SNAP 2022 Question Paper

Symbiosis National Aptitude Test or SNAP Test

SYMBIOSIS NATIONAL APTITUDE TEST (SNAP)

SOLVED PAPER - 2022

Memory Based

GENERAL ENGLISH: READING COMPREHENSION, VERBAL REASONING, VERBAL ABILITY

1. Which of the following words has a suffix appended to it?
(a) Frequently (b) Often
(c) Hydrophobia (d) Debunk

2. Fill in the blanks with the appropriate prepositions.
The book that has been recently brought _____ provides insight into bringing _____ children.
(a) up, up (b) in, out
(c) out, up (d) down, in

3. Fill in the blanks with the appropriate conjunction.
This can prove to be a difficult task for a leader _____ unfamiliar with building teams.
(a) yet (b) not
(c) until (d) but

4. Given below are four lines from the poem 'Morituri Salutamus' : (Lines from this poem were asked in Slot 1 too.)
Line 1: Something remains for us to do or dare;
Line 2: Even the oldest tree some fruit may bear;
Line 3: And as the evening twilight fades away
Line 4: The sky is filled with stars, invisible by day.
Which of the lines follows the most standard word order?
(a) Line 1 (b) Line 2
(c) Line 3 (d) Line 4

5. Which of the following is a compound word?
(a) Hold (b) Scaffold
(c) Unsolved (d) Threshold

6. Which of the following is the most appropriate synonym of the word underlined below?
Ferguson is convincing because of her extensive use of detail, the perspicacity of her observations, and the scholarly care that she takes in the construction of her argument.
(a) Clarity (b) Cleverness
(c) Accuracy (d) Acuity

7. Fill in the blank with the appropriate adjective/adverb.
My mother worked _____ despite her fluctuating health condition.
(a) tiresome (b) tiring
(c) tirelessly (d) tired

8. Which of the following gives the meaning of the underlined idiom?
The politician managed to complete the project in the teeth of cynicism from his constituency.
(a) stiff opposition (b) indifference
(c) having humour (d) appreciation

9. Convert the following sentence into the tense given in brackets:
People think that globalization is a recent phenomenon. (Past Perfect)
(a) People thought that globalization was a recent phenomenon.
(b) People had thought that globalization has been a recent phenomenon.
(c) People were thinking that globalization was a recent phenomenon.
(d) People have been thinking that globalization will be a recent phenomenon.

10. Change the voice of the following sentence:
By the time you reach auditorium, the pianist would have finished the rendition.
(a) By the time auditorium is reached by you, the pianist would have finished to rendition.
(b) By the time you reach auditorium, the rendition would have finished the pianist.
(c) By the time auditorium is reached by you, the pianist will have finished the renditio.
(d) By the time you reach auditorium, the rendition would have been finished by the pianist.

11. Fill in the blanks with the appropriate words.
The wound of the _____ takes much time to _____.
(a) heal, heel (b) heel, hail
(c) heel, hall (d) heel, heal

12. Refer to the lines below:
Line 1: May I come in, Sir?
Line 2: Yes, please have a seat, Arun.
Line 3: Sir, I could not finish this project in time.
Line 4: But you ought to stick to deadlines, Arun.
Which of the lines uses a modal verb seeking approval?
(a) Line 1 (b) Line 2
(c) Line 3 (d) Line 4

13. Fill in the blank with the correct preposition.
_____, please find the cheque enclosed.
(a) On date (b) According
(c) As per the rules (d) Accordance

14. Fill in the blank with the appropriate option.
There is nothing as refreshing as _____ sleep.
(a) long (b) lengthy
(c) deep (d) short

15. Which of the following is the correct meaning of the proverb- A new broom sweeps clean.
(a) Old brooms are useless.
(b) We should frequently buy new brooms.
(c) Cleanliness is essential to our well being.
(d) A newly appointed person takes actions that are noticeable.

QUANTITATIVE, DATA INTERPRETATION AND DATA SUFFICIENCY

16. In a political survey 78% of the politicians favour at least one proposal 50% of them are in favour of proposal A, 30% are in favour of proposal B, and 20% are in favour of proposal C. 5% are in favour of all three proposals. What is % of people favouring more than 1 proposal?
(a) 17 (b) 18
(c) 16 (d) None of these

17. Rohan sells two similar pens at Rs. 2580 and Rs. 1620. The % profit earned in first transaction is equal to percentage loss earned in 2nd transaction. At what price should these items be sold that final profit is 25%.
(a) 2100 each (b) None of these
(c) 1800 each (d) 2625 each

18. A four digit number is formed using digit 1, 2, 3, 4, 5, 6, 7 in all possible ways without repeating a digit. How many are greater than 3400.
(a) 560 (b) 580
(c) 540 (d) None of these

19. In an aeroplane the number of people aged 45 years and above is 20 and there are at most 26 people whose aged are below 45 years. The average age of all the people in the aeroplane is 32 years. What is largest possible average age, in years of the people whose ages are below 45 years?
(a) 22 (b) 20
(c) 21 (d) None of these

20. A train after travelling 150 km meets with an accident and after that proceeds with 3/5th of it's previous speed and arrives at the destination 8 hours late. Had the accident occurred 360 km farther it would have been 4 hours. What is the total Distance Travelled?
(a) 780 (b) 880
(c) 720 (d) None of these

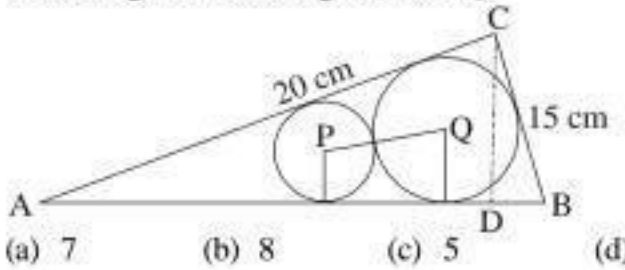
21. If $\cos\theta = 1/2$ what will be $6\cot^2\theta - 1$
(a) 1 (b) 2
(c) 0.5 (d) None of these

22. When a bus started from a bus stop the ratio of male and female passengers was 4:1. At the first stop 16 male and 8 females passengers got down and 12 female passengers boarded. The ratio of male and female passengers become 8:3. Find the number of passengers when the bus started.
(a) 100 (b) 110
(c) 90 (d) None of these

23. 0.236, 0.449, 0.645, ?, 1, 1.165
(a) 0.684 (b) 0.724 (c) 0.987 (d) 0.828

24. Sum of 37 1/2% of a and 41 2/3% of b is 22. If 37 1/2% of a exceeds 41 2/3% of b by 2. Find a & b.
(a) 32, 18 (b) 36, 12 (c) 32, 24 (d) –34, 14

25. In a right triangle ACB, $\angle ACB = 90°$ (shown in the figure). CD is height of the triangle. Find PQ.



(a) 7 (b) 8 (c) 5 (d) 20

26. The price of 4 products A, B, C, D was increased in 2 years by
A : k% & (k + 1)%
B : (k + 2)% & (k – 1)%
C : (k + 3)% & (k – 2)%
D : (k + 4)% & (k – 3)%
If initially all price were equal. The product with the lowest price after 2nd increase is?
(a) B (b) C
(c) D (d) None of these

27. The average runs scored by Sumesh in 4 innings is 50. In the fifth inning. Sumesh scores some runs such that his average now becomes 62. In the 6th inning he scores 10 runs more than 5th inning and now the average of his last five inning become 80. How many runs did he score in his 1st inning. (He does not remain not out in any inning).
(a) 28 (b) 26
(c) 30 (d) None of these

28. In a tourist place there are 3 buses A, B and C working together to take people around for sightseeing. They together carry 60 people in each trip. Yesterday A started making trips early morning almost carried 50 people in few trips and then stopped service. B and C then started together and made a few trips. If A, B and C made 10 trips in total to carry 300 people then, how many trips A alone would have made to carry 150 people?
(a) 15 (b) 10
(c) 30 (d) None of these

29. A Boy is flying a kite from the ground at the elevation 30° with string 100m. Another Boy is flying from the roof of 10 m tall building with elevation 45°. Both Boys are on the opposite sides of their kites. Find length of string the second boy must have so that both the kites meet.
(a) $40\sqrt{2}$ (b) $4\sqrt{10}$ (c) $42\sqrt{2}$ (d) $50\sqrt{2}$

30. In a box of 20 transistors, 4 were defective. If two transistors are chosen randomly what is the probability that atleast one is defective
(a) 7/19 (b) 12/19
(c) 4/19 (d) None of these

31. Find the largest 4 digit number which when divided by 3, 4, 5 leaves the remainders 2, 3, 4 respectively.
(a) 9999 (b) 9959
(c) 9989 (d) None of these

32. In a huge rectangular water tank of dimension 150m × 100m base. Water is filled using a pipe having cross sectional dimensions of 2 dm × 1.5 dm. The water flows at a speed of 15 kmph from the pipe. How many hours will the water in the tank be 3 m filled if measured from the base?
(a) 10 hrs (b) 50 hrs
(c) 100 hrs (d) None o the Above

33. 6 different sweet varieties of count 28, 189, 119, 77, 161, 112 were ordered for a particular occasion. They needed to be packed in such a way that each box has the same variety of sweets the number of sweets in each box is also the same. What is the minimum number of boxes required to pack?
(a) 97 (b) 98
(c) 99 (d) None of the above

DIRECTIONS (Qs. 34-35) : *Study the following tables carefully and answer the questions given below:*

Number of cars (In thousands) of different Models and Colours sold in two Metro cities in a year

Type	Metro M					Metro H				
	Colour					Colour				
	Black	Red	Blue	White	Silver	Black	Red	Blue	White	Silver
A	40	25	55	75	15	45	32	40	60	20
B	20	35	60	80	20	30	37	39	81	35
C	35	30	50	90	35	40	42	41	6	37
D	45	40	45	85	40	35	39	37	90	42
E	50	35	35	60	30	50	44	43	77	22
F	55	42	40	65	52	47	34	45	87	17

34. The difference between the white-coloured cars sold in the two metros of which of the following models is the minimum?
(a) A (b) C
(c) D (d) None of these

35. The total number of blue-coloured cars of Model E and D sold in Metro H is exactly equal to the number of white-coloured cars of which model in Metro M?
(a) B (b) F
(c) C (d) A

ANALYTICAL AND LOGICAL REASONING

36. If first I at the extreme left end of the meaningless word is 1, then which pair indicator the correct sequence of letters to form the same meaningful word
ISNRNRTCTIPOAOA
(a) 8, 15, 2, 7, 1, 14, 12, 9, 6, 4, 11, 3, 13, 5, 10, 8, 13, 2, 9, 10, 12, 14, 7, 4, 6, 11, 5, 15, 3, 1
(b) 11, 4, 14, 8, 6, 15, 2, 7, 1, 3, 13, 9, 10, 12, 5; 11, 6, 12, 8, 4, 13, 2, 9, 10, 5, 15, 7, 1, 14, 3
(c) 3, 13, 9, 10, 12, 5, 15, 11, 4, 1, 8, 6, 14, 2, 7, 5, 15, 7, 1, 14, 3, 13, 11, 6, 10, 5, 4, 12, 2, 9
(d) 5, 15, 9, 10, 12, 3, 13, 11, 4, 2, 8, 6, 14, 1, 7; 5, 15, 7, 1, 12, 3, 13, 11, 6, 2, 8, 4, 14, 10, 9

37. Fourth Friday was on 30 December, 2005. What was the day of the week on 03- Jan-2010?
(a) Sunday (b) Thursday
(c) Saturday (d) Friday

38. Apple (A) $\wedge$ Barberry (B) = A is mother of B; A – B = A is brother of B A % B = A is father of B, A $\neq$ B = A is sister of B The name of maternal uncle of Jackfruit is peach in which me?
(a) Jackfruit (S) – Narangi (N) $\wedge$ (M) melon $\neq$ Peach (P)
(b) P $\wedge$ Santara (S) $\neq$ N – J
(c) P – M $\wedge$ N $\neq$ J
(d) J – S % P

39. Amar, Akbar, Anthony have habit of carrying a stylish item. Each of them Carries a different item among goggles, hat, gloves, or among them is a truth-fellow, or, lier, or alternator. You are interested about glove. Who carries gloves?
Amar : I do not carry gloves. Anthoney carries gloves.
Akbar : I carry gloves. Amar carries goggles.
Anthony : I carry hat. Akbar carries gloves.
(a) Amar (b) Anthony
(c) Data insufficient (d) Akbar

40. A clock was set to start at 12:00:00 am. If the current time is 05:10:00 am. The hour hand has formed what degree angle?
(a) 150° (b) 155°
(c) 157° (d) 152°

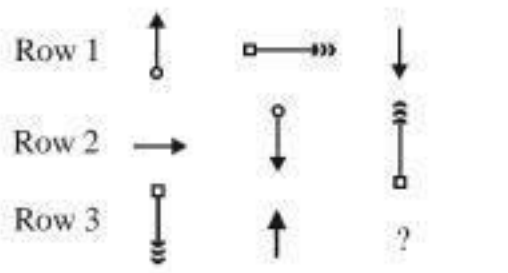
41. If ab = 3, de = 27 and 7 dc = 3 then ab : dc :: de : ?
(a) 9168 (b) 38691
(c) 729 (d) 19683

42. If BREAK THROUGH is EAOUHRBRGHKT, then CONTRIBUTION
(a) None (b) NTTIBUONRICO
(c) NTTIBUCORION (d) NTTIBUCOONRI

43. Atharva is son of Nannu who is sister of my mother-in-laws daughter. My only son's name is Nonu. I am the only son of my parents. Which of the following is incorrect?
(a) My wife is Nonu's mother.
(b) Atharva and Nonu's mothers are not real sisters.
(c) Nonu's mothers mother is mother of my father's only daughter in laws
(d) My mother-in-law's only daughter is Nonu's mother.

44. AC (CBABAB, ABC (CABAB, ABAC (CBAB, ABABC (CAB, ABABAC (CB
(a) ABABAAC (C (b) ABABABC (C
(c) BABAC (CBA (d) BAABC (CAB

45. Which figure replace the question mark?



(a) (b)
(c) (d)

46. Find the missing number?
27, 22, 18, ?, 8, 3
(a) 14 (b) 11
(c) 15 (d) 13

47. Which dates in march 2008 fall on Sunday?
(a) 3, 10, 17, 24, 31 (b) 1, 8, 15, 22, 29
(c) 2, 9, 16, 23, 30 (d) 7, 14, 21, 28

DIRECTIONS (Qs. 48-49) : *Read the given information carefully and answer the questions given beside:*

Seven candidates A, B, C, D, E, F and G went to a party and wore different colored dress sitting in a linear row numbered 1-7 from left to right facing towards north direction. The distance between each is the successive multiple of 4.

One who is wearing Green dress is sitting to the left of the one who is wearing Black dress. B is not wearing Yellow dress. Person wearing a Blue dress is not at any end. One who is wearing Pink dress is fourth right of the one wearing Yellow dress. Neither C nor E wore Pink dress. Two candidates sit between C and E. F who wore a Red dress sits between C and E but at an odd numbered position. One who is wearing Pink dress is 28 m away from E. A is sitting at fourth left of E. One person sits between the one who wore a Red and Blue dress. D is second left of the one who wore a Blue dress. One who is wearing Black dress is not sitting at any end. The person who wore a Yellow colored dress sits at an even numbered position not immediately to the one who wore a Red dress. One person wore white colored dress.

After having dinner one who was wearing Yellow dress moved 20 m towards North to point P and after turning right moved another 28 m to point Q.

From Q the candidate takes a 90° turn towards the right and moves 60 m to point R. Again from R it moves towards point S which is exactly South of B.

48. What is the direction of point R with respect to candidate E?
(a) North – East (b) South – West
(c) South – East (d) South

49. What is the position of F with respect to A?
(a) Immediate Right (b) Immediate Left
(c) Second to the Right (d) Second to the Left

50. A set of words are given in each option, you have to first arrange each alphabet according to alphabetical series within the word then by using third letter from each word you have to decide from which set a meaningful word is not formed by rearranging them.

For example:

1. TPSOU, RAWTY, OBRHA, OBTAS, GNEBI
First Arrange them in alphabetical order
OPSTU, ARTWY, ABHOR, ABOST, BEGIN
Now using third letter from each word i.e. S, T, H, O, G
Meaningful word will be GHOST.)

(a) FTEID, MESAT, OCLKP, GSIUD
(b) UGJYL, WTUZ, GERNC, PDOFV
(c) USVH, NDPMH, ETCNB, ITSD, OVEN
(d) QHFWA, MBNRH, SEVJ, TKXGU

DIRECTION (Q. 51) : *Study the following information carefully to answer the given questions:*

A word and number arrangement machine when given an input line of words and numbers rearranges them following a particular rule. The following is an illustration of input and rearrangement.

INPUT	3846	9231	7283	4731	8152	3285
STEP I	3468	1239	2378	1347	1258	2358
STEP II	1239	1258	1347	2358	2378	3468
STEP III	23	25	34	35	37	46
STEP IV	5	7	7	8	10	10

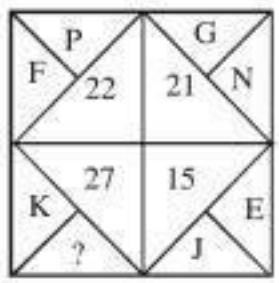
Step IV is the last step of the rearrangement. As per the rules followed in the above steps, find out in each of the following questions the appropriate steps for the given input.

Input: 7925 4758 2538 5628 8561 7426 3625 6245

51. What will the addition of the numbers which is second, forth, sixth and eight from the left end in step IV?
(a) 32 (b) 23
(c) 38 (d) 40

52. TOMATO : MTOOTA :: 123412 : ?
(a) 312214 (b) 123456
(c) 321124 (d) 213314

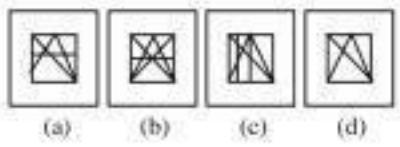
53. Find the missing number/alphabet?



(a) M (b) P
(c) 32 (d) None of these

54. Complete the figure

Answer figures :



DIRECTION (Q. 55) : *In questions, which one of the given responses would be a meaningful order of the following.*

55. 1. Adult 2. Old age
3. Adolescent 4. Childhood
5. Infant
(a) 5, 4, 3, 1, 2 (b) 1, 5, 4, 3, 2
(c) 1, 2, 3, 4, 5 (d) 3, 4, 5, 1, 2

56. Consider the statements and the following asusmptions and decide which of the assumptions is/are implicit in the statement.

Statement :

"Please prepare and send the following documents to the accountant's address," said a proprietor to his assistant.

Assumptions :

I. The assistant would follow the proprietor's instruction
II. The assistant would personally go and hand over the documents to the accountant

(a) Both I and II are implicit
(b) Neither I nor II is implicit
(c) Only II is implicit
(d) Only I is implicit

57. Bihar Chief Minister Nitish Kumar on Monday launched a State-wide campaign as one of the major step for women empowerment to abolish dowry, stated it as major drawback of our society.

Is this decision sufficient to get rid from this custom, which is running from long time in Bihar?
Which of the following will be best suited option to get rid from dowry with their explanation?

(a) Yes, as State govt. Is launching state wide campaign, it will impact the whole society of Bihar.
(b) No, It will not impact too much untill thinking of people will changed and dowry will be declared as illegal and punishable offence in Bihar.
(c) Yes, as many NGO run by women will also come against dowry.
(d) No, It has been set in nerves of Bihar's society as one of the necessities of the marriage.

58. **Cause :** The Government has recently increased its taxes on petrol and diesel by about 10 percent.
Which of the following can be a possible effect of the above cause ?

(a) The petroleum companies will reduce the prices of petrol and diesel by about 10 percent.
(b) The petroleum companies will increase the prices of petrol and diesel by about 10 percent.
(c) The petroleum companies will increase the prices of petrol and diesel by about 5 percent.
(d) The petrol pumps will stop selling petrol and diesel till the taxes are rolled back by the government.

59. **Direction :** In the questions below, a statement is given followed by two arguments. Choose the most appropriate option depending on which argument strengthens the given statement.
Statement : Study of Politics should be made compulsory in school
Arguments :

I. Yes, an informed electorate is the key to strong democracy
II. No, politics and education should not be mixed as it will affect education

(a) If only argument I is strong
(b) If only argument II is strong
(c) If either I or II is strong
(d) If neither I nor II is strong

DIRECTION (Q. 60): *Study the following information carefully and answer the below questions.*

A family consists of eight members and three married couples. No single parent has a child. *K* is the father of *H*. *M* is the only son of *N*. *K* is the brother-in-law of *M*. *K* does not have any siblings. *M* is the uncle of *P*. *Q* is the mother of the *M*'s. *N* is the maternal grandfather of *C*'s son. *G* is the sister-in-law of *C* and daughter-in-law of *Q*. *P* and *G* are of the same gender. *M*'s sister has only one son.

60. Who among the following person is the sister of *H*?

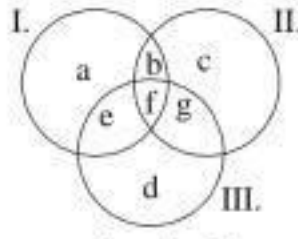
(a) K (b) M
(c) G (d) P

ANSWERS WITH EXPLANATIONS

1. (c) Hydrophobic is a term well-described by its etymology, with "hydro-" being a prefix that means "water", and "-phobos" being a suffix meaning "fearful". Hydrophobia means an extreme dread or fear of water.
2. (c) The book that has been recently **brought out** provides insight into **bringing up** children.
   Bringing up and 'brought out' both are phrasal verb. Here, brought out means to make apparent and bringing up means to look after a child until it is an adult.
3. (a) 'Yet' gives the same meaning as 'still'. Clearly option (a) is the most appropriate conjunction used in the above sentence.
4. (d) The standard order of words in an English sentence is subject + verb + object. Therefore, The sky (subject) + is filled (verb) with + stars, invisible by day.
5. (c) Un + solved, here 'un' works as prefix and 'solved' means find an answer to. Therefore, option c is the most appropriate option.
6. (b) Perspicacity is the quality of having a ready insight into things; shrewdness.
   Cleverness means the ability to understand and learn quickly and easily. Both have the same meaning.
7. (c) Tirelessly is an adverb. It means one is doing work in an energetic and continuous way.
8. (a) The meaning of the underlined idiom 'in the teeth of' is 'In opposition to something'.
   Clearly option (a) is the most appropriate meaning of the underlined idiom.
9. (b) People had thought that globalisation was a recent phenomenon.
   The past perfect is made from the verb 'had' and the past participle of a verb. It is used to refer to one event not had happened before another in the past.
10. (d) By the time you reach auditorium, the rendition would have been finished by the pianist.
    Active- will/shall + have + past participle
    Passive- will/shall + have been + past participle form.
    Therefore, option (d) is the most appropriate voice of the sentence.
11. (d) The wound of the **heel** takes much time to **heal**.
    Heel means the back part of the human foot below the ankle, whereas heal means to become sound or healthy again.
12. (a) The modal verb 'may' is used to ask, grant, or describe permission; to politely offer to do something for someone; to express the possibility of something happening or occurring; or to express a wish or desire that something will be the case in the future.
13. (c) As per the rules, please find the cheque enclosed.
    Clearly option (c) is the most appropriate preposition used in the above sentence.
14. (c) There is nothing as refreshing as **deep** sleep. Clearly option (c) is the most appropriate option.
15. (d) The newly appointed person takes actions that are noticeable. The proverb 'a new broom sweeps clean' means someone who has just started to work for an organisation and intends to make a lot of changes.
16. (a) Let the distribution of votes for each of the proposal be as given below. From the information given, we know that

    $a+b+c+d+e+f+g=78$ ... (i)
    $a+b+e+f=50$ ... (ii)
    $b+c+f+g=30$ ... (iii)
    $e+f+g+d=20$ ... (iv)
    and $f=5$ ... (v)

    In the above equations, (ii) + (iii) + (iv) – (i) implies
    $(a+b+e+f)+(b+c+f+g)+(e+f+g+d)-(a+b+c+d+e+f+g)=50+30+20-78=22$
    or, $b+e+g+2f=22$.
    As, $f=5$,
    it implies that $b+e+g+f=17$



17. (d) Let cost price of each pen $= x$
    then, Profit % on first pen = Loss % on second pen.

$$\left(\frac{2580-x}{x}\right)\times 100=\left(\frac{x-1620}{x}\right)\times 100$$

$$2x=2580+1620$$

$$x=\frac{4200}{2}=2100$$

Now, gain percent = 25%

$$\therefore \text{ Selling Price} = 2100\times\frac{125}{100}$$

$= 2625$ each.

18. (a) 1, 2, 3, 4, 5, 6
    Number starting with 3 and greater than 3400 can be choosen in $= 4\times5\times4=80$ ways.

Number starting with any digit from 4, 5, 6 and 7 and greater than 3400 can be choosen in $= 4 \times 6 \times 5 \times 4$ $= 480$ ways.

Hence, total number greater than 3400 are $= 80 + 480$ $= 560$

19. (a) Let number of people aged below 45 years are x.

$\therefore$ Total age of people in aeroplane $= (20 + x) \times 32$

Minimum possible average age of people above 45 years is 45.

$\therefore$ Total age of people above 45 years $= 45 \times 20 = 900$

$\therefore$ Total age of these x people $= (20 + x) \times 32 - 900$

$= 640 + 32x - 900$

$= 32x - 260$

$\therefore$ Required average age $= \dfrac{32x - 260}{x}$

$= 32 - \dfrac{260}{x}$

$\because$ Maximum possible value of $x = 26$

Hence, largest possible average age of the people whose ages are below 45 years $= 32 - \dfrac{260}{26}$

$= 32 - 10 = 22$ years

20. (d) Let original speed is x km/hr.

According to question,

$$\frac{360}{\frac{3x}{5}} - \frac{360}{x} = 8 - 4 = 4$$

$$\Rightarrow \quad \frac{360 \times 5 - 360 \times 3}{3x} = 4$$

$$\Rightarrow \quad 12x = 720$$

$$\Rightarrow \quad x = 60 \text{ km/hr}$$

Let total distance is y km.

$$\frac{150}{60} + \frac{y - 150}{60 \times \frac{3}{5}} - \frac{y}{60} = 8$$

$$\Rightarrow \quad 2.5 + \frac{y - 150}{36} - \frac{y}{60} = 8$$

$$\Rightarrow \quad \frac{1}{6}\left(\frac{y - 150}{6} - \frac{y}{10}\right) = 8 - 2.5 = 5.5$$

$$\Rightarrow \quad \frac{(y - 150) \times 5 - 3y}{30} = 6 \times 5.5 = 33$$

$$\Rightarrow \quad 5y - 750 - 3y = 990$$

$$\Rightarrow \quad 2y = 990 + 750 = 1740$$

$$\Rightarrow \quad y = \frac{1740}{2} = 870 \text{ km (Total distance)}$$

21. (a) $\cos\theta = \dfrac{1}{2}$

$$\Rightarrow \quad \cos\theta = \cos 60^\circ$$

$$\Rightarrow \quad \theta = 60^\circ$$

Hence, $6\cot^2\theta - 1 = 6 \times \cot^2 60^\circ - 1$

$$= 6 \times \left(\frac{1}{\sqrt{3}}\right)^2 - 1$$

$$= 6 \times \frac{1}{3} - 1 = 2 - 1 = 1$$

22. (a) Let the male and female passengers was 4x amd x respectively.

According to question,

$$\frac{4x - 16}{x - 8 + 12} = \frac{8}{3}$$

$$\Rightarrow \quad \frac{4x - 16}{x + 4} = \frac{8}{3}$$

$$\Rightarrow \quad 12x - 48 = 8x + 32$$

$$\Rightarrow \quad 4x - 80 \Rightarrow x = 20$$

Hence, number of passengers when the bus started $= 5 \times 20 = 100$

23. (d) Pattern of the series –

0.236 0.449 0.645 0.828 1 1.165

+0.213 +0.196 +0.183 +0.172 +0.165

−0.017 −0.013 −0.011 −0.007 (Prime Number)

24. (c) $\dfrac{75}{2} \times \dfrac{1}{100} \times a + \dfrac{125}{3} \times \dfrac{1}{100} \times b = 22$

$$\Rightarrow \quad \frac{3}{8}a + \frac{5}{12}b = 22 \qquad \text{...(i)}$$

and, $\dfrac{3}{8}a - \dfrac{5}{12}b = 2$ ...(ii)

By Solving (i) and (ii)

$$2 \times \frac{3}{8}a = 22 + 2$$

$$\Rightarrow \quad \frac{3}{4}a = 24$$

$$\Rightarrow \quad \boxed{a = 8 \times 4 = 32}$$

and, $2 \times \dfrac{5}{12}b = 22 - 2$

$\Rightarrow \frac{5}{6}b = 20$

$\Rightarrow \boxed{b = 4 \times 6 = 24}$

25. (a) By Pythagoras theorem - In Δ ABC

$(AB)^2 = (20)^2 + (15)^2 = 400 + 225$

$\Rightarrow AB = \sqrt{625} = 25$

$\therefore CD = \frac{AC \times BC}{AB} = \frac{15 \times 20}{25} = 3 \times 4 = 12$

In Δ ADC,

$AD = \sqrt{(15)^2 - (12)^2} = \sqrt{225 - 144}$

$\Rightarrow AD = \sqrt{81} = 9$

In Δ BDC,

$BD = \sqrt{(20)^2 - (12)^2} = \sqrt{400 - 144}$

$\Rightarrow BD = \sqrt{256} = 16$

$\therefore$ In radius in $\Delta ADC = \frac{12 + 9 - 15}{2} = \frac{6}{2} = 3$

In radius in $\Delta BDC = \frac{12 + 16 - 20}{2} = \frac{8}{2} = 4$

Hence, PQ = 3 + 4 = 7

26. (c) Let the CP of all four products A, B, C, D be 100P and assume the value of K be 10.

So, Increase in price of 4 products.

Product	Ist Year	2nd Year
A	K% = 10%	(K + 1)% = 11%
B	(K + 2)% = 12%	(K – 1)% = 9%
C	(K + 3)% = 13%	(K – 2)% = 8%
D	(K + 4)% = 14%	(K – 3)% = 7%

Increased prices of 4 products in 2 years.

Product	Ist Year	2nd Year
A	$100P + \boxed{\left(100P \times \frac{10}{100}\right)} = 110P$	$110P + \boxed{\left(110P \times \frac{11}{100}\right)} = 122.1P$
B	$100P + \boxed{\left(100P \times \frac{12}{100}\right)} = 112P$	$112P + \boxed{\left(112P \times \frac{9}{100}\right)} = 122.08P$
C	$100P + \boxed{\left(100P \times \frac{13}{100}\right)} = 113P$	$113P + \boxed{\left(113P \times \frac{8}{100}\right)} = 122.04P$
D	$100P + \boxed{\left(100P \times \frac{14}{100}\right)} = 114P$	$114P + \boxed{\left(114P \times \frac{7}{100}\right)} = 121.98P$

D product has the lowest price after 2nd increase.

27. (c) Total Runs scored in first four innings = 4 × 50

i.e (I + II + III + IV) innings = 200 runs

Sumesh scores in 5th innings = (5 × 62) – 200 = 110 runs

Sumesh 6th innings scores = 110 + 10 = 120 runs

Sumesh total score in Ist six innings

= 200 + 110 + 120 = 430 runs

Sumesh score in last five innings

i.e. II + III + IV + V + VI = 5(80) = 400 runs.

Hence, run scored in first inning = 30

28. (a) Let the trip made by A = T

remaining trips made by (B + C) = 10 - T

People carried by (A+B+C) in trip = 60 .....(1)

A.T.O

$At + (B+C)(10 - T) = 300$

At = 50 (given in question)

$(B + C)(10 - T) = 250$

$B + C = \frac{250}{(10 - T)}$ .....(2)

Using (2) in (1)

$\rightarrow A + \frac{250}{(10 - T)} = 60$

$10A - AT + 250 = 600 - 60T$

$\left\{\begin{matrix} \therefore\ AT = 50 \\ \rightarrow A = \dfrac{50}{T} \end{matrix}\right\}$

$\rightarrow 10\left(\dfrac{50}{T}\right) - 50 + 250 = 600 - 60T$

$\rightarrow \dfrac{500}{T} + 200 = 600 - 60T$

$3T^2 - 20T + 25 = 0$

$3T^2 - 15T - 5T + 25 = 0$

$3T(T-5) - 5(T-5) = 0$

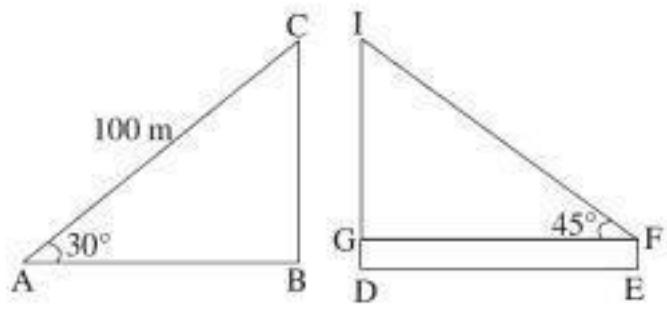
$T = 5, \left(\dfrac{5}{3}\right)$ (Trip cannot be in fraction)

$AT = 50$

$A = \dfrac{50}{5} = (10)$

A carry 10 people in 1 trip for carry 150 people. A alone would have mode $= \dfrac{150}{10} = 15$ Trip.

29. (a)



For meeting the kites, height i.e CD and ID should be same.

So, In ΔABC

$\sin 30° = \dfrac{BC}{100}$

$\dfrac{1}{2} = \dfrac{BC}{100} \quad \Rightarrow BC = 50$ m.

In ΔIGF,

$IG = ID - 10$ ($\because$ "10" is height of building)

$IG = 50 - 10 = 40$ m

So,

$\sin 45° = \dfrac{IG}{IF}$

$\dfrac{1}{\sqrt{2}} = \dfrac{40}{IF}$

$IF = 40\sqrt{2}$ m

Length of the string $= 40\sqrt{2}$ m

30. (a) Probability of chosen atleast one defective–

$\Rightarrow \dfrac{{}^4C_1 \times {}^{16}C_1 + {}^4C_2}{{}^{20}C_2}$

$\Rightarrow \dfrac{(4\times 16) + 6}{190} \quad \left\{\because\ {}^nC_r = \dfrac{n!}{r!(n-r)!}\right\}$

$= \dfrac{70}{190} = \dfrac{7}{19}$

31. (d) Largest four digit no. = 9999

Remainder = (3 – 2; 4 – 3; 5 – 4) = 1.

Least no. divisible by (3, 4, 5) = 60.

$$\begin{array}{r|l} 60 & 9999 \\ & \underline{60} \\ & 399 \\ & \underline{360} \\ & 39 \end{array} \quad 166$$

greatest no. divisible by 60 = 9999 - 39

= 9960

greatest no. divisible by (3, 4, 5) which leaves remainder 1 will be = 9960 + 1 = 9961

32. (c) The dimension of rectangular water tank = 150m × 100m × 3m

The dimension of Pipe = 2dm × 1.5 dm

The water flows from the pipe at a speed of = 15 km/ph

According to question

Volume of rectangular water tank

= Volume of a pipe 150m × 100m × 3m

$= \left(\dfrac{2}{10}\text{m} \times \dfrac{15}{100}\text{m} \times 15000\text{m}\right) \times \text{hours}$

$= \dfrac{150\times 100\times 3\times 10\times 100}{2\times 15\times 15000} = \text{hours}$

Hours = 100

33. (b) 6 different sweet varieties of count

= 28, 189, 119, 77, 161, 112

The number of sweets in each box = HCF of all 6 different sweet varieties

HCF = 7

The minimum number of boxes required to pack:–

$$\Rightarrow \frac{28}{7}+\frac{189}{7}+\frac{119}{7}+\frac{77}{7}+\frac{161}{7}+\frac{112}{7}$$

$\Rightarrow 4+27+17+11+23+16=98$

34. (d) The difference between the white-coloured cars sold is the minimum in B type model.

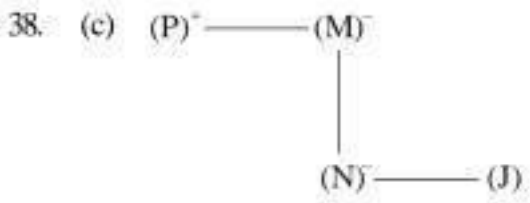
35. (a) Blue (E + D) = 37 + 43 = 80 = White (B)

36. (b)

As,	I	S	N	R	N	R	T	C	T	I	P	O	A	O	A
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	11	4	14	8	6	15	2	7	1	3	13	9	10	12	5
	P	R	O	C	R	A	S	T	I	N	A	T	I	O	N
	11	6	12	8	4	13	2	9	10	5	15	7	1	14	3
	P	R	O	C	R	A	S	T	I	N	A	T	I	O	N

37. (a) As, 30 December 2005 = Friday
30 December 2006 = Saturday
30 December 2007 = Sunday
30 December 2008 = Tuesday (leap year)
30 December 2009 = Wednesday
31 December 2009 = Thursday
01 January 2010 = Friday
02 January 2010 = Saturday
03 January 2010 = Sunday

38. (c)



(P) ⇒ Peach
(J) ⇒ Jack fruit
Option (c) shows that Peach is the maternal uncle of Jack Fruit.

39. (b) Amar: I do not carry gloves (True). Anthony Carries gloves (True)
Akbar: I Carry gloves (False). Amar Carries goggles (True)
Anthony: I Carry hat (False). Akbar Carries gloves (False)
From the above, it is clear that Anthony carries gloves.

40. (b) Angle made by the minute hand
60 minutes = 360°

$$1 \text{ minute} = \frac{360}{60} = 6^\circ$$

Angle made by the hour hand
60 minutes = 30°

$$1 \text{ minute} = \frac{36}{60} = \frac{1^\circ}{2}$$

Angle made by the hour hand form 12:00 am to 5:10 am is ⇒

$$\Rightarrow 25 \times 6^\circ + \frac{1}{2} \times 10$$

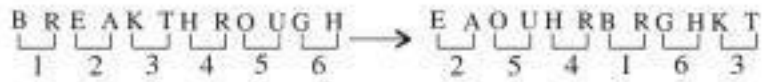
$\Rightarrow 150 + 5$
$\Rightarrow 155^\circ$

41. (d) $\frac{ab}{dc} = \frac{de}{x}$

$$\frac{3}{3^7} = \frac{27}{x}$$

$x = 3^9$
x = 19683

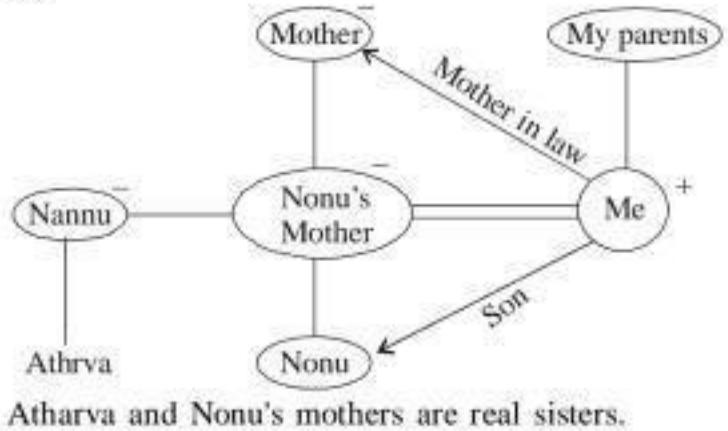
42. (d)



Arranging the given word in above arranggement.

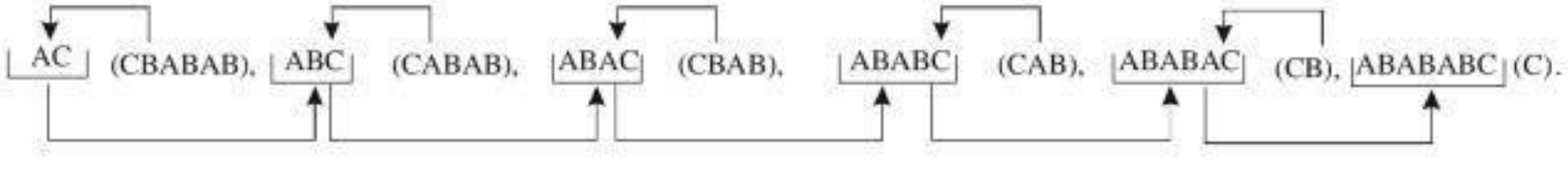
∴ NTTIBUCOONRI

43. (b)



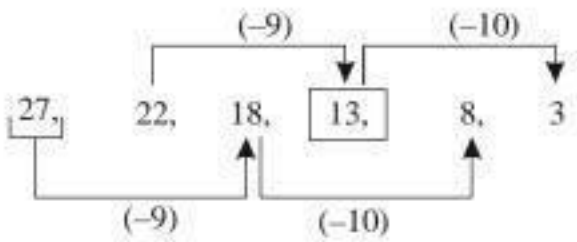
Atharva and Nonu's mothers are real sisters.

44. (b)



45. (a) There are there types of arrow in each row but '$\circ\!\!\longrightarrow\!\!\!\!\!\rightarrow$' arrow is missing in third row. So, Option (a) is the correct answer.

46. (d)



47. (c) For finding out the first Sunday in month of March first we find the mid date of Ist week i.e 4th March, 2008

$$\text{or } \left[\frac{1+7}{2}\right] = 4\text{th}$$

Then we find on 4th March2008 which day is there:-

Date $\rightarrow 04$

Month $\rightarrow 04$ { $\therefore$ " 1440 2503 6146"}

Year $\rightarrow 08$

Leap year Date $\rightarrow 04$

$$\text{Century} \rightarrow \frac{06}{24} \quad \{\because \text{ for "2000" use '6'}\}$$

$$7$$

Remainder = 3

So, starting from Sunday represents 1, 3 represents Tuesday

$\therefore$ On 4th March 2008 $\rightarrow$ Tuesday is there

On 2nd March 2008, first Sunday will be there.

$\therefore$ Sunday will be at :- 2nd , 9th, 16th, 23rd, 30th.

Sol. (48-49):

Reference:

Seven candidates A, B, C, D, E, F and G went to a party and wore different colored dress

sitting in a linear row numbered 1-7 from left to right facing towards north direction. The

distance between each is the successive multiple of 4.

Two candidates sits between C and E. F who wore Red dress sits between C and E but at

odd numbered position.

- One person sit between the one who wore Red and Blue dress. Person wearing Blue dress is not at any end.
- D is second left of the one who wore Blue dress. The person who wore Yellow colored dress sits at even numbered position not immediately to the one who wore Red dress.
- One who is wearing Pink dress is fourth right of the one wearing Yellow dress. Neither C not E wore Pink dress.
- B is not wearing Yellow dress. One who is wearing Black dress is not sitting at any end.

Inference:

G is wearing Yellow dress.

C is wearing Black dress.

- One who is wearing Green dress is sitting left of the one who is wearing Black dress.

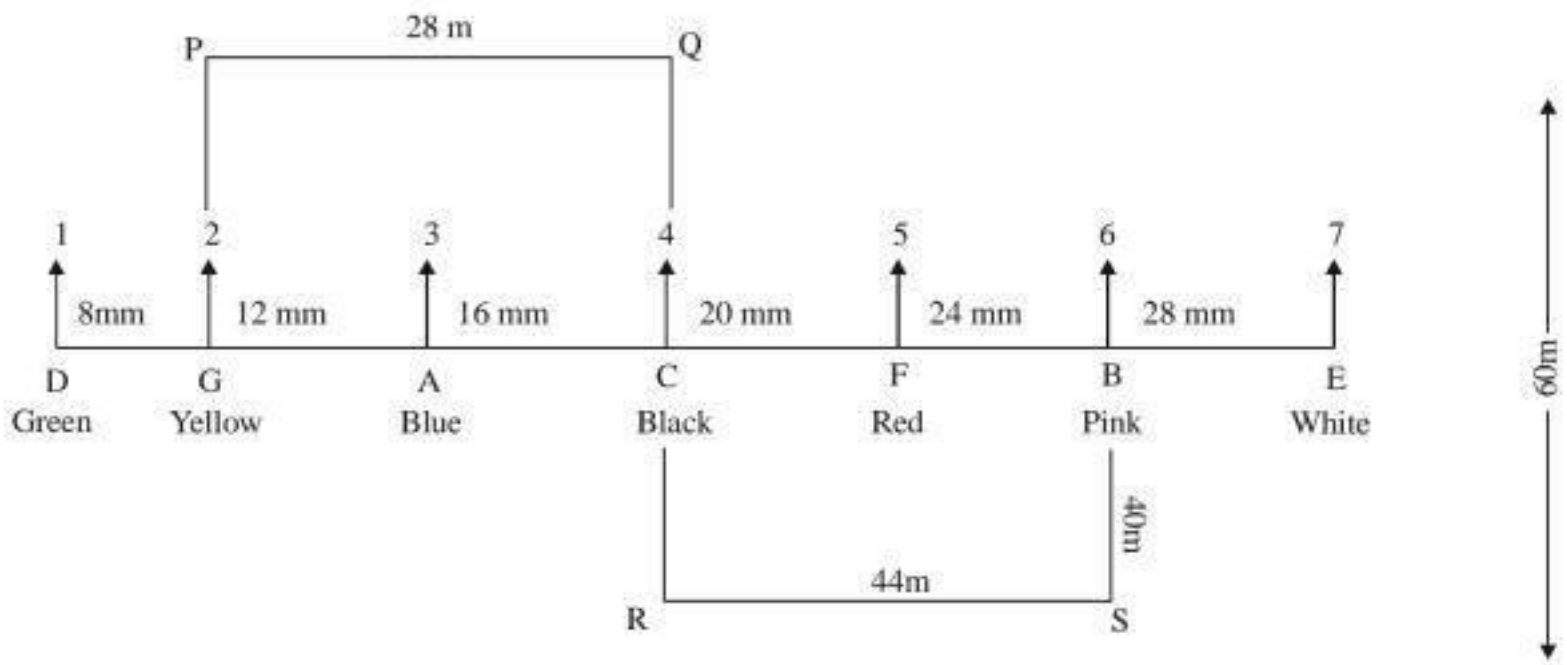
Inference:

D is wearing Green dress.

- After having dinner one who was wearing Yellow dress moves 20 m towards North to point P and after turning right moves another 28 m to point Q. From Q the candidate took 90° turn towards right and moves 60 m to point R. Again from R it moves towards point S which is exactly South of B

Inference:

We get all the positions of P, Q, R and S.



48. (b) 49. (c)

50. (d) From (a) FILM
(b) GLOW
(c) MOUSE

51. (d) In the given Input-Output question the logic is—
For step I- All the digits of the given numbers are arranged in ascending order within the numbers.
For Step II- All the numbers obtained in step I are arranged in ascending order from the left end.
For Step III- First and last digits of the numbers are omitted.
For step IV- The digits of the numbers obtained in step III are added.
INPUT– 7925 4758 2538 5628 8561 7426 3625 6245
STEP I- 2579 4578 2358 2568 1568 2467 2356 2456
STEP II- 1568 2356 2358 2456 2467 2568 2579 4578
STEP III- 56 35 35 45 46 56 57 57
STEP IV- 11 8 8 9 10 11 12 12
Addition = 8 + 9 + 11 + 12 = 40

52. (a) Substitute numbers for letters :
T – 1, O – 2, M – 3 and A – 4.
MTOOTA = 312214

53. (b) Putting A = 1, B = 2, C = 3, D = 4.....
X = 24, Y = 25, Z = 26,
We have, F + P = 6 + 16 = 22 : G + N
= 7 + 14 = 21
: J + E = 10 + 5 = 15.
Since K = 11, so value corresponding to missing letter
= (27 – 11) = 16
So, the missing letter is the 16th letter of the English alphabet, which is P.

54. (b)

55. (a) Meaningful order is :
Infant → Childhood → Adolescent → Adult → Old age
(5) (4) (3) (1) (2)

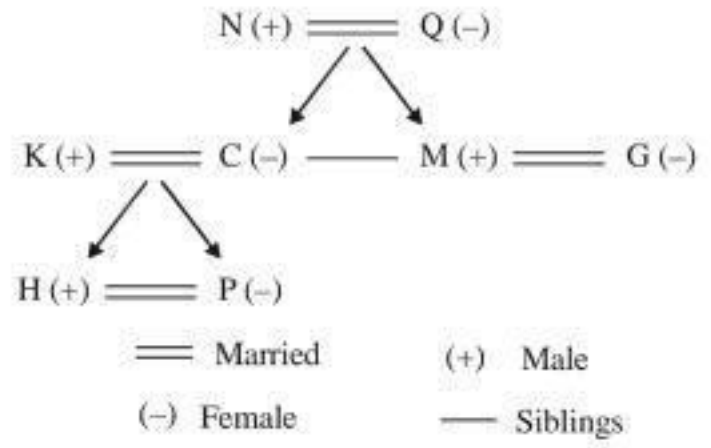
56. (d)

57. (b) It will be the best suited option as it is necessary to change the thinking of people but most important thing is to make dowry system as illegal and make it as punishable offence.

58. (b) The petroleum companies will increase the prices of petrol and diesel by about 10 percent.

59. (a) Educating the school going children on politics will definitely acquaint them with the intricacies and modalities of the same thus help them to make informed decision. Hence, argument I is strong.

Sol. (60) :



60. (d) P