



MOCK TEST PAPER - 12 (T-II) 2013 (SOLUTION)

1. (B) $\frac{1}{\sqrt{1}+\sqrt{2}} + \frac{1}{\sqrt{2}+\sqrt{3}} + \frac{1}{\sqrt{3}+\sqrt{4}} + \dots$

$$= \frac{1}{\sqrt{120}+\sqrt{121}}$$

$$= \frac{(\sqrt{2}-\sqrt{1})}{(\sqrt{2}^2-\sqrt{1}^2)} + \frac{(\sqrt{3}-\sqrt{2})}{(\sqrt{3}^2-\sqrt{2}^2)} + \frac{(\sqrt{4}-\sqrt{3})}{(\sqrt{4}^2-\sqrt{3}^2)}$$

$$\dots + \frac{(\sqrt{121}-\sqrt{120})}{(\sqrt{121}^2-\sqrt{120}^2)}$$

$$= (\sqrt{2}-\sqrt{1}) + \sqrt{3}-\sqrt{2} + \sqrt{4}-\sqrt{3}$$

$$+ \dots + (\sqrt{120}-\sqrt{119}) + (\sqrt{121}-\sqrt{120})$$

$$= -\sqrt{1} + \sqrt{121} = 11 - 1 = \mathbf{10 \text{ Ans.}}$$

2. (A) $\frac{\sqrt{5}}{2} - \frac{10}{\sqrt{5}} + \sqrt{125} = \frac{\sqrt{5}}{2} - \frac{10}{\sqrt{5}} + \frac{5\sqrt{5}}{1}$

$$= \frac{5-20+10 \times 5}{2\sqrt{5}} = \frac{35}{2 \times 2236} = \frac{35}{4.472}$$

= 7.826 Ans

3. (D) $\left(\frac{-1}{216}\right)^{-2/3} \Rightarrow \left(\frac{-1}{6^3}\right)^{-2/3} = \left(-\frac{1}{6}\right)^{-2}$

$$= (-6)^2 = \mathbf{36 \text{ Ans.}}$$

4. (C) Required measurement
= HCF of 403 kg, 434 kg and 465 kg
= 31 kg Ans.

5. (C) Let R = Age of Randheer,
A = Age of Anup

So, ATQ, $\frac{R-6}{18} = A$

Given, Mahesh = 5 yrs
 \Rightarrow Anup = (5 - 2) yrs = 3 yrs
 $\therefore R = 18 \times 3 + 6 = \mathbf{60 \text{ yrs Ans}}$

6. (B) Let x be the number of buffaloes and y be the number of ducks.
Then, total number of legs = $4x + 2y$
and total number of heads = $x + y$
So, $4x + 2y = 2(x + y) + 24$
 $\Rightarrow 2x = 24$
 $\Rightarrow x = \mathbf{12 \text{ Ans.}}$

7. (A) Cost of 9 lemons = 4×48 paise
= 144 paise
= cost of 4 mangoes

So, cost of 3 mangoes = $\frac{144}{4} \times 3$
= 108 paise
= Cost of 5 apples
 \Rightarrow Cost of 9 oranges = 108 paise
 \Rightarrow Cost of 1 orange = $\frac{108}{9}$
= 12 paise Ans.

8. (A) Sum of digits from numbers 1 to 10 = 46,
Sum of digits from numbers 11 to 20 = 56
& Sum of digits from numbers 21 to 29 = 63
 \Rightarrow Sum of digits of the given numbers
= $46 + 56 + 63 = 165$

Again,

Sum of digits of the number 165 = $1 + 6 + 5 = 12$
Now, when 12 is divided by 9, we get
remainder = **3 Ans.**

9. (A) Let x be the number.
Then calculation done by the student
$$= \frac{x+12}{6} = 112$$

 $\Rightarrow x = 660$

So, the correct answer = $\frac{660}{6} + 12$
= 122 Ans

10. (D) Let x be the number of students and w be their average weight.
ATQ,

$$\frac{xw+50}{x+1} = w+1$$

$$\Rightarrow x+w=49 \quad \dots (i)$$

Again, $\frac{xw+50+50}{x+2} = w+1.5$
 $\Rightarrow 1.5x+2w=97 \quad \dots (ii)$

From equations (i) and (ii),
we get, $w = \mathbf{47 \text{ Ans}}$

11. (A) Let x be the first number
$$\Rightarrow \frac{x+(x+1)+(x+2)+(x+3)+(x+4)}{5} = 41$$

or, $5x+10=205$
 $5x=195$
 $\Rightarrow x=39$
So, Product of A and E = $x \times (x+4)$
= 39×43
= 1677 Ans.



PARAMOUNT

Coaching Centre Pvt. Ltd.

An ISO 9001: 2008 Certified Company

Centres at: ★ MUKHERJEE NAGAR ★ MUNIRKA ★ UTTAM NAGAR ★ DILSHAD GARDEN ★ ROHINI ★ BADARPUR BORDER

12. (A) Let Sunil, Sumant and Surat get ₹ x , ₹ y and ₹ z respectively.

$$\text{So, } \frac{x \times 5 \times 1}{100} = \frac{y \times 5 \times 2}{100} = \frac{z \times 5 \times 3}{100}$$

$$\Rightarrow x = 2y = 3z$$

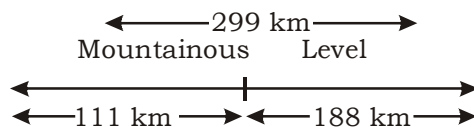
$$\Rightarrow x : y : z = 6 : 3 : 2$$

$$\therefore \text{Required difference} = \frac{6-2}{6+3+2} \times 7700$$

$$= ₹ \mathbf{2800 \text{ Ans}}$$

13. (C) Let the speed of train on level terrain = x km/h

So, the speed of train through mountainous terrain = $(x - 10)$ km/h



ATQ,

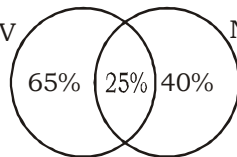
$$\frac{188}{x} + \frac{111}{x-10} = 7$$

$$\Rightarrow \frac{188x - 1880 + 111x}{x(x-10)} = 7$$

$$\Rightarrow 7x^2 - 369x + 1880 = 0$$

$$\Rightarrow x = \mathbf{47 \text{ km/h Ans.}}$$

14. (D) TV Newspaper



Number of people who either watch TV or read newspaper = $65\% + 40\% - 25\%$
 $= 80\%$

$$\Rightarrow \text{Number of people who neither watch TV nor read newspaper.}$$

$$= (100 - 80)\%$$

$$= \mathbf{20\% \text{ Ans.}}$$

15. (D) Let required amount of second solution to be added = x L

So,

$$\frac{15 \times 20 + 5 \times x}{20 + x} = 10$$

$$\Rightarrow 300 + 5x = 20 + 10x$$

$$\Rightarrow x = \frac{100}{5} = \mathbf{20L \text{ Ans.}}$$

16. (A) Milk in mixture

$$= 6 \times \frac{25}{100} + 4 \times \frac{30}{100} = \frac{270}{100}$$

$$\text{Required percentage} = \frac{270 \times (6+4)}{100}$$

$$= \mathbf{27\% \text{ Ans.}}$$

17. (B) Let x be the total score in the innings.

$$\text{So, the highest score} = \frac{2}{9}x$$

And, the next highest score

$$= \frac{2}{9} \text{ of the remaining runs}$$

$$= \frac{2}{9} \left(x - \frac{2}{9}x \right)$$

$$\text{So, ATQ, } \frac{2}{9}x - \frac{2}{9} \left(x - \frac{2}{9}x \right) = 8$$

$$\Rightarrow x - x + \frac{2}{9}x = \frac{8 \times 9}{2}$$

$$\Rightarrow x = \frac{8 \times 9 \times 9}{2 \times 2}$$

$$= \mathbf{162 \text{ Ans.}}$$

18. (B) $(13 + 22 + 33 + \dots + 153) - (1 + 2 + 3 + \dots + 15)$

$$= 15 \times \frac{(13+153)}{2} - \frac{15 \times 16}{2}$$

$$= 1245 - 120$$

$$= \mathbf{1125 \text{ Ans.}}$$

19. (B) Let total marks be 100.

So, the minimum marks required to be pass = 40% of 100 = 40 marks

$$\text{ATQ, Marks obtained by A} = 40 - 40 \times \frac{10}{100}$$

$$= 36 \text{ marks}$$

$$\&, \text{ Marks obtained by B} = 36 - \frac{100}{9} \times \frac{36}{100}$$

$$= 36 - 4$$

$$= 32 \text{ marks}$$

So, Marks obtained by C

$$= (36 + 32) - (36 + 32) \times \frac{700}{17 \times 100}$$

$$= 68 - 28 = \mathbf{40 \text{ marks Ans.}}$$

20. (B) Let ₹ x be the monthly salary of Mohan.

ATQ,

$$\frac{4x}{10} + \frac{6x}{10} \times \frac{50}{100} + \frac{3x}{10} \times \frac{30}{100} + \text{saving} = x$$

$$\Rightarrow \frac{4x}{10} + \frac{3x}{10} + \frac{9x}{100} + 630 = x$$

$$\Rightarrow 630 = \frac{100x - 70x - 9x}{100}$$



PARAMOUNT

Coaching Centre Pvt. Ltd.

An ISO 9001: 2008 Certified Company

Centres at: ★ MUKHERJEE NAGAR ★ MUNIRKA ★ UTTAM NAGAR ★ DILSHAD GARDEN ★ ROHINI ★ BADARPUR BORDER

$$\Rightarrow 630 = \frac{21x}{100}$$

$$\Rightarrow x = ₹ 3000 \text{ Ans}$$

21. (B) \therefore the total number of men employed = 50
So, total number of women employed = 100
& total number of children employed = 150
Now, let the men, women and children wages are $6x$, $3x$ and $2x$ respectively.

$$\Rightarrow 50 \times 6x + 100 \times 3x + 150 \times 2x = 4500$$

$$\text{or, } 900x = 4500$$

$$\Rightarrow x = 5$$

\therefore Per day wages paid to a man, a woman and a child are ₹ 30, ₹ 15 and ₹ 10.

\therefore Weekly wages paid to a man, a woman and a child are ₹ 210, ₹ 105 and ₹ 70 Ans.

22. (B) Let the present and last year salaries of Mahesh and Suresh are x , x' and y , y' respectively.

$$\frac{x'}{y'} = \frac{3}{5}, \frac{x'}{x} = \frac{2}{3}$$

$$\text{and } \frac{y'}{y} = \frac{4}{5}$$

$$\therefore \frac{\frac{x'}{y'}}{\frac{y'}{y}} = \frac{\frac{2}{3}}{\frac{4}{5}}$$

$$\Rightarrow \frac{x'}{y'} \times \frac{y}{x} = \frac{10}{12}$$

$$\Rightarrow \frac{3}{5} \times \frac{y}{x} = \frac{10}{12}$$

$$\Rightarrow \frac{y}{x} = \frac{50}{36}$$

$$\text{Also, } x + y = 43000$$

$$\Rightarrow x + \frac{50}{36}x = 43000$$

$$\Rightarrow x = \frac{43000 \times 36}{86} = ₹ 18000 \text{ Ans.}$$

23. (D) Actual amount to be paid

$$= 20000 \times \left(1 + \frac{10}{100}\right)^3$$

$$= ₹ 26620$$

Amount that Rohit have to pay now

$$= 20000 \left(1 + \frac{10}{100}\right)^2 \left(1 + \frac{15}{100}\right)$$

$$= ₹ 27830$$

So, required extra amount

$$= 27830 - 26620$$

$$= ₹ 1210 \text{ Ans.}$$

24. (A) Let the value of second rate of interest be $x\%$ and equal amounts be P each.

So, ATQ,

$$P \times \left(1 + \frac{5}{100}\right)^6 = P \times \left(1 + \frac{x}{100}\right)^3$$

$$\Rightarrow \left(1 + \frac{5}{100}\right)^2 = \left(1 + \frac{x}{100}\right)$$

$$\Rightarrow \frac{105 \times 105}{100 \times 100} = \frac{100 + x}{100}$$

$$\Rightarrow 110.25 = 100 + x$$

$$x = 10\frac{1}{4} \% \text{ Ans}$$

25. (B) Upstream speed = 2 km/h

$$\text{Downstream speed} = \frac{1}{10} \times 60 = 6 \text{ km/h}$$

\therefore Speed in stationary water

$$= \frac{2+6}{2} = 4 \text{ km/h}$$

$$\therefore \text{Required time} = \frac{5}{4} = 1 \text{ hr } 15 \text{ min Ans.}$$

26. (D) Let the man went up stream for x km.

\Rightarrow He turned back downstream for $(x-2)$ km.

$$\text{So, } \frac{x}{(4.5-1.5)} + \frac{x-2}{(4.5+1.5)} = 2 \text{ h } 10 \text{ min}$$

$$\Rightarrow \frac{2x+x-2}{6} = 2\frac{1}{6} \text{ hour}$$

$$\Rightarrow 3x-2 = 13$$

$$\Rightarrow x = 5 \text{ km Ans.}$$

27. (A) Let $x\%$ be the other discount.

$$\text{So, } 65 \times \frac{90}{100} \times \frac{(100-x)}{100} = 56.16$$

$$\Rightarrow 100 - x = \frac{56.16 \times 100 \times 100}{65 \times 90}$$

$$\Rightarrow 100 - x = 96$$

$$\Rightarrow x = 4\% \text{ Ans.}$$

28. (A) Let cost price of the article = ₹ x .

So,

$$x \times \frac{117.5}{100} + 11.55 = x \times \frac{92}{100} \times \frac{130}{100}$$



PARAMOUNT

Coaching Centre Pvt. Ltd.

An ISO 9001: 2008 Certified Company

Centres at: ★ MUKHERJEE NAGAR ★ MUNIRKA ★ UTTAM NAGAR ★ DILSHAD GARDEN ★ ROHINI ★ BADARPUR BORDER

$$\Rightarrow x = \frac{11.55}{(0.92 \times 130 - 117.5)} \times 100$$

= ₹ **550 Ans.**

29. (B) $12.5\% \text{ of profit} = \frac{12.5}{100} \times 880 = ₹ 110$

Remaining ₹ 770 is divided in the ratio
= 5000 : 6000 = 5 : 6

Profit to Anu = $\frac{5}{11} \times 770 + 110$
= ₹ 460

Profit to Bimla = $\frac{6}{11} \times 770$
= ₹ 420

Required profits are ₹ **460 and ₹ 420 Ans.**

30. (B) Ratio to capitals = $\frac{1}{3} : \frac{2}{3} = 1 : 2$

Ratio of profits = $\frac{3}{5} : \frac{2}{5} = 3 : 2$

Let Y's money was used for x months.

$\therefore (1 \times 9) : (2 \times x) = 3 : 2$

$\Rightarrow x = \mathbf{3 \text{ months Ans.}}$

31. (B) A's 1 day work = $\frac{1}{40}$

So, A's 5 day work = $\frac{1}{40} \times 5 = \frac{1}{8}$

So, remaining work = $1 - \frac{1}{8} = \frac{7}{8}$

\therefore B completed the remaining work in 21 days

So, 1 day's work of B = $\frac{7}{8 \times 21} = \frac{1}{24}$

\Rightarrow Both (A + B)'s 1 day work = $\frac{1}{40} + \frac{1}{24}$

= $\frac{3+5}{120} = \frac{8}{120} = \frac{1}{15}$

Hence, both complete the work in **15 days. Ans.**

32. (D) Let (A + B) together complete the work in x hours.

\Rightarrow A completes the work in (x + 8) days.

& B completes the work in $\left(x + \frac{9}{2}\right)$ days.

Using formula, $\frac{(x+8)\left(x+\frac{9}{2}\right)}{2x+\frac{25}{2}} = x$

$$\Rightarrow x^2 + 8x + \frac{9}{2}x + 36 = 2x^2 + \frac{25}{2}x$$

$$\Rightarrow x^2 = 36 \Rightarrow x = \mathbf{6 \text{ days Ans.}}$$

[* Read days as hours]

33. (C) Let the present population of male and female be x and y respectively.

ATQ, $x + y = 5500$

and $\frac{111x}{100} + \frac{120y}{100} = 6330$

$$\Rightarrow 111x + 120y = 633000$$

From equations (i) and (ii), we get

$y = \mathbf{2500 \text{ Ans.}}$

34. (C) Let the output be x and percentage be a. Then,

$$\therefore x \times \left(1 + \frac{a}{100}\right)^2 = 2x$$

$$\Rightarrow 1 + \frac{a}{100} = \sqrt{2}$$

$$\Rightarrow \frac{a}{100} = \sqrt{2} - 1$$

$$\Rightarrow a = (\sqrt{2} - 1) \times 100\%$$

$$= \mathbf{100(\sqrt{2} - 1)\% \text{ Ans.}}$$

35. (A) Let the cost of the product = ₹ x.

So, ATQ,

$$x \times \frac{110}{100} \times \frac{115}{100} \times \frac{125}{100} = 1265$$

$$\Rightarrow x = 1265 \times \frac{100}{110} \times \frac{100}{115} \times \frac{100}{125}$$

$$= \mathbf{₹ 800 \text{ Ans.}}$$

36. (C) Total work = $124 \times 120 = 14880$ men-days

Work completed in 64 days

$$= \frac{2}{3} \times 14880 \text{ men-days}$$

$$= 9920 \text{ men-days}$$

Remaining work for remaining 60 days

$$= (14880 - 9920) \text{ men-days}$$

$$= 4960 \text{ men-days}$$

$$\text{Now, } \therefore \frac{M_1 D_1}{W_1} = \frac{M_2 D_2}{W_2}$$

$$\therefore \frac{120 \times 64}{9920} = \frac{M_2 \times 60}{4960}$$

$$\Rightarrow M_2 = 64$$

\therefore Number of workmen who can be reduced = $120 - 64 = \mathbf{56 \text{ Ans.}}$

37. (C) Till 3 pm, part of tank filled

$$= \frac{2}{8} + \frac{1}{12} = \frac{1}{4} + \frac{1}{12} = \frac{4}{12} = \frac{1}{3} \text{ part}$$



PARAMOUNT

Coaching Centre Pvt. Ltd.

An ISO 9001: 2008 Certified Company

Centres at: ★ MUKHERJEE NAGAR ★ MUNIRKA ★ UTTAM NAGAR ★ DILSHAD GARDEN ★ ROHINI ★ BADARPUR BORDER

$$\therefore \text{Remaining part} = 1 - \frac{1}{3} = \frac{2}{3}$$

Now, let x be the time taken by all three pipes work to fill the remaining part of tank

$$\left(\frac{1}{8} + \frac{1}{12} - \frac{1}{6}\right)x = \frac{2}{3}$$

$$\Rightarrow \frac{(6+4-8)x}{48} = \frac{2}{3}$$

$$\Rightarrow \frac{2x}{48} = \frac{2}{3} \Rightarrow x = 16 \text{ hour}$$

Hence, the tank will be filled at 1 pm + 16 hour = **5 am. Ans.**

38. (D) Let leakage alone can empty the full cistern in x h.

$$\text{Then, } \frac{\frac{9}{2} \times x}{x - \frac{9}{2}} = 5$$

$$\Rightarrow \frac{9}{2}x = 5x - \frac{45}{2}$$

$$\Rightarrow \frac{1}{2}x = \frac{45}{2} \Rightarrow \textbf{45 h Ans.}$$

39. (D) ATQ, original (prime) cost of article = ₹ 6.

\Rightarrow Original raw material cost = ₹ 2

$$\text{So, New cost of raw material} = 2 \times \frac{12}{5}$$

$$= ₹ 4.80$$

Also, original manufacturing expenses

$$= (6-2) = ₹ 4$$

So, new manufacturing expenses

$$= 4 \times \frac{5}{4} = ₹ 5$$

$$\Rightarrow \text{New cost of article} = 4.80 + 5$$

$$= ₹ \textbf{9.80 Ans}$$

40. (A) Let the shares of Anita, Bindu and Champa are $11x$, $18x$ and $24x$ respectively.

$$\text{So, } 1105 = 11x + 10 + 18x + 20 + 24x + 15$$

$$\Rightarrow 1105 = 53x + 45$$

$$\Rightarrow x = 20$$

\therefore Amount received by Champa

$$= 24x + 15$$

$$= 24 \times 20 + 15$$

$$= ₹ 495$$

41. (A) Total marks got by the students in 8 subjects = $8 \times 57 = 696$

Total marks got by the student in 6 subjects = $6 \times 85 = 510$

$$\Rightarrow \text{Remaining marks in 2 subjects}$$

$$= 696 - 510 = 186$$

Let the highest marks be x , then the second highest marks will be $x - 2$.

$$\therefore x + x - 2 = 186$$

$$\Rightarrow 2x = 188$$

$$\Rightarrow x = 94$$

\Rightarrow Highest marks = **94 Ans.**

42. (C) Total score of first three friends

$$= 15 \times 3 = 45$$

and total score of last three friends

$$= 16 \times 3 = 48$$

\therefore Total score of four friends

$$= 45 + 19 = 64$$

\therefore Score of first friend

$$= 64 - 48 = 16$$

So, required percentage

$$= \frac{16}{48} \times 100\% = \textbf{33}\frac{1}{3}\% \textbf{ Ans.}$$

43. (B) When a value is first increased and then decreased by the same percentage, then the initial value is always decreased by

$$\frac{x^2}{100}\% \text{ (irrespective of initial value)}$$

$$\text{So, loss percent} = \frac{(15)^2}{100} = \textbf{2.25\% Ans.}$$

44. (B) Let rate of population increase = $R\%$ per annum

$$\text{So, } 4800 = 3600 \left[1 + \frac{R}{100}\right]^3$$

$$\Rightarrow \frac{4}{3} = \left[1 + \frac{R}{100}\right]^3 \quad \dots (i)$$

Now, the population after 3 years

$$= 4800 \left[1 + \frac{R}{100}\right]^3$$

$$= 4800 \times \frac{4}{3} \quad [\text{from (i)}]$$

$$= \textbf{6400 Ans.}$$

45. (D) Let the two numbers are x and y .

Then,

$$\text{their AM} = \frac{x+y}{2} = 5$$

$$\Rightarrow x + y = 10 \quad \dots (i)$$

$$\text{and their GM} = \sqrt{xy} = 4$$

$$\Rightarrow xy = 16$$

$$\text{Now, } \therefore (x-y)^2 = (x+y)^2 - 4xy$$

$$= 100 - 64 = 36$$

$$\text{or, } x - y = 6 \quad \dots (ii)$$



PARAMOUNT

Coaching Centre Pvt. Ltd.

An ISO 9001: 2008 Certified Company

Centres at: ★ MUKHERJEE NAGAR ★ MUNIRKA ★ UTTAM NAGAR ★ DILSHAD GARDEN ★ ROHINI ★ BADARPUR BORDER

From equations (i) and (ii),

$$x = 8 \text{ and } y = 2$$

So, the required numbers are **2 & 8 Ans.**

46. (B) Let the first term and common term of the AP be a and d respectively.

$$\text{ATQ, } (a + 5d) + (a + 14d) = (a + 6d) + (a + 9d) + (a + 11d)$$

$$\Rightarrow 2a + 19d = 3a + 26d$$

$$\Rightarrow a + 7d = 0$$

$$\Rightarrow \text{8th term is } \mathbf{0. \text{ Ans.}}$$

47. (A) Let M stands for Mohan and R stands for Ram.

Case : I $(M + 30) = 2(R - 30)$

$$M - 2R = -90 \quad \dots (i)$$

Case : II $(R + 10) = 3(M - 10)$

$$R - 3M = -40 \quad \dots (ii)$$

Solving Eqs. (i) and (ii), we get

$$\mathbf{M = ₹ 34 \text{ and } ₹ 62 \text{ Ans.}}$$

48. (B) Given,

$$\frac{x}{2x + y + z} = \frac{y}{x + 2y + z} = \frac{z}{x + y + 2z} = a$$

$$\therefore x = a(2x + y + z), y = a(x + 2y + z)$$

$$z = a(x + y + 2z)$$

$$\Rightarrow x + y + z = a(4x + 4y + 4z)$$

$$\Rightarrow 4a = 1 \Rightarrow a = \frac{1}{4} \mathbf{Ans.}$$

49. (C) Roots of a quadratic equation

$$ax^2 + bx + c = 0 \text{ are real if } b^2 - 4ac \geq 0$$

Option (a): $3x^2 - 4x + 5 = 0$

$$b^2 - 4ac = (-4)^2 - 4(3)(5) = -44 < 0$$

Hence, roots are not real.

Option (b): $x^2 + x + 4 = 0$

$$b^2 - 4ac = (1)^2 - 4(1)(4) = 1 - 16 = -15 < 0$$

Hence, roots are not real.

Option (c): $(x - 1)(2x - 5) = 0$

$$\Rightarrow x = 1 \text{ and } x = \frac{5}{2} > 0$$

Hence, roots are real.

Option (d): $2x^2 - 3x + 4 = 0$

$$b^2 - 4ac = (-3)^2 - 4(2)(4) = 9 - 32 = -23 < 0.$$

Hence, roots are not real. **Ans.**

50. (C) $2x^2 - 7xy + 3y^2 = 0$

$$2\left(\frac{x}{y}\right)^2 - 7\left(\frac{x}{y}\right) + 3 = 0$$

$$\therefore \frac{x}{y} = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$= \frac{7 \pm \sqrt{49 - 24}}{2 \times 2}$$

$$= \frac{7 \pm 5}{4} = 3, \frac{1}{2}$$

$$\therefore \frac{x}{y} = \frac{3}{1} \text{ and } \frac{x}{y} = \frac{1}{2} \mathbf{Ans.}$$

51. (A) Let $f(x) = 2x^3 - ax^2 - (2a - 3)x + 2$

$\therefore (x + 1)$ is a factor of the above expression,

$$\therefore \text{Remainder } f(-1) = 0$$

$$\Rightarrow f(-1) = 2(-1)^3 - a(-1)^2 - (2a - 3) \times -1 + 2 = 0$$

$$\Rightarrow -2 - a + 2a - 3 + 2 = 0$$

$$\Rightarrow a - 3 = 0$$

$$\Rightarrow a = \mathbf{3 \text{ Ans.}}$$

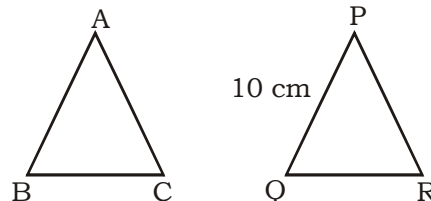
52. (B) Let the common base be x m.

Then, area of triangle = area of parallelogram.

$$\therefore \frac{1}{2} \times x \times \text{Altitude} = x \times 100$$

$$\Rightarrow \text{Altitude} = \mathbf{200 \text{ m Ans.}}$$

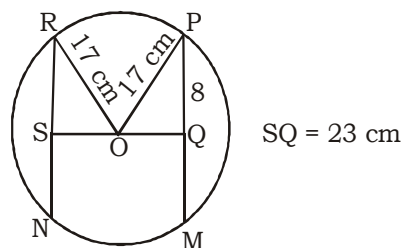
53. (D) For two similar triangles ABC and PQR.



$$\frac{AB}{PQ} = \frac{36}{24}$$

$$\Rightarrow AB = \frac{36}{24} \times 10 = \mathbf{15 \text{ cm Ans}}$$

54. (C)



In $\triangle PQO$,

$$(17)^2 = (8)^2 + (OQ)^2$$

$$\therefore (OQ)^2 = 289 - 64 = 225$$

$$OQ = 15$$

$$\therefore OS = 23 - 15 = 8$$

Now in $\triangle ORS$,

$$(RS)^2 = (17)^2 - (8)^2 = 289 - 64 = 225$$



PARAMOUNT

Coaching Centre Pvt. Ltd.

An ISO 9001: 2008 Certified Company

Centres at: ★ MUKHERJEE NAGAR ★ MUNIRKA ★ UTTAM NAGAR ★ DILSHAD GARDEN ★ ROHINI ★ BADARPUR BORDER

∴ RS = 15 cm
Hence, length of other chord
= $15 \times 2 = 30 \text{ cm Ans.}$

55. (D) Let the three points be $A\left(0, \frac{8}{3}\right)$, $B(1, 3)$
and $C(82, 30)$

$$\text{Then, } AB = \sqrt{(1-0)^2 + \left(3 - \frac{8}{3}\right)^2} = \frac{\sqrt{10}}{3}$$

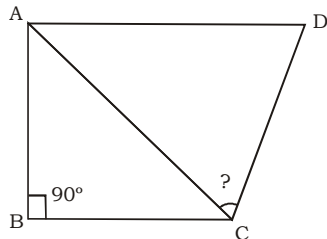
$$\begin{aligned} BC &= \sqrt{(82-1)^2 + (30-3)^2} \\ &= \sqrt{6561 + 729} \\ &= \sqrt{7290} = 27\sqrt{10} \end{aligned}$$

$$\begin{aligned} CA &= \sqrt{(82-0)^2 + \left(30 - \frac{8}{3}\right)^2} \\ &= \sqrt{\frac{10 \times (82)^2}{9}} = \frac{82}{3}\sqrt{10} \end{aligned}$$

$$\text{Now, } AB + BC = \frac{\sqrt{10}}{3} + 27\sqrt{10} = \frac{82\sqrt{10}}{3}$$

Since, $AB + BC = AC$, it means points A, B and C are collinear. Ans.

56. (A) Given, $AD^2 = AB^2 + BC^2 + CD^2$



In $\triangle ABC$,
 $AC^2 = AB^2 + BC^2$
 $\Rightarrow AD^2 = AC^2 + CD^2$
 $\Rightarrow \angle C = 90^\circ \text{ Ans.}$

57. (A) Let the length and breadth of a cuboid be $8x \text{ cm}$ and $7x \text{ cm}$ respectively.

$$\begin{aligned} \text{Volume of cuboid} &= l \times b \times h \\ \Rightarrow 1120 &= 8x \times 7x \times 5 \end{aligned}$$

$$\Rightarrow x^2 = \frac{1120}{8 \times 7 \times 5} = 4$$

$$\Rightarrow x = 2$$

∴ Length and breadth of a cuboid are 16 cm and 14 cm by 2 cm.

Hence, length exceeds its breadth by 2 cm. Ans.

58. (C) Let length and breadth of blackboard be $x \text{ m}$ and $(x - 8) \text{ m}$ respectively.

$$\begin{aligned} \text{ATQ, } x \times (x - 8) &= (x + 7)(x - 12) \\ \Rightarrow x^2 - 8x &= x^2 - 5x - 84 \end{aligned}$$

$$\Rightarrow x = \frac{84}{3} = 28 \text{ cm}$$

$$\text{Length} = 28 \text{ cm}$$

$$\text{Breadth} = x - 8 = 20 \text{ m Ans.}$$

59. (C) Let the outer radius of pipe be r .

Then, volume of the metal

$$= \pi \times 28 \times (r^2 - 8^2)$$

$$1496 = \pi \times 28 \times (r^2 - 8^2)$$

$$\Rightarrow r^2 - 64 = \frac{1496}{28 \times 22} \times 7$$

$$\Rightarrow r^2 = 17 + 64 = 81$$

$$\Rightarrow r = 9 \text{ cm Ans.}$$

60. (D) Let dimensions of the rectangular stone be $3x, 2x, x$ respectively.

$$\therefore \text{Volume of stone} = 10368$$

$$\Rightarrow 3x \times 2x \times x = 10368$$

$$\Rightarrow 6x^3 = 10368$$

$$\Rightarrow x^3 = 1728$$

$$\Rightarrow x = 12$$

∴ Dimensions are 36 dm, 24 dm, 12 dm.

∴ Entire surface area of a stone.

$$= 2(lb + bh + hl)$$

$$= 2(36 \times 24 + 24 \times 12 + 12 \times 36)$$

$$= 2(864 + 288 + 432)$$

$$= 3168 \text{ dm}^2$$

∴ Total cost of polishing

$$= 3168 \times 0.02$$

$$= ₹ 63.36 \text{ Ans.}$$

61. (A) Total area of two parks

$$= \pi(8^2 + 6^2) = 100\pi$$

Area of bigger park

$$= \pi \times 100$$

$$\pi \times r^2 = \pi \times 100$$

$$r^2 = 100$$

$$\therefore r = 10 \text{ m Ans}$$

62. (D) Total area of playground

$$= 750 \times 2\pi r$$

$$= 750 \times 2 \times \frac{22}{7} \times \frac{70}{2} \times 150$$

$$= 2475 \times 10^4 \text{ cm}^2$$

$$= 2475 \text{ m}^2$$

∴ Total cost of levelling = 2475×2

$$= ₹ 4950 \text{ Ans.}$$

63. (C) Since AD bisects $\angle A$.

$$\Rightarrow \frac{AB}{AC} = \frac{BD}{DC}$$

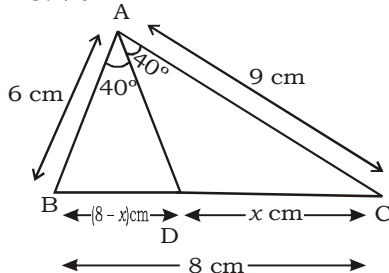
$$\Rightarrow \frac{6}{9} = \frac{x}{8-x}$$

$$\Rightarrow 9x = 48 - 6x$$

$$\Rightarrow x = \frac{48}{15}$$

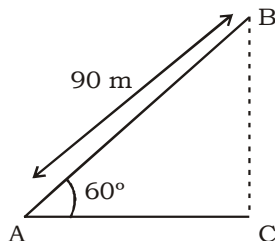


∴ $x = 3.2$ cm



∴ $DC = 8 - 3.2 = 4.8$ cm Ans.

64. (A)



Let AB be the string.

$$\frac{BC}{AB} = \sin 60^\circ$$

$$\Rightarrow BC = 90 \times \frac{\sqrt{3}}{2} = 45\sqrt{3} \text{ m Ans.}$$

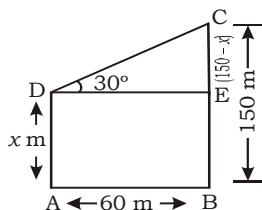
65. (D) $\cos^6 x + \sin^6 x + 3\sin^2 x \cos^2 x$
 $= (\cos^2 x)^3 + (\sin^2 x)^3 + 3\sin^2 x \cos^2 x (\sin^2 x + \cos^2 x)$
 $= (\cos^2 x + \sin^2 x)^3$
 $= 1$ Ans.

66. (A) Given, $a \sec \theta + b \tan \theta = 1$... (i)
 and, $a^2 \sec^2 \theta - b^2 \tan^2 \theta = 5$... (ii)
 From Eqs. (i) and (ii),
 $a \sec \theta - b \tan \theta = 5$... (iii)

From Eqs. (i) and (iii),
 $a \sec \theta = 3$... (iv)
 $b \tan \theta = -2$... (v)

From Eq. (iv),
 $a^2 \sec^2 \theta = 9$
 $a^2(1 + \tan^2 \theta) = 9$
 $\Rightarrow a^2 \left(1 + \frac{4}{b^2}\right) = 9$
 $\Rightarrow a^2 b^2 + 4a^2 = 9b^2$ Ans

67. (A)



Let the height of the shorter tower be x m.

Then, from $\triangle CDE$,

$$\tan 30^\circ = \frac{(150-x)}{60}$$

$$\frac{1}{\sqrt{3}} = \frac{150-x}{60}$$

$$\therefore (150-x) = \frac{60}{\sqrt{3}} = 2\sqrt{3}$$

$$\therefore x = 150 - 2\sqrt{3} = 116 \text{ m (approx) Ans.}$$

68. (D) $x = 2 + 2^{2/3} + 2^{1/3}$

The value of x is greater than 2, let us try it for $x = 2$ and 3.

For $x = 2$, $x^3 - 6x^2 + 6x = -4$

For $x = 3$, $x^3 - 6x^2 + 6x = -9$

$$\therefore x^3 - 6x^2 + 6x < 0 \text{ for } x = 2 \text{ and } 3$$

Hence, option (d) is the answer. Ans.

69. (A) $t - 2 = \sqrt[3]{4} + \sqrt[3]{2}$

$$(t-2)^3 = 4 + 2 + 3\sqrt[3]{4}\sqrt[3]{2}(\sqrt[3]{4} + \sqrt[3]{2})$$

$$\Rightarrow t^3 - 2^3 - 3 \times 2 \times t(t-2) = 6 + 6t - 12$$

$$\Rightarrow t^3 - 6t^2 + 6t - 2 = 0$$
 Ans.

70. (B) Sum of roots = $a + b = 6$

Product of roots = $a \times b = 6$

Now, $a^2 + b^2 = (a+b)^2 - 2ab$
 $= 36 - 12 = 24$ Ans.

71. (A) Using $AM \geq GM$

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

$$\Rightarrow 3^x + 3^{-x} \geq 2$$
 Ans.

72. (B) $a + b + c = 0$

$$\Rightarrow a^2 = (b+c)^2 \text{ or } a = -b-c$$

∴ Given expression

$$\frac{a^2}{a^2 - bc} + \frac{b^2}{b^2 - ca} + \frac{c^2}{c^2 - ab}$$

$$= \frac{(b+c)^2}{(b+c)^2 - bc} + \frac{b^2}{b^2 + c(b+c)} + \frac{c^2}{c^2 + b(b+c)}$$

$$= \frac{(b+c)^2}{b^2 + c^2 + bc} + \frac{b^2}{b^2 + c^2 + bc} + \frac{c^2}{b^2 + c^2 + bc}$$

$$= \frac{b^2 + c^2 + 2bc + b^2 + c^2}{b^2 + c^2 + bc} = \frac{2(b^2 + c^2 + bc)}{b^2 + c^2 + bc}$$

$$= 2$$
 Ans.



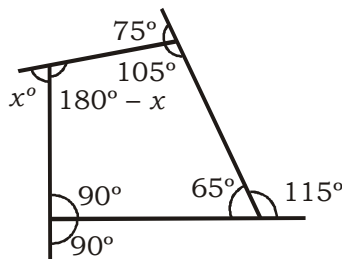
PARAMOUNT

Coaching Centre Pvt. Ltd.

An ISO 9001: 2008 Certified Company

Centres at: ★ MUKHERJEE NAGAR ★ MUNIRKA ★ UTTAM NAGAR ★ DILSHAD GARDEN ★ ROHINI ★ BADARPUR BORDER

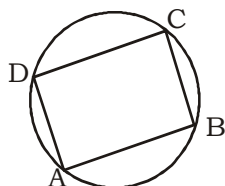
73. (C) Sum of all the exterior angles of the polygon is 360° .



$$\therefore x + 75^\circ + 90^\circ + 115^\circ = 360^\circ$$

$$\Rightarrow x = \mathbf{80^\circ \text{ Ans.}}$$

74. (B)



Given $\angle A = 2\angle C$

Also, $\angle A + \angle C = 180^\circ$
 $(\because \square ABCD \text{ is cyclic})$

$$\therefore \angle C = 60^\circ$$

and $\angle A = 120^\circ$

Now, $\angle B - \angle D = \frac{1}{3} \angle A = 40^\circ$

$$\angle B = 110^\circ$$

$$\angle D = 70^\circ$$

Minimum difference between any two angles is $\mathbf{10^\circ \text{ Ans.}}$

75. (C) Given, $\angle OBC = \angle OCB = 37^\circ$

$[\because \text{Angles opposite to equal sides of a triangle are equal}]$

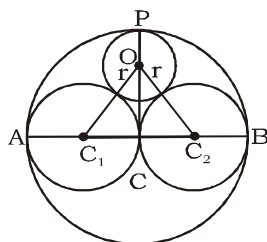
$$\angle COB = 180^\circ - (37^\circ + 37^\circ)$$

$$= 106^\circ$$

$$\therefore \angle BAC = \frac{1}{2} \angle COB = \frac{106^\circ}{2}$$

$$= \mathbf{53^\circ \text{ Ans.}}$$

76. (C) In ΔOC_1C_2 ,



$$(OC_1)^2 = (OC)^2 + (CC_1)^2$$

$$\Rightarrow (r+1)^2 = (PC - OP)^2 + 1$$

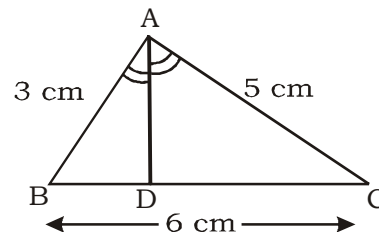
$$\Rightarrow (r+1)^2 = (2-r)^2 + 1$$

$$\Rightarrow r^2 + 1 + 2r = 4 + r^2 - 4r + 1$$

$$\Rightarrow 6r = 4$$

$$\Rightarrow r = \frac{2}{3} \mathbf{Ans.}$$

77. (B) $\frac{BD}{AB} = \frac{DC}{AC}$



$$\therefore \frac{BD}{DC} = \frac{3}{5}$$

$$\therefore BD : DC = 3 : 5$$

Now, $BD = \frac{3}{(3+5)} \times 6$

$$= \frac{18}{8} = \frac{9}{4} = \mathbf{2.25 \text{ cm Ans.}}$$

78. (C) Area of four walls = $2h(l + b)$

$$l = 2b \text{ and } h = 4 \text{ m}$$

$$\therefore 120 = 8 \times 3b$$

$$\Rightarrow b = \frac{120}{24} = 5 \text{ and } l = 10$$

$$\therefore \text{Area of floor} = l \times b = 10 \times 5 = \mathbf{50 \text{ m}^2 \text{ Ans.}}$$

79. (C) Initial length of rectangle = L

$$\text{New length of rectangle} = \frac{3}{2}L$$

$$\text{Initial breadth of rectangle} = B$$

$$\text{New breadth of rectangle} = \frac{1}{3}B$$

$$\text{Initial Area} = L \times B$$

$$\text{New Area} = \frac{3}{2}L \times \frac{1}{3}B = \frac{1}{2}LB$$

$$\text{Hence, change in area is } \frac{1}{2} \mathbf{Ans.}$$

80. (D) Let water in the tank is h deep.

$$\therefore 3 \times \frac{3}{2} \times h = 8 \times 2.5$$

$$\Rightarrow h = \frac{8 \times 2.5 \times 2}{3 \times 3} = \mathbf{4.44 \text{ ft Ans.}}$$

81. (A) Let the water level rises by x m.

$$\Rightarrow 90 \times 40 \times x = 150 \times 8$$

$$\Rightarrow x = \frac{150 \times 8}{90 \times 40} = 0.3333 \text{ m}$$

$$= \mathbf{33.33 \text{ cm Ans.}}$$



82. (B) Curved Surface Area of 50 pillars

$$\begin{aligned}
 &= 50 \times 2 \times 3.14 \times \frac{50}{2} \times 400 \\
 &= 314 \times 10^4 \text{ sq. cm.} = 314 \text{ sq. cm.} \\
 \therefore \text{Labour charges} &= 314 \times 0.50 \\
 &= \text{₹ } \mathbf{157 \text{ Ans.}}
 \end{aligned}$$

83. (A) Total surface area of remaining solid

$$\begin{aligned}
 &= \text{curved surface area of the cylinder} \\
 &\quad + \text{area of base} + \text{curved surface area of cone} \\
 &= 2\pi rh + \pi r^2 + \pi rl \\
 &= 2\pi \times 8 \times 15 + \pi (8)^2 + \pi \times 8 \times 17 \\
 &= 240\pi + 64\pi + 136\pi \\
 &= \mathbf{440\pi \text{ cm}^2 \text{ Ans.}}
 \end{aligned}$$

84. (C) Let the breadth and height of b and h respectively.

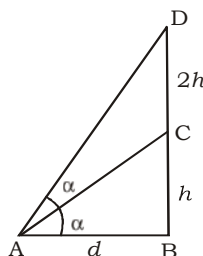
$$\begin{aligned}
 \text{Then, } 70 \times 2.2 &= 14 \times b \\
 \Rightarrow b &= \mathbf{11 \text{ m}} \\
 \text{Also, } 14 \times b \times h &= 70 \times 11
 \end{aligned}$$

$$\therefore h = \frac{70 \times 11}{14 \times 11} = \mathbf{5 \text{ m Ans.}}$$

85. (B) Total cost of plastering inner surface

$$\begin{aligned}
 &= 2 \times \frac{22}{7} \times \frac{7}{2} \times 22.5 \times 3 \\
 &= \text{₹ } \mathbf{1485 \text{ Ans.}}
 \end{aligned}$$

86. (C)



Let $BC = h$ be the height of the pillar, then $CD = 2h$.

\therefore Also, let $\angle BAC = \angle CAD = \alpha$ and $AB = d$

In $\triangle ABC$,

$$\tan \alpha = \frac{h}{d}$$

and in $\triangle ABD$,

$$\tan 2\alpha = \frac{3h}{d}$$

$$\Rightarrow \frac{2 \tan \alpha}{1 - \tan^2 \alpha} = \frac{3h}{d}$$

$$\Rightarrow \frac{\frac{2h}{d}}{1 - \left(\frac{h}{d}\right)^2} = \frac{3h}{d}$$

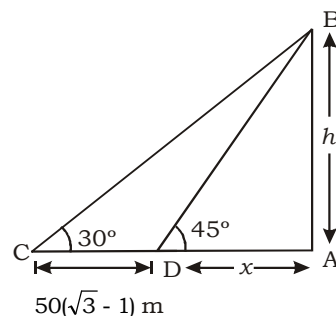
$$\Rightarrow \frac{2}{3} = 1 - \left(\frac{h}{d}\right)^2 \Rightarrow \frac{h}{d} = \frac{1}{\sqrt{3}} \text{ Ans.}$$

87. (D) Given,

$$\frac{\sin A}{\cos A} = \frac{4}{7}$$

$$\therefore \frac{7 \frac{\sin A}{\cos A} - 3}{7 \frac{\sin A}{\cos A} + 2} = \frac{7 \times \frac{4}{7} - 3}{7 \times \frac{4}{7} + 2} = \frac{4 - 3}{4 + 2} = \frac{1}{6}$$

88. (C)



Distance travelled in 2h, $CD = 50(\sqrt{3} - 1) \text{ m}$

Let AB be the building and its height be h and AD be x .

$$\frac{h}{x} = \tan 45^\circ \therefore h = x \dots (i)$$

$$\frac{h}{x + 50(\sqrt{3} - 1)} = \tan 30^\circ$$

$$\Rightarrow h = \frac{x}{\sqrt{3}} + \frac{50(\sqrt{3} - 1)}{\sqrt{3}} \dots (ii)$$

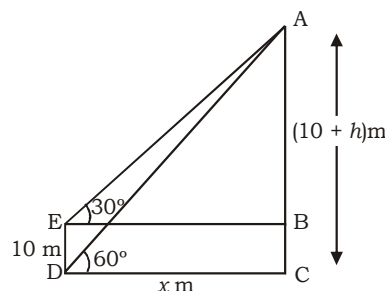
From eqs. (i) and (ii),

$$\Rightarrow h - \frac{h}{\sqrt{3}} = \frac{50(\sqrt{3} - 1)}{\sqrt{3}}$$

$$\Rightarrow h(\sqrt{3} - 1) = 50(\sqrt{3} - 1)$$

$$\Rightarrow h = \mathbf{50 \text{ m Ans.}}$$

89. (B) Let $AB = h \text{ m}$ and $DC = EB = x \text{ m}$





PARAMOUNT

Coaching Centre Pvt. Ltd.

An ISO 9001: 2008 Certified Company

Centres at: ★ MUKHERJEE NAGAR ★ MUNIRKA ★ UTTAM NAGAR ★ DILSHAD GARDEN ★ ROHINI ★ BADARPUR BORDER

Here, pole DE = 10 m
AC = tower = 10 + h

In $\triangle AEB$, we have

$$\tan 30^\circ = \frac{AB}{EB} = \frac{1}{\sqrt{3}} = \frac{h}{x} \quad \dots (i)$$

$$\Rightarrow x = \sqrt{3}h$$

In $\triangle ACD$, we have,

$$\tan 60^\circ = \frac{AC}{CD} = \frac{10+h}{x}$$

$$\Rightarrow \sqrt{3} = \frac{10+h}{x}$$

$$\therefore x = \frac{10+h}{\sqrt{3}} \quad \dots (ii)$$

From eqs. (i) and (ii), we get

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

$$\Rightarrow 3h = 10 + h$$

$$\Rightarrow h = 5 \text{ cm}$$

$$\therefore AC = 10 + h = \mathbf{15 \text{ m Ans.}}$$

[Remember the result in the above : height of tower = 1.5 height of the pole]

90. (C) When $x = 0$

$$\sin x + \operatorname{cosec} x = 0 + \infty = \infty$$

$$\text{When } x = \frac{\pi}{2}$$

$$\sin x + \operatorname{cosec} x = 1 + 1 = 2$$

\therefore When

$$2 \leq \sin x + \operatorname{cosec} x < \infty$$

Hence, $\sin x + \operatorname{cosec} x \geq \mathbf{2 \text{ Ans.}}$

91. (C)

Year	Total Sales of all company	Cumulative Sales
1986	44.50	44.50
1987	46.00	90.50
1988	57.00	147.50
1989	82.00	229.50
1990	138.00	367.50

$$\text{Required ratio} = \frac{90.50}{367.50} = \frac{181}{735} = \frac{1}{4} \mathbf{Ans}$$

92. (A) Average sales of Celia

$$= \frac{18.50 + 15 + 16.5 + 14.5 + 50}{5}$$

$$= \frac{114.50}{5} = \mathbf{22.90 \text{ Ans.}}$$

93 (A) Growth rate for

$$\text{Alpha} = \frac{25 - 20}{20} \times 100 = 25\%$$

$$\text{Baron} = \frac{15.00 - 11.50}{11.50} \times 100 = 30.43\%$$

$$\text{Celia} = \frac{50 - 14.5}{14.5} \times 100 = 244.8\%$$

$$\text{Dowby} = \frac{48 - 36}{36} \times 100 = 33.33\%$$

Growth is least for Alpha. Ans.

94. (B)

For the year 1986, total sales = 44.5

For the year 1987, total sales = 46

For two years show the closest sales.

$$95. (A) \text{ Required ratio} = \frac{50}{2} = \mathbf{25 : 1 \text{ Ans.}}$$

96. (A)

	Candidate who joined MBA = 8550	Candidate who completed MBA = 5700
A	$8550 \times \frac{22}{100} = 1881$	$5700 \times \frac{18}{100} = 1026$
B	$8550 \times \frac{15}{100} = 1282$	$5700 \times \frac{17}{100} = 969$
C	$8550 \times \frac{10}{100} = 855$	$5700 \times \frac{13}{100} = 741$
D	$8550 \times \frac{17}{100} = 1454$	$5700 \times \frac{16}{100} = 912$
E	$8550 \times \frac{8}{100} = 684$	$5700 \times \frac{9}{100} = 513$
F	$8550 \times \frac{12}{100} = 1026$	$5700 \times \frac{15}{100} = 855$
G	$8550 \times \frac{16}{100} = 1368$	$5700 \times \frac{12}{100} = 684$

Required percentage of

$$A = \frac{1026}{1881} \times 100 = 54.55\%$$

$$B = \frac{969}{1282} \times 100 = 75.59\%$$

$$C = \frac{741}{855} \times 100 = 86.67\%$$

$$D = \frac{912}{1454} \times 100 = 62.72\%$$

$$E = \frac{513}{684} \times 100 = 75\%$$

$$F = \frac{855}{1026} \times 100 = 83.33\%$$

$$G = \frac{684}{1368} \times 100 = 50\%$$

97. (C) Required percentage = **75% Ans.**
(See solution of last question)

$$98. (B) \text{ Required ratio} = \frac{684}{1368} = \mathbf{1 : 2 \text{ Ans.}}$$

99. (D) Required percentage

$$= \frac{969 + 741}{1282 + 855} \times 100$$

$$= \frac{1710}{2137} \times 100 = \mathbf{80\% \text{ Ans.}}$$

100. (C) Required difference

$$= (A + D) - (C + E)$$

[Completed - joined]

$$= (1026 + 912) - (855 + 684)$$

$$= 1938 - 1539$$

$$= \mathbf{399 \text{ Ans.}}$$



PARAMOUNT

Coaching Centre Pvt. Ltd.
An ISO 9001: 2008 Certified Company

Centres at: ★ MUKHERJEE NAGAR ★ MUNIRKA ★ UTTAM NAGAR ★ DILSHAD GARDEN ★ ROHINI ★ BADARPUR BORDER

SSC MAINS (MATHS) MOCK TEST -12 (ANSWER SHEET)

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