CSAT Solved Paper – 2014

SET- D

Passage - 1

The Himalayan ecosystem is highly vulnerable to damage, both due to geological reasons and on account of the stress caused by increased pressure of population, exploitation of natural resources and other related challenges. These aspects may be exacerbated due to the impact of climate change. It is possible that climate change may adversely impact the Himalayan ecosystem through increased temperature altered precipitation patterns, episodes of drought and biotic influences.

This would not only impact the very sustenance of the indigenous communities in uplands but also the life of downstream dwellers across the country and beyond.

Therefore, there is an urgent need for giving special attention to sustain the Himalayan ecosystem. This would require conscious efforts for conserving all the representative systems.

Further, it needs to be emphasized that the endemics with restricted distribution, and most often with specialized habitat requirements, are among the most vulnerable elements. In this respect the Himalayan biodiversity hotspot, with rich endemic diversity, is vulnerable to climate change.

The Threats include possible loss of genetic resources and species, habitats and concomitantly a decrease in ecosystem services. Therefore, conservation of endemic elements in representative ecosystems/habitats assumes a great significance while drawing conservation plans for the region.

Towards achieving the above, we will have to shift towards contemporary conservation approaches, which include a paradigm of landscape level interconnectivity between protected area systems. The concept advocates a shift from the species-habitat focus to an inclusive focus on expanding the bio-geographic range so that natural adjustments to climate change can proceed without being restrictive.

1. Consider the following statements:

According to the passage, the adverse impact of climate change on an ecosystem can be a

1. Permanent disappearance of some of its flora and fauna.

2. Permanent disappearance of ecosystem itself.

Which of the statements given above is/are correct?

(a) 1 only

(b) 2 only

(c) Both 1 and 2

(d) Neither 1 nor 2

Solution: a)

UPSC will always try to trick you giving options that will relate to the passage text, but will be an extreme version of it. For e.g. in statement 2: it says "disappearance of the ecosystem itself". First statement too is extreme, but you can find its mention in the passage.

Lesson is: Be careful of extreme and emphasizing words like ONLY, NECESSARILY, PERMANENT, TOTALLY, COMPLETELY etc.

2. Which one of the following statements best implies the need to shift toward contemporary conservation approach?

(a) Exploitation of natural resources causes a stress on the Himalayan ecosystem.

(b) Climate change alters precipitation patterns, causes episodes of drought and biotic interference.

(c) The rich biodiversity, including endemic diversity, makes the Himalayan region a biodiversity hotspot.

(d) The Himalayan biogeographic region should be enabled to adapt to climate change smoothly.

Solution: d)

On first look, it seems that all options except (d) are correct. But the reverse is the case.

Read the question carefully. It asks for the **'need'** to shift, not the **'cause'** of shifting to contemporary conservation practices. If cause was asked then all except (d) would be correct.

So, If you are confused in picking up the right option, you have not read the question carefully. Even a single word can make all the difference.

Lesson is: Be careful with the 'keywords'.

3. What is the most important message conveyed by the passage?

(a) Endemism is a characteristic feature of Himalayan region.

(b) Conservation efforts should emphasize on biogeographic ranges rather than on some species or habitats.

(c) Climate change has adverse impact on the Himalayan ecosystem.

(d) Without Himalayan ecosystem, the life of the communities of uplands and downstream will have no sustenance.

Solution: b)

Even though all the options mentioned in the question have been conveyed by the passage, it asks specifically for the **'important message'** – not **'concern'**, or **'fact'** etc. Look at the 'keyword' here.

If it was 'most important concern' in the question, then the answers should have been (c) or (d).

If it was 'most important fact', answer would have been (a).

Lesson is: Be careful with the 'keywords'.

4. With reference to the passage, the following assumptions have been made:

1. To maintain natural ecosystems, exploitation of natural resources should be completely avoided.

2. Not only anthropogenic but also natural reasons can adversely affect ecosystems.

3. Loss of endemic diversity leads to the extinction of ecosystems.

Which of the above assumptions is/are correct?

(a) 1 and 2

(b) 2 only

(c) 2 and 3

(d) 3 only

Solution: b)

Thats a cakewalk. 1 and 3 cannot be correct. So the answer has to be (b). Simple elimination will save you a lot of time and makes your job easy.

Lesson is: First eliminate, then choose.

Passage - 2

It is often forgotten that globalization, is not only about policies on international economic relationships and transactions, but has equally to do with domestic policies of a nation. Policy changes necessitated by meeting the internationally set conditions (by WTO etc.) of free trade and investment flows obviously affect domestic producers and investors. But the basic philosophy underlying globalization emphasizes absolute freedom to markets to determine prices and production and distribution patterns, and view government interventions as processes that create distortions and bring in inefficiency. Thus, public enterprises have to be privatized through disinvestments and sales; sectors and activities hitherto reserved for the public sector have to be opened to the private sector. This logic extends to the social services like education and health. Any restrictions on the adjustments in workforce by way of retrenchment of workers should also be removed and exit should be made easier by removing any restrictions on closures. Employment and wages should be governed by free play of market forces, as any measure to regulate them can discourage investment and also create inefficiency in production.

Above all, in line with the overall philosophy of reduction in the role of the state, fiscal reforms should be undertaken to have generally low levels of taxation and government expenditure should be kept to the minimum to abide by the principle of fiscal prudence. All these are policy actions on the domestic front and are not directly related to the core items of the globalization agenda, namely free international flow of goods and finance.

5. According to the passage, under the globalization, government interventions are viewed as processes leading to

(a) distortions and inefficiency in the economy.

(b) optimum use of resources.

(c) more profitability to industries.

(d) free play of market forces with regard to the industries.

Solution: a)

Pretty simple. Direct mention has been made in the passage.

6. According to the passage, the basic philosophy of globalization is to

(a) give absolute freedom to producers to determine prices and production.

(b) give freedom to producers to evolve distribution patterns.

(c) give absolute freedom to markets to determine prices, production and employment.

(d) give freedom to producers to import and export.

Solution: c)

Although direct mention has not been made, its there in the passage in bits and pieces. So while reading the passage, you should be able to grasp the essence of it. Confusion reduces.

Lesson: While reading try to get the essence (central core/idea/message/view) of the passage.

7. According to the passage, which of the following is/are necessary for ensuring globalization?

      1. Privatization of public enterprises

      2. Expansionary policy of public expenditure

      3. Free play of market forces to determine wages and employment

      4. Privatization of social services like education and health.

Select the correct answer using the code given below:

(a) 1 only

(b) 2 and 3 only

(c) 1, 3 and 4

(d) 2, 3 and 4

Solution: c)

Again apply elimination to save time. Statement 2 is ofcourse incorrect. So (b) and (d) are out.

Statement 3 is ofcourse correct (you know from the previous answer). So, answer has to be (c).

**8.** According to the passage, in the process globalization the State should have

(a) expanding role

(b) reducing role

(c) statutory role

(d) none of the above roles.

Directions for the following 4 (four) items:

The following graph shows the average profit of two fruit-sellers A and B in thousands (Rs.) per year from the year 1995 to 2000.

Consider the graph and answer the 4 (four) items that follow:
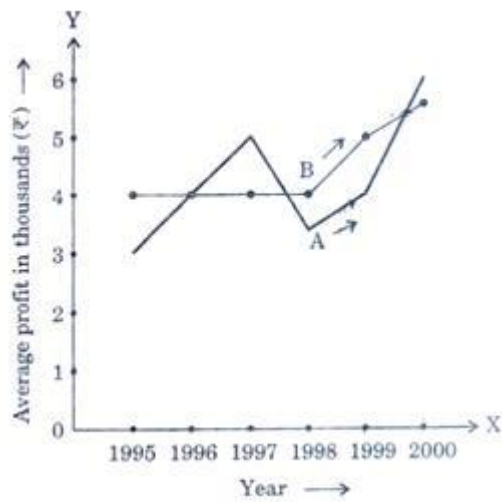
9. In which year is the average profit of A and B same?

(a) 1995

(b) 1996

(c) 1997

(d) 1998

Solution: b)

Where the graph intersects, they have the same value across the y axis (i.e. average profits)

10. What is the difference between the average profit of B and A in the year 1998?

(a) - Rs. 100

(b) - Rs. 1,000

(c) + Rs. 600

(d) - Rs. 300

Solution: c)

Since you can't calculate exact amount, look at the graph closely to first eliminate options (a) and (b). Then average profit of B is ofcourse greater than A. Answer has to be positive. Its (c)

11. How much more average profit did A make in the year 2000 than in the year 1999?

(a) Rs. 200

(b) Rs. 1,000

(c) Rs. 1,500

(d) Rs. 2,000

Solution: d)

Clear from the graph.

12. What is the trend of the average profit of B from the year 1997 to the year 2000?

(a) Non-increasing

(b) Non -decreasing

(c) Steady

(d) Fluctuating

Solution: (b)

Clear from the graph.

13. The following table shows the marks obtained by two students in different subjects:

| Subjects	Student A	Maximum marks	Student B	Maximum marks
English	60	100	80	150
Psychology	70	100	70	100
History	30	100	60	100
Sanskrit	50	50	15	25

The difference in the mean aggregate percentage marks of the students is
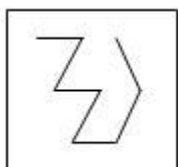
(a) 2.5%

(b) 13.75%

(c) 1.25%

(d) Zero

Solution: d)

Add total marks of student A; divide by total maximum marks- and find the percentage. Do the same for B. You have the answer.
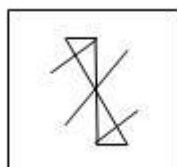
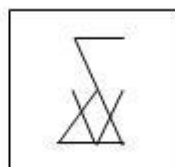**14.** Examine the following figure:
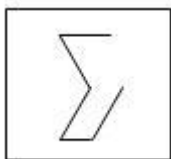
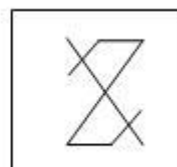Which one of the following figures has the above figure embedded in it?

    (a)   (b)   (c)   (d)
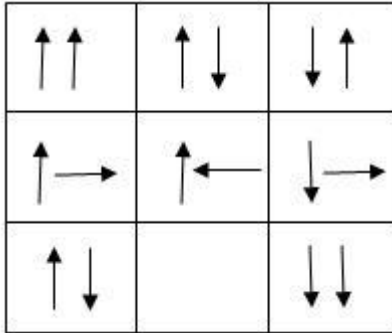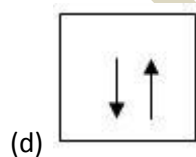
Solution: c)

Pure visual observation. Try tracing the Q figure using pencils in the option figures. It will be easier to find the right one.

15. Consider the following matrix:

Which one of the following figures fits into blank part of the above matrix?

(a)

(b)

(c)

(d)
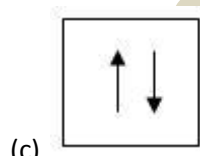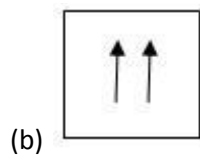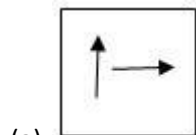
Solution: b)

The pattern is – of the two arrows in the first column, the second arrow flips by 180 degrees in the next column (second). In the third column, both arrows flip by 180 degrees.

16. The following table gives population and total income of a city for four years:

Year	1992	1993	1994	1995
Population In lakhs	20	21	22	23
Income In crores (Rs.)	1010	1111	1225	1345

Which one of the following statements correct in respect of the above data ?

(a) Population increased by 5% or more every year.

(b) Income increased by 10% or more every year.

(c) Per capita income was always above 5,000.

(d) Per capita income was highest in 1994.

Solution: c)

Simple calculations for every option. You have the answer.

A trick to calculate percentages faster

To calculate % growth in population – look at the growth from 1992-1993.

Its [(21-20)/20] X 100 = (1/20)X100 = 5%. Now you know that every year the growth is by 1 lakh, but the denominator base (population) is growing. For 1993-1994, its 1/21, for 1994-1995, its 1/22.

So as the denominator grows in a fraction, and nominator remains constant, the value of the fraction will be lesser each time i.e. less than 5% for all coming years. So you need not calculate percentage growth for all years and waste your precious time.

17. Consider the table given below in which the numbers bear certain relationship among themselves along the rows:

29	13	18
33	X	19
30	27	3

Which one of the following numbers is the missing number indicated above by X ?

(a) 19

(b) 15

(c) 14

(d) 8

18. Consider the following matrix with one empty block in the lower extreme corner:

Which of the following figures could fit in the empty block and thus complete the matrix?
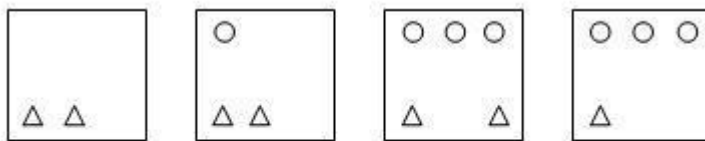
(a) (b) (c) (d)

Solution: a)

The pattern is very obvious. The squares are increasing and circles decreasing in a particular fashion across the next right columns. Extend logically, thats all.

19. With reference to the figure given below number of different routes from S to T without retracing from U and/or V (T is the next node after V), is

(a) 3

(b) 6

(c) 9

(d) 18

Solution: d)

There are two ways of doing it.

Technique 1: The Long one and obvious

You keep counting the number of routes starting from S to U to V to T.

Technique 2: Short cut
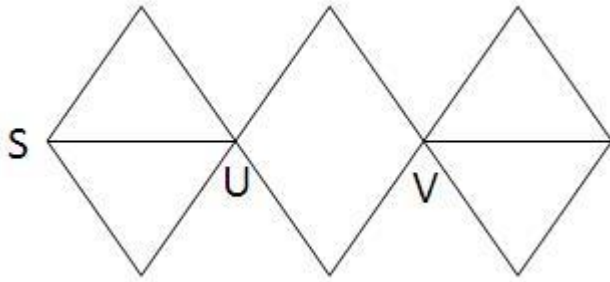
Multiply the number of nodes from S, U and V leading towards T. It is 3 X 2 X 3 = 18.

Reason: Each path that you will start on (lets say from S) will have to go through all the paths

Number of ways you can reach U from S is 3. The number of ways you can reach V from U is 2. So the number of ways you can reach from S to V will logically be 3 X 2 = 6. Similarily logically extend it to T, it becomes 6X3 =18.

20. Consider the following figures:
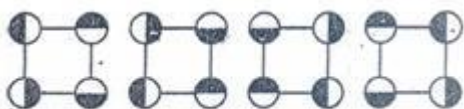
Change in positions of beads in the figures above follows a sequence. Follows the same sequence, which of the figures look should appear as the fifth figure above?

(a)

(b)

(c)

(d)
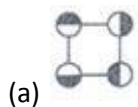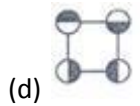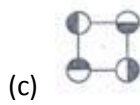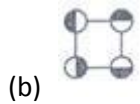
Solution: b)

The sequence followed is like Left (L), Right(R), Top(T) and bottom(B) in cycles for all beads.

Sequence for Top left bead across four figures – **LR** - **BT**

For Bottom left bead – **RL** – **TB** (total mirror image of top bead)

For Top Right bead – **TB** – **RL** (exact reverse of top left bead)

For bottom right bead – **BT** – **LR** (total mirror image of the above)

Repeat the same pattern. And you get the answer.

This was a little tricky. But you will have to keep practicing complex patterns until you get a hold of the topic.

21. A bell rings every 18 minutes. A second bell rings every 24 minutes. A third bell rings every 32 minutes. If all the three bells ring at the same time at 8 o'clock in the morning, at what other time will they all ring together?

(a) 12 : 40 hrs

(b) 12 : 48 hrs

(c) 12 : 56 hrs

(d) 13 : 04 hrs

Solution: b)

Simple LCM problem. Take the LCM of 18, 24 and 32 which comes out to be 288 minutes i.e. 4 hours and 48 minutes. Add to 8'o clock. The time is 12:48 hours.

22. "Price is not the same thing as value. Suppose that on a day the price of everything viz., coal, bread, postage stamps, a day's labour, the rent of houses, etc. were to double. Prices then would certainly rise, but- values of all things except one would not."

The writer wants to say that if prices of all things were doubled

(a) the values of all things would remain constant.

(b) the values of the things sold would be doubled.

(c) the values of the things bought would be halved.

(d) the value of money only would be halved.

Solution: d)

The question is a little tricky. But, by simple logic, first you can eliminate options (a) and (b) since the question statement clearly mentions the value of all things would not rise or value of all things would not remain constant.

Now, you can eliminate option (c) by the logic that – the question statement mentions that value of all things except one would rise (so it can't be halved for all).

So, the answer that you have is (d). Now, you can definitely prove answer (d) by what you study in economics (value of money goes down in inflationary situations), but it is not economics here. Its a critical reasoning question. So be objective. Just follow the question statement and eliminate whatever is illogical or cannot be deduced from the question statement. Although option (d) is not very explicit in the question statement, it sounds better than the other three.

Lesson: Rely on elimination a lot in tricky critical reasoning question.

23. A and B decide to travel from place X to place Y by bus. A has Rs. 10 with him and he finds that it is 80% of the bus fare for two persons. B finds that he has Rs. 3 with him and hands it over to A. In this context, which one of the following statements is correct?

(a) Now the money A has just enough to buy two tickets.

(b) A still needs Rs. 2 for buying the tickets

(c) After buying the two tickets A will be left with 50 paise.

(d) The money A now has is still not sufficient to buy two tickets.

Solution: c)

Rs. 10 is 80% of fare. So actual fare is Rs. 12.50

B gives Rs. 3 to A. So he has Rs. 9.50, i.e. 50 paisa short of bus fare.

24. As per agreement with a bank, a businessman had to refund a loan in some equal installments without interest. After paying 18 installments he found that 60 percent of his loan was refunded. How many installments were there in the agreement?

(a) 22

(b) 24

(c) 30

(d) 33

Solution: c)

Solve it by simple unitary method.

60% is equal to 18 installments.

1% is equal to 18/60 installments

So 100% is equal to (18/60)X100 = 30 installments.

25. A worker reaches his factory 3 minutes late if his speed from his house to the factory is 5 km/hr. If he walks at a speed of 6 km/hr then he reaches the factory 7 minutes early the distance of the factory from his house is

(a) 3 km

(b) 4 km

(c) 5 km

(d) 6 km

Solution: c)

You can solve it by two methods.

Technique 1: Pure mathematics

Use time, speed and distance equation for both situations.

Let distance of factory from house be X in Kms. Let the ideal time be T in hours.

$(X/5) = T + (3/60)$ ..... eqn (i)

(X/6) = T – (7/60) .....eqn (ii)

Solving both together, you get

(X/5)-(X/6) = 10/60

X/30 = 1/6

X = 5 Km.

Technique 2: Option checking (sometimes easier)

Quickly divide each distance (in option) by the two speeds and see the difference. If the net difference in both times is 10 minutes (3 minutes late and 7 minutes early), that is the answer.

26. "Liberty, therefore, is never real unless the Government can be called to account when it invades rights."

Which one of the following is the best justification of the above statement?

(a) In the realisation that the government can be brought to book in a court of law

(b) In identifying a man as a political unit in a way which distinguishes him from other citizens

(c) In a decentralized society wherein the basic needs of men can find satisfaction

(d) In the understanding that liberty and, restraints are complementary

Solution: a)

Look at the keyword 'justification'. So you should choose a statement that can give the best reasoning to validate the question statement.

Quickly eliminate (c) and (d). They are remote to the question statement.

Now option (b) does not justify government invasion on rights. Its more about state as a political unit; political equality and individuality of man.

Left is (a). Again its not very explicit from the question, but thats the best bet we have in tricky critical reasoning questions.

*Read the following **two** passages and answer the items that follow- each passage. Your answers to these items should be based on the passages only.*

Passage -1

In recent times, India has grown fast not only compared to its own past but also in comparison with other nations. But there cannot be any room for complacency because it is possible for the Indian economy to develop even faster and also to spread the benefits of this growth more widely than has been done thus far. Before going into details of the kinds of micro-structural changes that we need to conceptualize and then proceed to implement, it is worthwhile elaborating on the idea of inclusive growth that constitutes the defining concept behind this Government's various economic policies and decisions. A nation interested in inclusive growth views the same growth differently depending on whether the gains of the growth are heaped primarily on a small segment or shared widely by the population. The latter is cause for celebration but not the former. In other words, growth must not be treated as an end in itself but as an instrument for spreading prosperity to all. India's own past experience and the experience of other nations suggests that growth is necessary for eradicating poverty but it is not a sufficient condition. In other words, policies for promoting growth need to be complemented with policies to ensure that more and more people join' in the growth process and, further,· that there are mechanisms in place to redistribute some of the gains to those who are unable to partake in the market process and, hence, get left behind.

A simple way of giving this idea of inclusive growth a sharper form is to measure a nation's progress in terms of the progress of its poorest segment, for instance the bottom 20 per cent of the' population. One could measure the per capita income of the bottom quintile of the population and also calculate the growth rate of income; and evaluate our economic success in terms of these measures that pertain to the poorest segment. This approach is attractive because it does not ignore growth like some of the older heterodox criteria did. It simply looks at the growth of income of the poorest sections of the population. It also ensures that those who are outside of the bottom quintile do not get ignored. If that were done, then those people would in all likelihood drop down into the bottom quintile and so would automatically become a direct target of our policies. Hence the criterion being suggested here is a statistical summing up of the idea of inclusive growth, which, in turn, leads to two corollaries: to wish that India must strive to achieve high growth and that we must work to ensure that the weakest segments benefit from the growth.

27. The author's central focus is on

(a) applauding India's economic growth not only against its own past performance, but against other nations.

(b) emphasizing the-need for economic growth which is the sole determinant of a country's prosperity.

(c) emphasizing inclusive growth where gains of growth are shared widely by the population.

(d) emphasizing high growth.

Solution: c)

Just focus on getting the essence and overview of the passage while reading. Such questions will be a cakewalk for you.

28. The author supports policies which will help

(a) develop economic growth.

(b) better distribution of incomes irrespective of rate of growth.

(c) develop economic growth and redistribute economic gains to those getting left behind.

(d) put an emphasis on the development of the poorest segments of society.

Solution: d)

Options (a) and (b) can be eliminated right away. (b) talks about "irrespective of rate of growth".

Option (c) says, "redistribute to those left behind". But that is not what the author is trying to say.

In the whole passage, he keeps talking about the growth of the poorest segments first. So, (d) has to be the answer.

Lesson: Evaluate the options in the light of the essence of the passage.

29. Consider the following statements:

According to the author, India's economy his grown but there is no room for complacency as

1. growth eradicates poverty.

2. growth has resulted in prosperity all.

Which of the statements given above is/a correct?

(a) 1 only

(b) 2 only

(c) Both 1 and 2

(d) Neither 1 nor 2

Solution: d)

The author does not mention any of these. He mentions the opposite that growth has not been able to life large number of people from poverty; and distribution needs to be looked at.

Passage -2

It is easy for the government to control State-owned companies through nods and winks. So what really needs to be done as first step is to put petrol pricing on a transparent formula - if the price of crude is x and the exchange rate y, then every month or fortnight, the government announces a maximum price of petrol, which anybody can work out from the x and Y. The rule has to be worked out to make sure that the oil-marketing can, in general, cover their costs. This will mean that if one company can innovate and cut costs, it will make greater profits. Hence, firms will be more prone to innovate and be efficient under this system. Once the rule is announced, there should be no interference by the government. If this is done for a while, private companies will re-enter this market. And once a sufficient number of them are in the fray, we can remove the rule-based pricing and leave it truly to the market (subject to, of course, the usual relations of anti-trust and other competition laws).

30. Consider the following statements: According to the passage, an oil company can make greater profits, if a transparent formula for petrol pricing is announced every fortnight or month, by

      1. promoting its sales.

      2. undertaking innovation.

      3. cutting costs.

      4. selling its equity shares at higher prices.

Which of the statements given above is/are correct?

(a) 1 only

(b) 2 and 3

(c) 3 and 4

(d) 1, 2 and 4

Solution: b)

Explicitly mentioned in the passage.

31. Consider the following statements:

According to the passage, private oil companies re-enter the oil producing market if

       1. a transparent rule-based petrol pricing exists.

       2. There is no government interference in the oil producing market.

       3. subsidies are given by the government.

       4. regulations of anti-trust are removed .

Which of the statements given above are correct?

(a) 1 and 2

(b) 2 and 3

(c) 3 and 4

(d) 2 and 4

Solution: a)

Again explicit in passage.

32. Five persons fire bullets at a target at an interval of 6, 7, 8, 9 and 12 seconds respectively. The number of times they would fire the bullets together at the target in an hour is

(a) 6

(b) 7

(c) 8

(d) 9

Solution: b)

Its a simple LCM based question. Take the LCM of 6,7,8,9 and 12 which comes out to be 504 seconds.

Divide 3600 seconds (1 hour) by 504 = It will be between 7 and 8. So the answer is (b).

Tip: You need not calculate the exact thing upto decimal points. Save time. ☺

33. A group of 630 children is seated in rows for a group photo session. Each row contains three less children than the row in front of it. Which one of the following number of rows is not possible?

(a) 3

(b) 4

(c) 5

(d) 6

You can solve this question by two techniques.

Technique 1 (The Manual way):

Let the number of children in the front row be X.

So children in the back rows respectively will be

$$X - 3$$

$$X - 6$$

$$X - 9$$

$$X - 12$$

$$X - 15$$

And so on.....

Check if 3 rows are possible i.e. if they sum upto 630

$$(X) + (X-3) + (X-6) = 630$$

$$=> 3X = 639 => X = 213$$

Since X is an integer, 3 rows are possible.

Doing this check for all options, you will know that – 6 rows are not possible.

$$X + (X-3) + (X-6) + (X-9) + (X-12) + (X-15) = 630$$

⇨ $6X = 675 => X = 112. 5$

Technique 2: (Using formula of Arithmetic Progression (AP))

Formula for AP sum is -> n/2 [a+ l] where a is the initial number and l is the last number of AP.

The summation of the AP (total number of children in rows will be) – General formula

As you see that number of children in every successive follows an AP with initial number say X and last number as X-3n (where n represents the number of the respective row).

$$n/2 [X + X – 3n] = 630 => n (2X-3n) = 1260$$

Now just put the value of n as 3, 4, 5, 6 and check wherever X does not come as an integer value.

This method will save a lot of your time.

34. There are seven persons up on a ladder, A, B, C, D, E, F and G (not in that order). A is further up than E but is lower than C. B is in the middle. G is between A and B. E is between B and F. If F is between E and D, the person on the bottom step of the ladder will be

(a) B

(b) F

(c) D

(d) E

Solution: c)

Statement 1 (S1): C> ....A >........E (We are using dots where we can't predict the person's position on the ladder)

S2: B in the middle.

S3: G is between A and B. So the first four on top of ladder have to be C>A>G>B.....E

S4: F between E and D. So, sequence becomes something like C>A>G>B>E>F>D

D is at the bottom ladder.

Tip: Solving using dots (which represent uncertain entries in such sequences) makes problem easier and more visual.

35. Consider that:

1. A is taller than B.

2. C is taller than A.

3. D is taller than C.

4. E is the tallest of all.

If they are made to sit in the above order of their height, who will occupy the mid position?

(a) A

(b) B

(c) C

(d) D

Solution: c)

Use the same technique of using ">" and dots.

S1: A>.....B..

Adding S2: C>....A>....B..

Adding S3: D>...>C>...A>...B...

Adding S4: E>D>C>A>B

Answer is C will occupy the middle position.

36. Consider the following statements: There are six villages A, B, C, D, E and F.

F is 1 km to the west of D.

B is 1 km to the east of E.

A is 2 km to the north of E.

C is 1 km to the east of A.

D is 1 km to the south of A.

Which three villages are in a line?

(a) A, C, B

(b) A, D, E

(c) C, B, F

(d) E, B, D

Solution: b)
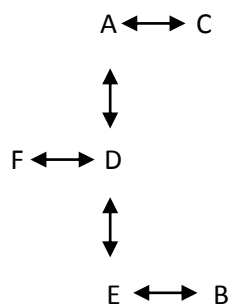
This is the arrangement. Each arrow represents 1 Km of distance. So, A, D and E are in a line.

37. Four children are sitting in a row. A is occupying the seat next to B but not next to C. If C is not sitting next to D, who is/are occupying seat/seats adjacent to D?

(a) B

(b) A

(c) B and A

(d) Impossible to tell

Solution: b)

First sentence, this can be the possibility – AB or BA, but not ~~CAB~~ or ~~BAC~~

Second sentence, ~~CD~~ or ~~DC~~ is not possible. So C has to be next to B, and D next to A.

It can be either DABC, or CBAD.

38. Assume that

1. the hour and minute hands of a clock move without jerking.

2. the clock shows a time between 8 o'clock and 9 o'clock.

3. the two hands of the clock are one above the other.

After how many minutes (nearest integer) with the two hands will be again lying one above the other?

(a) 60

(b) 62

(c) 65

(d) 67

Solution: c)

Little tricky question. You will not be able to use any formula in this question. Use option checking and see which ones you can eliminate logically.

A clock hour hand every hour moves by $30°$ ($360°/12$ hours) in every hour i.e. 60 minutes (i.e. 0.5 degrees every minute). But the minute hand moves by $360°$ every 60 minutes (i.e by $6°$ every minute).

Imagine, both the hands of the clock are over one another at a time which is possible somewhere around 8:40 and 8:45.

Now, lets try to estimate a more specific position of the hour and minute hand by seeing what position the hour hand would have been at these two times – 8:40 and 8:45

After, 40 minutes past 8, the hour hand will have advanced 40 minutes X 0.5 degrees per minute = $20°$ from the position of 8 AM/PM (Gap between 8-9 Am/PM is of $30°$). After 45 minutes, it would have advanced $22.5°$ from the position of 8 Am/pm. This means it would have completed $2/3^{rd}$ of its movement from 8 AM/PM to 9 AM/PM and will be a little ahead of it.

So, at $20°$ movement from the position of 8 Am/PM, it would have covered 3.33 minutes. At $22.5°$, 3.75 movement. So lets safely assume that it has covered 3.5 minutes past 8:40, i.e. the time can be assumed as 8:43.5 when both hands meet.

For them to meet again, the minute hand should meet the hour hand between 45-50 minutes, i.e. between 9:45 – 9: 50. After minute hand travelling for 45 minutes past 9, the hour hand would have definitely crossed 9:48 PM, but less than 9: 50 PM/AM.

So the gap between the times when both meet can never be 60 minutes, or 62 minutes or 67 minutes (you can subtract and check).

Clearly the nearest answer is 65 minutes (c).

Q39-44 were English Comprehension questions (Xth Standard).

45. If the 3rd day of a month is Monday, which one of the following will be the fifth day from 21st of this month?

(a) Monday

(b) Tuesday

(c) Wednesday

(d) Friday

Solution: b)

Simple arithmetic.

46. For a charity show, the total tickets sold were 420. Half of these tickets were sold at the rate of Rs. 5 each, one-third at the rate of Rs. 3 each and the rest for Rs. 2 each. What was the total amount received?

(a) Rs. 900

(b) Rs. 1,540

(c) Rs. 1,610

(d) Rs. 2,000

Solution: c)

Half of 420 tickets = 210: Price per ticket – Rs. 5; total = Rs. 1050

One-third at the rate of 3 Rs. Each : total= 140 X 3 = Rs. 420

Rest for Rs. 2: Total = 70X 2 = 140

Gross sales = Rs. 1,610

Directions for the following 3 (three) items: Read the passage given below and answer the items that follow.

A, B, C, D, E, F are members of a family. They are engineer, stenographer, doctor, draughtsman, lawyer and judge (not in order). A, the engineer is married to the lady stenographer.

The judge is married to the lawyer. F, the draughtsman is the son of B and brother of E. C, the lawyer is the daughter-in-law of D. E is the unmarried doctor. D is the grandmother of F. There are two married couples in the family.

47. What is the profession of B?

(a) Judge

(b) Lawyer

(c) Draughtsman

(d) Cannot be determined

Solution: a)

48. Which of the following is/are couple/couples?

(a) AD only

(b) BC only

(c) Both AD and BC

(d) Both AC and BD

Solution: c)

49. What is the profession of D?

(a) Judge

(b) Stenographer

(c) Doctor

(d) Cannot be determined

Solution: b)

Explanation:

This is the format: Person (Gender – Profession), So from the statements given in the question, we have. X, Y and Z are used until the person is unknown.

Statement1 (S1): A (M - Engineer) – "X" (F- Stenographer)

S2: "Y" (M/F – Judge) – "Z" (M/F- Lawyer)

S3: F (M – Draughtsman) – Son of B and brother of E

This means that: E is Doctor and son of B

By S4 the following are clear: C lawyer will the wife of B judge. Moreover, D is the stenographer.

By S5: D is the grandmother of F.

So, this is the final relationship:

First Generation : A (M - Engineer) – D (F- Stenographer)

|

Second Generation: B (M, Judge) – C (F, Lawyer)

|

Third Generation: F (M – Draughtsman) & E (M/F – Doctor)

Directions for the following 7 (seven) items: Read the following two passages and answer the items that follow each passage. Your answers to these items should be based on the passages only.

Passage -1

Many nations now place their faith in capitalism and governments choose it as the strategy to create wealth for their people. The spectacular economic growth seen in Brazil, China and India after the liberalisation of their economies is proof of its enormous potential and success. However, the global banking crisis and the economic recession have left many bewildered. The debates tend to focus on free market operations and forces, their efficiency and their ability for self correction. Issues of justice, Integrity and honesty are rarely elaborated to highlight the failure of the global banking system. The apologists of the system continue to justify the success of capitalism and argue that the recent crisis was a blip.

Their arguments betray an Ideological bias with the assumptions that an unregulated market is fair and competent, and that the exercise of private greed will be in the larger public interest.

Few recognize the bidirectional relationship between capitalism and greed; that each reinforces the other. Surely, a more honest conceptualisation of the conflicts of interest among the rich and powerful players who have benefited from the system, their biases and ideology is needed; the focus on the wealth. creation should also highlight the resultant gross inequity.

50. The apologists of the "Free Market System", according to the passage, believe in

(a) market without control by government authorities.

(b) market without protection by the government.

(c) ability of market to self correct.

(d) market for free goods and services.

Solution: a)

Here you can easily discard options (d) and (b) because there cannot be made out from the text. For aspirants, there might be confusion between the other two, because as per your knowledge, both options show the characteristics of a free market system. And both are somewhere mentioned in the passage.

Now, you need to be a little careful and be objective in selecting the options. You need to select the answer "according to the passage".

The temptation to pick up option (c) will come from this line – "*The debates tend to focus on free market operations and forces, their efficiency and their ability for **self correction**".* But notice that the word 'apologists' has not come into picture till now. It has been mentioned later. Moreover, "ability for self correction" is still a debate.

Now move on to examine the first option. Here is the supporting text - "...*The apologists of the system continue to justify the success of capitalism and argue that the recent crisis was a blip. Their arguments betray an ideological bias/ with the assumptions that an unregulated market is fair.....*"

Notice the word "unregulated" (not regulated by government). This is your answer. This option is more appropriate than the option (c), because it has been explicitly mentioned in the passage.

51. With reference to "ideological bias", the passage implies that

(a) free market is fair but not competent.

(b) free market is not fair but competent.

(c) free market is fair and competent.

(d) free market is neither fair nor biased.

Solution: d)

The ideological bias of the apologists is that free markets are fair and competent. But the passage criticizes this bias. This implies that free markets are neither fair, nor competent.

52. "The exercise of private greed will be in the larger public interest" from the passage

1. refers to the false ideology of capitalism.

2. underlies the righteous claims of the free market.

3. shows the benevolent face of capitalism.

4. ignores resultant gross inequity.

Which of the statements given above is/are correct?

(a) 1 only

(b) 2 and 3

(c) 1 and 4

(d) 4 only

Solution: d)

It might appear that statement 1 should also have been correct. But it is not because the passage does not say it is a false ideology. It says it is an "ideological bias" and that a more "honest conceptualization of interests of rich and poor are needed".

Therefore, don't mistake by reading too much between the lines. Stick to what the passage suggests. Do not draw your own conclusions. Its very important to read the passage "objectively" for what it is- and not what you may think.

Lesson is: Don't read too much between the lines. Read objectively.

Passage - 2

Net profits are only 2.2% of their total assets for central public sector undertakings, lower than for the private corporate sector. While the public sector or the State-led entrepreneurship played an important role in triggering India's industrialization, our evolving development needs, comparatively less-than-satisfactory performance of the public sector enterprises, the maturing of our private sector, a much larger social base now available for expanding entrepreneurship and the growing institutional capabilities to enforce competition policies would suggest that the time has come to review the role of public sector.

What should the portfolio composition of the government be? It should not remain static all times. The airline industry works well as a purely private affair. At the opposite end, rural roads, whose sparse traffic makes tolling unviable, have to be on the balance-sheet of the State. If the government did not own rural roads, they would not exist.

Similarly, public health capital in our towns and cities will need to come from the public sector. Equally, preservation and improvement of forest cover will have to be a new priority for the public sector assets.

Take the example of steel. With near-zero tariffs, India is a globally competitive market for the metal. Indian firms export steel into the global market which demonstrates there is no gap in technology. Indian companies are buying up global steel companies, which shows there is no gap in capital availability. Under these conditions, private ownership works best.

Private ownership is clearly desirable in regulated industries, ranging from, finance to infrastructure, where a government agency performs the function of regulation and multiple competing firms are located in the private sector. Here, the simple and clean solution - government as the umpire and the private sector as the players is what works best. In many of these industries, we have a legacy of government ownership, where productivity tends to be lower, fear of bankruptcy is absent, and the risk of asking for money from the tax payer is ever present. There is also the conflict of interest between government as an owner and as the regulator.

The formulation and implementation of competition policy will be more vigorous and fair if government companies are out of action.

53. According to the passage, what is/are the reason/reasons for saying that the time has come to review the role of public sector?

1. Now public sector has lost its relevance in the industrialization process.

2. Public sector does not perform satisfactorily.

3. Entrepreneurship in private sector is expanding.

4. Effective competition policies are available now.

Which of the statements given above is/are correct in the given context?

(a) 1 and 3 only

(b) 2 only

(c) 2, 3 and 4 only

(d) 1, 2, 3 and 4

Solution: c)

If you think 1 is correct, then you are reading too much between the lines. ☺

54. According to the passage, rural roads should be in the domain of public sector only. Why?

(a) Rural development work is the domain of government only.

(b) Private sector cannot have monetary gains in this.

(c) Government takes money from tax payers and hence it is the responsibility of government only.

(d) Private sector need not have any social responsibility.

Solution: b)

Pretty explicitly mentioned in the statement "tolling unviable" i.e. they can't recover costs.

55. The portfolio composition of the government refers to

(a) Public sector assets quality.

(b) Investment in liquid assets.

(c) Mix of government investment in different industrial sectors.

(d) Buying Return on Investment yielding capital assets.

Solution: c)

Explicit in the passage.

56. The author prefers government as the umpire and private sector as players because

(a) Government prescribes norms for a fair play by the private sector.

(b) Government is the ultimate in policy formulation.

(c) Government has no control over private sector players.

(d) None of the above statements is correct in this context.

Solution: a)

Clear when the passage talks about competition laws and government being out of action (last line).

The above passage was simple. You should not be making any mistake in such passages.

57. A question paper must have a question on one of the eight poets: A, B, C, D, E, F, G or H The first four belong to the medieval period while the rest are considered modern poets Generally, modern poets figure in the question paper in alternate years. Generally those who like H like G also; and those who like F like E also. The paper-setter does not like to ask about F as he has written a book on F, but he likes F. Last year, the paper contained a question on A. On the basis of the information given, this year's paper is most likely to contain a question on

(a) C

(b) E

(c) F

(d) H

Solution: b)

The following is clear from the question:

- A,B,C,D – Medieval
- E,F,G,H – Modern

- Modern poets come alternate years
- H-G, and F-E are liked together.
- Last year A came (medieval poet) which means this year, a modern poet will come

Now, F is out of the scene, but since the examiner likes to ask about F, he also likes E. So, E is the most probable poet for the year.

58. In a group of six women there are four dancers, four vocal musicians, one actress and three violinists. Girija and Vanaja are among the violinists while Jalaja and Shailaja do not know how to play on the violin. Shailaja and Tanuja are among the dancers. Jalaja, Vanaja, Shailaja and Tanuja are all vocal musicians and two of them are also violinists. If Pooja is an actress, who among the following is certainly a dancer and a violinist?

(a) Jalaja

(b) Pooja

(c) Shailaja

(d) Tanuja

Solution: d)

4 dancers, 4 vocal, 1 actress, 3 violin.

Girija = violin

Vanaja = violin, vocal

Jalaja = no violin, vocal

Shailja = no violin, dancer, vocal

Tanuja = dancer, vocal, violin (2 of them are also violin)

Pooja = actress

59. The letters L, M, N, 0, P, Q, R, S and T in their order are substituted by nine integers 1 to 9 but not in that order. 4 is assigned to P. The difference between P and T is 5. The difference between N and T is 3. What is the integer assigned to N?

(a) 7

(b) 5

(c) 4

(d) 6

Solution: d)

P = 4,

T = 4 + 5 = 9,

So, N = 9 – 3 = 6

60. The number of deaths among the army personnel is 8 in 1000, but among the civilian population it is 20 per 1000. Which one of the following inferences can be drawn from this statement?

(a) It is better to join the army.

(b) The relationship is fortuitous.

(c) Quality of Life Index is very high within the armed forces.

(d) The groups cannot be compared due to their heterogeneity.

Solution: d)

Option (c) cannot be the answer, because just a death rate data can not give quality of life index (that too "very high"). If they had said, quality of life index is "higher", it could have been acceptable.

61. Given the statement: "Buses are the cause of more accidents than cars, and trucks causes fewer accidents than buses", which of the following conclusions can we draw?

(a) There are more buses on the road than trucks.

(b) Car drivers are more careful than bus drivers.

(c) Truck drivers are more skilled than either car or bus drivers.

(d) None of the above

Solution: d)

None of the conclusions can be deduced logically from the statement.

62. "If political leadership fails to emerge, there is likelihood of military taking over power in developing countries. Radical student groups or labour may try to raise revolution but they are not likely to compete with the military. Military intervention, rule, and withdrawal from politics is closely related to a society's level of political development."

In the context of political development, the assumption in the above passage is that

(a) political leadership is not an effective instrument.

(b) military fills in political vacuum.

(c) military intervention is inevitable for development.

(d) None of the above

Solution: b)

The keyword here is "assumption". The only logical assumption here is (b) – explicitly mentioned in the statement.

63. Four persons, Alok, Bhupesh, Chander and Dinesh have a total of Rs. 100 among themselves. Alok and Bhupesh between them have as much money as Chander and Dinesh between them, but Alok has more money than Bhupesh; and Chander has only half the money that Dinesh has. Alok has in fact Rs. 5 more than Dinesh has. Who has the maximum amount of money?

(a) Alok

(b) Bhupesh

(c) Chander

(d) Dinesh

Solution: a)

Alok + Bhupesh = Chander + Dinesh

Alok > Bhupesh

Dinesh = 2 Chander

Alok = Dinesh + 5

Clearly, Alok has highest.

64. Examine the following statements:

1. George attends Music classes on Monday.

2. He attends Mathematics classes on Wednesday.

3. His Literature classes are not on Friday.

4. He attends History classes on the day following the day of his Mathematics classes.

5. On Tuesday, he attends his Sports classes.

If he attends just one subject in a day and his Sunday is free, then he is also free on

(a) Monday

(b) Thursday

(c) Saturday

(d) Friday

Solution: d)

It is a clear and simple arrangement exercise. The statements point out that

Monday = Music

Tues = Sports

Wed = Maths

Thus = History

Friday = not Lit,

65. In a row 'A' is in the 11th position from the left and 'B' is in the 10th position from the right. If 'A' and 'B' interchange, then 'A' becomes 18th from the left. How many persons are there in the row other than 'A' and 'B'?

(a) 27

(b) 26

(c) 25

(d) 24

Solution: c)

Here is the arrangement as per the question:

10 people - A – 'x' people in between – B - 9 people.

OR

10 people – B – 'x' people - A - 9 people.

Now,

10 + 1 + x = 17. X = 6. Total people other than A and B = 10 + 6 + 9 = 25.

66. Location of B is north of A and location of C is east of A. The distances AB and AC are 5 km and 12 km respectively. The shortest distance (in km) between the locations B and C is
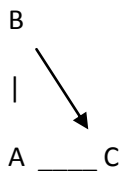
(a) 60

(b) 13

(c) 17

(d) 7

Solution: b)

Here is the arrangement.

B

|

A _____ C

Applying the Pythagoras theorem:

$BC^2 = AB^2 + AC^2 = 5^2 + 12^2 = 25 + 144 = 169$.

So BC = 13.

67. Two cars start towards each other, from two places A and B which are at a distance of 160 km. They start at the same time 08 : 10 AM. If the speeds of the cars are 50 km and 30 km per hour respectively, they will meet each other at

(a) 10 : 10 AM

(b) 10 : 30 AM

(c) 11 : 10 AM

(d) 11 : 20 AM

Solution: a)

Total distance = 160 km.

Using the concept of relative speed, the speed at which one car will approach the other (if other is kept stationary) is = 50 + 30 = 80 km/h. So they will meet after 160 / 80 = 2 hours. So time of meet is 10:10 AM.

Directions for the following 6 (six) items:

Read the following two passages and answer the items that follow each passage. Your answers to these items should be based on the passages only.

Passage -1

Climate change poses potentially devastating effects on India's agriculture. While the overall parameters of climate change are increasingly accepted a 1°C average temperature increase over the next 30 years, sea level rise of less than 10 cm in the same period, and regional monsoon variations and corresponding droughts - the impacts in India are likely to be quite site and crop specific. Some crops may respond favourably to the changing conditions, others may not. This emphasizes the need to promote agricultural research and create maximum flexibility in the system to permit adaptations.

The key ingredient for "drought proofing" is the managed recharge of aquifers. To ensure continued yields of important staple crops (e.g. wheat), it may also be necessary to shift the locations where these crops are grown, in response to temperature changes as well as to water availability. The latter will be a key factor in making long term investment decisions.

For example, water runoff from the Himalayas is predicted to increase over the next 30 years as glaciers melt, but then decline substantially thereafter. It will be critical to provide incentives to plan for these large-scale shifts in agro-ecological conditions.

India needs to make long term investment in research and development in agriculture. India is likely to experience changed weather patterns in future.

68. Consider the following statements:

Climate change may force the shifting of locations of the existing crops due to

1. melting of glaciers.

2. water availability and temperature suitability at other locations.

3. poor productivity of crops.

4. wider adaptability of crop plants.

Which of the statements given above are correct?

(a) 1, 2 and 3

(b) 2 and 3 only

(c) 1 and 4 only

(d) 1, 2, 3 and 4

Solution: a)

Statement 4 would not be correct here. It is not mentioned in the passage.

69. According to the passage, why is it important to promote agricultural research in India?

(a) To predict variations in monsoon patterns and to manage water resources

(b) To make long term investment decisions for economic growth

(c) To facilitate wider adaptability of crops

(d) To predict drought conditions and to recharge aquifers

Solution: c)

The central idea of the passage is to facilitate wider adaptability of crops for which it advocates promoting agricultural research. This has been mentioned quite clearly in the passage.

Passage – 2

It is essential that we mitigate the emissions of greenhouse gases .and thus avoid some of the worst impacts of climate change that would take place in coming years and decades. Mitigation would

require a major shift in the way we produce and consume energy. A shift away from overwhelming dependence on fossil fuels is now long overdue, but unfortunately, technological development has been slow arid inadequate largely because government policies have not promoted investments in research and development, myopically as a result of relatively low prices of oil. It is now, therefore, imperative for a country like India treating the opportunity of harnessing renewable energy on a large scale as a national imperative. This country is extremely well endowed with solar, wind and biomass sources of energy. Where we have lagged, unfortunately, is in our ability to develop and to create technological solutions for harnessing these resources.

One particular trajectory for carrying out stringent mitigation of greenhouse gas emissions assessed by the Inter-governmental Panel on Climate Change (IPCC) clearly shows the need for ensuring that global emissions of greenhouse gases peak no later than 2015 and reduce rapidly thereafter. The cost associated with such a trajectory is truly modest" and would amount, in the estimation of IPCC, to not more than 3 percent of the global GDP in 2030. In other words, the level of prosperity that the world would have reached without mitigation would at worst be postponed by a few months or a year at the most. This is clearly not a very high price to pay for protecting hundreds of millions of people from the worst risks associated with climate change. Any such effort, however, would require lifestyles to change appropriately also. Mitigation of greenhouse gas emissions is not a mere technological fix, and clearly requires changes in lifestyles and transformation of a country's economic structure, whereby effective reduction in emissions is brought about, such as through the consumption of much lower quantities of animal protein. The Food and Agriculture Organization (FAO) has determined that the emissions from the livestock sector amount to 18 percent of the total. The reduction of emissions from this source is entirely in the hands of human beings, who have never questioned the impacts that their dietary habits of consuming more and more animal protein are bringing about. Mitigation overall has huge co-benefits, such as lower air pollution and health benefits, higher energy security and greater employment.

70. According to the passage, which of the following would help in the mitigation of greenhouse gases?

1. Reducing the consumption of meat

2. Rapid economic liberalization

3. Reducing the consumerism

4. Modern management practices of livestock

Select the correct answer using the code given below:

(a) 1, 2 and 3

(b) 2, 3 and 4

(c) 1 and 3 only

(d) 2 and 4 only

Solution: c)

Very clear from the passage.

71. Why do we continue to depend on the fossil fuels heavily?

1. Inadequate technological development

2. Inadequate funds for research and development

3. Inadequate availability of alternative sources of energy

Select the correct answer using the code given below:

(a) 1 only

(b) 2 and 3 only

(c) 1 and 3 only

(d) 1, 2 and 3

Solution: a)

Statement 2 is incorrect because "technological development has been slow arid inadequate largely because government policies have not promoted investments in research and development"; not because of lack of funds.

Therefore, Lesson is: stick to what the passage tells you. Don't extrapolate from the passage.

72. According to the passage, how does the mitigation of greenhouse gases help us?

1. Reduces expenditure on public health

2. Reduces dependence on livestock

3. Reduces energy requirements

4. Reduces rate of global climate change

Select the correct answer using the code given below:

(a) 1, 2 and 3

(b) 1, 3 and 4

(c) 2, 3 and 4

(d) 1 and 4 only

Solution: b)

Explicit in the passage.

73. What is the essential message of the passage?

(a) We continue to depend on fossil fuel heavily

(b) Mitigation of the greenhouse gases is imperative

(c) We must invest in research and development

(d) People must change their lifestyle

Solution: d)

Both paragraphs essentially talk about how lifestyles need to be changed; how consumerism needs to be avoided etc. This is the message of the passage.

74. There are 50 students admitted to a nursery class. Some students can speak only English and some can speak only Hindi. 10 student can speak both English and Hindi. If the number of students who can speak English 21, then how many students can speak Hindi how many can speak only Hindi and how many can speak only English ?

(a) 21, 11 and 29 respectively

(b) 28, 18 and 22 respectively

(c) 37, 27 and 13 respectively

(d) 39, 29 and 11 respectively

Solution: d)

Again apply the same Venn diagram. Since 21 people can speak English (and 10 can speak both), so only English speaking crowd is 11. Total is 50, so only Hindi people will be 50-11 = 39.
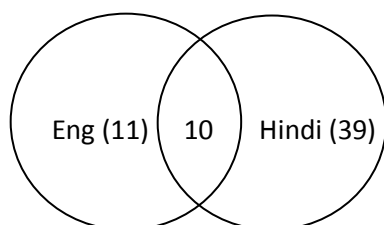
75. A gardener increased the area of his rectangular garden by increasing its length by 40% and decreasing its width by 20%. The area of the new garden

(a) has increased by 20%.

(b) has increased by 12%.

(c) has increased by 8%.

(d) is exactly the same as the old area.

Solution: b)

New length = 1.4 times the old length (say L) = 1.4L

New width = 0.8 W

Area (new) = 1.12 LW (12% increase)

76. Six books are labelled A, B, C, D, E and F and are placed side by side. Books B, C, E and F have green covers while others have yellow covers. Books A, B and D are new while the rest are old volumes. Books A, Band Care law reports while the rest are medical extracts. Which two books are old medical extracts and have green covers?

(a) B and C

(b) E and F

(c) C and E

(d) C and F

Solution: b)

BC**EF** – Green; AD – Yellow

ABD – New; C**EF** – Old

ABC – Law; D**EF** – Medical

You have to choose old medical extracts with green covers. It is E and F.

77. A straight line segment is 36 cm long. Points are to be marked on the line from both the end points. From each end, the first point is at a distance of 1 cm from the end, the second point is at a distance of 2 cm from the first point and the third point is at a distance of 3 cm from the second

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point and so on. If the points on the ends are not counted and the common points are counted as one, what is the number of points?

(a) 10

(b) 12

(c) 14

(d) 16

Solution: b)

This can again be solved manually as well as using a scale diagram.

Technique 1: (Manual)

First point is at a distance of 1 cm, 2nd at 2 cm and so on – therefore, the distance of each point from the left edge of the scale will be

1st point – 1 cm

2nd – 3 cm

3rd – 6 cm

4th – 10 cm

5th – 15 cm

6th – 21 cm

7th – 28 cm

8th – 36 cm

Similarly from the right edge too, the same story repeats. So we have totally 8+8 = 16 points.

But, common points are to be counted as one and end points not to be counted.

End points are the 8th point drawn from both the sides. So reduce 2 points from 16 which becomes 14.

Now common points – so 5th point from the left; and 6th point from the right are common and will repeat twice. So they have to be counted only once.

Reduce 2 more points from 14 which becomes 12 as the answer.

Technique 2: (Using a scale - or diagram)

Draw a rectangle 36 cm long with some width on the rough side of your notebook and mark 1 to 36 cm on it roughly.

Start putting points on the top and bottom of the rectangle from both left and right hand sides. You will be easily able to see the total number of points as 16 and; out of which 2 points will be overlapping; and 2 as end points. So the final answer will be 12.

In the exam you can follow any of the above techniques. Both will take almost the same time.

78. If Sohan, while selling two goats at the same price, makes a profit of 10% on one goat and suffers a loss of 10% on the other

(a) he makes no profit and no loss.

(b) he makes a profit of 1%.

(c) he suffers a loss of 1%.

(d) he suffers a loss of 2%.

Solution: c)

Let cost of 1st goat be Rs. 100. Then its selling price = 110 = selling price of goat 2. But he suffers loss of 10% on goat 2 which means cost of goat 2 = 110/.9 = 122.22

Total cost = 222.22, total selling price = 220. Means loss of ~1%.

79. Out of a total of 120 musicians in a club, 5% can play all the three instruments, guitar, violin and flute. It so happens that the number of musicians who can play any and only two of the above instruments is 30. The number of musicians who can play guitar alone is 40. What is the total number those who can play violin alone or flute alone?

(a) 45

(b) 44

(c) 38

(d) 30

Solution: b)

Using Venn diagrams

You can also see this by drawing a Set diagram.
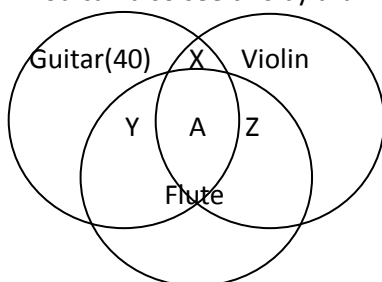
A= 6

X+Y+Z (who play only two) = 30

G+V+F+(X+Y+Z+A) = 120 [G,V,F are people who can play only guitar, violin or flute]

So, put all the data, and you have

40 + V+ F + 30 + 6 = 120

So, V+F (those who can play flute alone or violin alone) = 44

80. Six identical cards are placed on a table. Each card has number '1' marked on one side and number '2' marked on its other side. All the six cards are placed in such a manner that the number '1' is on the upper side. In one try, exactly four (neither more nor less) cards are turned upside down. In how many least number of tries can the cards be turned upside down such that all the six cards show number '2' on the upper side?

(a) 3

(b) 5

(c) 7

(d) This cannot be achieved

Solution: a)

Before trying, the Cards show: 111111

First try (make any 4 cards show 2): 222211

2nd try (take one of those showing 1 and three of those showing two and flip): 211121

3rd try (Flip all the ones): 222222...You got it !

 The logic used here is that you should be able to get four 1s somehow – which we achieved in the 2nd try.