SSC MAINS (MATHS) MOCK TEST-2 (SOLUTION)

1. (C)

2. (A) Unit place of $3762 \times 4725 \times 8719 \times 6743$
= Unit place of $2 \times 5 \times 9 \times 3 = 0$

3. (D) $(-8ab02) \div 286 = -307$
$-8ab02 = -307 \times 286$
$8ab02 = 87802$
So, $a = 7$ and $b = 8$
$a + b = 7 + 8 = 15$

4. (C) Required measure of container
= HCF of 1938, 1102 and 9367
= 19 l

5. (D) Required number
= (HCF of 9, 10 and 12) × N
= 180 × N = 53Q + 10
So, N = 3 ⇒ 180 × 3 = 540

6. (A) $$\frac{3}{3+\frac{\frac{1}{4}}{3-\frac{1}{3}+\frac{\frac{5}{6}}{1-\frac{1}{3}}}} = \frac{3}{3+\frac{\frac{1}{4}}{\frac{8}{3}+\frac{5}{6}\times\frac{3}{2}}}$$

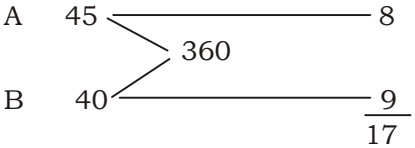
$$= \frac{3}{3+\frac{\frac{1}{4}}{\frac{8}{3}+\frac{5}{4}}} = \frac{3}{3+\frac{1}{4}\times\frac{13}{(32+15)}} = \frac{1}{1+\frac{1}{47}}$$

$$= \frac{47}{48}$$

7. (B) $$\frac{\sqrt{\sqrt{578\times2888}}}{\sqrt{9.5\times8.5}} = \frac{\sqrt{1292}}{\sqrt{9.5\times8.5}} = \sqrt{\frac{1292}{9.5\times8.5}}$$
$= \sqrt{16} = 4$

8. (C) Average weight of class $= \frac{36\times45+24\times38}{36+24}$
= 42.2 kg

9. (D)



Let total units of work = 360 units
Units of work done by B in 23 days
= 23 × 9 = 207 units
Then, units of work done by A and B together = 360 – 207 = 153 units

A did the work for $= \frac{153}{17}$ = 9 days

10. (A) Let cost price = ₹ x

Selling price = ₹ $x\left(x\times\frac{4}{3}\right)$ = ₹ $\frac{4}{3}x$

Market price = ₹ $\left(\frac{4}{3}x\times\frac{10}{9}\right)$ = ₹ $\frac{40}{27}x$

New Selling price = ₹ $\left(\frac{40}{27}x\times\frac{1}{2}\right)$ = ₹ $\frac{20}{27}x$

Loss percentage = $\frac{x-\frac{20}{27}x}{x}\times100$

= $\frac{7}{27}\times100 = 26\%$

11. (D) Let cost price of a bicycle = ₹ $80x$

Marked Price = ₹ $\left(\frac{5}{4}\times80x\right)$
= ₹ $100x$

Selling price at cash sale = ₹ $\left(\frac{90}{100}\times100x\right)$
= ₹ $90x$
Profit = ₹ $(90x - 80x)$
= ₹ $10x$

Selling price at credit sale = ₹ $\left(\frac{95}{100}\times100x\right)$
= ₹ $95x$
Profit = ₹ $(95x - 80x)$
= $15x$

ATQ,

$10x\times\frac{3}{4}\times40 + 15x\times\frac{1}{4}\times40 = 20250$
$300x + 150x = 20250$

$x = \frac{20250}{450} = 45$

Cost price of a bicycle = ₹ (80×45) = ₹ 3600

12. (B) Let the speed of a cyclist = x kms/hr
Then, the speed of the motorist = $(x + 5)$ kms/hr
ATQ,

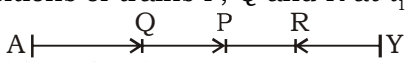
$$\frac{9}{x+15}+\frac{30}{60}+\frac{9}{(x+15)\times\frac{4}{5}} = \frac{18}{x}-\frac{15}{60}$$

$$\frac{9\times4}{4(x+15)}+\frac{9\times5}{4(x+15)} = \frac{72}{4x}-\frac{1}{4}-\frac{2}{4}$$

$$\frac{81}{(x+15)} = \frac{72-3x}{x}$$

$81x = 72x - 3x^2 + 1080 - 45x$
$x^2 + 30x - 12x - 360 = 0$
$(x + 30)(x - 12) = 0$
$x = 12$
Speed of cyclist = 12 kms/hr

13. (A) Positions of trains P, Q and R at t_1 time



Position of trains at 11:30 a.m.

$P \rightarrow \frac{210}{60} \times 25 = 87.5$ kms from X

$Q \rightarrow \frac{99}{60} \times 25 = 33$ kms from X

$R \rightarrow 0$ kms from Y

Let after t minutes, P be at equal distance from Q and R

ATQ,

$$(87.5 - 33) + \frac{t}{60} \times (25 - 60) = (220 - 87.5) - \frac{t}{60} \times (25 + 30)$$

$$\frac{t}{60} \times 5 + \frac{t}{60} \times 55 = 132.5 - 54.5$$

$$\frac{60t}{60} = 78 \Rightarrow t = 78$$

78 minutes after 11 : 30 a.m. *i.e.* at 12:48 p.m., trains Q and R will be equidistance from train P.

14. (D) Amount of loan = ₹ 10000

Total number of installments = 15

Amount of one installment = ₹ 800

Amount paid in installments = ₹ (800 × 15) = ₹ 12000

Simple interest = ₹ (12000 – 10000) = 2000

$$\text{Rate of interest} = \frac{2000 \times 12}{15 \times 100 \times 1} = 16\%$$

15. (D) ATQ,

$$\text{Loan amount} : \underbrace{\text{Total interest}}_{\text{Rate} \times \text{time}} = 5 : 2$$

$$\text{Loan amount} : \text{Rate} \times 5 = 5 : 2$$

$$\text{Loan amount} : \text{Rate} = 5 : \frac{2}{5}$$

$$= 25 : 2$$

16. (D) ATQ,

Time taken by air + Time taken by train = 4 hours

Time taken by air + $\frac{1}{5}$th time taken by train = 2 hours

So, Time taken by train

$$= 2 \times \frac{5}{4} = 2\frac{1}{2} \text{ hours}$$

$$\text{Time taken by air} = 1\frac{1}{2} \text{ hours}$$

$$\text{Speed by air} = \frac{400}{2}$$

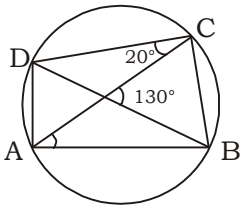
$$= 200 \text{ kms/hr}$$

$$\text{Distance travelled by air} = 200 \times 1\frac{1}{2}$$

$$= 300 \text{ kms}$$

So, distance travelled by train = 400 – 300 = 100 kms

17. (D)



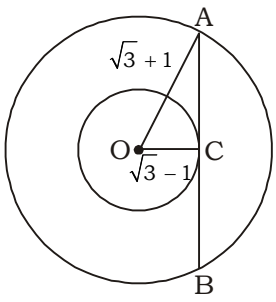
$\angle ACD = \angle ABD = 20°$

$\angle BEC = \angle BAC + \angle ABD$

$130° = \angle BAC + 20°$

$\angle BAC = 110°$

18. (C)



ATQ,

$OA = (\sqrt{3}+1)\text{cm}, \quad OC = (\sqrt{3}-1)\text{cm}$

$$AC = \sqrt{(OA)^2 - (OB)^2}$$

$$= \sqrt{(\sqrt{3}+1)^2 - (\sqrt{3}+1)^2}$$

$$= \sqrt{(\sqrt{3}+1+\sqrt{3}-1)(\sqrt{3}+1-\sqrt{3}+1)}$$

$$= \sqrt{2\sqrt{3} \times 2} = 2 \times 3^{\frac{1}{4}}$$

$AB = 2 \times AB = 4 \times 3^{\frac{1}{4}}$

19. (D)

20. (A) ATQ,

$$4\pi r^2 = 616$$

$$r^2 = 616 \times \frac{7}{22 \times 4} = 49$$

$$\text{Volume of sphere} = \frac{4}{3}\pi r^3$$

$$= \frac{4}{3} \times \frac{22}{7} \times (7)^3 = \frac{4312}{3} \text{ cubic cms}$$

21. (A) Let length = l, breadth = b and height = h

ATQ,

$$lbh = 720$$

$$lb = 72$$

So, $h = 10$ cms

$$2(lb + bh + lh) = 484$$

$$72 + 10b + 10l = 242$$

$$b + l = 17$$

$$l - b = \sqrt{(17)^2 - 4 \times 72} = 1$$

$$l = \frac{17+1}{2} = 9 \text{ cms}$$

$$b = \frac{17-1}{2} = 8 \text{ cms}$$

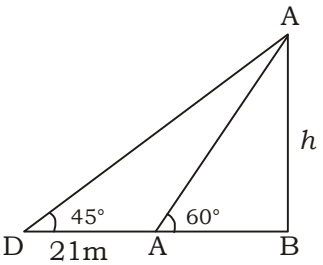
22. (D) Geometric mean

$$(32\times4\times8\times x\times2)^{\frac{1}{5}} = 8$$

$$32\times4\times8\times x\times2 = 8\times8\times8\times8\times8$$

$$x = 16$$

23. (C)



Let BC = h m

In ΔBCD

$$\frac{BD}{BC} = \cot 45°$$

$$AB + 21 = h$$

$$AB = h - 21$$

In ΔABC

$$\frac{AB}{BC} = \cot 60°$$

$$h - 21 = h\times\frac{1}{\sqrt{3}}$$

$$\sqrt{3}h - 21\sqrt{3} = h$$

$$h(\sqrt{3}-1) = 21\sqrt{3}$$

$$h = \frac{21\times1.732}{1.732-1} = 49.77$$

$$= 50$$

24. (C)

25. (C) $f(x) = 36(3x^4 + 5x^3 - 2x^2)$

$= 36x^2(3x-1)(x+2)$

$g(x) = 9(6x^3 + 4x^2 - 2x)$

$= 18x(3x-1)(x+1)$

$h(x) = 54(27x^4 - x)$

$= 54x(3x-1)(9x^2 + 1 + 3x)$

H.C.F. of $f(x)$, $g(x)$ and $h(x) = 18(3x-1)$

26. (C) Let total amount of money = ₹ x

ATQ,

$$x - \left(x\times\frac{20}{100} + x\times\frac{80}{100}\times\frac{25}{100}\right) = 480$$

$$x - \frac{x}{5} - \frac{x}{5} = 480$$

$$\frac{3x}{5} = 480 \Rightarrow x = 800$$

Total money the man had = ₹ 800

27. (C) Average percentage profit

$$= \frac{3\times10 + 3\times0 - 2\times5}{8}$$

$$= 2.5\%$$

28. (A) Radius of folded cardboard (in shape of cone)

$$= \frac{2\times\pi\times30\times144°}{2\pi\times360°}$$

$$= 12 \text{ cms}$$

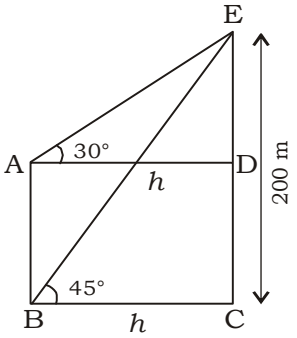
29. (C) $x + \frac{1}{x} = a$

$$x^3 + \frac{1}{x^3} = a^3 - 3a$$

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

$$x^3 + x^2 + \frac{1}{x^3} + \frac{1}{x^2} = a^3 + a^2 - 3a - 2$$

30. (D)



In ΔBCE

$$\frac{BC}{CE} = \cot 45° \Rightarrow BC = 200\text{m}$$

In ΔADE

$$\frac{ED}{AD} = \tan 30° \Rightarrow ED = \frac{200\sqrt{3}}{3}$$

$$AB = CD = CE - ED = 200 - \frac{200\sqrt{3}}{3}$$

$$= 200\left(\frac{3-\sqrt{3}}{3}\right) = \frac{200(9-3)}{3(3+\sqrt{3})}$$

$$= \frac{400}{3+\sqrt{3}}\text{ m}$$

31. (C) ATQ,

$$\frac{x}{y} = \frac{2}{3} \Rightarrow 3x = 2y$$

$$\frac{x+9}{y+9} = \frac{3}{4}$$

$$4x + 36 = 3y + 27 = 4.5x + 27$$

$$4.5x - 4x = 36 - 27$$

$$x = 18$$

So, $y = \frac{3\times18}{2} = 27$

$$xy = 18\times27 = 486$$

32. (D) $2x - 1 = 0 \Rightarrow x = \frac{1}{2}$

$$f(x) = 4x^4 - (k-1)x^3 + kx^2 - 6x + 1$$

$$f\left(\frac{1}{2}\right) = 4\left(\frac{1}{2}\right)^4 - (k-1)\left(\frac{1}{2}\right)^3 + k\left(\frac{1}{2}\right)^2 - 6\left(\frac{1}{2}\right) + 1$$

$$\Rightarrow \frac{1}{4} - \frac{k-1}{8} + \frac{k}{4} - 3 + 1 = 0$$

$$\frac{-k+1+2k}{8} = \frac{7}{4}$$

$$k + 1 = 14 \Rightarrow k = 13$$

33. (D) $196\,x^4 = x^6 \Rightarrow x^2 = 196$
$x = 14 \Rightarrow x^3 = 14x^2$

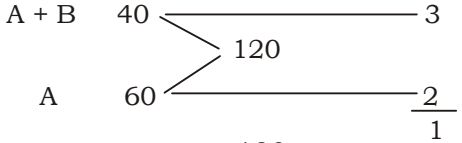
34. (B) Area of wall = $1225 \times \frac{100}{250} = 350\ m^2$
ATQ,
$\frac{x \times 7x}{2} = 350 \Rightarrow x = 10$ m
length of the base = $7 \times 10 = 70$ m

35. (A) Area of larger base = $Q = \pi r_1^2$
Area of smaller base = $P = \pi r_2^2$
$$r_1 - r_2 = \sqrt{\frac{Q}{\pi}} - \sqrt{\frac{P}{\pi}} = \frac{\sqrt{Q} - \sqrt{P}}{\sqrt{\pi}}$$

36. (B)

37. (B) Length of diagonal = $\sqrt{3}\,l$
$= \sqrt{3}\,(729)^{\frac{1}{3}} = 9\sqrt{3}$ cm

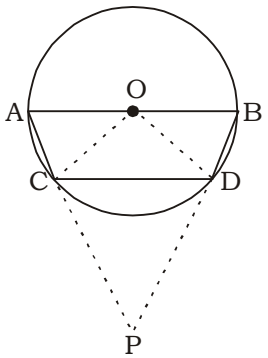
38. (D) Area of rectangle = $2a^2$
breadth = a
length = $\frac{2a^2}{a} = 2a$
Diagonal of rectangle = $\sqrt{2a^2 + a^2} = \sqrt{5}a$
ATQ, Area of square = $5a^2$

39. (D)


Time taken by B = $\frac{120}{1}$ = 120 minutes

40. (C) Required sum = $\frac{1}{a} + \frac{1}{b} = \frac{a+b}{ab} = \frac{20}{75} = \frac{4}{5}$

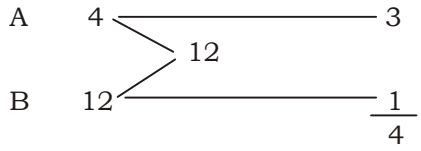
41. (A) Ratio of complementary angles = 1: 5
Then, difference of complementary angles
$= (5 - 1) = 4$
If sum of ratio is 6 then require angle = 4
Sum of ratio is 90° then require angle
$= \frac{4}{6} \times 90° = 60°$

42. (A)


In ΔOCD
OC = CD = OD
So, ∠COD = 60°
Similarly in ΔOAC and ΔOBD
∠CAO = ∠AOC = 60°
and ∠OBD = 60°
∠APB = 180° – ∠PAB – ∠PBO
= 60°

43. (B) $3^{x+y} = 81 \Rightarrow 3^{x+y} = 3^4$
$x + y = 4$ ...(i)
$81^{x-y} = 3 \Rightarrow 81^{x-y} = (3)^{\frac{1}{4}}$
$x - y = \frac{1}{4}$ ...(ii)
By equation (i) and (ii)
$x = \left(4 + \frac{1}{4}\right) \times \frac{1}{2} = \frac{17}{8}$

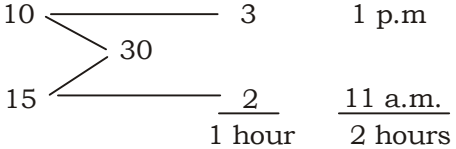
44. (C) Let the numbers be $98a$ and $98b$
Then, $98ab = 2352 \Rightarrow ab = 24$
So, possible value of a and b is (1, 24) and (3, 8)
As options
Sum of numbers = 98(a + b) = 98(3 + 8)
= 1078

45. (B)


Time required by A + B = $\frac{12}{4}$ = 3 days

46. (C) Price at which onions are sold = ₹ 15 per kg
Cost price for onions = $\frac{10 \times 1 + 15 \times 1}{1 + 1}$
= 12.5 per kg
Profit percentage = $\frac{15 - 12.5}{12.5} \times 100$
= 20%

47. (B) ATQ,
(2M + 1W) × 14 = (2M + 4W) × 8
28M + 14W = 16M + 32W
12M = 18W
2M = 3W
Wages of a man = ₹ 90
So, wages of a woman = $90 \times \frac{2}{3}$ = ₹ 60

48. (B) **Speed**


So, actual distance = $\frac{30}{1} \times 2 = 60$ kms
Time at which man start cycling
$= \frac{60}{1}$ = 6 hours i.e. 7 a.m.
If he reaches at 12 noon, then speed of man
$= \frac{60}{(12 - 7)} = 12$ kms/hr

49. (B) Area of circle = Area of triangle
$= \sqrt{\frac{7 + 24 + 25}{2} \times (28 - 7)(28 - 24)(28 - 25)}$
$= \sqrt{28 \times 21 \times 4 \times 3} = 84\ cm^2$

50. (C) Rise in level of field

$$= \frac{\text{Volume of sand}}{\text{Area of field} - 2 \times \text{base area of hemisphere}}$$

$$= \frac{\frac{4}{3} \times \frac{22}{7} \times (2)^3}{22 \times 10 - 2 \times \frac{22}{7} \times (2)^2} = \frac{22(32) \times 7}{21 \times 22(70 - 8)} = \frac{16}{93}$$

51. (A) Required number
$= 10.5 \times 6 + 11.4 \times 6 - 11 \times 10.9$
$= 11.5$

52. (B) ATQ,

Milk used in first year $= \frac{4080}{7.50} = 544$ litres

Milk used in second year $= \frac{4080}{8} = 510$ litres

Milk used in third year $= \frac{4080}{8.5} = 480$ litres

Average price of milk $= \frac{4080 \times 3}{544 + 510 + 480}$

$= \frac{12240}{1534} = ₹\ 7.98$

53. (D) Let third number $= 4a$
Second number $= 2a$
First number $= a$
ATQ,
$4a + 2a + a = 42 \times 3$
$a = 18$
Then, difference between largest and smallest number $= 3 \times 18 = 54$

54. (A) 5 years ago, average age of P, Q and R $= 25$ years
7 years ago, average age of Q and R $= 20$ years
Present age of R $= (25 + 5) \times 3 - (20 + 7) \times 2$
$= 36$ years

55. (D) 4 years ago, average age of husband and wife $= 27$ years
At present, average age of husband, wife and child $= 21$ years
So, Age of child $= 21 \times 3 - (27 + 4) \times 2$
$= 1$ year

56. (B) Let average age of a player $= x$
ATQ,

$$11 \times x - (17 + 20) + (a + b) = 11\left(x - \frac{2}{12}\right)$$

$$11x - 37 + (a + b) = 11x - \frac{11}{6}$$

$$a + b = 37 - \frac{11}{6} = \frac{211}{6}$$

Average age of two players $= \frac{a+b}{2} = \frac{211}{6 \times 2}$
$= 17$ years 7 months

57. (B) Total age of class of 15 students
$= 30 \times 15 = 450$ years
Total age of class of 14 students
$= 450 - 20 = 430$ years
Total age of class of 16 students
$= 31 \times 15 = 465$ years
Age of two new students $= 465 - 430$
$= 35$ years
ATQ,
Age of younger newcomer $= \frac{35 - 5}{2} = 15$ years

58. (C) A : B = 4 : 9
A : C = 2 : 3
A : B : C = 4 : 9 : 6
(A + B) : (A + C) = (4 + 9) : (4 + 6)
= 13 : 10

59. (B) Salaries of A, B and C = A : B : C
Expenditure of A, B and C

$$= \frac{20}{100}A : \frac{15}{100}B : \frac{25}{100}C$$

$= 4A : 3B : 5C$
ATQ,
$4A : 3B : 5C = 8 : 9 : 20$
$A : B : C = 2 : 3 : 4$
Salary of A $= \frac{2}{2+3+4} \times 72000 = ₹\ 16000$

60. (B) Let ratio of pair of black and brown socks $= 4 : x$
Ratio of price of black and brown socks $= 2 : 1$
Cost of black and brown socks $= 8 + x$
If number of pair interchanged then cost of socks $= 2x + 4$
ATQ,
$(8 + x) \times 1.5 = 2x + 4$
$0.5x = 8$
$x = 16$
Ratio of black and brown socks $= 4 : 16$
$= 1 : 4$

61. (A)

	Sulphuric acid		water		
Container)$_1$	3	:	2)$_{\times 6}$	$\Rightarrow$	18 : 12
Container)$_2$	7	:	3)$_{\times 3}$	$\Rightarrow$	21 : 9
Container)$_3$	11	:	4)$_{\times 2}$	$\Rightarrow$	22 : 8
					61 : 29

Ratio of sulphuric acid to water $= 61 : 29$

62. (B)

	A	:	B	:	C
For first 4 months	50000 × 4	:	45000 × 4	:	0 × 4
For next 4 months	25000 × 4	:	45000 × 4	:	0 × 4
For last 4 months	25000 × 4	:	22500 × 4	:	70000 × 4
	400000	:	450000	:	280000

Required ratio $= 40 : 45 : 28$

63. (D) ATQ,
Percentage of students playing both game
$= (40 + 50) - (100 - 18) = 8\%$

64. (D) ATQ,
Percentage of students passed in both the subjects $= 60 + 70 - (100 - 20) = 50\%$
So, total number of candidates passed

$$= \frac{100}{50} \times 2500 = 5000$$

65. (D)

66. (A)

Quantities		Price
11		9 × 10
	99	
9		11 × 10
		₹ 200

If person gets profit of 20%, selling price

$= 200 \times \frac{120}{100} = ₹\ 240$

Toffees sold in ₹ 240 = 198

So, toffees sold in ₹ 10 = $\frac{198}{240} \times 10 = 8.25$

67. (C) ATQ,

$\text{Seller loses} = 900 \times \left[16 - \left(8 + 8 - \frac{8 \times 8}{100}\right)\right] \times \frac{1}{100}$

$= 900 \times \frac{64}{10000} = ₹\ 5.76$

68. (A) Cost price of one chair

$= ₹\left(600 \times \frac{85}{100} \times \frac{80}{100}\right) = ₹\ 408$

Expense of transportation = ₹ 28

Actual cost price = ₹ 436

Selling price = ₹ 545

$\text{Profit percentage} = \frac{545 - 436}{436} \times 100 = 25\%$

69. (C) Principal = ₹ 800

Amount after 3 years = ₹ 956

Amount if rate of interest is increased by 4%

$= 956 + \frac{800 \times 4 \times 3}{100} = ₹\ 1052$

70. (C) ATQ,

Percent of interest paid

$= 6 \times 3 + 9 \times 5 + 13 \times 3 = 102\%$

So, money borrowed = $\frac{8160}{102} \times 100 = ₹\ 8000$

71. (B) $(A + C) : B \quad 3 : 1)_{\times 3} = 9 : 3$

$(A + B) : C \quad 2 : 1)_{\times 4} = 8 : 4$

Let total units of work = 12 × 10 = 120 units

Units of work done by A, B and C

= 5, 3 and 4

So, time required by A = $\frac{120}{5}$ = 24 days

= ₹ 612

72. (A) Marked price of table = ₹ 800

Cost price of table = $800 \times \frac{90}{100} \times \frac{85}{100}$

= ₹ 612

Expense on transportation = ₹ 13

Actual cost price = ₹ (612 + 13) = ₹ 625

Selling price = ₹ 875

$\text{Profit percentage} = \frac{875 - 625}{625} \times 100$

= 40%

73. (A) $\tan 15° = 2 - \sqrt{3}$

$\tan 15°.\cot 75° + \tan 75°.\cot 15°$

$= \tan^2 15° + \tan^2 75°$

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

$= (2 - \sqrt{3})^2 + (2 + \sqrt{3})^2$

$= 2\left(2^2 + \sqrt{3}^2\right) = 2 \times 7 = 14$

74. (A) $2\ \text{cosec}^2 23° \cot^2 67° - \sin^2 23° - \sin^2 67° - 2\cot^2 67°$

$= 2 \times \frac{1}{\sin^2 23°} \times \frac{\cos^2 67°}{\sin^2 67°} - (\sin^2 23° + \sin^2 67°) - 2\cot^2 67°$

$= 2 \times \frac{1}{\cos^2 67°} \times \frac{\cos^2 67°}{\sin^2 67°} - (1) - 2\cot^2 67°$

$= 2\ \text{cosec}^2 67° - 2\cot^2 67° - 1$

$= 2(\text{cosec}^2 67° - \cot^2 67°) - 1$

$= 2 - 1 = 1$

75. (B) $\sin 3\theta = \cos(\theta - 2°) = \sin(90° - \theta + 2°)$

$\sin 3\theta = \sin(92° - \theta)$

$3\theta = 92° - \theta$

$4\theta = 92° \Rightarrow \theta = 23°$

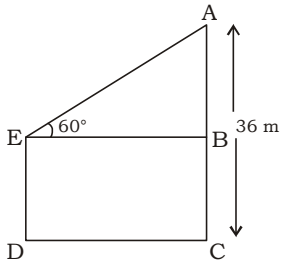
76. (C) ATQ,

$(x + 5)° + (2x - 5)° + (3x + 5)° = 180°$

$(6x + 7)° = 180°$

$x = \frac{180 - 7}{6} = 29$

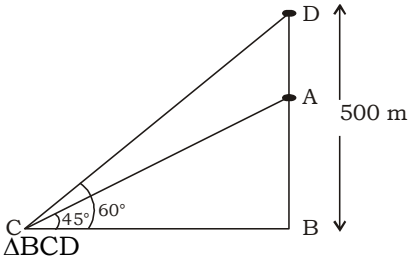
77. (B) ATQ,



AB = AC − BC = (36 − 24)m = 12m

$AE = \frac{AB}{\sin 60°} = \frac{12}{\sqrt{3}} \times 2 = 8\sqrt{3}$ m

78. (C)



In ΔBCD

$\frac{BC}{BD} = \cot 60° \Rightarrow BC = \frac{1}{\sqrt{3}} \times 5000$ m

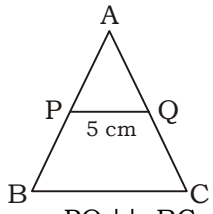
In ΔABC

$\frac{AB}{BC} = \tan 45° \Rightarrow AB = \frac{1}{\sqrt{3}} \times 5000$ m

Then, distance between aeroplanes (AD)

$= \left(5000 - \frac{5000}{\sqrt{3}}\right) = 5000\left(1 - \frac{1}{\sqrt{3}}\right)$ m

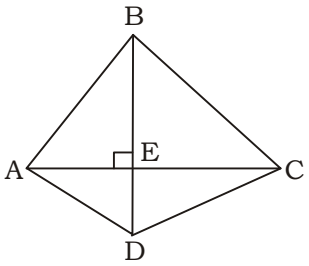
79. (C)



If PQ || BC
then, $\angle A = \angle A$
$\angle APQ = \angle ABC$
$\angle PQA = \angle BCA$
So, $\Delta APQ \cong \Delta ABC$
So, ΔAPQ is an equilateral triangle

$$\text{Area of } \Delta APQ = \frac{\sqrt{3}}{4} \times (5)^2 = \frac{25\sqrt{3}}{4} \text{ cm}^2$$

80. (B)



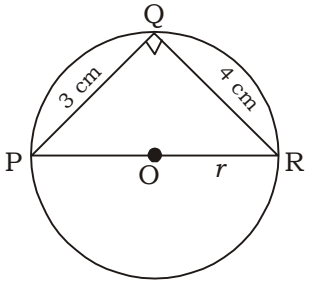
ATQ,

$$(AB)^2 = (AE)^2 + (BE)^2$$
$$(BC)^2 = (BE)^2 + (CE)^2$$
$$(CD)^2 = (CE)^2 + (ED)^2$$
$$(DA)^2 = (DE)^2 + (AE)^2$$

So,

$$(AB)^2 + (CD)^2 = BC^2 + DA^2$$

81. (C)

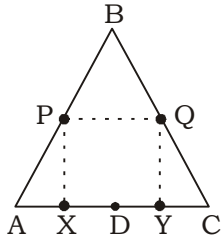


In ΔPQR

$$PR = \sqrt{3^2 + 4^2} = 5 \text{ cm}$$

$$r \text{ (radius)} = \frac{PR}{2} = \frac{5}{2} = 2.5 \text{ cm}$$

82. (B)



As given, P and Q are mid points of AB and BC.

So, PQ || AC and $PQ = \frac{1}{2}$ AC

X and Y are mid points of AD and CD
Then,

$$DX = \frac{AD}{2}$$

$$DY = \frac{CD}{2}$$

$$XY = DX + DY = \frac{AD}{2} + \frac{CD}{2} = \frac{AC}{2}$$

So, XY = PQ and XY || PQ
So, PX : QY = 1 : 1

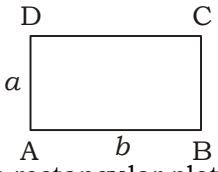
83. (B) ATQ,

Volume of prism = Area of base × Height

$$= \frac{1}{2} \times 10 \times 12 \times 20$$
$$= 1200 \text{ cm}^3$$

$$\text{Density of material} = 1200 \times \frac{6}{1000} = 7.2 \text{ kg}$$

84. (D) ATQ,



Area of the rectangular plot = $ab = 108 \text{ m}^2$
Perimeter of the rectangular plot = $2(a + b)$
= 48 m

So,

$$a - b = \sqrt{(a+b)^2 - 4ab} = \sqrt{(24)^2 - 4 \times 108}$$
$$= \sqrt{576 - 432} = \sqrt{144} = 12 \text{ m}$$

Dimension of plots are

$$= \frac{24 + 12}{2} \text{ m and } \frac{24 - 12}{2} \text{ m}$$
= 18 m and 6 m

85. (D) The water level will drop by

$$= \frac{\text{Volume of water}}{\text{Area of base of cylinder}}$$

$$= \frac{11 \text{ litres}}{\frac{22}{7} \times \left(\frac{35}{2}\right)^2 \text{cm}^2} = \frac{11 \times 1000}{\frac{22}{7} \times \left(\frac{35}{2}\right)^2} \text{ cm}$$

$$= \frac{80}{7} \text{ cm} = 11\frac{3}{7} \text{ cm}$$

86. (C) Length of cube = HCF of 6, 9 and 12 = 3
Least possible number of cubes will be

$$= \frac{6 \times 9 \times 12}{3 \times 3 \times 3} = 24$$

87. (B) Ratio of radii of cylinder and cone = $\sqrt{3} : \sqrt{2}$
Ratio of heights of cylinder and cone = $\sqrt{2} : \sqrt{3}$
Volume of cylinder and cone

$$= \pi(\sqrt{3})^2 \times \sqrt{2} : \frac{\pi}{3}(\sqrt{2})^2 \sqrt{3}$$
$$= 3\sqrt{3} : \sqrt{2}$$

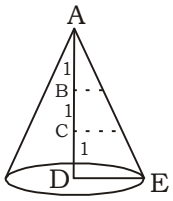
88. (C) Area of required canvas = πrl

$$= \frac{22}{7} \times 9.6 \times \sqrt{(9.6)^2 + (2.8)^2}$$

$$= \frac{22}{7} \times 9.6 \times 10$$

$$= 301.7 \text{ m}^2$$

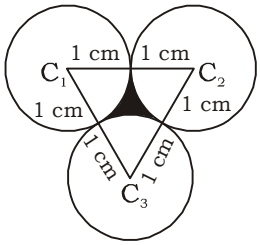
89. (D)



ATQ,

$$V_1 : V_2 : V_3 = (1)^3 : (2^3 - 1^3) : (3^3 - 2^3)$$
$$= 1 : 7 : 19$$

90. (B)



$$\text{Required area} = \frac{\sqrt{3}}{4}(1+1)^2 - \frac{60^\circ \times 3}{360^\circ}[\pi(1)^2]$$

$$= \left(\sqrt{3} - \frac{\pi}{2}\right) \text{ cm}^2$$

91. (C) Number of horn produced in Nagpur plant

$$= \frac{800000}{32} \times 3 = 75000$$

92. (B) Required percentage $= \frac{28 - 25}{25} \times 100 = 12\%$

93. (A) Required ratio = 3 : 7

94. (B) Required difference $= \frac{131250}{15} \times (28 - 20)$

$= 70000$

95. (A) Required ratio = 30 : 28

= 15 : 14

96. (B) Required number $= \frac{4200}{2800} = 1.5$

97. (A) Required percentage $= \frac{4200}{2100} \times 100$

$= 200\%$

98. (D)

99. (A) Required ratio = 3 : 5

100. (C) Average deficit

$$= \frac{2200 + 3100 + 2100 + 2800 + 2600 + 3600 + 4200 + 2600}{8}$$

$= 2900$

Required percentage $= \frac{3600}{2900} \times 100$

$= 124.79\% = 125\%$

SSC MAINS (MATHS) MOCK TEST-2 (ANSWER KEY)

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

***Note : If your opinion differs regarding any answer please message the mock test and question no to* 8860330003**

For any issues related to Result Processing, kindly contact us on **9313111777.**