2)       29. (4)         5. (4)       30. (2)         6. (1)       31. (2)         7. (2)       32. (3)         8. (2)       33. (4)         9. (1)       34. (3)         10. (1)       35. (1)         11. (2)       36. (3)         12. (4)       37. (4)         13. (3)       38. (4)         14. (4)       39. (4)         15. (1)       40. (3)         16. (4)       41. (4)         17. (1)       42. (1)         18. (4)       43. (1)         19. (2)       44. (3)         20. (1)       45. (3)         21. (2)       46. (3)         22. (1)       47. (2)         23. (3)       48. (3)         24. (4)       49. (3)         25. (3)       50. (3)				
	2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 20. 21. 22. 23. 24.	(1) (3) (2) (4) (1) (2) (2) (1) (1) (2) (4) (3) (4) (1) (4) (1) (4) (2) (1) (4) (2) (1) (3) (4) (1) (4) (2) (1) (3) (4)	27. (3) 28. (1) 29. (4) 30. (2) 31. (2) 32. (3) 33. (4) 34. (3) 35. (1) 36. (3) 37. (4) 38. (4) 39. (4) 40. (3) 41. (4) 42. (1) 43. (1) 44. (3) 45. (3) 46. (3) 47. (2) 48. (3) 49. (3)	

- 76. (3) Change 'faster' into 'fast'. Comparative degree is used in comparision.
- 77. (3) Change 'any' into either'. For 'one out of two' we use 'either'.
- (2) Replace 'among' by 'between', as we are talking about two group of people. 78.
- 79. (2) 'Too ...... to' is a pair of conjunction.

