SSC MAINS (MATHS) MOCK TEST–6 (SOLUTIONS)

1.(A) $$\frac{(243)^{0.13}\times(243)^{0.07}}{(7)^{0.25}\times(49)^{0.075}\times(343)^{0.2}}$$

$$=\frac{(3^5)^{0.13}\times(3^5)^{0.07}}{(7)^{0.25}\times(7^2)^{0.075}\times(7^3)^{0.2}}$$

$$=\frac{3^{0.65}\times3^{0.35}}{7^{0.25}\times7^{0.150}\times7^{.06}}$$

$$=\frac{3^{(0.65+0.35)}}{7^{(0.25+0.150+0.6)}}=\frac{3^1}{7^1}=\frac{3}{7}$$

2.(B) $16^{\frac{3}{2}}+16^{-\frac{3}{2}}$

$$=(4^2)^{\frac{3}{2}}+\frac{1}{16^{\frac{3}{2}}}=4^{2\times\frac{3}{2}}+\frac{1}{(4^2)^{\frac{3}{2}}}$$

$$=4^3+\frac{1}{4^3}=64+\frac{1}{64}=\frac{4096+1}{64}=\frac{4097}{64}$$

3.(C) No. of digits required
= [{(9–1)+1}×1 + {(50–10)+1}×2]
= 9 × 1 + 41× 2 = 9+82 = 91

4.(D) Digit in the unit's place of
$(251)^{98}+(21)^{59}-(106)^{100}+(705)^{35}-164+259$
= 1 + 1 – 6 + 5 – 4 + 9
= 6

5.(D) The required number must also be divisible by $(2^{32}+1)$ and among the options given, $(2^{96}+1)$ is divisible by $(2^{32}+1)$
$\because\ 2^{96}+1 = 2^{96}+1^{96}$
$= (2^{32})^3 + (1^{32})^3$, which is divisible by $2^{32}+1$
[$\because$ when n is odd, (a^n+b^n) is always divisible by $(a+b)$]

6.(B) Given that,
H.C.F. of the two numbers = 27
So, Let the numbers are 27 x and 27 y where x and y are co-prime nos. i.e. prime to each other.
Now, A.T.Q
$27x + 27y = 216$
or, $27(x + y) = 216 \Rightarrow x + y = 8$
So, possible pairs of x and y are (1, 7) & (3, 5)
So, The possible pairs of two numbers will be (27, 189) & (81, 135) possible pairs of
$\Rightarrow$ The possible no. of pairs is 2.

7.(B) $$\frac{[(1931)^{221}]^{428}}{1932}=\frac{\left[(1931)^{0dd}\right]^{even}}{1932}$$

$$=\frac{1931^{even}}{1932};\text{Remainder}=1$$

$$\left[\because\frac{(a-1)^{even}}{a};R=1\right]$$

8.(B) Term difference = 12–4 = 8
Value difference = 70–14=56
$\Rightarrow$ Value difference per term (i.e. common difference) = 56 / 8 = 7
So, first term = 4th term– 3 × common difference = 14 – 3 × 7 = - 7

9.(B) Required height at the 1st bounce $=32\times\frac{3}{4}$

Required height at the 2nd bounce $=32\times\left(\frac{3}{4}\right)^2$

Required height at the 3rd bounce $=32\times\left(\frac{3}{4}\right)^3$

$$=32\times\frac{27}{64}=13\frac{1}{2}\text{m}$$

10.(A) Remaining no. of total balls after 1st ball is chosen = (12 + 6)-1 = 17 balls
Also,
Remaining no. of black balls after 1st ball (which is black) is chosen = 12–1
= 11 black balls
So, The probability that the second ball is also black = 11 / 17

11.(A) Let x be the initial no. of people in the company.
So, ATQ,

$$=\frac{35x+5\times32}{x+5}=34$$

or, $35x + 160 = 34x + 170$
$\Rightarrow x = 10$

12.(*) Initial bowling average = 12.4
After improving bowling average by 0.2, new bowling average = 12.4 – 0.2 = 12.2
Now, let x be the number of wickets taken before the last match
So, A.T.Q,

$$=\frac{12.4x+26}{x+4}=12.2$$

or $12.4x + 26 = 12.2x + 48.8$
$\Rightarrow 0.2x = 22.8$

$\Rightarrow x = \frac{22.8}{0.2} = 114$

$\Rightarrow$ No. of wickets taken before the last match = 114

13.(A) Average speed during the entire journey

$= \frac{\text{Total distance}}{\text{Total time}} = \frac{3584\,\text{km}}{2\,\text{days}\,8\,\text{hours}} = \frac{3584\,\text{km}}{56\,\text{hours}}$

= 64 km/hour

Now, Average speed during the remaining part (last 8 hr.) of journey

$= \frac{3584 - (1440 + 1608)}{8}$ km/hr.

$= \frac{3584 - 3048}{8} = 536/8$

=67 km/hr

So, required difference = (67 – 64) km/hr

= 3 km/hr

$\Rightarrow$ 3 km/hr. more

14.(A)

Age	$\sqrt{\text{Age}}$	height
9 yr.	$\sqrt{9} = 3$	4 ft.
(9+7) yr.=16 yr	$\sqrt{16} = 4$	$\frac{4}{3} \times 4$ ft $= 5\frac{1}{3}$ ft

15.(A) Let the required ratio is $x : y$

So, A.T.Q,

$= \left(\frac{192x + 150y}{x + y}\right) \times \frac{120}{100} = 194.40$

or, $\frac{192x + 150y}{x + y} = 162$

or, 192 x + 150 y = 162 x + 162 y

or, (192 – 162)x = (162 – 150)y

or, 30x = 12y

or, 5x = 2y

$\Rightarrow$ x : y = 2 : 5

16.(B) weight of lead per kg in the new alloy

$= \frac{3}{(5 + 4 + 2) \times 2} = \frac{3}{24} = \frac{1}{8}$ kg

17.(B) Required average rate of interest per annum

$= \left[\frac{1}{2} \times 10 + \frac{1}{3} \times 9 + \left\{1 - \left(\frac{1}{2} + \frac{1}{3}\right)\right\} \times 12\right]\%$

= (5 + 3 + 2) % = 10%

18.(C) Let the income of Sanjay two yrs. ago = Rs. x

Saving of Sanjay two yrs ago= 20% of Rs. x

= Rs. $x/5$

$\Rightarrow$ Expenditure of Sanjay two yrs. ago.

$= \left(x - \frac{x}{5}\right) = \frac{4}{5}x$

$\Rightarrow$ Two years later now,

income of Sanjay = $\text{Rs.}\frac{120}{100}x = \text{Rs.}\frac{6}{5}x$

and saving of Sanjay = $\text{Rs.}\frac{x}{5}$

$\Rightarrow$ Expenditure of Sanjay = $\text{Rs.}\left(\frac{6}{5}x - \frac{x}{5}\right) = x$

So,

% increase in the expenditure

$= \frac{x - \frac{4}{5}x}{\frac{4}{5}x} \times 100\%$

$= \frac{x}{4x} \times 100\% = 25\%$

19.(B) Price is reduced by 20%

$\Rightarrow$ Consumption can be increased by

$\left(\frac{20}{100 - 20}\right) \times 100\%$

= 25%

$\Rightarrow$ 25% of initial consumption = 500 gm

$\Rightarrow$ Initial consumption (ie. 100%) = 2000gm = 2 kg

$\Rightarrow$ Original price of the Sugar per kg = Rs. 36/2kg = Rs. 18/kg

20.(B) Let the maximum marks = x

Case (i) Pass marks = 32% of x + 16

Case (ii) Pass marks = 36% of x – 10

from Case (i) & Case (ii), we get,

32% of x + 16 = 36% of x – 10

or, 4% of x = 26

or, $\frac{4}{100} \times x = 26$

$\Rightarrow x = \frac{26 \times 100}{4} = 650$

So,

$\text{Pass\%} = 32\% + \left(\frac{16}{650} \times 100\right)\%$

$= 32\% + 2\frac{6}{13}\% = 34\frac{6}{13}\%$

21.(D)

	Re. 1 coins	50p coins
Ratio of respective values	= 13	: 11
Ratio of value of 1 coin of each	= 2	: 1
So, Ratio of no. of coins	$= \frac{13}{2}$	$: \frac{11}{1}$
	= 13	: 22

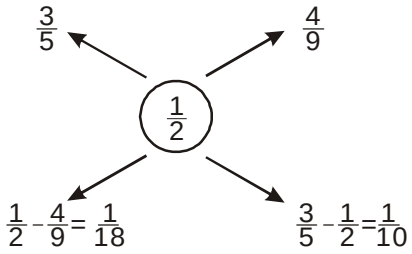
$\because$ total no. of coins = 210

So, No. of Re.1 coins $= \frac{13}{13+22} \times 210$

$= \frac{13}{35} \times 210$

= 78 coins

22.(A) By Alligation method



$\Rightarrow$ Required ratio of mixture = $\frac{1}{18} : \frac{1}{10}$

= 10 : 18

= 5 : 9

A.T.Q, Amount of the former mixture = 3 litre

So, required of the later mixute

$= 3 \times \frac{9}{5}$ litre

$= 5\frac{2}{5}$ litre

23.(D) Let the original number of boys and girls be 5*x* and 3*x* respectively and that of new boys and girls be 5*y* and 7*y* respectively.

$\therefore$ 5*x* + 3*x* + 5*y* + 7*y* = *1200*

$\Rightarrow$ 2x + 3y = 300 ..... (i)

and $\frac{5x+5y}{3x+7y} = \frac{7}{5}$

$\Rightarrow$ 25*x* + 25*y* = 21*x* + 49*y*

$\Rightarrow$ 4*x* = 24*y*

$\Rightarrow$ *x* = 6*y* ..... (i)

From equation (i),

4*x* + 6*y* = 600

$\Rightarrow$ 5x = 600

$\Rightarrow$ x = 120

$\therefore$ Original no. of students

= 8x = 960

24.(A) Ratio of first and second class fares = 3:1

and Ratio of no. of passengers = 1 : 50

$\Rightarrow$ Ratio of total amount from 1st & 2nd class passengers

= 3 × 1 : 1 × 50 = 3 : 50

So, Amount collected from 2nd class passengers = $\left(\frac{50}{52} \times 1325\right)$ =Rs. 1250

25.(C) ATQ,

Ratio of money received by each (Son : Daughter : Nephew)

= 5*x* : 4*x* : *x*

So, Ratio of amount to

5 Sons : 4 daughters : 2 nephews

= 25x : 16x : 2x

$\Rightarrow$ 25x : 16x : 2x = Rs. 8600

or, 43x = Rs. 8600

x = Rs. 200

$\therefore$ Required money to each daughter

= 4 × 200 = Rs. 800

26.(C) $\frac{2}{5}A + 40 = \frac{2}{7}B + 20$

$= \frac{9}{17}C + 10 = x$ (let)

$\therefore A = \frac{5}{2}(x-40), B = \frac{7}{2}(x-20)$

and, $C = \frac{17}{9}(x-10)$

$\therefore \frac{5}{2}(x-40) + \frac{7}{2}(x-20) + \frac{17}{9}(x-10)$

= 600

$\Rightarrow$ x = 100

$\therefore$ A's share = $Rs.\frac{5}{2}(100-40)$ = Rs. 150

27.(D) Extra interest received in 4 years if the rate of interest is increased by 1%

= (4×1)% of 1200

= 4% of 1200

= Rs. 48

Total amount received in 4 years if the rate of interest is increased by 1%

= 1632 + 48

= Rs. 1680

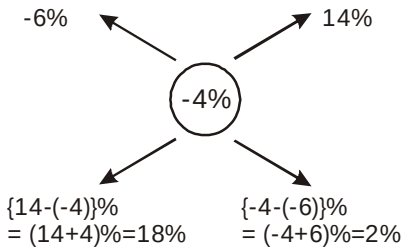
28.(C) Reparied gain = $2 \times \left(6\frac{1}{4} - 4\right)\% \; of \; 5000$

$= 2 \times 2\frac{1}{4}\% of \; 5000$

$= 2 \times \frac{9}{4 \times 100} \times 5000$

= Rs. 225

29.(A) By method of alligation



⇒ Ratio of Amount = 18:2 = 9:1

⇒ Quantity sold at 14% profit

$= \frac{1}{10} \times 50kg = 5kg$

⇒ Quantity sold at 6% loss

$\frac{9}{10} \times 50kg = 45kg$

30.(C) ∴ n = 2 years, r = 10%

∴ C.I. = 525

$\therefore C.I. = P\left[\left(1+\frac{r}{100}\right)^n - 1\right]$

$525 = P\left[\left(1+\frac{10}{100}\right)^2 - 1\right] = P\left[\frac{121-100}{100}\right]$

$\Rightarrow P = \frac{525 \times 100}{21}$ = Rs. 2500

Now, ATQ, n_1= 4 years, r_1 = 5%

So, $S.I. = \frac{P \times r_1 \times n_1}{100} = \frac{2500 \times 5 \times 4}{100}$ = Rs. 500

31.(D) Let Rs. x be the sum borrowed

So, Rs. x after two years will become

Rs. $x\left(1+\frac{5}{100}\right)^2 = \text{Rs.}\frac{441x}{400}$

⇒ Present value of Rs. $\frac{441x}{x} \times 882 = \text{Rs.}800$

Present value of Rs. 882 = Rs. 800

Now, Amount of Rs. x after one year

$= x\left(1+\frac{5}{100}\right) = Rs.\frac{21x}{20}$

Present value of = Rs. $\frac{21x}{20}$ after one year

= Rs. x

⇒ Present value of Rs. 882 due after one year

$= \frac{x \times 20 \times 882}{21x} = Rs.840$

∴ Required sum

= Rs. (800 + 840) = Rs. 1640

32.(A) Let Rs. x be the marked price of the shirt.

ATQ, Difference of discounts = 2%

⇒ 2% of x = 15

⇒ $\frac{x \times 2}{100} = 15$

⇒ $x = \frac{15 \times 100}{2} = Rs.750$

33.(C) Let the first CP of the commodity be Rs. 100

∴ First SP = Rs. 110

Second CP = Rs. 90.

Gain = $16\frac{2}{3}\% = \frac{50}{3}\%$

∵ Second SP

$= \left(100 + \frac{50}{3}\right)\% of\ Rs.90 = \frac{350}{3 \times 100} \times 90$ = Rs.105

⇒ Difference of SPs = Rs. (110 – 105) = Rs. 5

⇒ If the difference is Rs.5, then CP = Rs. 100

So, If the difference be Rs. 2, then

$CP = \frac{100}{5} \times 2 = Rs.40$

34.(C) For the first trader,

Let the CP of the article = Rs. 100

⇒ SP = Rs. 120

Now, For the second trader,

SP of the article = Rs. 120

& Gain = 20%

Let the CP be Rs. x.

∴ $\frac{120-x}{120} \times 100 = 20$

∴ $120 - x = 20 \times \frac{6}{5} = 24$

∴ $x = 120 - 24 = Rs.96$

∴ Gain = Rs. 24

Now when difference of gains = Rs. 4,

then SP = Rs. 120

So, When the difference = Rs. 85,

then SP = $\frac{120}{4} \times 85$ = Rs. 2550

35.(A) Let the C.P. = Rs. 100,

When sold at 3/4 th of S.P. the loss is 4%.

⇒ S.P. in this case = Rs. 96

= 3/4 times Actual selling Price.

$\Rightarrow$ Actual selling price = (96)×4 / 3 = Rs. 128
If Gaurav sells at the actual S.P. then he makes a profit of Rs. 28 on a cost price of Rs. 100 i.e. profit = 28%.

36.(A) Let the marked price of the article= Rs. x
Single discount for successive discounts of 30% and 20%

$$=\left(30+20-\frac{30\times 20}{100}\right)\%$$

$$=(50-6)\%=44\% \text{ discount}$$

Now, A.T.Q.

$$(100-44)\% \text{ of } x=2240$$

$$\Rightarrow \frac{x\times 56}{100}=2240$$

$$\Rightarrow x=\frac{2240\times 100}{56}=Rs.4000$$

37.(D) Let the printed price of the book = Rs. x.
So, Selling price = 90% of x

$$=Rs.\frac{9x}{10}$$

Now, if the CP of the book = Rs. y. (let)
Then, A.T.Q,

$$y\times\frac{112}{100}=\frac{9x}{10}$$

or, $\frac{y}{x}=\frac{9}{10}\times\frac{100}{112}=\frac{45}{56}$

Required ratio = 45 : 56

38.(A)*Let* x= number of months (from starting) after which C joined the business.
So, Ratio of shares of Profit
= 30,000×12 : 40,000×8: 50,000× x
= 32 : 36 : 5x

C's share $=\frac{5x}{36+32+5x}=\frac{5x}{68+5x}$

given, $\frac{5x}{68+5x}=\frac{15000}{49000}\Rightarrow x=6$

$\Rightarrow$ C joined the business (i.e. 6-4) =2 months after joining of B

39.(A) Let 1 child's 1 day's work =x
& 1 adult's 1 day's work = y

Then, $12x=\frac{1}{16}\Rightarrow x=\frac{1}{192}$

and $8y=\frac{1}{12}\Rightarrow y=\frac{1}{96}$

Work done in 3 days by 16 adults

$$=16\times\frac{1}{96}\times 3=\frac{1}{2} \text{ part}$$

$\Rightarrow$ Remaining work $=\frac{1}{2}$ part

Now, (6 adults + 4 children)'s 1 day's work

$$=\frac{6}{96}+\frac{4}{192}=\frac{1}{12}$$

i.e. $\Rightarrow \frac{1}{12}$ work is done by them is 1 day

So, $\frac{1}{2}$ work will be done by them in

$$=12\times\frac{1}{2} \text{ days}$$

= 6 days

40.(C)Time taken by A to complete the work

$$=\frac{4\times 3}{2}=6 \text{ days}$$

& Time taken by B to complete the work

$$=\frac{6\times 5}{3}=10 \text{ days}$$

$\therefore$ A and B together will complete the work in $\frac{6\times 10}{6+10}$ days $=3\frac{3}{4}$ days.

41.(C) Completed road in 80 days by 280 workers

$$=\frac{7}{2} \text{ km= 3.5 km}$$

$\Rightarrow$ Remaining road to be completed in 20 days = 1.5 km
Let, total x workers are needed to construct the 1.5 km road in 20 days.

So, $\frac{280\times 80}{x\times 20}=\frac{3.5}{1.5}$

$\Rightarrow$ x = $280\times\frac{80}{20}\times\frac{1.5}{3.5}$

$\Rightarrow$ x = 480 workers

$\Rightarrow$ No. of more workers needed
= (480–280) people
= 200 workers

42. (B) Ratio of wages of A, B, C
= (6×5): (4×6): (9×4) = 30 : 24: 36
= 5 : 4 : 6

A's Share = $\frac{5}{15}\times 1800$ = Rs. 600

43.(D)Part of tank filled in one hour by inlet pipe

$$=\frac{1}{12}-\frac{1}{15}=\frac{1}{60} \text{ part}$$

So, the inlet pipe can fill the tank in 60 hrs.
$\because$ Inlet pipe fills water at the rate of 5 litres per minute

$\Rightarrow$ Capacity of tank
= (60 × 60 × 5) litres = 18000 litres

44.(A) Part filled by 1st pipe from 8 a.m. to 11 a.m.

$= \frac{3}{15} = \frac{1}{5}$ part

Part filled by 2nd pipe from 9 a.m. to 11 a.m.

$= \frac{2}{12} = \frac{1}{6}$ part

$\Rightarrow$ Part filled till 11 a.m.

$= \frac{1}{5} + \frac{1}{6} = \frac{6+5}{30} = \frac{11}{30}$ part

At 11 a.m. 3rd pipe is also opened to empty it.

$\therefore$ Now, time taken by 3 pipes together to completely empty the full cistern =

$$= \frac{1}{\frac{1}{4} - \frac{1}{15} - \frac{1}{12}} = \frac{1}{\frac{1}{10}} = 10 \text{ hrs.}$$

So, Time required to empty $\frac{11}{30}$ filled part

$= \frac{11}{30} \times 10 = \frac{11}{3} hr = 3\frac{2}{3}$ hrs.

i.e. 3 hours 40 minutes
i.e. at 11. 40 a.m.

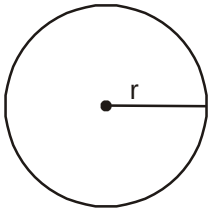
45.(D)Let the speed of the bus = x km/hr
Then to take a lead of 60m, he will have to cover a distance of (60+40)m= 108m, with the speed of (30–x) km/hr in 20 sec.
100m = (30–x) km/hr × 20 sec.

$\Rightarrow 100 = \frac{(30-x) \times 1000}{3600} \times 20$

$\Rightarrow \frac{1}{10} = \frac{(30-x)}{180}$

or , 180= 300–10x
$\Rightarrow$ 10x = 120
$\Rightarrow$ x = 12 km/hr

46. (C)



Circumference = $2\pi r$

Time taken for one round= $\frac{40}{8}$ = 5 min.

Now, new radius = 10 r

So, New circumference = $2\pi \times 10r = 20\pi r$

So Required time = $\frac{20\pi r}{2\pi r} \times 5$ minute

= 50 minutes

47.(B) In such type of questions, required ratio of the speeds of the two trains = $\frac{\sqrt{9}}{\sqrt{4}} = \frac{3}{2} = 3 : 2$

48.(A) Let the speed of goods train = x km/hr
Distance travelled at the speed of 80 km/hr in 4 hours.
= 4 × 80 = 320 km

$\therefore$ $x = \frac{320}{10}$ = 32 km/hr

49.(B) Let the length of train or platform = x metre.
Speed = 90km/hr

$= \frac{90 \times 5}{18}$ metre/sec.

= 25 metre/sec.
$\therefore$ Distance covered in 60 sec.
= 25 × 60 = 1500 metres
Now, according to question,
2x = 1500
$\therefore$ x = 750 metre

50.(A) Speed in still water = 12km/hr
speed against the current

$= \frac{4}{3} \times 12$ = 9km/hr ($\because$ 80 min= $\frac{4}{3}$ hr)

Speed of current = 12 – 9 = 3km/hr
Speed with the current = 12 + 3 = 15 km/hr

So, required time = $\frac{45}{15} + \frac{45}{9}$ = 8 hr.

51.(A) Let the cost of one saree = Rs. x
and the cost one shirt = Rs. y
According to question
20x + 4y = 1600
$\Rightarrow$ x + 2 y = 800 ..... (i)
and
x + 6 y = 1600 ..... (i)
on solving equations (i) and (ii), we get
x = 400; y = 200;
$\therefore$ cost of 12 shirts
= 12 × 200 = Rs. 2400

52.(D) $\frac{1-x^4}{1+x}\div\frac{1+x^2}{x}\times\frac{1}{x(1-x)}=A$

$\Rightarrow \frac{(1+x^2)(1-x^2)}{1+x}\times\frac{x}{1+x^2}\times\frac{1}{x(1-x)}$ = A

$\Rightarrow \frac{(1+x^2)(1-x)(1-x)}{(1+x)}\times\frac{x}{1+x^2}\times\frac{1}{x(1-x)}$ = A

$\Rightarrow$ A = 1

53.(*) $\because x=(\sqrt{2}+1)^{1/3}$

$\therefore x^3=\sqrt{2}+1$

Now, $\frac{1}{x^3}=\frac{1}{\sqrt{2}+1}$

$=\frac{1}{\sqrt{2}+1}\times\frac{\sqrt{2}-1}{\sqrt{2}-1}=\frac{\sqrt{2}-1}{2-1}=\sqrt{2}-1$

Now, $x^3-\frac{1}{x^3}=(\sqrt{2}+1)-(\sqrt{2}-1)$

= $\sqrt{2}+1-\sqrt{2}+1=2$

54.(C) Let **p**(*x*) = $(x+1)^7+(2x+k)^3$

$\because$ (x+2) is a factor of **p**(x)

$\Rightarrow$ **p**(–2) = 0 [by factor Theorem]

$\Rightarrow (-2+1)^7+(2\times-2+k)^3=0$

$\Rightarrow (-1)^7+(k-4)^3=0$

$\Rightarrow (k-4)^3=1$

$\Rightarrow k-4=\sqrt[3]{1}=1$

$\therefore k=5$

55.(C) $\because (y-z)+(z-x)+(x-y)=0$

[$\because a^3+b^3+c^3=3abc$ if a + b + c =0]

$\Rightarrow (y-z)^3+(z-x)^3+(x-y)^3=3(y-z)(z-x)(x-y)$

56.(D) $\left(1+\frac{1}{x}\right)\left(1+\frac{1}{x+1}\right)\left(1+\frac{1}{x+2}\right)\left(1+\frac{1}{x+3}\right)$

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

$=\frac{x+4}{x}$

57.(B) $5^{\sqrt{x}}+12^{\sqrt{x}}=13^{\sqrt{x}}$

The above statement is true only for $\sqrt{x}=2$

$\Rightarrow$ x = 2^2 = 4

58.(C) $a=(\sqrt{3}+\sqrt{2})^{-3}$,

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

a.b = $\left[(\sqrt{3}+\sqrt{2})(\sqrt{3}-\sqrt{2})\right]^{-3}$

$=[3-2]^{-3}=(1)^{-3}=1$

= $(a+1)^{-1}+(b+1)^{-1}$

= $\frac{1}{a+1}+\frac{1}{b+1}$

$=\frac{b+1+a+1}{ab+b+a+1}=\frac{a+b+2}{1+a+b+1}$

$=\frac{a+b+2}{a+b+2}$ [$\therefore$ ab =1]

= 1

59.(B) $a^x=b^y=c^z=k$ (Say)

$\Rightarrow a=k^{\frac{1}{x}},b=k^{\frac{1}{y}},c=k^{\frac{1}{z}}$

$\because b^2=ac$

$\Rightarrow k^{\frac{2}{y}}=(k)^{\frac{1}{x}+\frac{1}{z}}$

$\Rightarrow k^{\frac{2}{y}}=k^{\frac{1}{x}+\frac{1}{z}}$

$\Rightarrow \frac{2}{y}=\frac{z+x}{zx}$

$\therefore y=\frac{2zx}{z+x}$

60.(C) let $p(x) = ax^3+3x^2-8x+b$

$\because$ (x + 2) is a factor of p(x)

$\Rightarrow$ P(–2) = 0

$\Rightarrow a(-2)^3+3(-2)^2-8(-2)+b=0$

$\Rightarrow$ –8a + 12 + 16 + b = 0

$\Rightarrow$ –8a + b + 28 = 0 ..... (i)

Again, $\because$ (x–2) is factor of p(x)

$\Rightarrow$ P(2) = 0

$\Rightarrow a(2)^3+3(2)^2-8.2+b=0$

$\Rightarrow$ 8a + b – 4 = 0 ..... (ii)

On adding (1) & (2), we have

2b + 24 = 0

b = –12

On substituting b = -12 in (2)

8a –12 – 4 = 0

$\Rightarrow$ a = 2

61.(C) sinB = $\frac{1}{2}$ = sin30°

$\Rightarrow B=30^0$

Now, 3 cos B - $4\cos^3 B$

= 3 cos 30° - $4\cos^3 30^0$

$= 3\times\frac{\sqrt{3}}{2} - 4\times\frac{3\sqrt{3}}{8}$

$= \frac{3\sqrt{3}}{2} - \frac{2\sqrt{3}}{2} = 0$

Another method

$3\cos B - 4\cos^3 B$
= – cos3B
= -cos 3× 30^0
= - $\cos 90^0$
= 0

62.(A) tanA =1 $\Rightarrow$ A = 45^0

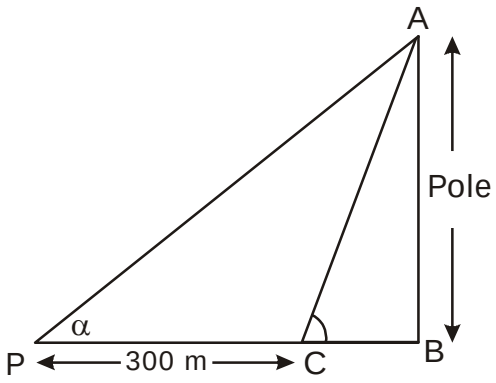
tan B = $\sqrt{3}$ = B = 60^0

Now, cosA. cosB + sinA.sinB
$\cos 45^0.\cos 60^0 + \sin 45^0.\sin 60^0$

$\frac{1}{\sqrt{2}}\times\frac{1}{2} + \frac{1}{\sqrt{2}}\times\frac{\sqrt{3}}{2}$

$= \frac{\sqrt{3}+1}{2\sqrt{2}}$

63.(B)



$\because \tan\alpha = \frac{5}{12}$

$\Rightarrow \frac{AB}{BP} = \frac{5}{12}$

$\Rightarrow \frac{AB}{BC+300} = \frac{5}{12}$ ---------- (1)

tan B = $\frac{3}{4}$

$\frac{AB}{BC} = \frac{3}{4}$ ---------- (2)

On dividing (1) by (2), We have

$\frac{BC}{BC+300} = \frac{5}{12}\times\frac{4}{3} = \frac{5}{9}$

9BC = 5BC + 1500

BC = $\frac{1500}{4}$ = 375m

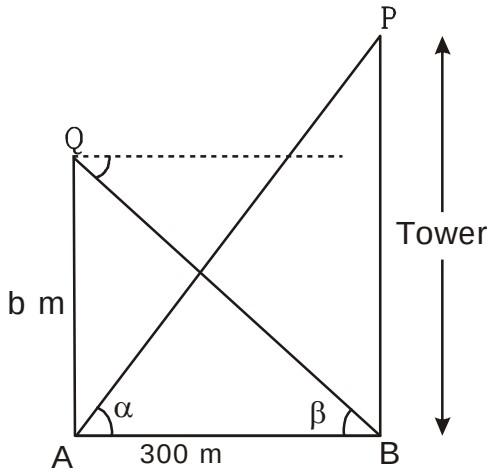
Height of the pole = AB = $\frac{3}{4}\times BC$

= $\frac{3}{4}\times 375$

= $\frac{1125}{4} = 281.25m$

64.(A) $(\sin A+\operatorname{cosec} A)^2 + (\cos A + \sec A)^2$
$=\sin^2 A + \operatorname{cosec}^2 A + 2\sin A.\operatorname{cosec} A + \cos^2 A + \sec^2 A + 2\cos A.\sec A$
$= \sin^2 A + \cos^2 A + \operatorname{cosec}^2 A + \sec^2 A + 2.1 + 2.1$
$= 1 + 1 + \cot^2 A + 1 + \tan^2 A + 4$
$= 7 + \cot^2 A + \tan^2 A$

65.(D)



In Δ ABQ

$\tan\beta = \frac{QA}{AB}$

$\tan\beta = \frac{b}{AB}$

$\Rightarrow AB = \frac{b}{\tan\beta}$

In Δ ABP

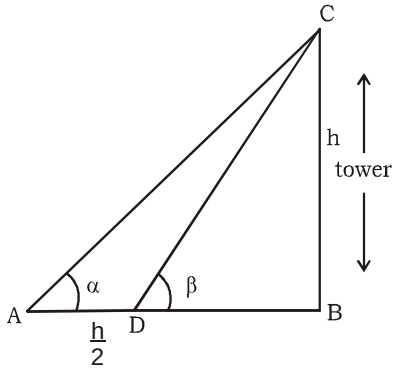
$\tan\alpha = \frac{PB}{AB}$

$\tan\alpha = \frac{PB}{\frac{b}{\tan\beta}}$

$\Rightarrow$ PQ = $\tan\alpha.\frac{b}{\tan\beta}$

= $b\tan\alpha\times\cot\beta$

66.(C)



In Δ CBD,

$\tan\beta = \frac{h}{BD}$

$\Rightarrow$ BD = $\frac{h}{\tan\beta} - h\cot\beta$

In Δ CBA,

$\tan\alpha = \frac{CB}{BA} = \frac{CB}{BD+DA} = \frac{h}{h\cot\beta + \frac{h}{2}}$

($\because$ BD= hcotβ)

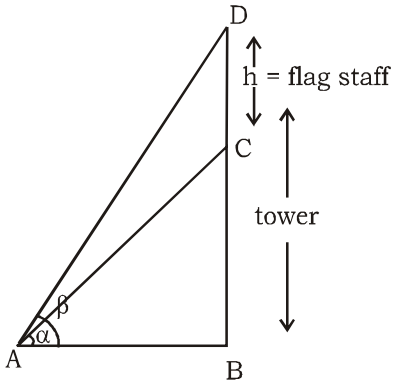
$\tan\alpha = \frac{h}{h\left(\cot\beta + \frac{h}{2}\right)}$

$\cot\beta + \frac{1}{2} = \frac{1}{\tan\alpha}$

$\cot\beta + \frac{1}{2} = \cot\alpha$

$\Rightarrow \cot\alpha - \cot\beta = \frac{1}{2}$

67.(B)



Let the height of the tower be x unit

In Δ CBA

$\tan\alpha = \frac{CB}{BA} = \frac{x}{BA}$

$\Rightarrow$ BA = $\frac{x}{\tan\alpha} = x\cot\alpha$ ..... (i)

In Δ DBA

$\tan\beta = \frac{DB}{BA} = \frac{h+x}{x\cot\alpha}$ ($\because$ BA = x cot α)

$\Rightarrow x\cot\alpha = \frac{h+x}{\tan\beta} = (h+x)\cot\beta$

$\Rightarrow$ x(cotα –cotβ) = hcotβ

$\Rightarrow x = \frac{h\cot\beta}{\cot\alpha - \cot\beta}$

$\Rightarrow \frac{\frac{h}{\tan\beta}}{\frac{1}{\tan\alpha} - \frac{1}{\tan\beta}} = \frac{h}{\tan\beta} \times \frac{\tan\alpha\tan\beta}{\tan\beta - \tan\alpha}$

$= \frac{h\tan\alpha}{\tan\beta - \tan\alpha}$

68.(B) $2(\sin^6 q + \cos^6 q) - 3(\sin^4 q + \cos^4 q) + 1$

$= 2\left[\left(\sin^2 q\right)^3 + \left(\cos^2 q\right)^3\right] - 3\left[\left(\sin^2 q\right)^2 + \left(\cos^4 q\right)^2\right] + 1$

$= 2\left[\left(\sin^2 q + \cos^2 q\right)^3 - 3\sin^2 q\cos^2 q(\sin^2 q + \cos^2 q)\right]$

$-3\left[\left(\sin^2 q + \cos^2 q\right)^2 - 2\sin^2 q.\cos^2 q\right] + 1$

$= 2\left[1^3 - 3\sin^2 q.\cos^2 q.(1)\right]$ -3 [(1)² – sin²q.cos²q] + 1

= 2 – 6sin²q cos²q – 3 + 6sin²q cos²q + 1

$= 2 - 3 + 1 = 0$

69.(C) $\sin\theta + \sin^2\theta + \sin^3\theta = 1$

$\Rightarrow \sin\theta + \sin^3\theta = 1 - \sin^2\theta$

On squaring both sides,

$\Rightarrow [(\sin\theta)(1+\sin^2\theta)]^2 = \cos^4\theta$

$\Rightarrow (1-\cos^2\theta)(2-\cos^2\theta)^2 = \cos^4\theta$

$\Rightarrow (1-\cos^2\theta)[4 - 4\cos^2\theta + \cos^4\theta] = \cos^4\theta$

$\Rightarrow 4 - 4\cos^2\theta + \cos^4\theta - 4\cos^2\theta + 4\cos^4\theta - \cos^6\theta = \cos^4\theta$

$\Rightarrow -\cos^6\theta + 4\cos^4\theta - 8\cos^2\theta + 4 = 0$

$\Rightarrow \cos^6\theta - 4\cos^4\theta + 8\cos^2\theta = 4$

70.(C) $\tan q = \frac{a}{b}$

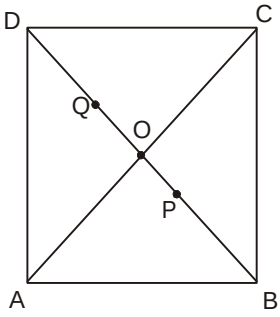
$\Rightarrow \frac{\sin q}{\cos q} = \frac{a}{b}$

$\Rightarrow \frac{a\sin q}{b\cos q} = \frac{a^2}{b^2}$

Applying C & D, we have

$\frac{a\sin q + b\cos q}{a\sin q - b\cos q} = \frac{a^2 + b^2}{a^2 - b^2}$

71.(B)



ABCD is a ||gm whose diagonal BD=18cm.
Let both the diagonals bisect at 'O'
$\Rightarrow$ DO = OB = 9 cm.
$\because$ DO and BO are medians of ΔADC & ΔABC
Also P & Q are centroids of ΔADC & ΔABC

$\Rightarrow PO = \frac{1}{3}\times BO$ & $QO = \frac{1}{3}\times DO$

[centroid of a Δ divides each median in the ratio of 2 : 1]

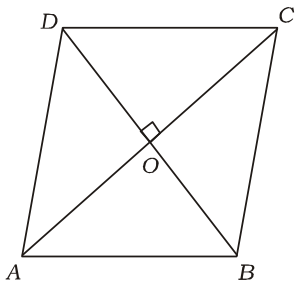
$PO = \frac{1}{3}\times 9$ & $QO = \frac{1}{3}\times 9$

= 3 cm & = 3 cm

$\Rightarrow$ PQ = PO + QO

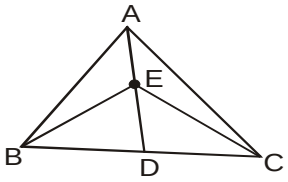
= 3 + 3 = 6cm

72.(B)



ABCD is a quad. where diagonals AC & BD intersect each other at O. Also AC $\perp$ BD
$AB^2 = AO^2 + BO^2$ (By using $BC^2 = BO^2 + CO^2$ pythograms Theorms)
$CD^2 = CO^2 + DO^2$
$AD^2 = AO^2 + OD^2$
Now, $AB^2 + CD^2 = AO^2 + BO^2 + CO^2 + DO^2$
$AD^2 + BC^2 = AO^2 + OD^2 + BO^2 + CO^2$
Hence $AB^2 + CD^2 = AD^2 + BC^2$

73.(A)



$\because$ E is the mid point of AD
$\Rightarrow$ BE is the median.
$\therefore$ ar (ΔBED) = ar (ΔABE)

$= \frac{1}{2}\text{ar}(\Delta ABD)$ ..... (1)

[A medians divides each Δ into two parts of equal areas]
Similarly, we can write

ar (ΔCED) = ar (AEC)= $\frac{1}{2}$ ar (ΔACD)

On adding (1) & (2)

ar (ΔBEC) = $\frac{1}{2}$ ar (ΔABD)+$\frac{1}{2}$ ar (ΔACD)

$= \frac{1}{2}$ ar (ΔABC)

74.(C) Let one of the two adjacent angles be of x^0,

other adjacent angle = $\frac{2}{3}x^0$,

Now, $x^0 + \frac{2}{3}x^0 = 180^0$

[Adjacent angles of a ||gm are supplementary]

$x\left[1+\frac{2}{3}\right] = 180^0$

$x = 180^0 \times \frac{3}{5} = 108^0$

Smallest angle = $\frac{2}{3}x = \frac{2}{3}\times 108^0 = 72^0$

75.(B) $\because \angle BCE = \angle CBD + \angle BDC$
(Exterior angle of a Δ is equal to the sum of opp. interior angles.)
$65^0 = 28^0 + \angle$BDC
$\Rightarrow$ 65 – 28 = $\angle$BDC
$37^0 = \angle$BDC
Also, AB||DC & BD works as a transversal.

$\Rightarrow \angle BDC = \angle ABD$ (Alternate interior angles)

$37^0 = \angle ABD$

76.(D) Let the side of the square be x cm

Lenght of the rectangle = (x + 5) cm

its breadh = (x – 3) cm

ATQ

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

$x^2 = x^2 - 3x + 5x - 15$

$2x = 15$

$x = \frac{15}{2} = 7.5 cm$

Perimeter of the rectangle = 2 (l + b)

= 2 [(7.5 + 5)+ (7.5 – 3)]

= 2 [12.5 + 4.5]

= 2 × 17 = 34 cm.

77.(D) $\therefore$ EF || DC (Given)

$\Rightarrow \Delta EGF \sim \Delta CGD$ (by AA Similarity)

$\Rightarrow \frac{EG}{GC} = \frac{EF}{DC}$

$\frac{5}{10} = \frac{EF}{18}$

$\Rightarrow$ EF = $\frac{18 \times 5}{10}$ = 9 cm

78.(C) $\because$ $CF \parallel AB$

$\Rightarrow$ $\angle BCF = \angle ABC$

(alternate interior angles)

= 85^0 (Given)

$\angle BCE = \angle BCF + \angle ECF$

= $85^0 + 20^0$

= 105^0

$\angle BAD = \angle BCF$

(Angles in the alternate segment)

= 105^0

79.(*) coordinates of the mid-point of (4,2) & (6,4)

$= \left(\frac{4+6}{2}, \frac{2+4}{2}\right)$

= (5, 3)

Equation of the required straight line is

$y - 3 = \frac{-3-3}{-5-5}(x-5)$

$y - 3 = \frac{6}{10}(x-5)$

$\Rightarrow 6x - 30 = 10y - 30$

$\Rightarrow 6x - 10y = 0$

$\Rightarrow 3x - 5y = 0$

80.(A) The equation the circle is

$(x+1)(x+2) + (y-1)(y+3) = 0$

$\Rightarrow x^2 + 3x + 2 + y^2 + 2y - 3 = 0$

$\Rightarrow x^2 + y^2 + 3x + 2y - 1 = 0$

On comparing with the standard eqn. of circle.

$x^2 + y^2 + 2gx + 2fy + c = 0$

$g = \frac{3}{2}$, $f = 1$, $c = -1$

rad. of the circle = $\sqrt{g^2 + f^2 - c}$

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

$= \sqrt{\frac{9}{4} + 2} = \frac{\sqrt{17}}{2}$

Area of the circle = πr^2

$= \pi \times \left(\frac{\sqrt{17}}{2}\right)^2$

$= \frac{17}{4}\pi$ sq. unit.

81.(B) $\because \Delta BDE \sim \Delta BCA$

($\because$ both Δs are equilateral $\Rightarrow$ equi angular)

$\Rightarrow$ ar (ΔBDE) : ar (ΔABC) = $BD^2 : BC^2$

$= \left(\frac{1}{2}BC\right)^2 : BC^2$

$= \frac{1}{4}BC^2 : BC^2$

= 1 : 4

82.(A) Let the parallel sides of the trapezium be $5x$ cm & $7x$ cm

its area = $\frac{1}{2}[5x + 7x] \times 14$

$\Rightarrow 336 = 12x \times 7$

$\Rightarrow \frac{336}{7 \times 12} = x$

$\Rightarrow x = 4$

smaller of the parallel sides = $5x$ cm

= 5 × 4 =20 cm.

83.(B) Volume of the wooden block = 5×10×20 cm^3

Volume of the required solid wooden cube

= 5 × 10 × 20 × x^3 cm^3

(where x^3 is an unknown no.)

$\because$ only '8' is the smallest perfect cube

$\Rightarrow$ $x^3 = 8$

$\Rightarrow$ No. of wooden block = 8

84.(C) Let the original area of the cube

= $6x^2$ sq. unit.

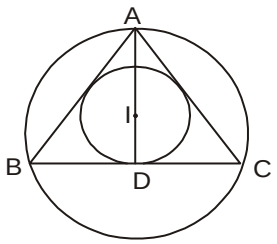
Side of the new cube = $3x$ unit

its area = $6 \times (3x)^2 = 6 \times 9x^2 = 54x^2$ sq. unit.

% increase in area = $\frac{54x^2 - 6x^2}{6x^2} \times 100$

$= \frac{48x^2}{6x^2} \times 100 = 800\%$

85. (C)



$\because$ Incentre & circumcentre of an equilateral Δ is same.

let 'a' unit be the side of ΔABC

Then AD = $\sqrt{AB^2 - BD^2} = \sqrt{a^2 - \frac{a^2}{4}} = \frac{\sqrt{3}}{2}a$

$\because$ AI : ID : 2 : 1

$\Rightarrow$ AI= $\frac{2}{3}$ AD= $\frac{2}{3} \times \frac{\sqrt{3}}{2}a = \frac{a}{\sqrt{3}}$ unit.

ID = $\frac{1}{3}AD = \frac{1}{3} \times \frac{\sqrt{3}}{2}a = \frac{1}{2\sqrt{3}}a$ unit.

Now, Area of circumcircle – area of incircle = 44

$$\pi \times \left(\frac{a}{\sqrt{3}}\right)^2 - \pi \times \left(\frac{a}{2\sqrt{3}}\right)^2 = 44$$

$$\Rightarrow \frac{22}{7}\left[\frac{1}{3} - \frac{1}{12}\right]a^2 = 44$$

$$\Rightarrow \frac{22}{7}\left[\frac{4-1}{12}\right]a^2 = 44$$

$$a^2 = \frac{44 \times 12 \times 7}{22 \times 3} = 56$$

Area of the $\Delta = \frac{\sqrt{3}}{4} \times a^2 = \frac{\sqrt{3}}{4} \times 56 = 14\sqrt{3}cm^2$

86.(A) Let r_1 : internal radius
r_2 : external radius
h : height of the pipe

Volume of the metal = $\pi r_2^2 h - \pi r_1^2 h$

$$748 = \frac{22}{7}\left[9^2 - r_1^2\right] \times 14$$

$$\Rightarrow \frac{748 \times 7}{22 \times 14} = 81 - r_1^2$$

$17 = 81 - r_1^2$

$\Rightarrow r_1^2 = 81 - 17 = 64$

$\Rightarrow r_1 = \sqrt{64} = 8cm$

thickness = 9–8 = 1 cm

87.(B) Area of the tank = $2(lb+bh+lh)-lb$
$=2[25\times12+12\times 6 + 25 \times 6]- 25 \times 12$
$= 2[300 + 72 + 150] - 300$
$= 2 [522] - 300$
$= 1044 - 300$
$= 744\ m^2$
Cost of plastering = Rs. 744×75
Rs. 55800

88.(A) h : height
c : curved surface area
V = Volume of the cone
C= πrl

$V = \frac{1}{3}\pi r^2 h$

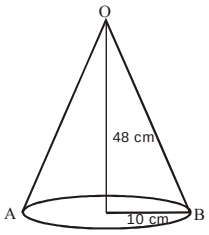
$3V = \pi r^2 h$
Now, $qv^2 - c^2h^2 + 3\pi Vh^3$
$= (\pi r^2 h)^2 - (\pi rl)^2 h^2 + \pi(\pi r^2 h)h^3$
$= \pi^2 r^4 h^2 + \pi^2 r^2 l^2 h^2 + \pi^2 r^2 h^4$
$= \pi^2 r^2 h^2 (r^2 - l^2) + \pi^2 r^2 h^4$
$= \pi^2 r^2 h^2 \times -h^2 + \pi^2 r^2 h^4$
$= -\pi^2 r^2 h^4 + \pi^2 r^2 h^4$
$= 0$

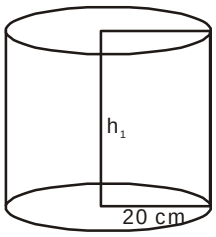
89.(B) Area of quad. ABCD = $\frac{1}{2}$ × diagonal × (Sum of offsets on the given diagonal)

$= \frac{1}{2} \times 16 \times (9+7)$

$= 8 \times 16 = 128\ cm^2$

90.(*) r = 10 cm
h = 48 cm





Volume of the water in the conical vessel = Volume of the water in the cylindrical vessel.

$\Rightarrow \frac{1}{3}\pi r^2 h = \pi r_1^2 h_1$

$\Rightarrow \frac{1}{3} \times (10)^2 \times 48 = (20)^2 \times h_1$

$\Rightarrow h_1 = \frac{10 \times 10 \times 48}{20 \times 20 \times 3} = 4$ cm

91.(A) $r = \frac{7}{2}$ cm

h = 12 cm

Volume of the water in pipe in 1 sec. $=\pi r^2 h$

$= \frac{22}{7} \times \frac{7}{2} \times \frac{7}{2} \times 12$

$= 66 \times 7\ cm^3$

Volume of water stored in (3600 seconds)1 hr.

$= 66 \times 7 \times 3600\ cm^3$

$= 1663200\ cm^3$

$= \frac{1663200}{1000000}\ m^3$

$= 1.6632\ m^3$

$= 1663.2\ l$

92.(D) $\because$ ar (ΔGBD) = $\frac{1}{6}$ ar(ΔABC)

$\Rightarrow 6 = \frac{1}{6}$ ar (ΔABC)

$\Rightarrow$ ar (ΔABC) = $36cm^2$

93.(B) Area allotted for residential purpose

$= \frac{144}{360} \times 5 = 2 \text{ acres.}$

Area allotted for road purpose =

$= \frac{36}{360} \times 5 = \frac{1}{2} \text{ acres.}$

Required ratio = $2 : \frac{1}{2}$

= 4 : 1

94.(A) % of area allotted for water area and green zone.

$= \frac{\frac{(108+18)}{360} \times 5}{5} \times 100$

$= \frac{1.75}{5} \times 100$

= 35%

95.(D) Land allotted for green zone

$= \frac{108}{360} \times 5 = 1.5 \text{ acres}$

Land allotted for commercial purpose

$= \frac{54}{360} \times 5 = 0.75 \text{ acres}$

difference = 1.5 – 0.75 = 0.75 acres.

$\frac{3}{4}$ acres

96.(C) Total land allotted for residencial & commercial purpose = $\frac{144+54}{360} \times 5$

$= \frac{198 \times 5}{360} = \frac{990}{360}$ acres

= 2. 75 acres = $2\frac{3}{4}$ acres

97.(B) Average distribution of loan

$= \frac{87+104+113+120}{4} = \frac{424}{4} = 106 \text{ crores.}$

It is clear from the table that the distribution of loan in 2008 is nearest to the average distribution.

98.(B) % increse of disbursement of loans by all banks from 2009 to 2010

$= \frac{120-113}{113} \times 100 = \frac{700}{113} = 6\frac{22}{113}\%$

99.(D) Total disbursement of loans by (in cores)

	2007	2008	2009	2010
A & B	45	56	63	71
C & D	42	48	50	49

disbursement of loans by A & B is never equal to the disbursement of loans by C & D in any year.

100.(B) It is clear from the table that the bank B distributes more than 30% of the total laons by all banks in 2010.

SSC MAINS (MATHS) MOCK TEST–6 (ANSWER KEY)

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

MOCK TEST PAPER - 3 CORRECTIONS

7. Correct answer is option (3) 12 yrs.
Let the ages of the boys are $4x$, $5x$ & $7x$
A.T.Q.

$$\frac{4x+5x+7x}{3} = 16$$

or, $16x = 48 \Rightarrow x = 3$

$\Rightarrow$ Age of the youngest boy = $4x$
= 12 yrs.

23. Correct answer is option (1)
$\because$ 10% of rice was spoiled
$\Rightarrow$ rate of rice must be increased by

$$\frac{10}{100-10} \times 100\% = 11.11\%$$

i.e. by $\frac{1}{9}$ th of the intial price

also, 20% profit is required
So, Finally the rate of rice must be

$$150 \times \frac{(1+9)}{9} \times \frac{120}{100} = 150 \times \frac{10}{9} \times \frac{6}{5} = ₹\ 200$$

51. Correct answer is option (3) 125

$$\sqrt[5]{2x-7} = 3 \Rightarrow 2x - 7 = 3^5$$

or, $2x = 243 + 7$

$$\Rightarrow x = \frac{250}{2} = 125$$

52. Correct question should be

$3^{2x+1} - 3^x = 3^{x+3} - 3^2$

& according to the above correct question, correct answer is option (4) -1 and 2

87. Correct answer is option (2) 1 : 2 : 3

Vol.(cone) : Vol. (hemisphere) : Vol. (cylinder)

$= \frac{1}{3}\pi r^2 r \quad : \quad \frac{2}{3}\pi r^3 \quad : \quad \pi r^2 r$

$= \frac{1}{3} \quad : \quad \frac{2}{3} \quad : \quad 1$

$= 1 \quad : \quad 2 \quad : \quad 3$

MOCK TEST PAPER - 5 (CORRECTIONS)

14. Accroding to question printed in English language answer is option (D) 20yrs.
but, Accroding to question printed in Hindi language answer is option (A) 27yrs.

20. Correct option is (A) 9800
correct solution →
Suppose the cost price of T.V. = ` x
Then, 2 (x - 9400) = (10600 - x)

$\Rightarrow$ $2x - 18800 = 10600 - x$

$\Rightarrow$ $3x = 29400$

$\Rightarrow$ $x = 9800$

33. In the question,

ratio of C:D should be $\frac{5}{6} : \frac{3}{4}$

and with this correction,
answer should be option (C)