Directions (36-40): Study the following pie-chart and answer the following questions.

Adda-247 is the official app for providing best **material according to latest pattern** for those who want to **get bank jobs or central govt. jobs**.

In the following pie-chart percentage of number of students are given who opted different test-series of Adda-247

Total No. of Students = 48000

- SBI PO test series
- Practice set test series
- Puzzle test series
- Data-interpretation
- Challenger test seires

16%
36%
21%
15%
12%
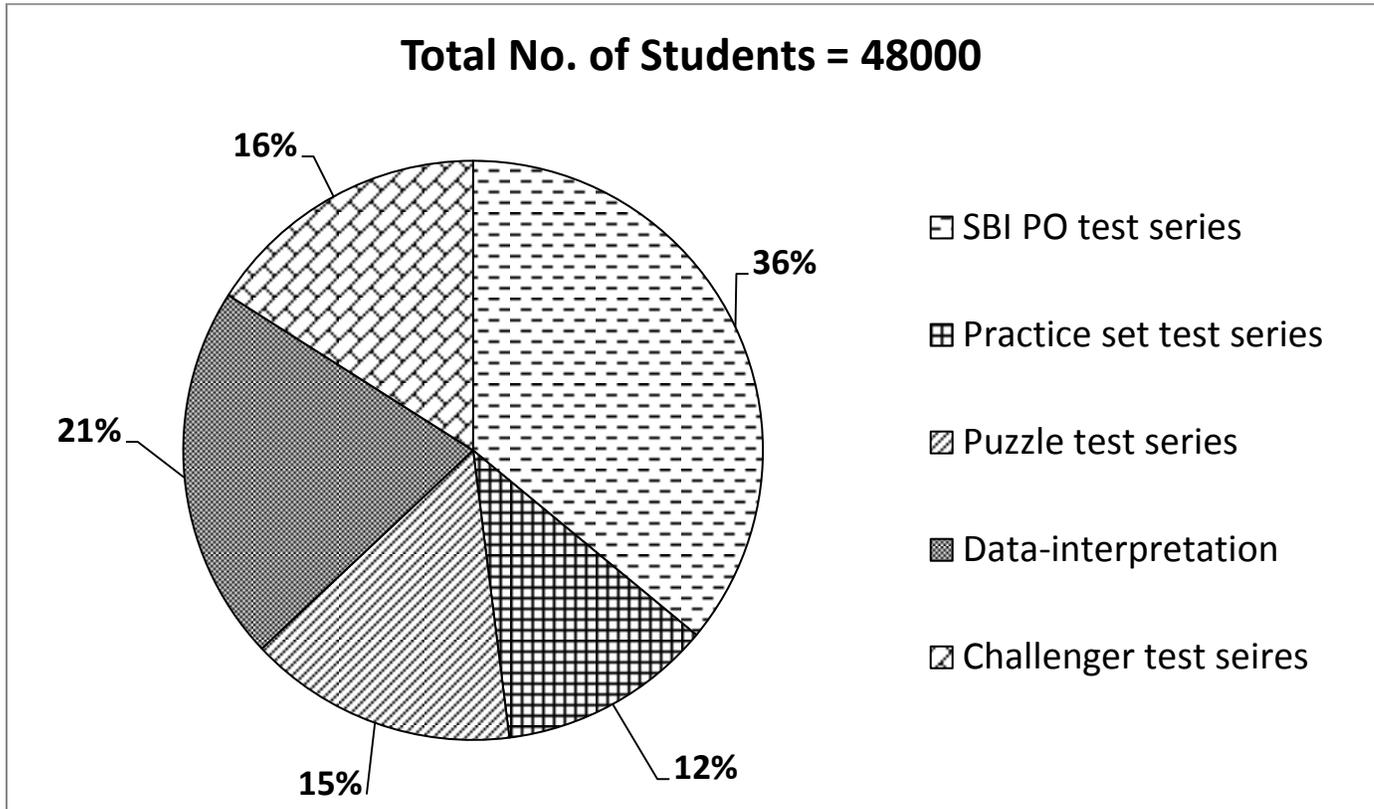
Q36. If the number of female who opted puzzle test series are 70% of the number of students who opted data-interpretation test series then the number of females who opted puzzle test series is approximately what percent of the number of students who opted Sbi-Po test series from Adda-247 ?
(a) 72%
(b) 41%
(c) 51%
(d) 62%
(e) 30%

Q37. If the ratio of number of male to number of female who opted SBI PO test series is 2 : 3 and the ratio of no. of male to no. of female who opted challenger series is 3 : 2 then the ratio of males who opted SBI PO test series and number of female who opted challenger test series together to the number of female who opted SBI PO test series and number of male who opted number of female who opted challenger test series is?

(a) 3:2

(b) 2:3

(c) 2:5

(d) 5:2

(e) none of these

Q38. Average number of students who opted SBI-PO test series, puzzle test series and practice set test series together is what % more than the average number of students who opted Data Interpretation test series and challenger test series together ? (Rounded off to two decimal points)

(a) 14.34%

(b) 14.51%

(c) 13.51%

(d) 13.21%

(e) none of these

Q39. If cost of one SBI PO test series is 500 rs. and the price of a data Interpretation test series is $79\frac{4}{5}\%$ of the price of a SBI PO test series than find the total amount generated through Data interpretation test series?

(a) 3992210 Rs

(b) 4092910 Rs

(c) 4020219 Rs

(d) 4021920 Rs

(e) None of these

Q40. There is a channel of Adda-247 on youtube.com which provides free study class-room and 3.5 lakh students follow this channel. If out of these 25% students opted challengers test series and 15% students opted Puzzle test series then find the difference between the number of students who opted both of the test series through this channel

(a) 0.25 lakh

(b) 1.30 lakhs

(c) 1.35 lakhs

(d) 0.34 lakh

(e) Can not be determined

Q41. A is an alloy of tin and copper and B is an alloy of copper and zinc. A has 30% copper while B has 50% copper. x gms of A is mixed with 30 gms of B to form another alloy which has 45% copper. What is the value of x?

(a) 5

(b) 10

(c) 15

(d) 20

(e) none of these

Q42. There is a vessel holding 40 litres of milk. 4 litres of milk initially is taken out from the vessel and 5 litres of water is poured in. After this, 6 litres of mixture from this vessel is replaced with 7 litres of water. And finally 8 litres of mixture from this vessel is replaced with 9 litres of water. How much of the milk (in litres) is there in the vessel now?

(a) 22.82

(b) 20.92
(c) 26.78
(d) 24.87
(e) none of these

Q43. The ratio of the age of Sita and her mother is 2 : 3. N years from now, ratio of their ages will become 3 : 5. What is the value of N?

(a) Infinite
(b) 1
(c) More than 1 but finite
(d) Not possible
(e) none of these

Q44. A, B and C are assigned a piece of job which they can complete by working together in 15 days. Their efficiencies (measured in terms of rate of doing job) are in the ratio of 1 : 2 : 3. After $1/3^{rd}$ of the job is completed, one of them has to be withdrawn due to budget constraint. Their wages per day are in the ratio of 3 : 5 : 6. The number of days in which the remaining two persons can finish the job (at optimal cost) is

(a) 9
(b) 12
(c) 15
(d) 18
(e) none of these

Q45. Two cyclists start from the same place to ride in the same direction. Aflatoon starts at noon with a speed of 8 km/h and Bablajoon starts at 2 pm with a speed of 10 km/h. At what times Aflatoon and Bablajoon will be 5 km apart?

(a) 7 : 30 pm same day and 1 : 30 am on the next day
(b) 7 : 30 pm same day and 12 : 30 am on the next day
(c) 8 : 30 pm same day and 1 : 30 am on the next day
(d) 8 : 30 pm same day and 12 : 30 am on he next day
(e) none of these

Direction (46-50): Given below is the percentage share of votes of 5 different political parties from five different states.

	Percentage shared by BJP	Percentage shared by Congress	Percentage shared by BSP	Percentage shared by SP	Percentage shared by AAP
UP	28	19	24	26	—
Goa	32	22	10	—	15
Uttarakhand	22	28	—	31	—
Manipur	—	31	22	15	18
Panjab	—	21	—	18	35

Note: some values are missing. You have to calculate these values as per data given in following questions:

Q46. If the votes secured by BJP and SP together from UP is equal to votes secured by Congress and SP together from Uttarakhand and the total number of voters in UP is 16 crore then find the number of votes share by congress in Uttarakhand ?

(a) 4.2 crore

(b) 4.1 crore

(c) 4 crore

(d) 3.9 crore

(e) None of these

Q47. If the total number of voters in Punjab are 2.1 crore and the ratio of number of votes secured by BJP in Punjab to that of BSP is 3 : 2 then find the ratio of the number of votes secured by BSP to that of AAP in the same state ?

(a) 3:5

(b)175:52

(c) 52:175

(d)5:3

(e) None of these

Q48. If the total number of voters from UP are 14.05 crore and the number of votes secured by AAP in this state is all equal to number of votes secured by Congress and BSP together in Manipur then find the average number of voters from Manipur state ?

(a) 10.5 lakhs

(b)9.15 lakhs

(c) 16 lakhs

(d) 15.9 lakhs

(e) None of these

Q49. If the difference between the average number of votes secured by Congress and BSP together from Goa and the average number of votes secured by BJP and Congress together from Uttarakhand is 18 lakh and total number of voters from Uttarakhand are 150% more the number of voters from Goa then find the total number of votes secured by SP in Goa?

(a)15.4 lakhs

(b)17.6 lakhs

(c)18.9 lakhs

(d)19.4 lakhs

(e) None of these

Q50. Total number of votes secured by BSP and Congress together from UP is what percent more than the number of votes secured by AAP from the same state?

(a) $133\frac{1}{3}$ %

(b) $133\frac{2}{3}$ %

(c) $1333\frac{2}{3}$ %

(d) $1333\frac{1}{3}$ %

(e) None of these

Q51. Thor and Tony Stark entered into partnership with Rs. 7000 and Rs. 9000 respectively. After 30 months, Thor withdrew two-sevenths of his stock but after 6 months, he puts back three-fifths of what he had withdrawn. The profit at the end of the four year is Rs. 7007.

Quantity I – Profit earned by Thor.

Quantity II – Profit earned by Tony Stark.

(a) Quantity I > Quantity II

(b) Quantity I < Quantity II

(c) Quantity I ≥ Quantity II

(d) Quantity I ≤ Quantity II

(e) Quantity I = Quantity II or No relation

Q52. Speed of current is $83\frac{1}{3}\%$ less than the speed of a boat in still water. The difference between distance covered by boat in 2 hour upstream and $1\frac{1}{2}$ hour downstream is 16 km.

Quantity I – Upstream speed

Quantity II – Original speed of the car which when travels a distance of 110 km develops a problem in the engine and proceeds at $\frac{3}{4}$ th of its original speed and arrives at the distortion 60 minutes late. Had the problem developed 30 km further on, the car would have arrived 12 minutes sooner.

(a) Quantity I > Quantity II

(b) Quantity I < Quantity II

(c) Quantity I ≥ Quantity II

(d) Quantity I ≤ Quantity II

(e) Quantity I = Quantity II or No relation

Directions (53-54): In each of these questions, two equations (I) and (II) are given. You have to solve both the equations and give answer-

(a) if x > y

(b) if x ≥ y

(c) if x < y

(d) if x ≤ y

(e) if x = y or the relationship between x and y cannot be established.

Q53. **I.** $(289)^{\frac{1}{2}}x - \sqrt{324} = 203$ **II.** $(484)^{\frac{1}{2}}y + \sqrt{225} = 183$

Q54. **I.** $679x^2 - 168x^2 = 3066$ **II.** $\sqrt{144}y^3 - 9y^3 = 1536$

Q55. Quantity I $= \frac{242\, x^6 y^9}{42\, x^4 y^{23}}$, if x > 0 & y < 0

Quantity II $= \frac{2626 x^{11} y^9}{6.5\, x^{24} y^{13}}$, if x < 0 & y > 0

(a) Quantity I > Quantity II

(b) Quantity I < Quantity II

(c) Quantity I ≥ Quantity II

(d) Quantity I ≤ Quantity II

(e) Quantity I = Quantity II or No relation

Directions (56-60): What should come in place of the question mark (?) in the following number series?

Q56. 418, 208, 102, 48, ?, 5

(a) 22

(b) 24

(c) 20

(d) 18
(e) 30

Q57. 180, 191, 193, 203, 206, ?
   (a) 215
   (b) 225
   (c) 205
   (d) 315
   (e) 305

Q58. 3, 4, 9, 28, ?, 566
   (a) 111
   (b) 112
   (c) 113
   (d) 114
   (e) 115

Q59. 153, 155, 160, 170, 187, ?
   (a) 211
   (b) 212
   (c) 213
   (d) 214
   (e) 215

Q60. 3, 1.5, 1.5, 3, 12, 96, ?
   (a) 1530
   (b) 1430
   (c) 1636
   (d) 1436
   (e) 1536
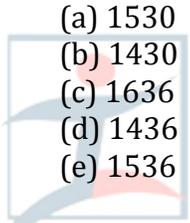
Q61. There is a solid cube with side 10m. If the largest possible cone is carved out of it, then what is the surface area of the remaining part of the cube?
   (a) $600 + 25\sqrt{5}\pi$
   (b) $500 + 25\sqrt{5}\pi$
   (c) $600 - 25(\sqrt{5} + 1)\pi$
   (d) $600 + 25(\sqrt{5} - 1)\pi$
   (e) none of these

Q62. Three different numbers are selected at random from the set A = {1, 2, 3, …. 10}. The probability that the product of two of the numbers is equal to the third is
   (a) $\frac{3}{4}$
   (b) $\frac{1}{40}$
   (c) $\frac{1}{8}$
   (d) $\frac{1}{20}$
   (e) none of these

Q63. The height of a cone is 30 cm. A small cone is cut off at the top by a plane parallel to the base. The volume of this smaller cone is 1/27 of the given cone. What is the height of the smaller cone?

(a) 13.5 cm
(b) 11 cm
(c) 10 cm
(d) 12 cm
(e) none of these

Q64. A moneylender takes advantage of difficult situation of poor people and charges 50% interest. However he never gets caught because he gives 20% of his total capital (initial capital + profit) as bribe. If in the beginning of 4ᵗʰ year, he has a capital of Rs 25,000 to invest, how much bribe did he give at the end of 2ⁿᵈ year(approx.)?
(a) Rs 4,900
(b) Rs 5,200
(c) Rs 5,000
(d) Rs 6,000
(e) none of these

Q65. Traders A and B buy two goods for Rs. 1000 and Rs. 2000 respectively. Trader A marks his goods up by x% and sell at this mark price, while trader B marks his goods up by 2x% and offers a discount of x%. If both make the same non-zero profit, find x.
(a) 25%
(b) 12.5%
(c) 37.5%
(d) 40%
(e) none of these

Directions (66-70): What approximate value should come in place of the question mark (?) in the following questions?

Q66. $\{(4444 + 333 + 22 + 1) - (2 \times 3 \times 4 \times 5)\} \times 2.532 = ?$
(a) 11850
(b) 11950
(c) 11749
(d) 11860
(e) 11532

Q67. $\dfrac{(1.23)^2 + (2.34)^2}{2.34 - 1.23} \times 10 = ?$
(a) 61
(b) 63
(c) 65
(d) 67
(e) 69

Q68. 17% of $760 + 57\%$ of $78.99 + 77.77 = ?$
(a) 238
(b) 242
(c) 248
(d) 252
(e) 256

Q69. $35.99\sqrt{?} + 32.0032\sqrt{?} = \frac{68}{10.998} \times (?)$

    (a) 81

    (b) 72

    (c) 169

    (d) 121

    (e) 144

Q70. $(3.2)^2 + (9.8)^2 + (8.13)^2 + (4.24)^2 = ?$

    (a) 190

    (b) 194

    (c) 188

    (d) 198

    (e) 170

Solutions

S36. Ans.(b)

Sol.

No. of females who opted puzzle test series $= \frac{70}{100} \times \frac{21}{100} \times 48000$

$= \frac{70}{100} \times 10080$

$= 7056$

Required % $= \frac{7056}{17280} \times 100$

$= 40.83\%$

$\approx 41\%$

S37. Ans.(b)

Sol.

	Male	Female
SBI PO test series	6912	10368
Challenger test series	4608	3072

Required Ratio = 9984 : 14976

                = 2 : 3

S38. Ans.(c)

    Sol.

Average number of students who opted SBI-PO test series, puzzle test series and practice set test series

$= \frac{36+15+12}{3} = 21$

Average number of students who opted Data Interpretation test series and challenger test series

$= \frac{21+16}{2} = 18.5$

Required % $= \frac{21-18.5}{18.5} \times 100 = 13.51$

S39. Ans.(d)
Sol. Required amount generated = 399 × 10080
$$= 10080 (400 - 1)$$
$$= 403200 - 10080$$
$$= 4021920 \text{ Rs.}$$

S40. Ans.(e)
Sol. Cannot be determined

S41. Ans.(b)
Sol. $\frac{30}{100} \times x + \frac{50}{100} \times 30 = \frac{45}{100} \times (x + 30)$
⇒ 15x = 1500 – 1350 = 150
⇒ x = 10 gms.

S42. Ans.(d)
Sol. Amount of milk remained = $40 \times \left(\frac{40-4}{40}\right) \times \left(\frac{41-6}{41}\right) \times \left(\frac{42-8}{42}\right)$
$= 40 \times \frac{36}{40} \times \frac{35}{41} \times \frac{364}{42}$
= 24.87 lit.

S43. Ans.(d)
Sol. Let their present ages be 2x and 3x.
$\frac{2x+N}{3x+N} = \frac{3}{5}$
⇒ 10x + 5N = 9x + 3N
⇒ x = – 2N
This can't be possible for any values of x and N.

S44. Ans.(b)
Sol. Let A, B and C do 1, 2 and 3 units of work per day respectively.
And their wages per day be Rs. 3, Rs. 5 and Rs. 6 respectively.
Total work = 15 × (1 + 2 + 3) = 90 units
30 units have been completed.
Case 1: If A and B complete remaining work
Cost incurred = $\frac{60}{(1+2)} \times (3 + 5) = 20 \times 8 = 160$
Case 2: If B and C complete remaining work
Cost incurred = $\frac{60}{(2+3)} \times (5 + 6) = 12 \times 11 = 132$
Case 3: If A and C complete remaining work.
Cost incurred = $\frac{60}{(1+3)} \times (3 + 6) = 15 \times 9 = 135$
So, minimum no. of days to finish the remaining job at optimal cost is 12.

S45. Ans.(b)
Sol. Distance covered by Aflatoon till 2pm. = 8 × 2 = 16 km.
Relative sped = 10 – 8 = 2 km/hr.
11 kms will be covered by in $\frac{11}{2}$ = 5.5 hrs.

Hence, they will be 5 km apart at 7 : 30 pm.

To be 5 km apart again, Bablagoon have to be 5 kms ahead of Aflatoon.

Time taken = $\frac{10}{2} = 5 hrs$.

Hence, they will be 5 km apart again at 7:30 + 5 = 12:30 A.M.

S46. Ans.(b)

Sol. Let total number of voters from UP = x

Let total number of voters from Uttarakhand = y

54% of x = 59% of y

$\frac{x}{y} = \frac{59}{54}$

Given

$59 \rightarrow 16$

$54 \rightarrow \frac{16}{59} \times 54$

Required no. of voters = $\frac{28}{100} \times \frac{16}{59} \times 54$ crore

≈ 4.1 crore

S47. Ans.(c)

Sol. Given number of voters in Punjab = 2.1 crore

Number of votes secured by BJP from Punjab = $\frac{3}{5} \times 0.546$

$= 0.364$ crore

No. of votes secured by BSP from Punjab = $\frac{2}{5} \times 0.546$

$= 0.2184$ crore

Number of votes secured by AAP from Punjab = $\frac{35}{100} \times 2.1 = 0.735$ crore

∴ Required ratio = 2184 : 7350

$= \frac{52}{175}$

S48. Ans.(d)

Sol. Number of votes secured by AAP from UP = $\frac{3}{100} \times 14.04$

$= 0.4212$ crore

Required average $= \frac{0.4212}{53} \times 100 \times \frac{1}{5}$

$= \frac{20}{53} \times 0.4212$

$= 15.9$ lakh

S49. Ans.(b)

Sol. Let total no. of voters from Goa = 100

∴ total no. of voters from Uttarakhand = 150

Average no. of votes secured by Congress and BSP together from Goa = $\frac{1}{2}\frac{(32)}{100} \times 100 = 16$

Average no. of votes secured by BJP and Congress from Uttarakhand = $\frac{1}{2}\frac{(50)}{100} \times 150$

= 37.5

Difference = 37.5 – 16 = 21.5

∴ 21.5 → 18

$1 \rightarrow \frac{18}{21.5}$

Total no. of voters from Goa = $= \frac{18}{21.5} \times 100$

Required votes = $\frac{21}{100} \times \frac{18}{21.5} \times 100$

$= \frac{21 \times 18}{21.5}$

≈ 17.6 lakhs

S50. Ans.(d)

Sol. Required % = $\frac{43-3}{3} \times 100$

$= \frac{40}{3} \times 100$

$= \frac{4000}{3}$

$= 1333\frac{1}{3}\%$

S51. Ans.(b)

Sol. Thor's investment

$= (7000 \times 30) + (5000 \times 6) + (6200 \times 12)$ = 314400

Tony Stark's investment = 9000 × 48 = 432000

∴ Ratio of their profit = 131 : 180

∴ Tony stark will have higher profit than Thor

Quantity I < Quantity II

S52. Ans.(a)

Sol. Let speed of boat in still water = 6x

∴ Speed of current = x

∴ $1\frac{1}{2} \times 7x - 2 \times 5x = 16$

10.5x – 10x = 16

x = 32

∴ Quantity I → upstream speed

= 5x = 160 km/hr

And, Let original speed of car = 4a

Let total distance = x

∴ $\frac{110}{4a} + \frac{x-110}{3a} = \frac{x}{4a} + 1$ _____(1)

Now, $\frac{140}{4a} + \frac{x-140}{3a} = \frac{x}{4a} + \frac{48}{60}$ _____(2)

From (1) and (2)

a = 12.5 km/hr

∴ Original speed of car = 4 × 12.5
= 50 km/hr
∴ Quantity II → 50 km/hr
Quantity I > Quantity II

S53. Ans.(a)
Sol. $x = 13$
   $y = 7.18$
   ∴ $x > y$

S54. Ans.(c)
Sol. $x = \pm\sqrt{6}$, y=8
   ∴ $x < y$

S55. Ans.(a)
Sol. Quantity I → numerator = –Ve
                denominator = – Ve
∴ $\frac{242\ x^6\ y^9}{42\ x^4 y^{23}} = +ve$

$\frac{2626 x^{11} y^9}{6.5\ x^{24}\ y^{13}}$, = -ve

Quantity I > Quantity II

S56. Ans.(c)
Sol.
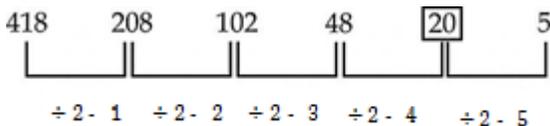
S57. Ans.(a)
Sol.
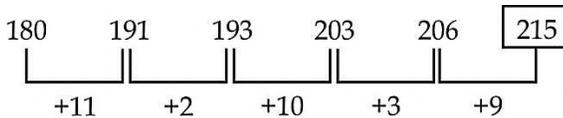
S58. Ans.(c)
Sol.
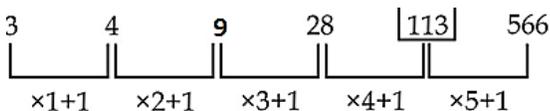
S59. Ans.(c)
Sol.
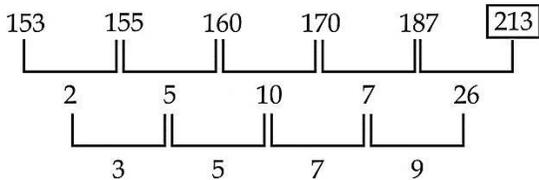
S60. Ans.(e)
Sol.
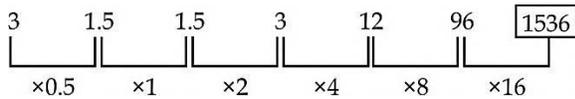
S61. Ans.(d)
Sol. The cone is shown below with its face as a circle inscribed in one of the surfaces of the cube and its vertex on the opposite side.
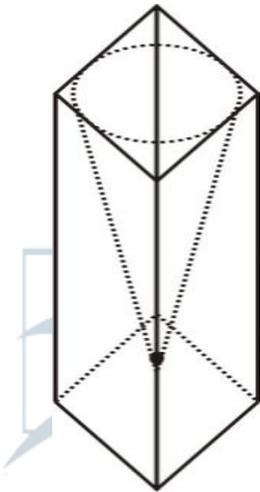
Area of the cube
= 6 × 100 = 600 cm^2.
The base of the cone = $25\pi\ cm^2$
Lateral surface of cone
= $\pi \times 5\sqrt{100 + 25} = 25\sqrt{5}\ \pi\ cm^2$
∴ New surface area
= Area of cube – area of base of cone + lateral surface
Area of cone = 600 + 25 $\left(\sqrt{5} - 1\right)\pi$

S62. Ans.(b)
Sol. Possible favourable triplets are (2, 3, 6), (2, 4, 8), (2, 5, 10)
Total ways of selecting 3 different numbers = $10_{c_3} = \frac{10\times9\times8}{3\times2}$
= 120
Probability = $\frac{3}{120} = \frac{1}{40}$

S63. Ans.(c)
Sol. Let, height of smaller cone be 'h' cm and radius be 'r' and radius of bigger cone be 'R'.
$\frac{1}{27} \times \frac{1}{3}\pi R^2 H = \frac{1}{3}\pi r^2 h$
$\Rightarrow R^2 H = 27r^2h$ ____ (1)

Also, $\frac{r}{R} = \frac{h}{30}$

$\Rightarrow R = \frac{30r}{h}$

Putting 'R' in eq. (1)

$\frac{30 \times 30 \times r^2 \times 30}{h^2} = 27r^2h$

$\Rightarrow h^3 = \frac{(30)^3}{(3)^3}$

$\Rightarrow h = \frac{30}{3} = 10 \ cm$

S64. Ans.(b)

Sol. Let the moneylender has Rs 100 initially. 1st year ---> 100 + 50 (interest) ---> 150 – 20% bribe ---> 120

2nd year → 120 + 60 (interest) →180 – 20% bribe → 144

3rd year → 144 + 72 (interest) → 216 – 20% bribe → 172.8 (This is the capital he will have at the beginning of 4th year)

So, if 172.8 → 25,000

=) 36 (bribe given in 2nd year) = (25000/172.8)*36= 25000/4.8=5208.33≈ 5200

S65. Ans.(a)

Sol. SP of trader A = 1000 (1 + x).

Profit of trader A = 1000 (1 + x) – 1000.

MP of trader B = 2000 (1 + 2x).

SP of trader B = 2000 (1 + 2x) (1 – x).

Profit of trader B = 2000(1 + 2x) (1 – x) – 2000.

Both make the same profit ⇒ 1000(1 + x) – 1000 = 2000(1 + 2x) (1 – x) – 2000

1000x = 2000 – 4000x² + 4000x – 2000x – 2000

4000x² -1000x = 0

1000x (4x – 1) = 0

⇒ x = 25%.

S66. Ans.(a)

Sol. $[4800 - (120)] \times 2.532$

= 11850

S67. Ans.(b)

Sol. $\frac{1.51 + 5.47}{1.11} \times 10 = 62.88 \approx 63$

S68. Ans.(d)

Sol. $(129.2 + 45.03 + 77.77) \approx 252$

S69. Ans.(d)

Sol. $36\sqrt{x} + 32\sqrt{x} = \frac{68}{11} \times x$

$68\sqrt{x} = \frac{68}{11} \times x$

$\sqrt{x} = 11$

$x = 121$

S70. Ans.(a)
Sol. $10.24 + 96.04 + 66.09 + 17.96 \approx 190$