

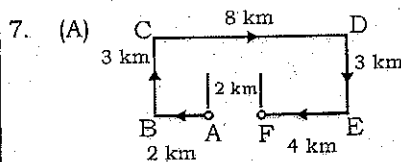
SSC Solution & Key

- (A) Second is the feminine gender of the first.
- (B) There are waves in the oceans and **sand dunes** in the desert.

3. (C) $38 \square 3 \times \frac{8}{2} = 12 \square 12^2 = 144$

$54 \square 5 \times \frac{4}{2} = 10 \square 10^2 = 100$

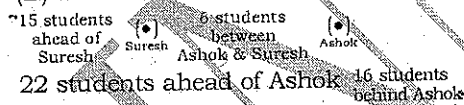
- (A) All except **Vapour** are different forms of Precipitation.
- (D) Except **Shout**, others are sound related to animals.
- (C) Except **LAZINESS**, the other words contain all vowels.



□ Required distance = $8 - (4 + 2) = 2$ kms

- (C) Lady will bake in an oven and oven is called **grinder**.
- (D) From the given data we can find that (A, E) are the couple and has two child F and C. Also (B, D) are the couple with G as their child. As it is given that there are three children in the family, in which F is a girl, so C will definitely be a boy to satisfy one boy and one girl condition. So we can say that C is **A's son**.

10. (B) $15 + \text{Suresh} + 6 + \text{Ashok} + 16 = 39$



The rank of Suresh from the start is **23rd**.

- (A) The first, second and third letters move three steps forward, four steps backward and two steps forward respectively. So, the required answer is **NHR**.
- (B) The series consists of two groups (M, O, R, V) and (N, L, I, P). The letters in the first group move 2, 3, 4, ... steps forward. The letters in the second group move 2, 3, 4, ... steps backward. So **E** is the required answer.
- (C) $2 \times 0.25 + 0.5 = 1$
 $1 \times 0.5 + 1.5 = 2$
 $2 \times 0.75 + 2.5 = 4$
 $4 \times 1 + 3.5 = 7.5$
 $7.5 \times 1.25 + 4.5 = 14.75$
- (D) $2 \square 3 \square 5 \square 4 \square 1$
- (B)
- (D) There is no **C** in **DISSEMINATION**.
- (D) The sequence in the differences of the numbers is 7, 5, 3, 1, -1. Substituting **35** instead of 36 will satisfy the sequence.
- (D) $12^2 = 144$
 $25^2 = 625$
 $19^2 = 361$
 $17^2 = 289$

19. (B) $2^3 + 3^2 + 4^1 = 21$

$1^3 + 3^2 + 5 = 15$

$3^3 + 4^2 + 2 = 45$

20. (A) $(3 + 2) \times 4 = 20$

$(5 + 2) \times 6 = 42$

$(1 + 2) \times 2 = 6$

$(7 + 2) \times 8 = 72$

21. (D)

Words	No. of letters (A)	(A) ²	Reverse of (A) ²
Behind	6	36	63
Every	5	25	52
Successful	10	100	001
Man	3	09	90
There	5	25	52
is	2	04	40
a	1	01	10
Woman	5	25	52

□ Behind every successful man there is a woman = 63520019052401052

Words	No. of letters (A)	(A) ²	Reverse of (A) ²
Empty	5	25	52
Vessels	7	49	94
Makes	5	25	52
Much	4	16	61
Noise	5	25	52

□ Empty vessels makes much noise = **5294526152**

22. (D) $12 \times 7 = 84 \square 804 \frac{3}{4} \frac{7}{4} \frac{7}{4} \frac{7}{4} \textcircled{R} 408$

$9 \times 8 = 72 \square 702 \frac{3}{4} \frac{7}{4} \frac{7}{4} \frac{7}{4} \textcircled{R} 207$

$13 \times 7 = 91 = 901 \frac{3}{4} \frac{7}{4} \frac{7}{4} \frac{7}{4} \textcircled{R} 109$

23. (C)

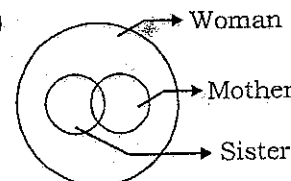
24. (B) $1, 1 \times 2, 1 \times 3 \square 1 \ 2 \ 3$

$2, 2 \times 2, 2 \times 3 \square 2 \ 4 \ 6$

$3, 3 \times 2, 3 \times 3 \square 3 \ 6 \ 9$

So, 9 box is the required answer.

25. (C)



Some sister may be mother and vice-versa. Also, some mothers may not be sisters and vice-versa. But all sisters and mothers belong to woman group.

27. (D) Antigen is a foreign molecule, which invade the body of an organism, and induce immune response to stimulate antibody.
28. (D) The Government of India (GoI) has constituted a committee of officers to enable 100 % conversion of Government - Citizen Transactions to the digital platform. The committee, under the leadership of NITI Aayog CEO Amitabh Kant, will identify and operationalize various digital payment systems appropriate to different sectors of the economy and coordinate efforts to make them accessible and user-friendly. The committee will also identify and access infrastructural and bottlenecks affecting the access and utility of digital payment options.
29. (A) Fuel value can be expressed in terms of calorific value of fuel. The calorific value of a fuel is the amount of heat produced by burning 1 kg of fuel. Hydrogen has the highest calorific value of 141,790 KJ/kg thus have highest fuel value. Calorific value of charcoal, natural gas and gasoline are (29,600; 43,000; 47,300 KJ/kg) respectively. Natural gas mainly consists of Methane.
31. (A) Magnetic quantum number represents the number of orbital's present in the sub-shell magnetic quantum number about the orientation of the orbital.
33. (B) The Palampur Assembly Constituency has become the India's first e-assembly constituency at Kangra district in Himachal Pradesh. Now, the resident of constituency would not only know about the development works going on by one click on computer but they would also send their requirement about funds for different schemes in their respective areas online. This system would be introduced in other 67 constituencies of the state in next 6 months.
34. (B) The 2016 International Day for the Elimination of Violence against Women is observed every year on November 25 to raise public awareness of violence against women. The 2016 theme is "Orange the World - raise funds to end violence against women" in which orange colour designated the UNiTE campaign to symbolize a brighter future without violence.
35. (B) The book "Banaras City of Light" has been authored by Diana L. Eck. It is about the spiritual and historical aspects of the city.
36. (C) According to evolution of living organisms evolution started from amphibians 350 million years ago, reptiles appeared 300 million years ago and 200 million years ago first small mammals appeared.
37. (B) Airtel Payments Bank Limited (or Airtel Bank), a subsidiary of Bharti Airtel Limited has launched India's first payment bank with 7.25% interest on savings accounts as a pilot basis of its banking services in Rajasthan. Airtel Bank's services can be accessed by Airtel customers on their mobile phones through the Airtel Money app, through USSD by dialing *400#, or via a simple IVR by dialing 400. Both the USSD & IVR options are available in Hindi and English language and work on simple feature phones as well. The non-Airtel customers can access Airtel Bank's services by dialing 8800688006.
38. (D) By-products of thermal power plant operation need to be considered in both design and operation. Waste heat due to the finite efficiency of the power cycle must be released to the atmosphere, using a cooling tower, or river or lake water as a cooling medium. The gas from combustion of the fossil fuels is discharged to the air; this contains carbon dioxide and water vapour, as well as other substances such as nitrogen, nitrogen oxides, sulphur oxides, and (in the case of coal-fired plants) fly ash, mercury and traces of other metals.
39. (C) Sun is the star nearest to the earth. It is 150 million kilometers away from earth. Sun has temperature of over 15 million °C.
40. (C) A cryogenic rocket engine is a rocket engine that uses a cryogenic fuel or oxidiser, that is, its fuel or oxidizers (or both) are gases liquefied and stored at very low temperatures. Notably, these engines were one of the main factors of the ultimate success in reaching the Moon by the Saturn V rocket. Various cryogenic fuel-oxidizer combinations have been tried, but the combination of liquid hydrogen fuel and the liquid oxygen oxidizer is one of the most widely used.
41. (D) One of the greatest attractions in Africa and one of the most spectacular waterfalls in the world, Victoria Falls is located on the Zambezi River, the fourth largest river in Africa, which is also defining the border between Zambia and Zimbabwe.
42. (C) A fluorescent lamp or fluorescent tube is a gas-discharge lamp that uses electricity to excite mercury vapour. The excited

mercury atoms produce shortwave ultraviolet light that then causes a phosphor to fluoresce, producing visible light. 6500 K is usually printed on a used fluorescent tubelight.

43. (C) Adrenaline is the hormone that prepares the body to deal with anger, fear and danger. Estrogen hormone is released from ovary of female. Insulin controls the level of glucagon in blood. Pheromones attract partners through sense of smell.
44. (D) The tribal population of Andaman and Nicobar belong to Negroid race. A small population of Shompen and Nicobars are Mongoloid descent.
46. (C) The term of the LS can be extended by not more than one year at a time during the proclamation of national emergency under Article 352.
49. (A) The Bollywood actor Manoj Bajpayee has won the "Best Performance by an Actor" at the 10th edition of Asia Pacific Screen Awards (APSA) for his performance as Professor Siras in "Aligarh" directed by Hansal Mehta. The 10th APSA is recognizing and promoting cinematic excellence and cultural diversity of the world's fastest growing film region.

51. (A) $x = \sqrt{y + 373437} - 37439$
 $x = \sqrt{y + (37438 - 1)(37438 + 1)}$
 $x = \sqrt{y + 37438^2 - 1^2}$

For $y = 1$, the value of x is possible to find.

As, $x = \sqrt{1^2 + 37438^2 - 1^2} = \sqrt{37438^2} = 37438$

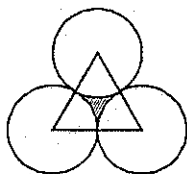
52. (B) $2^x \square 2^y = 8 \square 2^{x+y} = 8 \square x + y = 3$
 $9^x \square 3^y = 81 \square 3^{2x+y} = 81 \square 2x + y = 4$
 So $(x, y) = (1, 2)$
 So, $x^2 + y^2 - 2xy + 1 = 1^2 + 2^2 - 2 \times 1 \times 2 + 1 = 6 - 4 = 2$

53. (C)

3 more than multiple of 5	53	58	63	68	73	78	83	88
2 more than multiple of 6	56	62	68	74	80	86		

Required no. of questions = 68

54. (C)



Draw an equilateral triangle after connecting

Area = $\frac{\sqrt{3}}{4} a^2$ where a is side of triangle

= $\frac{\sqrt{3}}{4} \square 4^2$ [$a = 2r = 4$]

= $4\sqrt{3} \text{ cm}^2$

As, the 3 sectors of a triangle will form a

semi-circle and its area = $\frac{1}{2} \times 4\sqrt{2}r^2 = \frac{1}{2} \times 4\sqrt{2} \times 2^2 = 2\sqrt{2}$

Required area of shaded region

= $(4\sqrt{3} - 2\sqrt{2}) \text{ cm}^2$

55. (B) $(x, y) = \{(1, 18) (6, 15) (11, 12) (16, 3) (21, 6) (26, 3)\}$

The number of possible value of $x = 6$

56. (A) ₹ 100 invested in CI becomes 200 in 5 yr
Amount gets doubled again in 5 yr

It means new amount = ₹ 400 in another 5 yr
So, we can say that in another 5 yr 200 interest will be earned.

57. (C) By sine rule of \triangle

$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C} = K$

$a = K \sin A, b = K \sin B, c = K \sin C$

So, $\frac{\cos A}{K \sin A} = \frac{\cos B}{K \sin B} = \frac{\cos C}{K \sin C}$

$\cot A = \cot B = \cot C$

$A = B = C$

So, It is equilateral \triangle .

58. (C) 20% of the men are above the age of 50 years. 20% of these men play football.

It means, 20% of 20% of 4% of the total men are football players above the age of 50 years.

20% of the men are football players.

Therefore, 16% of the men are football players below the age of 50 years.

Therefore, the % of men who are football players and below the age of 50

= $\frac{16}{20} \times 100 = 80\%$

59. (C) Required percentage

= $\frac{\frac{115}{8} - \frac{115}{125}}{\frac{115}{8} - \frac{23}{25}} \times 100 = \frac{\frac{115}{8} - \frac{23}{25}}{\frac{115}{8} - \frac{23}{25}} \times 100$

= $\frac{2}{25} \times 100 = 8\%$

60. (B) SP = 30 profit = 20% then CP of mixture

= $\frac{30}{1.2} = 25$

By Alligation rule, $\frac{QA}{QC} = \frac{30-25}{25-20} = \frac{5}{5} = 1$

Also, $\frac{QB}{QC} = \frac{30-25}{25-24} = \frac{5}{1}$

□ $QA : QB : QC = 1 : 5 : (1+1) = 1 : 5 : 2$

□ Required weight of the rice = 5 kg

61. (C) In a 1000 metre race A gives B a start of 100 m or 15 seconds.

□ B takes 15 seconds to run 100 m.

□ B will take 150 seconds to run the stretch of 1000 metres.

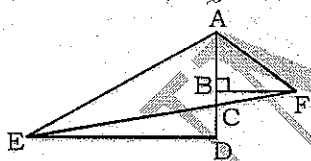
As, 1000 m = 10 times 100 m

□ The time taken will also be 10 times 15 seconds = 150 seconds.

As, A gives B a start of 15 seconds, which means A obviously takes 15 seconds less than B to complete the race.

Hence, A will take 135 seconds to run the 1000 m.

62. (D)



Given $CD = BF = 10$ unit

□ $\angle CED = \angle BAF = 30^\circ$

In $\triangle CDE$,

$$\tan 30^\circ = \frac{CD}{ED} \quad \square \quad \frac{1}{\sqrt{3}} = \frac{CD}{ED}$$

$$\square ED = \sqrt{3} CD = 10\sqrt{3}$$

In $\triangle ABF$

$$\tan 30^\circ = \frac{BF}{AB} \quad \square \quad \frac{1}{\sqrt{3}} = \frac{BF}{AB}$$

$$\square AB = \sqrt{3} BF = 10\sqrt{3}$$

Also, $\angle BFC = \angle CED = 30^\circ$

So, In $\triangle BFC$

$$\tan 30^\circ = \frac{BC}{BF} \quad \square \quad \frac{1}{\sqrt{3}} = \frac{BC}{BF} \quad \square BC = \frac{10}{\sqrt{3}}$$

$$AD = AB + BC + CD = 10\sqrt{3} + \frac{10}{\sqrt{3}} + 10$$

$$= 10 \frac{\sqrt{3}}{\sqrt{3}} + \frac{10}{\sqrt{3}} + 10 = 10 \frac{\sqrt{3} + 1 + \sqrt{3}}{\sqrt{3}}$$

$$= \frac{\sqrt{3} + 1 + \sqrt{3}}{\sqrt{3}} \times 10$$

$$\square \text{ Area of } \triangle AFD = \frac{1}{2} \times AD \times ED$$

$$= \frac{1}{2} \times 10 \frac{\sqrt{3} + 1 + \sqrt{3}}{\sqrt{3}} \times 10\sqrt{3} = 50(4 + \sqrt{3})$$

63. (C) Writing ratio = 100 : 50 = 2 : 1

As equal quantities are taken, in a given time, first boy will be writing the line number

$$= \frac{2}{3} \times 535 = 356 \frac{2}{3} \text{ or the 357th line}$$

Hence, both of them shall meet on 357th line.

64. (C) $(x+2)^2 = 9$

$$\square x + 2 = \pm 3$$

$$\square x = 1 \text{ or } -5$$

$$\text{and } (y+3)^2 = 25$$

$$\square y + 3 = \pm 5$$

$$\square y = 2 \text{ or } -8$$

Therefore, maximum value of $\frac{x}{y} = \frac{-5}{-8} = \frac{5}{8}$

65. (B) The meeting started with P people. Q left the room during the first hour.

So, (P - Q) people have been in the room during first hour since the meeting started.

Another R joined the group in the next hour. So, the number of people in the room currently = P - Q + R.

$$\text{Required expression} = \frac{P - Q + R}{P - Q} \times 100$$

66. (A) Ram completes 60% of the task in 15 days. He completes 4% of the task in a day.

Rahim is 50% as efficient as Ram is.

Therefore, Rahim will complete 2% of the task in a day.

Russel is 50% as efficient as Rahim.

□ Russel will complete 1% of the task in a day.

Together, Ram, Rahim and Russel will complete $(4 + 2 + 1) = 7\%$ of the work in a day. They have another 40% of the task to be completed.

Therefore, they will take $\frac{40}{7}$ more days to complete the task.

67. (B) The value of the square of the hypotenuse = $h^2 = a^2 + b^2$.

Here 23 cannot be expressed as the sum two numbers.

Rest $(13 = 2^2 + 3^2)$, $(37 = 1^2 + 6^2)$ and $(41 = 4^2 + 5^2)$ can be written as the sum of the squares of positive integer.

68. (B) Let the maximum marks in each of the three subjects be 100.

□ Aggregate score of the candidate = 60% of $3 \times 100 = 60\%$ of 300 marks = 180 marks.

Let the marks scored in the three subjects be $4x$, $5x$ and $6x$.

Then, $4x + 5x + 6x = 180$

$15x = 180$ or $x = 12$.

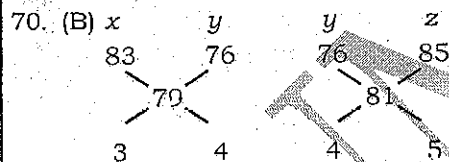
□ Marks scored by the candidate in the three subjects are 4×12 , 5×12 and $6 \times 12 = 48$, 60 and 72.

Hence, the candidate has scored more than or equal to 60% in two subjects.

69. (C) For a right angled triangle,
The length of in-radius

$$= \frac{(\text{Product of perpendicular sides})}{(\text{Perimeter of triangle})}$$

$$= \frac{(72 \cdot 21)}{(72+21+75)} = \frac{1512}{168} = 9 \text{ cm}$$



□ $x : y : z = 3 : 4 : 5$

Average score for all the three classes x , y

$$\text{and } z = \frac{3 \cdot 83 + 4 \cdot 76 + 5 \cdot 85}{3 + 4 + 5}$$

$$= \frac{249 + 304 + 425}{12} = \frac{978}{12} = 81.5$$

71. (C) Let the time taken by them from the moment they started be x hrs and y hrs respectively.

So, Yana would take $(x + 4)$ hrs

as Gupta would take $(x + 9)$ hrs

By time Yana and Gupta meet, Yana would have traveled $48x$ kms in 9 hr.

$$\square \text{ Gupta's speed} = \frac{48x}{9}$$

$$\text{Yana's speed} : \text{Gupta's speed} = 1 : \frac{x+4}{x+9}$$

$$\square 48 : \frac{48x}{9} :: 1 : \frac{x+4}{x+9} \quad \square \frac{x}{9} = \frac{x+4}{x+9}$$

$$\square x^2 + 9x = 9x + 36 \quad \square x = 6 \text{ hrs}$$

$$\square \text{ Speed of Gupta} = \frac{48x}{9} = \frac{48 \cdot 6}{9} = 32 \text{ km/hr}$$

$$= 20 \text{ mile/hr}$$

72. (C) 11^2 is a factor of the given number.

In the given expression, $a \times 4^3 \times 6^2 \times 13^{11}$ none of the other factors, viz., 4, 6 or 13 is either a power or multiple of 11.

Hence, if $a \times 4^3 \times 6^2 \times 13^{11}$ is divisible by 11^2 , 'a' should necessarily include 11^2 .

The question states that 3^3 is a factor of the given number. 6^2 is a part of the number.

6^2 can be expressed as $3^2 \times 2^2$.

i.e., $a \times 4^3 \times 6^2 \times 13^{11}$ has 3^2 in it.

It needs a 3^3 in it for the number to be divisible by 3^3 .

Therefore, a will have to provide one more 3 to $a \times 4^3 \times 6^2 \times 13^{11}$.

□ 'a' should be at least $11^2 \times 3 = 363$, if the given number has to have 11^2 and 3^3 as its factors.

*73. (C) Let $a = 5$, $b = 4$ & $c = 3$

It is a right angle triangle and (3, 4, 5) is a Pythagorean triplet.

$$s = \frac{(a+b+c)}{2} = \frac{12}{2} = 6$$

Substitute these values and check which condition satisfies.

Let us take choice(3)

$$\text{L.H.S } (s-a)(s-b) = (6-5)(6-4) = 2.$$

$$\text{R.H.S } s(s-c) = 6(6-3) = 18.$$

L.H.S < R.H.S

It satisfies the given condition hence

Choice(3) is the right answer.

74. (C) Total passed students,

$$= 140 + 150 + 165 = 455$$

Total students

$$= 170 + 195 + 200 = 565$$

∴ Required percentage

$$= \frac{455}{565} \times 100$$

$$= \frac{9100}{113} = 80 \frac{60}{113} \%$$

75. (D) Required percentage

$$= \frac{20}{170} \times 100$$

$$= \frac{200}{17} = 11 \frac{13}{17} \%$$

MEANINGS IN ALPHABETICAL ORDER

Word	Meaning in English	Meaning in Hindi
Agitate	to make someone troubled or nervous	उत्तेजित करना
Cliff	Rock	चट्टान
Dilettante	a person who cultivates an area of interest, without real knowledge	अनुरागी
Exacerbate	to make worse	खराब करना
Fathomable	a unit of length equal to six feet	छः फीट की लम्बाई
Feeble	lacking physical strength	निबल, शक्तिहीन
Foment	to promote the undesirable violence	भड़फाना
Frail	immoral	अनैतिक
Obligatory	compulsory	अनिवार्य
Occult	relating to supernatural	रहस्यमय
Playwright	a person who writes plays	नाटक लिखनेवाला
Quell	to thoroughly overwhelm and reduce to submission	वश में करना
Servile	characteristic of a slave	दासभाव, गुलामी
Synoptic	forming a general summary or synopsis	सामान्य अवलोकन
Unequivocal	leaving no doubt, unambiguous	स्पष्ट, द्विअर्थी
Urge	a strong desire or impulse	अनुरोध करना

16 Dec - 2016 (SSC)

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

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