

EXPLANATORY ANSWERS

SECTION - I PS

- Let $S = 1 + 2 + \dots + 40$.
 i.e., $1 + 2 + a + b + \dots + 40 = S$
 After step I:
 $1 + 2 + \dots + (a + b - 1) + \dots + 40 = S - 1$
 Hence, after each step the total reduces by 1. Continuing this way after 39 steps we will be left with the number $S - 39 = \frac{40 \times 41}{2} - 39 = 781$
 Hence, [3].
- $7^{2008} = (7^4)^{502} = (2401)^{502}$
 $(2401)^{502} = (2400 + 1)^{502}$
 $= (2400)^{502} + {}^{502}C_1 \times 2400 + \dots + {}^{502}C_{501} \times 2400 + 1^{502}$
 Every term in the above expansion except, 1^{502} is divisible by 100.
 $\therefore 7^{2008} = k \times 100 + 1$
 Thus, 7^{2008} ends with 01. Hence, [3].
- Let the consecutive roots be $(n - 1)$, n and $n + 1$
 Now, $b = n(n - 1) + n(n + 1) + (n - 1)(n + 1)$
 $= 3n^2 - 1$
 Since, $3n^2 \geq 0$ minimum value of $b = 3 \times 0^2 - 1 = -1$
 Hence, [2].
- From the data, we get a table

Quantity of Rice in the shop	Quantity of Rice bought	Quantity Left
x	$\left(\frac{x}{2} + \frac{1}{2}\right)$	$\frac{x}{2} - \frac{1}{2}$
$\frac{x}{2} - \frac{1}{2}$	$\left(\frac{x}{4} - \frac{1}{4}\right) + \frac{1}{2}$	$\frac{x}{4} - \frac{3}{4}$
$\frac{x}{4} - \frac{3}{4}$	$\left(\frac{x}{8} - \frac{3}{8}\right) + \frac{1}{2}$	$\frac{x}{8} - \frac{7}{8}$

$$\frac{x}{8} - \frac{7}{8} = 0 \Rightarrow x = 7$$

Now, $5 \leq 7 \leq 8$

Hence, [2].

5. Given $f(x) = ax^2 + bx + c$ ($a \neq 0$).

3 is a root of $f(x)$

$$\therefore 9a + 3b + c = 0 \quad \text{--- (i)}$$

Also, $f(5) = -3f(2)$.

$$\begin{aligned} \therefore 25a + 5b + c &= -3(4a + 2b + c) \\ &= -12a - 6b - 3c \end{aligned}$$

$$\therefore 37a + 11b + 4c = 0 \quad \text{--- (ii)}$$

From (i) and (ii), $a - b = 0 \therefore a = b$

Thus we get $f(x) = ax^2 + ax + c$

Dividing $f(x)$ by $x - 3$, we get $c = -12a$

$$\therefore f(x) = ax^2 + ax - 12a$$

$f(x) = 0 \Rightarrow -4$ is second root. Hence, [2].

6. $a + b + c = a + a - 12a = -10a$

Since a is not explicitly given, we cannot get the value of $a + b + c$. Hence, [5].

7. Let $S_1 = 17, 21, 25, \dots, 417$

and $S_2 = 16, 21, 26, \dots, 466$

So, terms of S_1 are in the form $4n + 1$ ($4 \leq n \leq 104$)

and terms of S_2 are in the form $5m + 1$ ($3 \leq m \leq 93$)

In order to have same terms, we should get $4n = 5m$.

This happens only 20 times.

Thus, we get 21, 41, 61, 401 i.e., 20 common terms. Hence, [3].

8. For numbers other than 4000:

1st digit = 3 possibilities

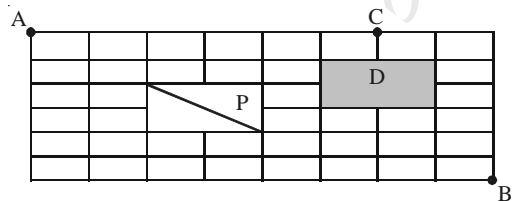
2nd digit = 5 possibilities

So, total possible numbers = $15k + 1$

The only option satisfying this is 376

Hence, [4].

Answer for questions: 9 and 10:



9. Neelam has to take path XY

A to X = ${}^4C_2 = 6$ possibilities

Y to B = ${}^6C_2 = 15$ possibilities

In all $6 \times 15 = 90$ possibilities

Hence, [4].

10. From A to B = 90 paths
 From B to C via N = 6 (and not via M)
 From B to C via M = 7 paths
 In all $90 \times (6 + 7) = 1170$ paths
 Hence, [1].

11. We have $f(x)f(y) = f(xy)$
 $\therefore f(1)f(1) = f(1 \times 1) = f(1)$
 $\Rightarrow f(1)^2 = f(1)$
 $\Rightarrow f(1) = 0$ or $f(1) = 1$
 If $f(1) = 0$ then $f(x) = 0$ for any $x \because x = x \times 1$
 $\Rightarrow f(1) = 1$
 Now, $f(2) = 4$

$$\text{So, } 1 = f(1) = f\left(\frac{1}{2} \times 2\right) = f\left(\frac{1}{2}\right)f(2) = f\left(\frac{1}{2}\right) \times 4$$

$$\Rightarrow f\left(\frac{1}{2}\right) = \frac{1}{4}$$

Hence, [2].

12. From the definition of 'Seed', it is clear that we have to count number of integers between 1 and 500, which are divisible by 9.
 The smallest is 9 and the largest is 495.
 $9 \times 1 = 9$ and $9 \times 55 = 495$.
 Hence there are 55 such numbers.
 Hence, [5].

13. Let $a = AB$, $b = AC$, $c = BC$

$$A(\Delta ABC) = \frac{abc}{4R}$$

$$\text{Also, } A(\Delta ABC) = \frac{1}{2} \times c \times 3$$

$$\therefore \frac{abc}{4R} = \frac{1}{2} \times c \times 3$$

$$R = \frac{a \times b}{2 \times 3}$$

$$= \frac{17.5 \times 9}{2 \times 3} = 26.25 \text{ cm}^2$$

Hence, [5].

14. Let the three sides be $a = 8$, $b = 15$ and $c = x$

Case I:

c is the longest side.

we know that $15 < c < 23$. ($\because 8 + 15 = 23$) also for $c = 17$ we get a right angled triangle. Hence c should be > 17 for an obtuse angle.

Therefore c is 18, 19, 20, 21 or 22.

Case II:

b is the longest side. In this case $7 < c < 15$

($\because 15 - 8 = 7$) also for a right angled triangle

$$c < \sqrt{15^2 - 8^2}$$

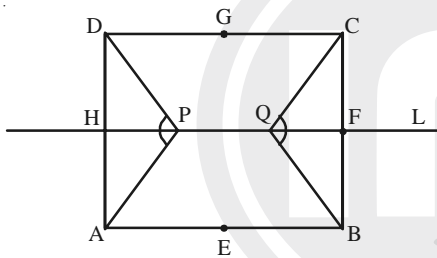
$$\therefore c < \sqrt{161} \cong 12.7$$

$\therefore c$ can be 8, 9, 10, 11 or 12.

Hence in total there are 10 possible cases.

Hence, [3].

15. Consider the figure



$$m\angle APD = m\angle BQC = 120^\circ$$

Hence $m\angle HAP = 30^\circ$ & $m\angle HPA = 60^\circ$

$$\text{Let } AH = x. \therefore HP = \frac{x}{\sqrt{3}}$$

$$A(\triangle PHA) = \frac{1}{2} \times x \times \frac{x}{\sqrt{3}} = \frac{x^2}{2\sqrt{3}} = A(\triangle PHD)$$

$$= A(\triangle QFB) = A(\triangle QFC)$$

$$\therefore A(\triangle APD) + A(\triangle BQC) = 4 \times \frac{x^2}{2\sqrt{3}} = \frac{2x^2}{\sqrt{3}}$$

$$A(\square ABCD) = 4x^2$$

$$\text{Area of } ABQCDP = 4x^2 - \frac{2x^2}{\sqrt{3}} = \frac{(4\sqrt{3} - 2)x^2}{\sqrt{3}}$$

$$\text{Required Ratio} = \frac{(4\sqrt{3}-2)x^2}{\frac{\sqrt{3}}{2x^2}} = 2\sqrt{3} - 1.$$

Hence, [5].

16. $(a + b + c)^{20}$ has each term of the form $a^x b^y c^z$ where $x + y + z = 20$. This has ${}^{20+2}C_2 = 231$ solutions.

Hence, [1].

17. There are 3 possibilities

Horse	Rank		
	Case 1	Case 2	Case 3
Red	4/5	4/5	3
White	2	3	4/5
Black	5/4	1	2
Grey	1/3	2/4/5	1/4/5
Spotted	3/1	2/4/5	1/4/5

From the above table, we get

$$17-[4] \quad 18-[3]$$

19. From statement A alone, if there are 83 players, the number of players in each subsequent round will be as follows:

Round	Players
1	83
2	42
3	21
4	11
5	6
6	3
7	2 → Final

∴ The champion plays in the final and so can play either 6 or 7 matches (depending on whether he gets a bye or not.) Hence no unique answer.

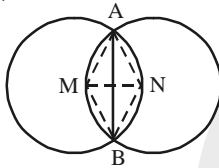
From statement B alone, we can draw no conclusion without knowing the number of rounds. With both the statements together, we can say that the champion plays 6 matches. Hence, [4].

20. From statement A alone we get various possible cases. We can see that 7 rounds have to be played. The bye could have occurred in any of the first 6. Accordingly the totals could be:

Round	Bye in					
	Round 1	Round 2	Round 3	Round 4	Round 5	Round 6
1	127	126	124	120	112	96
2	64	63	62	60	56	48
3	32	32	31	30	28	24
4	16	16	16	15	14	12
5	8	8	8	8	7	6
6	4	4	4	4	4	3
7	2	2	2	2	2	2

From Statement B alone, we cannot say anything as other players too might have received byes. From both together we can say that the number of players is 124. Hence, [4].

- 21.



Area required region

$$= 2 \times [(\text{Area of sector } N - AMB) - A(\Delta ANB)]$$

$$= 2 \times \frac{120^\circ}{360^\circ} \times \pi r^2 - 2 \times A(\Delta ANB)$$

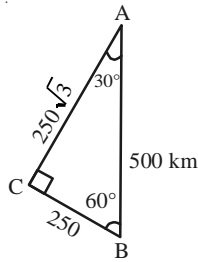
$$= \frac{2}{3}\pi \times 1^2 - 2 \times A(\Delta AMN)$$

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

$$= \frac{2}{3}\pi - \frac{\sqrt{3}}{2} \text{ sq.cm.}$$

Hence, [5].

22.



$$\text{Time required to travel from A to C} = \frac{250\sqrt{3}}{70}$$

$$\approx 6.1 \text{ hrs}$$

$$\approx 6 \text{ hrs } 11 \text{ mins}$$

$$\text{Time required to travel from B to C} = \frac{250}{50} = 5 \text{ hrs.}$$

∴ Rahim should reach at C before (8:00 + 5 hrs – 15 minutes) i.e., 12:45 p.m.

∴ Rahim should leave place A before (12:45 – 6 hrs 11 mins) i.e., 6:34 a.m.

Hence, [2].

23. $3 + 4^2 + 5^3 = 144$

$$\sqrt{144} = 3 + 4 + 5$$

So, the numbers are 3, 4 and 5.

Hence, [1].

24. In the given sum,

$$\sqrt{1 + \frac{1}{1^2} + \frac{1}{2^2}} = \sqrt{\frac{9}{4}} = \frac{3}{2} = 2 - \frac{1}{2}$$

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

$$= \frac{3}{2} + \frac{7}{6} = \frac{8}{3} = 3 - \frac{1}{3}$$

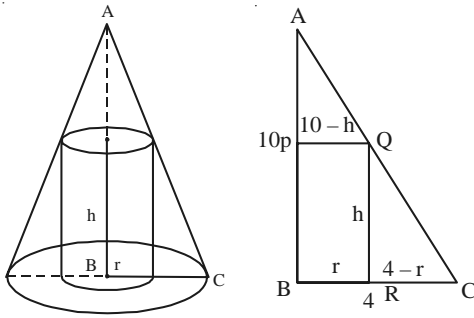
Similarly,

$$\sqrt{1 + \frac{1}{2^2} + \frac{1}{2^2}} + \dots + \sqrt{1 + \frac{1}{2007^2} + \frac{1}{2008^2}}$$

$$= 2008 - \frac{1}{2008}$$

Hence, [1].

25.



$$\frac{AP}{PB} = \frac{AQ}{QC} = \frac{10-h}{h}$$

$$\frac{BR}{RC} = \frac{AQ}{QC} = \frac{r}{4-r}$$

$$\therefore \frac{10-h}{h} = \frac{r}{4-r} \Rightarrow 4h = 40 - 10r$$

$$\Rightarrow 2h = 20 - 5r$$

Surface area of cylinder

$$= 2\pi r^2 + 2\pi rh$$

$$= 2\pi r^2 + \pi r (20 - 5r)$$

$$= 20\pi r - 2\pi r^2$$

So, we have to maximize $f(r) = 20r - 3r^2$

(π is constant)

Differentiating, we get, $f'(r) = 20 - 6r$

$$\therefore f'(r) = 0 \Rightarrow r = \frac{10}{3}$$

$$\text{and } f''(r) = -6 < 0$$

So, $f(r)$ has a maxima at $r = \frac{10}{3}$

$$f\left(\frac{10}{3}\right) = \frac{100\pi}{3}$$

Hence, [1].

SECTION - II DI

Answers to questions 26 to 28:

From statements (vii), (viii) and (ix), we get,

P	U	S
	Orange	
R	Q	
Yellow	Green	

Then, T is opposite S and the colour of S is red.

From (x), the colour of house P is white, hence the colour of house T is blue.

P	U	S
White	Orange	Red
R	Q	T
Yellow	Green	Blue

Now, from (v) and (x), we get

$$T > S, Q > P > R$$

From (vi), U is the shortest.

i.e., the order of houses in the descending order of their heights is T, S/Q, Q/S, P, R, U.

- 26. R is yellow coloured house and the house diagonally opposite R is S. And the colour of house S is Red. Hence, [4].
- 27. The second tallest house is either S or Q. Hence, [5].
- 28. The tallest house is T and its colour is blue. Hence, [2].
- 29. Let the volume of data transfer in India and Singapore be y, each, then

For India : $\frac{y}{\text{Total revenue}} \times 100 = 9 \Rightarrow \text{Total revenue} = \frac{100y}{9} \approx 11.11y$

For Singapore : $\frac{9y}{\text{Total revenue}} \times 100 = 21 \Rightarrow \text{Total revenue} = \frac{900y}{21} \approx 42.85y$

Hence, [5].

30. Revenue from data transfer as a percentage of total revenue in 2010:

For India = $3 \times 9\% = 27\%$

For Sweden = $2 \times 18\% = 36\%$

Total revenue in 2010:

In India = $2 \times$ In Sweden (say x)

In 2010, the volume of the data transfer in each country be y .

ARDT in Sweden in 2010 = \$6 (same as in graph)

$$\therefore \frac{6y}{x} \times 100 = 36 \Rightarrow y = \frac{6x}{100}$$

Let ARDT in India in 2010 be z , then

$$\frac{zy}{2x} \times 100 = 27 \Rightarrow \frac{z \times \frac{6x}{100}}{2x} \times 100 = 27$$

$$\Rightarrow z = \$9$$

\therefore The required percentage increase

$$= \frac{9 - 1}{1} \times 100 = 800\%.$$

Hence, [3].

31. We know that $\frac{\text{ARDT} \times \text{volume}}{\text{Total revenue}} = \%$ of total revenue

i.e., we want a pair for whom the ratio

$\frac{\% \text{ of total revenue}}{\text{ARDT}}$ is approximately same for both.

Option [1]: Philipines = $\frac{54}{3}$; Austria = $\frac{19}{8}$, not same

Option [2]: Canada = $\frac{13}{8}$; Poland = $\frac{22}{6}$; not same

Option [3]: Germany = $\frac{25}{6}$; USA = $\frac{17}{11}$; not same

Option [4]: UK = $\frac{29}{13}$; Spain = $\frac{15}{6}$, approximately same

Option [5]: Denmark = $\frac{12}{6}$; Mexico = $\frac{17}{3}$, not same.

Hence, [4].

Answers to questions 32 to 34:

Sectional cut-offs for colleges 1, 2, 3, 4, 5 and 6 are mentioned in the table given in the question.

The sections where cut-offs are missing need not be considered.

32. To get calls from all colleges, Bhama should score marks equal to maximum cut-off marks required for each section of all the colleges the Bhama should score,

Section A	Section B	Section C	Section D
45	45	46	45

Aggregate marks obtained = $45 + 45 + 45 + 46 = 181$. Hence, [2].

33. If aggregate marks of Charlie are 175, Charlie stands a chance to clear cut-off of college 2 and 3.

So, Charlie should score,

Section A	Section B	Section C	Section D
50	50	50	25

His aggregate marks = $50 + 50 + 50 + 25 = 175$. Hence, [3].

34. Aditya did not get a call from even a single college and if he has score maximum aggregate marks, he must have cleared cut-off of two sections with highest score and not cleared the remaining two. So,

Aditya should have scored,

Section A	Section B	Section C	Section D
50	50	41	43

Aggregate marks = $50 + 50 + 41 + 43 = 184$. Hence, [3].

Answers to questions 35 to 38:

Stage I:

B lost at least one match. D and E lost one match each.

C and F have lost two matches each.

i.e., A is the top team of Stage I and has won all the three matches in Stage I.

Hence, A and F did not play against each other in Stage I.

Also, B, D and E have won at least one match. Hence, C and F must have lost all the 3 matches in Stage I.

Thus, the 9 matches played in Stage I are:

$$\begin{array}{|l|} \hline \text{D(Won)} \times \text{C(Lost)} \\ \hline \text{D(Won)} \times \text{F(Lost)} \\ \hline \text{D(Lost)} \times \text{A(Won)} \\ \hline \end{array} \quad \begin{array}{|l|} \hline \text{E(Lost)} \times \text{B(Won)} \\ \hline \text{E(Won)} \times \text{C(Lost)} \\ \hline \text{E(Won)} \times \text{F(Lost)} \\ \hline \end{array} \quad \begin{array}{|l|} \hline \text{A(Won)} \times \text{B(Lost)} \\ \hline \text{A(Won)} \times \text{C(Lost)} \\ \hline \text{B(Won)} \times \text{F(Lost)} \\ \hline \end{array}$$

Stage II:

The 6 matches played in Stage II are as follows:

$$\begin{array}{|l|} \hline \text{A} \times \text{E} \\ \hline \text{A} \times \text{F} \\ \hline \end{array} \quad \begin{array}{|l|} \hline \text{B} \times \text{C} \\ \hline \text{B} \times \text{D} \\ \hline \end{array} \quad \begin{array}{|l|} \hline \text{D} \times \text{E} \\ \hline \text{C} \times \text{F} \\ \hline \end{array}$$

The leader of Stage I i.e., A lost both his matches.

Two teams at the bottom after stage I are C and F.

Since, F lost against A, F lost against C also.

And C won against B and F.

Now, the only other team that lost both the matches is D.

$$\begin{array}{|l|} \hline \text{A(Lost)} \times \text{E(Won)} \\ \hline \text{A(Lost)} \times \text{F(Won)} \\ \hline \end{array} \quad \begin{array}{|l|} \hline \text{B(Won)} \times \text{C(Lost)} \\ \hline \text{B(Won)} \times \text{D(Lost)} \\ \hline \end{array} \quad \begin{array}{|l|} \hline \text{D(Lost)} \times \text{E(Won)} \\ \hline \text{C(Lost)} \times \text{F(Won)} \\ \hline \end{array}$$

35-[2] 36-[4] 37-[5] 38-[5]

39. Percentage growth rate of 2007(over 2006)

$$= 31.6\% \approx 30\%$$

$$\therefore \text{The subscription in Europe in 2008} = 1.3 \times 500 = 650$$

$$\therefore \text{The difference} = 650 - 610 = 40$$

The closest option is [1].

Hence, [1].

40. Let there be 100 subscribers in Europe in 2003.

∴ In Europe

	2003	2004	2005	2006	2007	2008	2009	2010
Men	60	63	66.15	69.5	73	76.6	80.4	84.4 ≈ 85
Women	40	44	48.4	53.24	58.56	64.4	70.86	77.9 ≈ 78
	Total = 163							

Hence, [1].

41. The annual percent change in the gap between the subscription revenues in the US and Europe during.

$$2003-04 : \frac{340 - 300}{300} = \frac{40}{300}$$

$$2005-06: \frac{270 - 320}{320} = \frac{50}{320}$$

$$2006-07: \frac{210 - 270}{270} = \frac{60}{270}$$

$$2008-09: \frac{110 - 180}{180} = \frac{70}{180}, \text{ the highest.}$$

$$2009-10: \frac{100 - 110}{190} = \frac{10}{190}$$

Hence, [4].

42. Growth rate of 2007(over 2006)

$$= \frac{500 - 380}{380} \times 100 = 31.6\% \approx 30\%$$

Growth rate of 2005(over 2004)

$$= \frac{270 - 180}{180} \times 100 = 50\%$$

$$\therefore \text{The percentage change} = \frac{50 - 30}{50} \times 100 = 40\%,$$

which is closest to 35. Hence, [3].

Answers to questions 43 to 47:

Abdul - A, Bikram - B, and Chetan - C

	A	B	C
10:00 AM	Purchase all at a time	Purchases x shares	Purchases shares worth Rs.y
11:00 AM	-	Purchases x shares	Purchases shares worth Rs.y
12:00 noon	-	Purchases x shares	Purchases shares worth Rs.y
1:00 PM	-	Purchases x shares	Purchases shares worth Rs.y
2:00 PM	-	Purchases x shares	Purchases shares worth Rs.y
3:00 PM	Sells all at a time	Sells all 5x shares	Sells all shares

Profit or loss = |(sale value at 3 pm) – (investment in purchase)|

$$\text{Return} = \frac{\text{Profit or loss}}{\text{Investment}} \times 100$$

43. Consider following two cases of the fluctuating prices of shares of company XYZ.

	Case I	A	B	C	Case II	A	B	C
10:00 AM	10	5 shares	1 share	Rs.20	20	5 shares	1 share	Rs.20
11:00 AM	20		1 share	Rs.20	10		1 share	Rs.20
12 noon	10		1 share	Rs.20	5		1 share	Rs.20
1:00 PM	20		1 share	Rs.20	20		1 share	Rs.20
2:00 PM	10		1 share	Rs.20	10		1 share	Rs.20
Total investment		Rs. 50	Rs.70	Rs.100		Rs.100	Rs.65	Rs.100
No. of shares		5	5	8		5	5	10
Closing price	20	$5 \times 20 = 100$	$5 \times 20 = 100$	$8 \times 20 = 160$	30	$5 \times 30 = 150$	$5 \times 30 = 150$	$10 \times 30 = 300$
$\frac{\text{Returns}}{100}$		$\frac{50}{50} = 1$	$\frac{30}{70} = 0.43$	$\frac{60}{100} = 0.6$		$\frac{50}{100} = 0.5$	$\frac{85}{65} < 2$	$\frac{200}{100} = 2$

In case I, Abdul got maximum Returns while in

Case II, Chetan got maximum Returns. Thus, we cannot determine the trader gaining maximum returns. Hence, [5].

44. Referring to case II, statement [1], [3] and [4] cannot be always true.
Consider case III,

	Case III	A	B	C
10:00 AM	10	5 shares	1 share	Rs.99
11:00 AM	9		1 share	Rs.99
12 noon	11		1 share	Rs.99
1:00 PM	9		1 share	Rs.99
2:00 PM			1 share	Rs.99
In Total Investement		Rs.50	Rs.50	Rs.495
No. of Shares		5	5	49.9
Closing Price	12	$5 \times 12 = 60$	$5 \times 12 = 60$	$49.9 \times 12 = 598.8$
$\frac{\text{Returns}}{100}$		$\frac{10}{50} = 0.2$	$\frac{10}{50} = 0.2$	$\frac{103.8}{495} = 0.2$

As in Case III, Returns of Bikram and Chetan can be equal, Statement II cannot be always true. Hence, [5].

45. Consider case IV:

	Case IV	A	B	C
10:00 AM	10	5 shares	1 share	Rs.50
12:00 AM	20		1 share	Rs.50
12 noon	30		1 share	Rs.50
1:00 PM	40		1 share	Rs.50
2:00 PM	50		1 share	Rs.50
In Total Investement		Rs.50	Rs.150	Rs.250
No. of Shares		5	5	11.42
Closing Price	60	$5 \times 60 = 300$	$5 \times 60 = 300$	685.2
$\frac{\text{Returns}}{100}$		$\frac{250}{50} = 5$	$\frac{150}{150} = 1$	$\frac{435.2}{250} = 1.75$

Thus, Bikram earns minimum Return. Hence, [1].

Answers to questions 46 and 47:

46.

	10:00 AM	11:00 AM	12 noon	1:00 PM	2:00 PM	3:00 PM
Share price	a	b	c	d	e	f

From (i) $\rightarrow a > f$

Consider Emily invests Rs.x.

At 10 am, Emily purchased $\frac{x}{a}$ shares, sold at 12 noon for Rs. $\frac{x}{a} \times c$

At 1 pm, Emily purchased $\frac{xc}{ad}$ shares, finally at 3 pm earned Rs. $\frac{xc}{ad} \times f$.

From, (ii) $x < \frac{xcf}{ad} \Rightarrow 1 < \frac{cf}{ad} \Rightarrow \frac{c}{d} > \frac{a}{f} > 1$ --- (1)

Dane made profit implies

$(d + e + f) - (a + b + c) > 0$ --- (2)

From (1)

$(f - a) < 0$

$(d - c) < 0$

$\Rightarrow (e - b) > 0$ (for (2))

i.e., $e > b$ and $e < f$... from (iii)

Thus, $a > f > e > b$ and $a > c > d$

Thus, share price was highest at 10 am. Hence, [1].

47. Referring to answer to 46,

$c > d$ therefore,

statement (4) is false.

$\therefore e$ is not lowest share price, statement (1) is also false.

Thus [1] and [4] both are right answers.

48. Gross pay of HR department = $5000 \times 1.7 \times 5 = 42500$

Average gross pay = 8500

Gross pay of a new person in HR department = $8000 \times 1.9 = 15200$

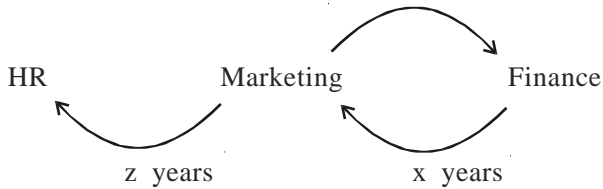
Total new gross pay of HR = 57700

\therefore New average ≈ 9617

$$\therefore \text{Percentage change} = \frac{9617 - 8500}{8500} \times 100 \approx 13\%$$

Hence, [3].

49.



$$\text{For Finance : } \frac{20 \times 30 - x + y}{20} = 31$$

$$\Rightarrow x - y = 20 \quad \dots \text{ (i)}$$

$$\text{For Marketing: } \frac{30 \times 35 - y + x - z}{29} = 35$$

$$\Rightarrow x - y + z = 35 \quad \dots \text{ (ii)}$$

Form (i) and (ii), $z = 15$

$$\therefore \text{Average age for HR} = \frac{45 \times 5 + 15}{6} = \frac{240}{6} = 40 \text{ years}$$

Hence, [3].

50. Current average basic pay of HR department = 5000

New average basic pay of HR department

$$= \frac{5000 \times 5 + 2 \times 6000 + 8000}{8} = \frac{45000}{8} = 5625$$

$$\therefore \text{Percentage change} = \frac{625}{5000} \times 100 = 12.5\%$$

Hence, [2].

SECTION - III VA

51. In sentence A, there is a spelling error. 'Imigrant' is not the correct spelling, 'immigrant' is the correct spelling. Sentence C has a punctuation error, as it requires a comma at the end. Sentence D needs the article 'the' before 'owner of dry goods business'. Sentence E has a tense error: it should be 'would later become', not 'would later became'. So only B is correct. Hence, [1].
52. Sentences A and D are correct. Sentence E uses a wrong article: it should be 'an industry', not 'a industry'. The comma at the end of sentence C is incorrect, as it separates the subject from the main verb. B uses the incorrect pronoun 'their' instead of 'its'. Hence, [4].
53. In sentence B, the word 'home' should be in the plural, as millions of people cannot share a single home. In E, the verb should be the singular 'has', because the subject 'death count' is singular. A, C and D are correct. Hence, [4].
54. In B, the verb 'associate' should be in the past tense in keeping with the rest of the sentence. Similarly in C, 'seem' should also be in the past. In E, the noun 'effort' is missing an article. Therefore only A and D are correct. Hence, [5].
55. In the 1st sentence 'brooch', which means 'a clasp or ornamental pin' is the correct word. 'Broach' is a verb which means to bring up a topic for discussion. In the 2nd sentence 'councillor', which means 'a member of a council' is the best fit, as people do not complain about the amenities in the neighbourhood to a counsellor ('a person who counsels; adviser') but to a councillor who can handle these issues. The 3rd sentence requires a noun, which is 'advice' and not 'advise' which is a verb. In the 4th sentence, 'climactic' means 'pertaining to or coming to a climax' which suits in the context of the play. 'Climatic' means 'of or pertaining to climate', which does not fit in the context. In 5th sentence, 'flare' which means 'a shape that spreads outward' is the correct option. 'Flair', which means talent, is incorrect. Only [3] in the options has all the sequence BAAAB. Hence, [3].
56. In the 1st sentence 'currants', which means 'small seedless raisins used in baking', fits best in the context of making a cake. In the 2nd sentence 'exceptionable', which means 'objectionable', is the best fit in this context. In the 3rd sentence 'to consent to' is the correct expression. In the 4th sentence, 'obliged', meaning 'required or constrained as by law', suits the context. In the 5th sentence, 'sanguine' which means 'cheerfully optimistic or confident' fits the sentence. 'Genuine' is incorrect because something can be either genuine or not, not 'too genuine'. Only [2] has the required sequence BBAAA. Hence, [2].

57. In the 1st sentence 'caustic', which means 'severely critical or sarcastic', fits in the context. In the 2nd sentence 'cogent, which means 'pertinent' is the appropriate word in the context. In the 3rd sentence, 'averse', meaning 'having a strong feeling of opposition', is the correct word in the context. In the 4th sentence, 'coupé', which means 'the compartment in a railroad car' fits in the context. 'Peal', which means 'to sound loudly and sonorously' fits in the context of the 4th sentence. Only option [2] has the sequence BBBAB. Hence, [2].
58. In the 1st sentence 'diffusing', meaning 'spreading about', fits in the context. In the 2nd sentence, 'baited', which means 'tormented' fits in the context of asking irrelevant questions. In the 3rd sentence, 'horde', which means 'a large group or crowd', fits in the context. In the 4th sentence, 'internment' which means 'confining someone in a prison' fits the sentence. In the 5th sentence, 'unsociable' is the appropriate word and means 'not congenial'. The correct sequence is BABBA. Hence, [1].
59. Sentences [1], [2], [4] and [5] use the word 'run' appropriately. Sentence [3] makes no sense, because 'run over' usually means to hit and knock down, especially with a vehicle. Hence, [3].
60. Sentences [1], [2], [3] and [4] use the word 'round' in appropriate contexts. In sentence [5] the correct expression should be 'come around' and not 'come round'. Hence, [5].
61. The word 'buckle' has been used in correct contexts in sentences [1], [3], [4] and [5]. In sentence [2], 'broke into a buckle' does not make any sense. Hence, [2].
62. Sentences [1] and [2] use the word 'file' in the most common context. Sentences [3] and [4] also use the word correctly. However, [5] should be 'broke the ranks' and not 'broke the file'. Hence, [5].
63. 'Disingenuous' means 'insincere' and this best fits the context as the phrase 'ethnic cleansing' is marked by apostrophes indicating a misrepresentation. Also, the word 'victims' is best in contrast to 'perpetrators'. Hence, [3].
64. 'Navigators, calendar makers' are best clubbed under the category of 'observers' rather than 'scrutinizers', as the latter term is more used to refer to specialists in a particular field. 'Students' can also fit to a certain extent and this leaves us with options [2], [4] and [5]. 'Concede' has more to do with defeat or revision which is more apt in this context than 'agree' or 'conclude'. Hence, [4].
65. Since the sentence talks about the life of an individual extending from the first few days to the entire term of his/her life, 'genetic endowments' suits the context best. The closest option 'congenital' relates to endowments happening at birth and this might not be as pertinent, viz.

the entire life-span of an individual. 'Pedagogy', which refers to education, fits in the second blank. Hence, [5].

66. The first word should combine well with the phrases 'central' and 'education and propaganda'. The first blank is not easy to resolve as many of the options fit in some way or the other. The second blank, however, is easier to resolve as the phrase 'earlier kind of world' combines well with the word 'tradition'. This leaves us with [4], which has the word 'organs', which suitably fits the first blank. Hence, [4].
67. The paragraph talks about how the hands of the doctor, Perowne, seem to be so important for the patients. It ends with how a certain category of people demonstrate signs of deserting the doctor. Option [3] says Perowne is not concerned but Perowne's concern or the lack of it, cannot be determined as his views on this matter (patients leaving) are not stated. Option [2], however, states that the other category of people, who stick to Perowne, do so because they are not aware of their alternatives. This option sticks to the condition of a surgeon's hands being important to his impression as a surgeon and continues with the thought of how Perowne is only chosen by default. Hence, [2].
68. The paragraph discusses climate change being disguised as a reason to implement trade protectionism by powerful industrialized countries. It ends by quoting the example of OECD countries citing lacklustre economic performance and the rapid rise of China and India for trade protectionism. Option [1] is not right as it does not mention the actors involved (evoked by whom?). Option [5] incorrectly states that all those who are 'climate change champions' are perpetrators of global economic inequity. Option [3] relates climatic change to the rise of India and China, while the rise of these countries have only been mentioned viz. OECD countries. This leaves us with options [2] and [4]. Option [2] just talks of OECD countries so option [4], being more comprehensive, is a better ending to the passage. Hence, [4].
69. The paragraph discusses Mattancherry, Indian Jewry's most famous settlement. It goes on to describe the settlement in some detail and ends with an image of religious tolerance. So it makes sense that religious tolerance in some way should continue to complete the paragraph. This makes option [5] irrelevant. Option [4] goes against the logic of the passage. Option [1] states peaceful 'coexistence', but coexistence with whom cannot be inferred. It seems that Mattancherry, an almost idyllic settlement, could have only been possible if this particular community wasn't discriminated against and left to its own devices. Hence, [2].
70. To paraphrase the passage, we can say: it is hard to pin down, intellectually, what singularly is a Western or Eastern thought. Option [3] changes the focus. Option [4] goes against the logic of the paragraph. Option [2] also goes against the grain of the passage. Between [1] and [5], [5] refers more directly to the last sentence of the paragraph, and therefore completes the theme. Hence, [5].

71. Option [1] can be inferred from the first sentence of paragraph 5. The author's description of the way in which some of his friends enjoyed two two-cent ice creams at the same time, helps us infer [2]. According to the author, the act of enjoying the ice creams was almost like a celebration. Refer to paragraph 6 "... the consumer civilization pretends to give more ...what is worth four cents" - option [4] is mentioned. Option [5] is clearly stated in the first sentence of paragraph 6. Option [3] cannot be inferred because the author mentions in the fourth paragraph that the justification provided by elders was 'mendacious' or false. Hence, [3].
72. The word 'parvenu' means 'upstart', i.e., a person who has risen suddenly from a humble position to a position of wealth or consequence, but who has not yet gained the manner associated with this new position. In the passage 'little parvenus' refers to people who splurge inappropriately. Hence, [4].
73. Option [1] contradicts what is said in the passage, and [5] cannot be inferred at all. While [3] and [4] may be partially correct, the most comprehensive reason is [2], i.e. 'intemperance', which means lack of moderation or excessive indulgence. Refer to paragraphs 3 ('sumptuously enviable') and 5 ('two ice creams suggested excess'). Hence, [2].
74. Refer to the last two paragraphs. The penultimate paragraph begins with the quoted sentence, and the example given in the last paragraph clearly indicates that the concept of morality has changed over the years. Options [1] and [3] are exaggerations, and [4] and [5] are outside the purview of the passage. Hence, [2].
75. Refer to the last sentence of paragraph 4: the author thinks that the real reason his elders refused to allow him two ice cream cones at once was 'cruelly pedagogical', i.e. one intended to teach him something – in other words, 'didactic'. Note that the author thinks that [2] cannot possibly be the reason, and the other options are completely out of context. Hence, [1].
76. The author starts the passage by negating the popular view of language as stated in option [1] and [3]. He then goes on to explicitly negate [2] in paragraph 2. [4] is also stated in the same paragraph. However, in paragraph 1, he states that [5] is the belief of some cognitive scientists, not of people in general. Hence, [5].
77. The spider-web analogy emphasizes the author's point that language is an instinct in human beings, not something that has to be consciously taught or learnt. Options [1], [3], [4] and [5] all pertain to animals doing something they have learnt or been trained to do. Only [2] pertains to an animal instinct. Hence, [2].
78. Refer to the last sentence of paragraph 2: option [2] is explicitly stated. On the other hand, [1], [3] and [4] are either not stated at all, or cannot be inferred to be unique to human beings. Hence, [2].

79. Refer to the first paragraph. According to the author, language ‘develops in the child spontaneously’. This indicates option [1] as the answer. Hence, [1].
80. Option [1] is a minor point, and [5] is not mentioned anywhere. [2] and [3] are only partially correct. Only [4] is the main idea that the author tries to convey through the passage. Hence, [4].
81. Refer to paragraph 2, the first sentence, where option [1] is clearly stated in the context of Rwanda and Haiti. [2] is mentioned only later in the paragraph, while the other options are not mentioned at all. Hence, [1].
82. ‘Anthropogenic’ means caused or produced by humans. Therefore only option [4] conveys the correct meaning. Hence, [4].
83. Refer to the second half of the 3rd paragraph: option [3] is clearly mentioned as treason the drought at the time of the Maya collapse had a different impact. Hence, [3].
84. Refer to the first paragraph: according to the author, Maya archaeologists still have different opinions as to what caused the Maya collapse, and which reason was most important. This implies [4] as the answer. Options [1], [2] and [3] cannot be inferred, and is irrelevant. Hence,[4].
85. Options [1] to [4] have been mentioned in the course of the passage. [5] distorts the information in the passage: only the kings and nobles have been mentioned as being focused on short-term concerns, and not the entire Maya population. Hence, [5].
86. Refer to paragraph 1, the sentence ‘Many of the concepts of modern art ... certain times and certain places.’ [3] is a paraphrase of the same. Hence, [3].
87. Options [1] and [3] contradict the positive attitude of the author towards ‘fossils’ and their worth. [4] is too literal. The word ‘historic’ in [2] is misleading, as it implies a significant event, which is not necessarily what the author implies. Only [5] appropriately encapsulates the metaphorical meaning of the word ‘fossil’ as it is used in the passage. Hence, [5].
88. Refer to paragraph 1, the second sentence, where option [1] is clearly stated. Hence, [1].
89. Refer to paragraph 1, the sentences ‘Briefly then ... spiritual experience.’ This is what is summarized in option [4]. [2] and [3] are only partial answers, [1] is irrelevant, and [5] is not mentioned at all. Hence, [4].
90. Refer to the last paragraph, the last two sentences. Options [1] and [4] contradict what is stated in the passage. [2] and [3] are incomplete, as they neglect to mention how the past influences can be shaped to meet present needs. Only [5] covers all these points. Hence, [5].