

CSAT – UPSC PAPER 2017 (BOOKLET – D)

Directions for the following 8 (eight) items: Read the following seven passages and answer the items that follow the passages. Your answers to these items should be based on the passages only.

Passage - 1

Disruption of traditional institutions, identifications and loyalties is likely to lead to ambivalent situations. It is possible that some people may renew their identification with traditional groups whereas others align themselves with new groups and symbols emergent from processes of political development. In addition, political development tends to foster group awareness of a variety of class, tribe, region, clan, language, religion, occupation and others.

1. Which one of the following is the best explanation of the above passage?
 - (a) Political development is not a unilinear process for it involves both growth and decay.
 - (b) Traditional societies succeed in resisting positive aspects of political development.
 - (c) It is impossible for traditional societies to break away from lingering loyalties.
 - (d) Sustenance of traditional loyalties is conducive to political development.

Ans. (a)

Option (b) is wrong because from passage it is not clear that they succeed in doing so always

Option (c) is wrong because passage says “new groups and symbols emergent from processes of political development” which hints that it is not impossible for traditional societies to break away from lingering loyalties

Option (d) is not wrong essentially as Sustenance of traditional loyalties happens along with political development but option (a) is the best option because it talks of both growth - new identities emerging and decay - old disrupted, as seen from the passage overall.

Hence, correct answer is (a)

Passage-2

There has been a significant trend worldwide towards regionalism in government, resulting in a widespread transfer of powers downwards towards regions and communities since 1990s. This process, which involves the creation of new political entities and bodies at a sub-national level and an increase in their content and powers, is known as devolution. Devolution has been characterized as being made up of three factors—political legitimacy, decentralization of authority and decentralization of resources. Political legitimacy here means a mass demand from below for the decentralization process, which is able to create a political force for it to take place. In many cases, decentralization is initiated by the upper tier of government without sufficient political mobilization for it at the grassroots level, and in such cases the decentralization process often does not fulfil its objectives.

2. Which among the following is the most logical, rational and critical inference that can be made from the above passage?
 - (a) Emergence of powerful mass leaders is essential to create sub-national political entities and thus ensure successful devolution and decentralization.
 - (b) The upper tier of government should impose devolution and decentralization on the regional communities by law or otherwise.

- (c) Devolution, to be successful, requires a democracy in which there is free expression of the will of the people at lower level and their active participation at the grassroots level.
- (d) For devolution to take place, a strong feeling of regionalism in the masses is essential.

Ans. (c)

Option (a) is wrong because idea of powerful mass leaders to create sub-national political entities is not discussed in the passage

Option (b) is wrong because passage says the opposite

Option (d) is not wrong but the phrase “strong regionalism” cannot be inferred confidently from the passage. At the same time, option (a) can be inferred from the last two lines of the passage satisfactorily.

Hence, correct answer is (c)

Passage-3

We live in digital times. The digital is not just something we use strategically and specifically to do a few tasks. Our very perception of who we are, how we connect to the world around us, and the ways in which we define our domains of life, labour and language are hugely structured by the digital technologies. The digital is everywhere and; like air, invisible. We live within digital systems, we live with intimate gadgets, we interact through digital media, and the very presence and imagination of the digital has dramatically restructured our lives. The digital, far from being a tool, is a condition and context that defines the shapes and boundaries of our understanding of the self, the society, and the structure of governance.

3. Which among the following is the most logical and essential message conveyed by the above passage?
- (a) All problems of governance can be solved by using digital technologies.
 - (b) Speaking of digital technologies is speaking of our life and living.
 - (c) Our creativity and imagination cannot be expressed without digital media.
 - (d) Use of digital systems is imperative for the existence of mankind in future.

Ans. (b)

The language and the tone of the passage clearly points to option (b) as the correct answer. The phrases “digital is everywhere”, “condition and context that defines the shapes and boundaries of our understanding of the self, the society” etc. support this option.

Options (a), (c) and (d) are far fetched and extreme.

Hence, correct answer is (b)

Passage - 4

The IMF has pointed out that the fast growing economies of Asia face the risk of falling into 'middle-income trap'. It means that average incomes in these countries, which till now have been growing rapidly, will stop growing beyond a point—a point that is well short of incomes in the developed West. The IMF identifies a number of causes of middle-income trap—none of which is surprising—from infrastructure to weak institutions, to less than favourable macroeconomic conditions. But the broad, overall cause, says IMF, is a collapse in the growth of productivity.

4. Which among the following is the most logical, rational and critical inference that can be made from the above passage?
- (a) Once a country reaches middle-income stage, it runs the risk of falling productivity which leads to stagnant incomes.
 - (b) Falling into middle-income trap is a general characteristic of fast growing economies.
 - (c) There is no hope at all for emerging Asian economies to sustain the growth momentum.
 - (d) As regards growth of productivity, the performance of Asian economies is not satisfactory.

Ans. (a)

Options (b), (c) and (d) are far fetched.

Option (b) is wrong because passage says that there is risk and hence not a general characteristic

Option (c) is extreme as it says “no hope at all”

Option (d) is wrong because it is beyond what is being said in the passage

Option (a) can be inferred from the passage as the passage says that overall cause of stagnant incomes is a collapse in the growth of productivity.

Hence, correct answer is (a)

Passage -5

An innovative India will be inclusive as well as technologically advanced, improving the lives of all Indians. Innovation and R&D can mitigate increases in social inequality and relieve the pressures created by rapid urbanization. The growing divergence in productivity between agriculture and knowledge-intensive manufacturing and services threatens to increase income inequality. By encouraging India's R&D labs and universities to focus on the needs of poor people and by improving the ability of informal firms to absorb knowledge, an innovation and research agenda can counter this effect. Inclusive innovation can lower the costs of goods and services and create income - earning opportunities for the poor people.

5. Which among the following is the most logical and rational assumption that can be made from the above passage?
- (a) Innovation and R&D is the only way to reduce rural to urban migration.
 - (b) Every rapidly growing country needs to minimize the divergence between productivity in agriculture and other sectors.
 - (c) Inclusive innovation and R&D can help create an egalitarian society.
 - (d) Rapid urbanization takes place only when a country's economic growth is rapid.

Ans. (c)

Options (a) and (d) can be ruled out due to their extreme wording, i.e. “only”. The passage is not definitive about these.

Option (b) is not correct as it is too generalistic as the context of the passage is limited to India and we have a better choice in form of option (c). Option (c) is the best choice as it reflects the broad idea presented in the passage. Hence, correct answer is (c).

Passage-6

Climate change is likely to expose a large number of people to increasing environmental risks forcing them to migrate. The international community is yet to recognize this new category of migrants. There is no consensus on the definition and status of climate refugees owing to the distinct meaning the term refugees carry under international laws. There are still gaps in understanding how climate change will work as the root cause of migration. Even if there is recognition of climate refugees, who is going to provide protection? More emphasis has been given to international migration due to climate change. But there is a need to recognize the migration of such people within the countries also so that their problems can be addressed properly.

6. Which of the following is the most rational inference from the above passage?
- (a) The world will not be able to cope with large scale migration of climate refugees.
 - (b) We must find the ways and means to stop further climate change.
 - (c) Climate change will be the most important reason for the migration of people in the future.
 - (d) Relation between climate change and migration is not yet properly understood.

Ans. (d)

Option (a) and (c) cannot be inferred from the passage. They are far fetched.

Option (b) can be considered correct but cannot be strongly deduced or inferred from the passage. We have a better choice in option (d)

Option (d) can be inferred from the passage. In fact, this idea is the crux of the passage.

Hence, correct answer is (d)

Passage-7

Many farmers use synthetic pesticides to kill infesting insects. The consumption of pesticides in some of the developed countries is touching 3000 grams/hectare. Unfortunately, there are reports that these compounds possess inherent toxicities that endanger, the health of the farm operators, consumers and the environment. Synthetic pesticides are generally persistent in environment. Entering in food chain they destroy the microbial diversity and cause ecological imbalance. Their indiscriminate use has resulted in development of resistance among insects to insecticides, upsetting of balance in nature and resurgence of treated populations. Natural pest control using the botanical pesticides is safer to the user and the environment because they break down into harmless compounds within hours or days in the presence of sunlight. Plants with pesticidal properties have been in nature for millions of years without any ill or adverse effects on the ecosystem. They are easily decomposed by many microbes common in most soil. They help in the maintenance of biological diversity, of predators and the reduction of environmental contamination and human health hazards. Botanical pesticides formulated from plants are biodegradable and their use in crop protection is a practical sustainable alternative.

7. On the basis of the above passage, the following assumptions have been made:
1. Synthetic pesticides should never be used in modern agriculture.
 2. One of the aims of sustainable agriculture is to ensure minimal ecological imbalance.
 3. Botanical pesticides are more effective as compared to synthetic pesticides.
- Which of the assumptions given above is/are correct?
- (a) 1 and 2 only
(b) 2 only
(c) 1 and 3 only
(d) 1, 2 and 3

Ans. (c)

For assumption questions, the best strategy is to employ the Assumption Negation Technique and negate each answer choice to see if the conclusion falls down without the negated assumption. If the conclusion falls down without this assumption, then it was absolutely required. If it changes nothing, then it was purely decorative and can be ignored.

Statement 1 when negated would recommend use of Synthetic pesticides in modern agriculture. But this will contradict the entire passage. Hence, assumption is correct.

Statement 2 when negated would say that minimal ecological imbalance is not an aim of sustainable agriculture. This does not affect the validity of the passage.

Statement 3 when negated would say Synthetic pesticides are less effective than Botanical pesticides. But this will contradict the entire passage. Hence, assumption is correct.

Hence, correct answer is (c)

8. Which of the following statements is/are correct regarding biopesticides?
1. They are not hazardous to human health.
 2. They are persistent in environment.
 3. They are essential to maintain the biodiversity of any ecosystem.
- Select the correct answer using the code given below.
- (a) 1 only
(b) 1 and 2 only
(c) 1 and 3 only
(d) 1, 2 and 3

Ans. (a)

Statement 1 is correct as passage says "...have been in nature for millions of years without any ill or adverse effects on the ecosystem.."

Statement 2 is incorrect as passage says "Synthetic pesticides are generally persistent in environment.", not biopesticides.

Statement 3 is incorrect as it is too far fetched.

Hence, correct answer is (a)

9. Certain 3-digit numbers following characteristics:
1. All the three digits are different.
 2. The number is divisible by 7.
 3. The number on reversing the digits is also divisible by 7.
- How many such 3-digit numbers are there?

- (a) 2
(b) 4
(c) 6
(d) 8

Ans. (b)

There are four such numbers: (168, 861) and (259, 952)

To find such numbers, first list down all 3 digits divisible by 7. This will generate a large set. In this set, remove those whose all digits are not different.

Among the remaining ones, look for the reverse digits pairings like the two pairs shown above.

10. Examine the following statements:
1. All colours are pleasant.
 2. Some colours are pleasant.
 3. No colour is pleasant.
 4. Some colours are not pleasant.
- Given that statement 4 is true, what can be definitely concluded?

- (a) 1 and 2 are true
(b) 3 is true
(c) 2 is false
(d) 1 is false

Ans. (d)

As per statement 4: Some colours are not pleasant. It implies that there is atleast one colour that is not pleasant. It obviously means that statement 1 that states that all colours are pleasant is definitely false.

11. How many numbers are there between 99 and 1000 such that the digit 8 occupies the units place?
- (a) 64
(b) 80
(c) 90
(d) 104

Ans. (c)

Numbers between 99 and 1000 are 100 to 999, i.e. all three digit numbers.

Now, for 100 to 200: 8 will come at the unit's place 10 times, i.e. 108, 118, 128.... 198.

Similar will be the case with number sets of 201-300, 301-400 etc.

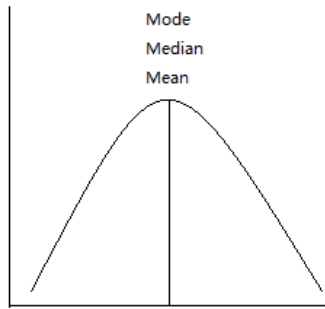
Hence, the number of times that 8 will come at unit's place between 99 and 1000 = $10 \times 9 = 90$

12. If for a sample data Mean < Median < Mode then the distribution is
- (a) symmetric
(b) skewed to the right
(c) neither symmetric nor skewed
(d) skewed to the left

Ans. (d)

Arithmetic mean is also known as average. It is the sum of all the numbers divided by the number of numbers. Median is the middle value in the list of numbers written in ascending or descending order. Mode is the most frequently occurring value in the data set (it corresponds to the peak of the bell shaped distribution curve).

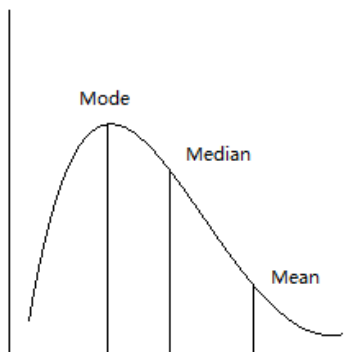
A Normal Distribution is perfectly symmetrical (not skewed) and the mean is exactly at the peak of the bell shaped curve as shown below:



Normal Distribution

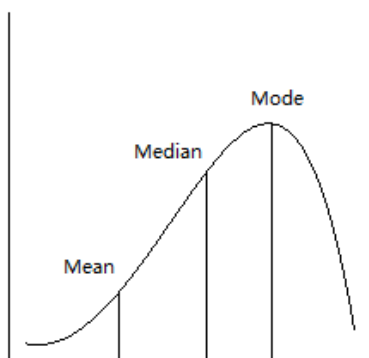
A distribution is skewed if one tail is longer than another. These distributions are sometimes called asymmetric distributions. These are of two types:

1. A right-skewed distribution has a long right tail (also called positive-skew distribution). The mean is to the right of the peak/mode, i.e. $\text{Mean} > \text{Mode}$.



Right skew

2. A left-skewed distribution has a long left tail (also called negatively-skewed distribution). The mean is to the left of the peak, i.e. $\text{Mean} < \text{Mode}$.



Left skew

We can see in the above graph that Mean < Median < Mode, the condition given for the sample data in the question. Hence, the distribution of the sample data is skewed to the left.

13. The age of Mr. X last year was the square of a number and it would be the cube of a number next year. What is the least number of years he must wait for his age to become the cube of a number again?
- (a) 42
(b) 38
(c) 25
(d) 16

Ans. (b)

The age of Mr. X last year was the square of a number and it would be the cube of a number next year. Hence, we have to find two numbers, one of which is a cube and the other a square and the difference between them must be 2.

Let us see the cubes: $1^3 = 1$; $2^3 = 8$; $3^3 = 27$; $4^3 = 64$.

Having a look at the above we can see that the desired numbers are 25 and 27 (i.e. 5^2 and 3^3). Hence, the present age of Mr. X = 26.

The next time his age will be a cube of a number will be when he will become 64 years old.

Hence, the least number of years he should wait = $64 - 26 = 38$ years

14. P works thrice as fast as Q, whereas P and Q together can work four times as fast as R. If P, Q and R together work on a job, in what ratio should they share the earnings?
- (a) 3 : 1 : 1
(b) 3 : 2 : 4
(c) 4 : 3 : 4
(d) 3 : 1 : 4

Ans. (a)

Let the efficiencies of P, Q and R be p, q and r units per day. Now, it's given that:

$$p = 3q \text{ and}$$

$$p + q = 4r$$

$$\text{or } 3q + q = 4r$$

$$\text{or } 4q = 4r$$

$$\text{or } q = r$$

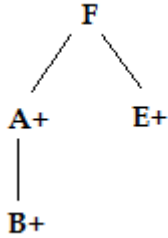
Hence, the required ratio of work done or the ratio in which they will share their earnings = $p : q : r = 3q : q : q = 3 : 1 : 1$

15. Consider the following relationships among members of a family of six persons A, B, C, D, E and F:
1. The number of males equals that of females.
 2. A and E are sons of F.
 3. D is the mother of two, one boy and one girl.
 4. B is the son of A.
 5. There is only one married couple in the family at present.
- Which one of the following inferences can be drawn from the above?
- (a) A, B and C are all females.
(b) A is the husband of D.
(c) E and F are children of D.
(d) D is the daughter of F.

Ans. (b)

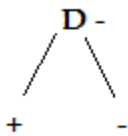
As per statement 1: The number of males equals that of females, i.e. there must be 3 males and 3 females in the family.

Now, as per statements 2 and 4: A and E are sons of F and B is the son of A. We can denote it as the following family tree (wherein + denotes male and - female):



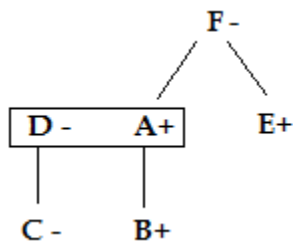
As, we can see A, B and E are males. Hence, C, D and F must be females.

As per statement 3: D is the mother of two, one boy and one girl.



Now, F cannot be the daughter of D, as otherwise C must be her son. But we already know that C is a female. Hence, C must be the daughter of D.

As per statement 5, there's only one married couple in the family at present. The only possibility is that A is married to D. It has been denoted below using a family tree:



We can only infer that A is the husband of D.

16. A bag contains 20 balls. 8 balls are green, 7 are white and 5 are red. What is the minimum number of balls that must be picked up from the bag blindfolded (without replacing any of it) to be assured of picking at least one ball of each colour?
- (a) 17
 - (b) 16
 - (c) 13
 - (d) 11

Ans. (b)

A bag contains 20 balls. 8 balls are green, 7 are white and 5 are red. We have to pick at least one ball of each colour.

Now consider this: Even if we pick 8 balls, there's a probability that all of them may be green. Hence, we must pick more than 8 balls for sure.

Now, even if we pick 8 + 7 balls, i.e. 15 balls, there's a probability that all of them may be green and white only, with no red ball picked at all.

Hence, taking the worst possible scenario in consideration we must pick $15 + 1 = 16$ balls to be sure that atleast one ball of all the three colours is picked.

17. If 2 boys and 2 girls are to be arranged in a row so that the girls are not next to each other, how many possible arrangements are there?
(a) 3
(b) 6
(c) 12
(d) 24

Ans. (c)

2 boys and 2 girls are to be arranged in a row so that the girls are not next to each other. Hence, they must sit alternatively. Let us place the boys first:

_____ **BOY** _____ **BOY** _____

We can place these boys in $2! = 2$ ways

Now, as we can see in the above arrangement, there are three places to choose from in order to place 2 girls.

Number of ways we can choose 2 places out of 3 = ${}^3C_2 = {}^3C_1 = 3$

Also, the girls can interchange their positions in $2! = 2$ ways.

Hence, total number of possible arrangements = $2 \times (3 \times 2) = 12$

18. The outer surface of a 4 cm x 4 cm x 4 cm cube is painted completely in red. It is sliced parallel to the faces to yield sixty four 1 cm x 1 cm x 1 cm small cubes. How many small cubes do not have painted faces?
(a) 8
(b) 16
(c) 24
(d) 36

Ans. (a)

Of all the smaller cubes obtained, only the inner cubes (i.e. those which had none of their 6 faces exposed) will have no face painted.

Number of such inner cubes = $(n - 2)^3$, where n is the number of smaller cubes on each edge, which is 4 in this case.

Hence, the required number of cubes = $(4 - 2)^3 = 2^3 = 8$

19. Consider the following:
A, B, C, D, E, F, G and H are standing in a row facing North.
B is not neighbour of G.
F is to the immediate right of G and neighbour of E.
G is not at the extreme end.
A is sixth to the left of E.
H is sixth to the right of C.
Which one of the following is correct in respect of the above?
(a) C is to the immediate left of A.
(b) D is immediate neighbour of B and F.
(c) G is to the immediate right of D.
(d) A and E are at the extreme ends.

Ans. (c)

It's given that F is to the immediate right of G and neighbour of E. Hence, F must be to the immediate left of E. Hence, their corresponding arrangement must be: GFE

Now, A is sixth to the left of E. We get the following two cases:

Case 1:



Case 2:



Now, H is sixth to the right of C. It is not possible in case 1 depicted above. There's only one way we can place H and C in the sitting arrangement depicted in case 2:



As we know that B is not a neighbour of G, we get the following final sitting arrangement:



Only statement given in option (c) is correct.

20. In a certain code, '256' means 'red colour chalk', '589' means 'green colour flower' and '254' means 'white colour chalk'. The digit in the code that indicates 'white' is
- (a) 2
 - (b) 4
 - (c) 5
 - (d) 8

Ans. (b)

In a certain code:

'256' means 'red colour chalk'(i)

'589' means 'green colour flower'(ii)

'254' means 'white colour chalk'(iii)

Comparing (i) and (iii), we get:

Code for 'colour chalk' must be 2/5.

Hence, code for 'white' must be 4.

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

Passage-1

An air quality index (AQI) is a way to combine measurements of multiple air pollutants into a single number or rating. This index is ideally kept constantly updated and available in different places. The AQI is most useful when lots of pollution data are being gathered and when pollution levels are normally, but not always, low. In such cases, if pollution levels spike for a few days, the public can quickly take preventive action (like staying indoors) in response to an air quality warning. Unfortunately, that is not urban India. Pollution levels in many large Indian cities are so high that they remain well above any health or regulatory standard for large part of the year. If our index stays in the Red/Dangerous' region day after day, there is not much any one can do, other than getting used to ignoring it.

- 21.** Which among the following is the most logical and rational inference that can be made from the above passage?
- (a) Our governments are not responsible enough to keep our cities pollution free.
 - (b) There is absolutely no need for air quality indices in our country.
 - (c) Air quality index is not helpful to the residents of many of our large cities.
 - (d) In every city, public awareness about pollution problems should increase.

Ans. (c)

Options (a) and (d) are beyond the scope of the passage

Option (b) contradicts the passage

Option (c) can be inferred from the passage. Hence, correct answer is (c)

Passage-2

Productive jobs are vital for growth and a good job is the best form of inclusion. More than half of our population depends on agriculture, but the experience of other countries suggests that the number of people dependent on agriculture will have to shrink if per capita incomes in agriculture are to go up substantially. While industry is creating jobs, too many such jobs are low-productivity non-contractual jobs in the unorganized sector, offering low incomes, little protection, and no benefits. Service jobs are relatively of high productivity, but employment growth in services has been slow in recent years.

- 22.** Which among the following is the most logical and rational inference that can be made from the above passage?
- (a) We must create conditions for the faster growth of highly productive service jobs to ensure employment growth and inclusion.
 - (b) We must shift the farm workers to the highly productive manufacturing and service sectors to ensure the economic growth and inclusion.
 - (c) We must create conditions for the faster growth of productive jobs outside of agriculture even while improving the productivity of agriculture.
 - (d) We must emphasize the cultivation of high-yielding hybrid varieties and genetically modified crops to increase the per capita income in agriculture.

Ans. (a)

Option (a) can be directly inferred from the passage. The first line says that Productive jobs are vital for growth and inclusion and the last line says that Service jobs are relatively of high productivity but are not growing fast. Hence, the inference that by creating conditions for faster growth of highly productive service jobs will ensure employment growth and inclusion.

Option (c) is too generalistic and even far fetched, like options (b) and (d).

Hence, correct answer is (a)

Passage-3

A landscape-scale approach to land use can encourage greater biodiversity outside protected areas. During hurricane 'Mitch' in 1998, farms using ecoagricultural practices suffered 58 percent, 70 percent and 99 percent less damage in Honduras, Nicaragua and Guatemala, respectively, than farms using conventional techniques. In Costa, vegetative windbreaks and fencerows boosted farmers' income from pasture and coffee while also increasing bird diversity. Bee pollination is more effective when agricultural fields are closer to natural or seminatural habitat, a finding that matters because 87 percent of the world's 107 leading crops depend on animal pollinators. In Costa Rica, Nicaragua and Colombia silvopastoral systems that integrate trees with pastureland are improving the sustainability of cattle production, and diversifying and increasing farmers' income.

- 23.** Which among the following is the most logical and rational inference that can be made from the above passage?
- (a) Agricultural practices that enhance biodiversity can often increase farm output and reduce the vulnerability to disasters.
 - (b) All the countries of the world should be encouraged to replace ecoagriculture with conventional agriculture.
 - (c) Ecoagriculture should be permitted in protected areas without destroying the biodiversity there.
 - (d) The yield of food crops will be very high if ecoagricultural practices are adopted to cultivate them.

Ans. (a)

Option (a) is correct, as it can be inferred from the passage. Option (b) is incorrect as it says the opposite from what passage conveys. Option (c) and Option (d) are far fetched.

Hence, the correct answer is (a).

Passage-4

The medium term challenge for Indian manufacturing is to move from lower to higher tech sectors, from lower to higher value-added sectors, and from lower to higher productivity sectors. Medium tech industries are primarily capital intensive and resource processing; and high tech industries are mainly capital and technology intensive. In order to push the share of manufacturing in overall GDP to the projected 25 per cent, Indian manufacturing needs to capture the global market in sectors showing a rising trend in demand. These sectors are largely high technology and capital intensive.

- 24.** Which among the following is the most logical and rational inference that can be made from the above passage?
- (a) India's GDP displays high value-added and high productivity levels in medium tech and resource processing industries.
 - (b) Promotion of capital and technology intensive manufacturing is not possible in India.
 - (c) India should push up the public investments and encourage the private investments in research and development, technology upgradation and skill development.
 - (d) India has already gained a great share in global markets in sectors showing a rising trend in demand.

Ans. (c)

Option (b) and (d) are incorrect as per the passage.

Between Option (a) and option (c), option (c) seems to be better aligned to the passage

Hence, the correct answer is (c).

Passage-5

Over the last decade, Indian agriculture has become more robust with record production of food grains and oilseeds. Increased procurement, consequently, has added huge of food grains in the granaries. India is one of the world's top producers of rice, wheat, milk, fruits and vegetables. India is still home the quarter of all

undernourished people in the world. On an average, almost half of the total expenditure of nearly half of the households is on food.

25. Which among the following is the most logical corollary to the above passage?
- (a) Increasing the efficiency of farm to-fork value chain is necessary to reduce the poverty and malnutrition.
 - (b) Increasing the agricultural productivity will automatically eliminate the poverty and malnutrition in India.
 - (c) India's agricultural productivity is already great and it is not necessary to increase it further.
 - (d) Allocation of more funds for social welfare and poverty alleviation programmes will ultimately eliminate the poverty and malnutrition in India.

Ans. (a)

Option (b) is incorrect because it is too definitive, it says "eliminate poverty" which passage does not say.

Option (c) is incorrect because productivity is not discussed.

Option (d) is far-fetched too.

Option (a) follows the argument presented in the paragraph, it can be viewed as the logical next step.

Hence, the correct answer is (a).

Passage-6

The States are like pearls and the Centre is the thread which turns them into a necklace; if the thread snaps, the pearls are scattered.

26. Which one of the following views corroborates the above statement?
- (a) A strong Centre and strong States make the federation strong.
 - (b) A strong Centre is a binding force for national integrity.
 - (c) A strong Centre is a hindrance to State autonomy.
 - (d) State autonomy is a prerequisite for a federation.

Ans. (b)

The underlying message of the passage is "states will scatter in absence of center"

This idea is well corroborated or supported by option (b) – "A strong Centre is a binding force for national integrity"

Hence, the correct answer is (b).

Passage-7

Really I think that the poorest man that is in England has a life to live, as the greatest man, and therefore truly, I think it is clear that every man that is to live under a government ought first by his own consent to put himself under the government, and I do think that the poorest man in England is not at all bound in a strict sense to that government that he has not had a voice to put himself under.

27. The above statement argues for
- (a) distribution of wealth equally to all
 - (b) rule according to the consent of the governed
 - (c) rule of the poor
 - (d) expropriation of the rich

Ans. (b)

The passage makes an argument that "poorest are not bound to government as he didn't had a say in its formation". As per this and overall message in the passage, it argues for "rule according to the consent of the governed".

Hence, the correct answer is (b).

28. The average rainfall in a city for the first four days was recorded to be 0.40 inch. The rainfall on the last two days was in the ratio of 4 : 3. The average of six days was 0.50 inch. What was the rainfall on the fifth day?
- (a) 0.60 inch
 (b) 0.70 inch
 (c) 0.80 inch
 (d) 0.90 inch

Ans. (c)

The average rainfall in six days = 0.5 inch.

Hence, total rainfall in six days = $0.5 \times 6 = 3$ inch

The average rainfall in a city for the first four days = 0.4 inch

So, total rainfall in these four days = $0.4 \times 4 = 1.6$ inch

Hence, rainfall in the last two days = $3 - 1.6 = 1.4$ inch

Now, it's given that the rainfall on the last two days was in the ratio of 4:3.

Hence, rainfall on the fifth day = $1.4 \times [4/(4 + 3)] = 1.4 \times (4/7) = 0.8$ inch

Explanation for Questions 29-31:

There are 7 lectures who are from 7 different cities and specialize in 7 different subjects. Let us make a table and fill all the direct information that has been provided in the question.

As per statements 2, 3, 6 and 7: Lecturer D is from Shillong; Lecturer C from Delhi is specialized in Sociology; Lecturer F who is specialized in Commerce belongs to Srinagar; Lecturer G who is specialized in Statistics belongs to Chennai. We get the following table:

Name	City	Subject
A		
B		
C	Delhi	Sociology
D	Shillong	
E		
F	Srinagar	Commerce
G	Chennai	Statistics

Now, let us fill the information given in statements 4 & 5 in the table too, i.e. Lecturer B is specialized in neither History nor Mathematics; Lecturer A who is specialized in Economics does not belong to Hyderabad.

Name	City	Subject
A	Hyderabad	Economics
B		History, Mathematics
C	Delhi	Sociology
D	Shillong	
E		
F	Srinagar	Commerce
G	Chennai	Statistics

From the above table we can infer that lecturer B must be the one specialized in Geography. Now, as per statement 1, lecturer from Kanpur is specialized in Geography. So, B must be from Kanpur. Also, E and A must be from Hyderabad and Mumbai respectively.

Name	City	Subject
A	Mumbai	Economics
B	Kanpur	Geography

C	Delhi	Sociology
D	Shillong	History/Mathematics
E	Hyderabad	History/Mathematics
F	Srinagar	Commerce
G	Chennai	Statistics

Directions for the following 3 (three) items : consider the given information and answer the three items that follow.

A, B, C, D, E, F and G are Lecturers from different cities—Hyderabad, Delhi, Shillong, Kanpur, Chennai, Mumbai and Srinagar (not necessarily in the same order) who participated in a conference. Each one of them is specialized in a different subject, viz., Economics, Commerce, History, Sociology, Geography, Mathematics and Statistics (not necessarily in the same order). Further

1. Lecturer from Kanpur is specialized in Geography
2. Lecturer D is from Shillong
3. Lecturer C from Delhi is specialized in Sociology
4. Lecturer B is specialized in neither History nor Mathematics
5. Lecturer A who is specialized in Economics does not belong to Hyderabad
6. Lecturer F who is specialized in Commerce belongs to Srinagar
7. Lecturer G who is specialized in Statistics belongs to Chennai

29. Who is specialized in Geography?
- (a) B
 - (b) D
 - (c) E
 - (d) Cannot be determined as data are inadequate

Ans. (a)

Lecturer B is specialized in Geography.

30. To which city does the Lecturer specialized in Economics belong?
- (a) Hyderabad
 - (b) Mumbai
 - (c) Neither Hyderabad nor Mumbai
 - (d) Cannot be determined as data are inadequate

Ans. (b)

Lecturer A specializes in Economics and he belongs to Mumbai.

31. Who of the following belongs to Hyderabad?
- (a) B
 - (b) E
 - (c) Neither B nor E
 - (d) Cannot be determined as data are inadequate

Ans. (b)

E belongs to Hyderabad.

32. In a school, there are five teachers A, B, C, D and E. A and B teach Hindi and English. C and B teach English and Geography. D and A teach Mathematics and Hindi. E and B teach History and French. Who teaches maximum number of subjects?
- (a) A
 - (b) B
 - (c) D
 - (d) E

Ans. (b)

Let's list down the subjects taught by each of the five teachers.

Teacher	Subjects Taught
A	Hindi, English, Mathematics
B	Hindi, English, Geography, History, French
C	English, Geography
D	Mathematics, Hindi
E	History, French

Hence, teacher B teaches the most number of subjects.

33. A 2-digit number is reversed. The larger of the two numbers is divided by the smaller one. What is the largest possible remainder?

- (a) 9
- (b) 27
- (c) 36
- (d) 45

Ans. (d)

To ensure that the remainder is the largest possible, we should make one of the numbers as large as possible. So, one of the two digits must be 9. Hence, the two numbers will be in the form of $9x$ and $x9$.

Now, we must also ensure that the smaller number does not divide the larger one by more than one time. Otherwise the value of remainder will be small. For example, if $x = 1$, the numbers will be 91 and 19. The remainder got when we divide 91 by 19 is 15.

Also, if the smaller number is made too big it will decrease the value of the remainder. For example, if $x = 8$, the numbers will be 98 and 89. The remainder got when we divide 98 by 89 is 9.

Hence, the value of x must not be very small or very large. Hence, we may try the values 4 and 5.

If $x = 5$: Numbers are 95 and 59. Remainder got on dividing 95 by 59 = 36

If $x = 4$: Numbers are 94 and 49. Remainder got on dividing 94 by 49 = 45.

Hence, the highest possible remainder is 45.

34. The monthly incomes of X and Y are in the ratio of 4 : 3 and their monthly expenses are in the ratio of 3 : 2. However, each saves Rs. 6,000 per month. What is their total monthly income?

- (a) Rs. 28,000
- (b) Rs. 42,000
- (c) Rs. 56,000
- (d) Rs. 84,000

Ans. (b)

The monthly incomes of X and Y are in the ratio of 4 : 3. Let them be $4a$ and $3a$.

Their monthly expenses are in the ratio of 3:2. Let them be $3b$ and $2b$.

As each saves Rs 6,000 per month, we get two equations:

Saving = Income – Expenditure

So, $4a - 3b = 6000$

and $3a - 2b = 6000$

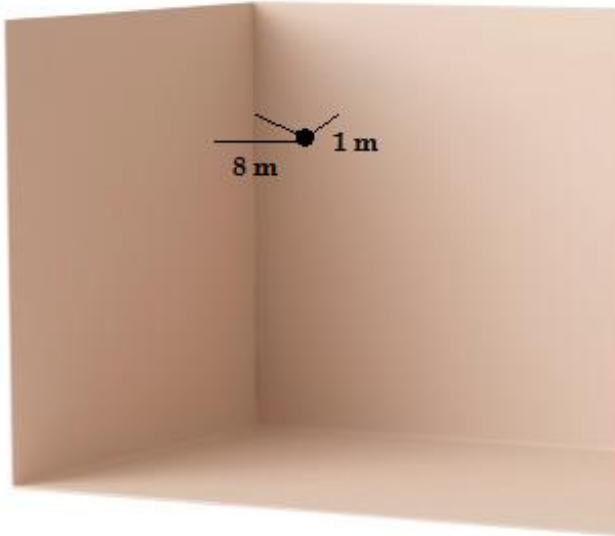
On solving we get: $a = 6000$ and $b = 6000$

Their total monthly income = $4a + 3a = 7a = 7 \times 6000 = \text{Rs. } 42,000$

35. Two walls and a ceiling of a room meet at right angles at a point P. A fly is in the air 1 m from one wall, 8 m from the other wall and 9 m from the point P. How many meters is the fly from the ceiling?
- (a) 4
 (b) 6
 (c) 12
 (d) 15

Ans. (a)

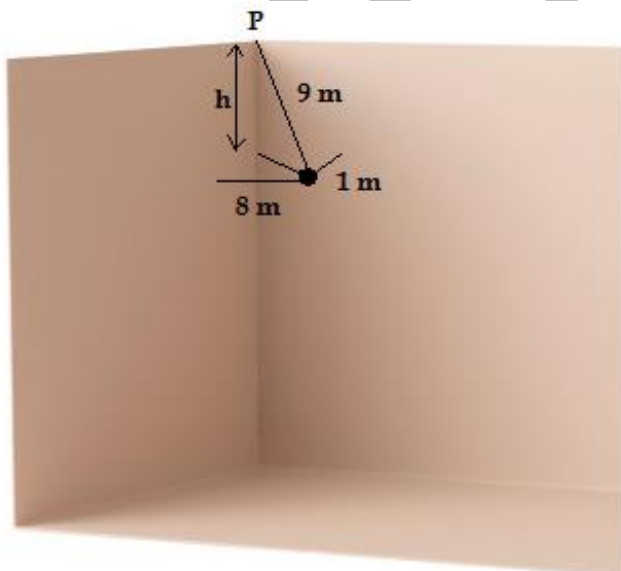
The fly is 8 m from one wall and 1 m from another.



So, its distance of the fly from the meeting point of the two walls in the same horizontal plane = $(8^2 + 1^2)^{1/2} = (64 + 1)^{1/2} = 65^{1/2}$ m

(Using Pythagoras theorem, i.e. Hypotenuse² = Base² + Height²)

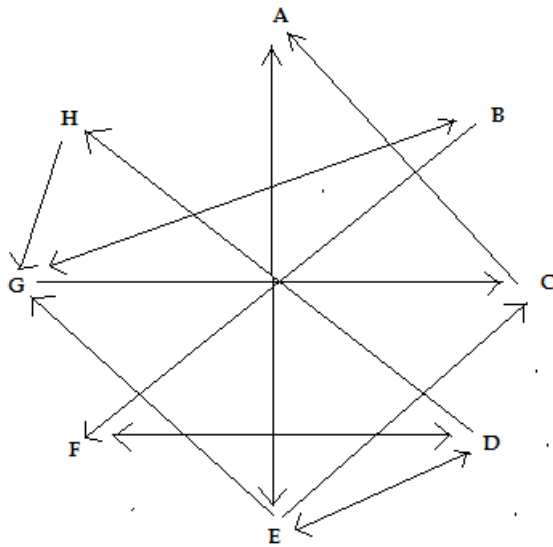
Now, the distance of the fly from the ceiling (say h) can again be determined using Pythagoras theorem.



$$h = (9^2 - 65)^{1/2} = (81 - 65)^{1/2} = (16)^{1/2} = 4 \text{ m}$$

Explanations for Questions 36 to 38:

Let us make the diagram representing all the passages first of all. It has been shown below. One way passages are represented by single side arrow and two way passages by two side arrows.



Directions for the following 3 (three) items : Consider the given information and answer the three items that follow.

Eight railway stations A, B, C, D, E, F, G and H are connected either by two-way passages or one-way passages. One-way passages are from C to A, E to G, B to F, D to H, G to C, E to C and H to G. Two-way passages are between A and E, G and B, F and D, and E and D.

36. While travelling from C to H, which one of the following stations must be passed through?

- (a) G
- (b) E
- (c) B
- (d) F

Ans. (b)

To move from C to H one must go from C to A and from A to E.

37. In how many different ways can a train travel from F to A without passing through any station more than once?

- (a) 1
- (b) 2
- (c) 3
- (d) 4

Ans. (d)

Possible ways to move from F to A without passing through any station more than once:

1. FDHGCA
2. FDEA
3. FDECA
4. FDEGCA

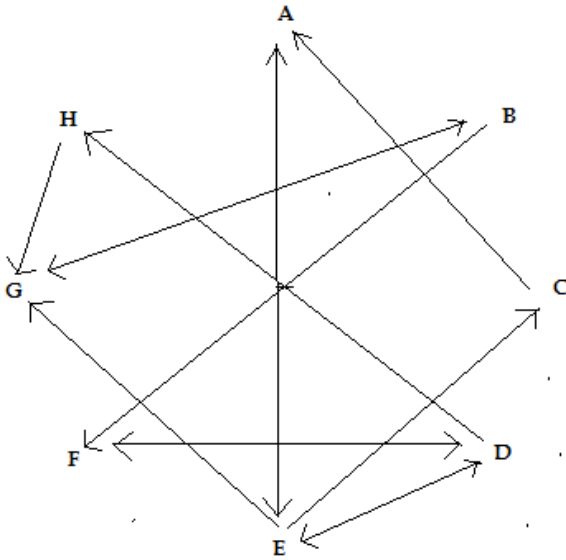
Hence, there are 4 ways.

38. If the route between G and C is closed, which one of the following stations need not be passed through while travelling from H to C?

- (a) E
- (b) D
- (c) A
- (d) B

Ans. (c)

Now, route between G and C is closed. Hence, we get:



Now while travelling from H to C, one must take the route: HGBFDEC

Hence, one may not pass through A.

39. There are certain 2-digit numbers. The difference between the number and the one obtained on reversing it is always 27. How many such maximum 2-digit numbers are there?

- (a) 3
- (b) 4
- (c) 5
- (d) None of the above

Ans. (d)

Let the numbers be of the form xy and yx , i.e. $10x + y$ and $10y + x$ (where $y > x$)

As per the question, $(10y + x) - (10x + y) = 27$

$$\text{Or } 9y - 9x = 27$$

$$\text{Or } y - x = 3$$

$$\text{Or } y = x + 3$$

So, possible sets of the value of x and y are: (1, 4), (2, 5), (3, 6), (4, 7), (5, 8) and (6, 9), i.e. 6 such numbers are there.

40. What is the total number of digits printed, if a book containing 150 pages is to be numbered from 1 to 150?

- (a) 262
- (b) 342
- (c) 360
- (d) 450

Ans. (b)

Number of digits from 1 to 150 = Number of units digits + Number of tens digits + Number of hundreds digits = $150 + (150 - 9) + (150 - 99) = 150 + 141 + 51 = 342$

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

Passage-1

We have hard work ahead. There is no resting for any of us till we redeem our pledge in full. We make all the people of India what destiny intends them to be. We are citizens of a great country, on the verge of bold advance, and we have to live up to that high standard. All of us, to whatever religion we may belong, are equally the children of India with equal rights, privileges and obligations. We cannot encourage communalism or narrow mindedness, for no nation can be great whose people are narrow in thought or action.

- 41.** The challenge the author of the above passage throws to the public is to achieve
- (a) a high standard of living, progress and privileges
 - (b) equal privileges, fulfilment of destiny and political tolerance
 - (c) spirit of adventure and economic parity
 - (d) hard work, brotherhood and national unity

Ans. (b)

Passage-2

"The individual, according to Rousseau, puts his person and all his power in common under the supreme direction of the General Will and in our corporate capacity we receive each member as an indivisible part of the whole."

- 42.** In the light of the above passage, the nature of General Will is best described as
- (a) the sum total of the private wills of the individuals
 - (b) what is articulated by the elected representatives of the individuals
 - (c) the collective good as distinct from private wills of the individuals
 - (d) the material interests of the community

Ans. (a)

Passage-3

In a democratic State, where a high degree of Political maturity of the people obtains, the conflict between the will of the sovereign law-making body and the organized will of the people seldom occurs.

- 43.** What does the above passage imply?
- (a) In a democracy, force is the main phenomenon in the actual exercise of sovereignty.
 - (b) In a mature democracy, force to a great extent is the main phenomenon in the actual exercise of sovereignty.
 - (c) In a mature democracy, use of force is irrelevant in the actual exercise of sovereignty.
 - (d) In a mature democracy, force is narrowed down to a marginal phenomenon in the actual exercise of sovereignty.

Ans. (d)

Passage-4

A successful democracy depends upon widespread interest and participation in politics, in which voting is an essential part. To deliberately refrain from taking such an interest, and from voting, is a kind of implied anarchy, it is to refuse one's political responsibility while enjoying the benefits of a free political society.

- 44.** This passage relates to
- (a) duty to vote
 - (b) right to vote
 - (c) freedom to vote
 - (d) right to participate in politics

Ans. (a)

The passage talks about voting as duty and describes refraining from it as an act of anarchy and refusing one's responsibility. Hence, the correct answer is the best choice ie option (a).

Passage-5

In a free country, the man who reaches the position of leader is usually one of outstanding character and ability. Moreover, it is usually possible to foresee that he will reach such a position, since early in life one can see his qualities of character. But this is not always true in the case of a dictator; often he reaches his position of power through chance, very often through the unhappy state of his country.

- 45.** The passage seems to suggest that
- (a) a leader foresees his future position
 - (b) a leader is chosen only by a free country
 - (c) a leader must see that his country is free from despair
 - (d) despair in a country sometimes leads to dictatorship

Ans. (d)

Options (a), (b) and (c) cannot be deduced from the passage. Moreover, the definitive words like "only", "must" etc. force a rethink over these options.

According to the passage, only option (d) seems correct, also seen from the lines "...very often through the unhappy state of his country".

Passage-6

The greatest blessing that technological progress has in store for mankind is not, of course, an accumulation of material possessions. The amount of these that can be effectively enjoyed by one individual in one lifetime is not great. But there is not the same narrow limit to the possibilities of the enjoyment of leisure. The gift of leisure may be abused by people who have had no experience of making use of it. Yet the creative use of leisure by a minority in societies has been the mainspring of all human progress beyond the primitive level.

- 46.** With reference to the above passage, the following assumptions have been made :
1. People always see the leisure time as a gift and use it for acquiring more material possessions.
 2. Use of leisure by some people to produce new and original things has been the chief source of human progress.

Which of these assumptions is/are valid?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

Ans. (b)

Statement 1 is contradictory to the passage as seen from the last two lines of the passage

Statement 2 is a valid assumption as seen from the passage, especially the last line.

Hence, the correct answer is option (b)

Passage-7

There is more than a modicum of truth in the assertion that "a working knowledge of ancient history is necessary to the intelligent interpretation of current events". But the sage who uttered these words of wisdom might well have added something on the benefits of studying particularly the famous battles of history for the lessons they contain for those of us who lead or aspire to leadership. Such a study will reveal certain qualities and attributes which enabled the winners to win—and certain deficiencies which caused the losers to lose and the student will see that the same pattern recurs consistently, again and again, throughout the centuries.

47. With reference to the above passage, the following assumptions have been made:
1. A study of the famous battles in history would help us understand the modern warfare.
 2. Studying the history is essential for anyone who aspires to be a leader.
- Which of these assumptions is/are valid?
- (a) 1 only
 (b) 2 only
 (c) Both 1 and 2
 (d) Neither 1 nor 2

Ans. (d)

Statement 1 is an invalid assumption because study of the famous battles of history is talked in context of learning leadership qualities and not understanding modern warfare.

Statement 2 is also invalid as even though passage suggests importance of studying history, it never assumes it to be essential for all leaders.

Hence, the correct answer is option (d)

48. Suppose the average weight of 9 persons is 50 kg. The average weight of the first 5 persons is 45 kg, whereas the average weight of the last 5 persons is 55 kg. Then the weight of the 5th person will be
- (a) 45 kg
 (b) 47.5 kg
 (c) 50 kg
 (d) 52.5 kg

Ans. (c)

The average weight of 9 persons is 50 kg. So, total weight of all the persons = $50 \times 9 = 450$ kg

The average weight of the first 5 persons is 45 kg. So, their total weight = $45 \times 5 = 225$ kg

The average weight of the last 5 persons is 55 kg. So, their total weight = $55 \times 5 = 275$ kg

The fifth person has been included in both the last cases.

Hence, the weight of the fifth person = $(275 + 225) - 450 = 50$ kg

49. In a group of six women, there are four tennis players, four postgraduates in Sociology, one postgraduate in Commerce and three bank employees. Vimla and Kamla are the bank employees while Amala and Komala are unemployed. Komala and Nirmala are among the tennis players. Amala, Kamla, Komala and Nirmala are postgraduates in Sociology of whom two are bank employees. If Shyamala is a postgraduate in Commerce, who among the following is both a tennis player and a bank employee?
- (a) Amala
 (b) Komala
 (c) Nirmala
 (d) Shyamala

Ans. (c)

Let's list down the information given in the question in tabular format.

Name	Tennis Player	Postgraduate in	Bank Employee
Vimla			Yes
Kamla		Sociology	Yes
Amala		Sociology	No (Unemployed)
Komala	Yes	Sociology	No (Unemployed)
Nirmala	Yes	Sociology	
Shyamala		Commerce	

Now, there were 4 post graduates in sociology and one in commerce. All have been accounted for. Hence, Vimla is not a post graduate either in sociology or commerce.

Among Kamla, Amala, Komala and Nirmala there are 2 bank employees. We already know that Kamla is a bank employee and Amala and Komala are not. Hence, Nirmala must be a bank employee too. Hence, all the three bank employees are accounted for too.

However, there are still two tennis players unaccounted for. The updated information can again be shown in the form of a table:

Name	Tennis Player	Postgraduate in	Bank Employee
Vimla		-	Yes
Kamla		Sociology	Yes
Amala		Sociology	No (Unemployed)
Komala	Yes	Sociology	No (Unemployed)
Nirmala	Yes	Sociology	Yes
Shyamala		Commerce	No

Nirmala is both a tennis player and a bank employee.

50. $P = (40\% \text{ of } A) + (65\% \text{ of } B)$ and $Q = (50\% \text{ of } A) + (50\% \text{ of } B)$, where A is greater than B . In this context, which of the following statements is correct?
- P is greater than Q .
 - Q is greater than P .
 - P is equal to Q .
 - None of the above can be concluded with certainty.

Ans. (d)

According to the question, $P = (40\% \text{ of } A) + (65\% \text{ of } B)$ and

$Q = (50\% \text{ of } A) + (50\% \text{ of } B)$, where $A > B$

Now, $P - Q = (40\% \text{ of } A) + (65\% \text{ of } B) - (50\% \text{ of } A) - (50\% \text{ of } B) = (15\% \text{ of } B) - (10\% \text{ of } A)$

We know that $A > B$, but not by how much. Hence, all three cases are possible, as illustrated below:

- If $B = 100$ and $A = 110$, then $P - Q = (15\% \text{ of } B) - (10\% \text{ of } A) = 15 - 11 = 4$. So, $P > Q$
- If $B = 100$ and $A = 150$, then $P - Q = (15\% \text{ of } B) - (10\% \text{ of } A) = 15 - 15 = 0$. So, $P = Q$
- If $B = 100$ and $A = 200$, then $P - Q = (15\% \text{ of } B) - (10\% \text{ of } A) = 15 - 20 = -5$. So, $P < Q$

Hence, nothing can be said about the relation between P and Q .

51. A watch loses 2 minutes in every 24 while another watch gains 2 minutes, in 24 hours. At a particular instant, the two watches showed an identical time. Which of the following statements is correct if 24-hour clock is
- The two watches show the identical time again on completion of 30 days.
 - The two watches show the identical time again on completion of 90 days.
 - The two watches show the identical time again on completion of 120 days.
 - None of the above statements correct.

Ans. (d)

A watch loses 2 minutes in every 24 hours, while another watch gains 2 minutes in every 24 hours. Hence, every day the time difference between the two watches will keep on increasing by 4 minutes.

They will again show the same identical time when this difference increases to 24 hours, i.e. 24×60 minutes.

Now, for the difference to increase by 4 minutes it takes 1 day

For the difference to increase by 24×60 minutes it will take $(1/4) \times 24 \times 60$ days = 6×60 days = 360 days

52. In a city, 12% of households earn less than Rs. 30,000 per year, 6% households earn more than Rs. 2,00,000 per year, 22% households earn more than Rs. 1,00,000 per year and 990 households earn between Rs. 30,000 and Rs. 1,00,000 per year. How many households earn between Rs. 1,00,000 and Rs. 2,00,000 per year?
- (a) 250
(b) 240
(c) 230
(d) 225

Ans. (b)

According to the question:

Households that earn more than Rs 1,00,000 per year = 22%

and households that earn more than Rs 2,00,000 per year = 6%

Hence, households that earn between Rs 1,00,000 and Rs 2,00,000 per year = $22 - 6 = 16\%$

Now, Households that earn less than Rs. 30,000 per year = 12%

Households that earn between Rs 30,000 and Rs 1,00,000 per year = $100 - (22 + 12) = 66\% = 990$

So, $100\% = 990 \times (100/66) = 1500$

Hence, households that earn between Rs 1,00,000 and Rs 2,00,000 per year = $16\% = (16/100) \times 1500 = 240$

53. A clock strikes once at 1 o'clock, twice at 2 o'clock and thrice at 3 o'clock, and so on. If it takes 12 seconds to strike at 5 o'clock, what is the time taken by it to strike at 10 o'clock?
- (a) 20 seconds
(b) 24 seconds
(c) 28 seconds
(d) 30 seconds

Ans. (b)

At 5 o'clock the clock will strike 5 times. It's given that it takes 12 seconds to do so.

Now, at 10 o'clock the clock will strike 10 times. Hence, the time taken by it to strike = $12 \times 2 = 24$ seconds

54. Consider the given statement and the two conclusions that follow:

Statement:

Morning walk is good for health.

Conclusions:

1. All healthy people go for morning walk.
2. Morning walk is essential for maintaining good health.

What is/are the valid conclusion/ conclusions?

- (a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Ans. (d)

The statement simply says that morning walk is good for health. It is not presented as either the necessary or the sufficient condition for good health.

Hence, conclusion 1 is incorrect as all healthy people need not go for morning walk

Similarly, conclusion 2 is also incorrect as morning walk is not an essential condition for good health

Hence, the correct answer is option (d)

55. There are thirteen 2-digit consecutive odd numbers. If 39 is the mean of the first five such numbers, then what is the mean of all the thirteen numbers?
- (a) 47
(b) 49
(c) 51
(d) 45

Ans. (a)

These are consecutive odd numbers. The mean of the first 5 such numbers will be third such number, which is given to be as 39.

Hence, the series is: 35, 37, 39, 41, 43, 45, 47, 49, 51 and so on.

Now, mean of all the thirteen numbers = $\left\{ \left[\frac{(13 - 1)}{2} + 1 \right] \text{th term} = 7^{\text{th}} \text{ term from the start, i.e. } 47. \right.$

56. Six boys A, B, C, D, E and F play a game of cards. Each has a pack of 10 cards. F borrows 2 cards from A and gives away 5 to C who in turn gives 3 to B while B gives 6 to D who passes 1 to E. Then the number of cards possessed by D and E is equal to the number of cards possessed by
- (a) A, B and C
(b) B, C and F
(c) A, B and F
(d) A, C and F

Ans. (b)

At the start all the boys have equal number of cards, as shown below:

A	10
B	10
C	10
D	10
E	10
F	10

Now, F borrows 2 cards from A and gives away 5 to C who in turn gives 3 to B:

A	8
B	13
C	12
D	10
E	10
F	7

B gives 6 to D who passes on 1 to E.

A	8
B	7
C	12
D	15
E	11
F	7

Number of cards with D and E = $15 + 11 = 26$

We can see that number of cards with B, C and F = $7 + 12 + 7 = 26$

57. There is a milk sample with 50% water in it. If $\frac{1}{3}$ rd of this milk is added to equal amount of pure milk, then water in the new mixture will fall down to
- (a) 25%
(b) 30%

- (c) 35%
- (d) 40%

Ans. (a)

Percentage of milk in milk sample = 50%

It is added to equal amount of pure milk, i.e. in the ratio of 1:1

Note: The information that $\frac{1}{3}$ rd of the milk sample is mixed is useless.

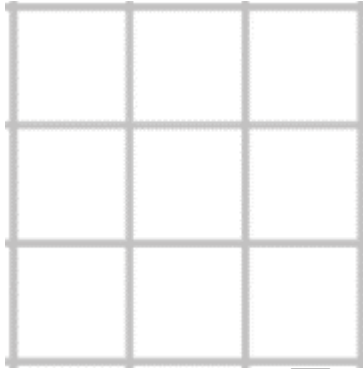
Let 100 lt of milk sample is mixed with 100 lt of pure milk. Water in milk sample = 50 lt

Percentage of water in the new mixture = $[50/(100 + 100)] \times 100 = (50/200) \times 100 = 25\%$

- 58.** There are 4 horizontal and 4 vertical lines, parallel and equidistant to one another on a board. What is the maximum number of rectangles and squares that can be formed?
- (a) 16
 - (b) 24
 - (c) 36
 - (d) 42

Ans. (c)

The board will be a 3×3 one and will look as follows:



We know that to form a square/rectangle we need 2 horizontal and 2 vertical lines.

The number of ways in which 2 vertical lines may be chosen from 4 = ${}^4C_2 = (4 \times 3)/2 = 6$

Similarly, number of ways in which 2 horizontal lines may be chosen from 4 = ${}^4C_2 = (4 \times 3)/2 = 6$

Hence, the maximum number of squares and rectangles that can be formed = $6 \times 6 = 36$

- 59.** A freight train left Delhi for Mumbai at an average speed of 40 km/hr. Two hours later, an express train left Delhi for Mumbai, following the freight train on a parallel track at an average speed of 60 km/hr. How far from Delhi would the express train meet the freight train?
- (a) 480 km
 - (b) 260 km
 - (c) 240 km
 - (d) 120 km

Ans. (c)

Speed of freight train = 40 km/hr and Speed of express train = 60 km/hr

Hence, relative velocity = $60 - 40 = 20$ km/hr

Distance travelled by freight train in 2 hours = Speed of freight train \times 2 = $40 \times 2 = 80$ km

So, time taken by express train to catch freight train = Distance/Relative speed = $80/20 = 4$ hr

Distance from Delhi at this moment = Speed of express train \times 4 = $60 \times 4 = 240$ km

60. In a test, Randhir obtained more marks than the total marks obtained by Kunal and Debu. The total marks obtained by Kunal and Shankar are more than those of Randhir. Sonal obtained more marks than Shankar. Neha obtained more marks than Randhir. Who amongst them obtained highest marks?
- (a) Randhir
(b) Neha
(c) Sonal
(d) Data are inadequate

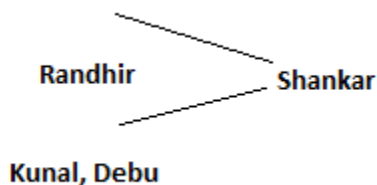
Ans. (d)

As per question, Randhir obtained more marks than the total marks obtained by Kunal and Debu. So, marks of both Kunal and Debu individually must also be less than Randhir.

Randhir

Kunal, Debu

Total marks obtained by Kunal and Shankar are more than those of Randhir. So, the marks of Shankar can be more than or less than that of Randhir.



Sonal obtained more marks than Shankar, i.e. $\text{Sonal} > \text{Shankar}$

Neha obtained more marks than Randhir, i.e. $\text{Neha} > \text{Randhir}$

It's evident that we cannot tell for sure who amongst them attained the highest marks.

Directions for the following 8 (eight) items: Read the Following eight passages and answer the items that follow the passages. Your answers to these items should be based on the passages only.

Passage-1

What climate change will undeniably do is cause of amplify events that hasten the reduction of resources. Competition over these diminishing resources would ensue in the form of political or even violent conflict. Resource based conflicts have rarely been overt and are thus difficult to isolate. Instead they take on veneers that appear more politically palatable. Conflicts over resources like water are often cloaked in the guise of identity or ideology.

61. What does the above passage imply?
- (a) Resource-based conflicts are always politically motivated.
(b) There are no political solutions to resolve environmental and resource based conflicts.
(c) Environmental issues contribute to resource stresses and political conflict.
(d) Political conflict based on identity or ideology cannot be resolved.

Ans. (c)

Option (c) is the only option supported by the passage. Rest all cannot be seen from the passage. Further, this statement represents the key message of the passage. Hence, Option (c) is the correct answer.

Passage-2

The man who is perpetually hesitating which of the two things he will do first, will do neither. The man who resolves, but suffers his resolution to be changed by the first counter Suggestion of a friend—who fluctuates

from opinion to opinion and veers from plan to plan—can never accomplish anything. He will at best be stationary and probably retrograde in all. It is only the man who first consults wisely, then resolves firmly and then executes his purpose with inflexible perseverance, undismayed by those petty difficulties which daunt a weaker spirit—that can advance to eminence in any line.

- 62.** The keynote that seems to be emerging from the passage is that
- (a) we should first consult wisely and then resolve firmly
 - (b) we should reject suggestions of friends and remain unchanged
 - (c) we should always remain broad-minded
 - (d) we should be resolute and achievement-oriented

Ans. (d)

Keynote could be understood as the central theme or gist of the passage.

Option (b) and (c) are contradictory to the passage.

Option (a) is factually correct but does not represent the central theme.

Option (d) contains two words which represent the beginning and concluding ideas of the passage, i.e. “not being perpetually hesitant” and “advance to eminence...”

Hence, Option (d) is the correct answer

Passage-3

During the summer in the Arctic Ocean, sea ice has been melting earlier and faster, and the winter freeze has been coming later. In the last three decades, the extent of summer ice has declined by about 30 per cent. The lengthening period of summer melt threatens to undermine the whole Arctic food web, atop which stand polar bears.

- 63.** Which among the following is the most crucial message conveyed by the above passage?
- (a) Climate change has caused Arctic summer to be short but temperature to be high.
 - (b) Polar bears can be shifted to South Pole to ensure their survival.
 - (c) Without the presence of polar bears, the food chains in Arctic region will disappear.
 - (d) Climate change poses a threat to the survival of polar bears.

Ans. (d)

Option (a), (c) and (b) cannot be deduced from the passage.

Option (d) can be inferred from the passage and comes out as the most crucial message conveyed by the passage.

Hence, Option (d) is the correct answer

Passage-4

Why do people prefer open defecation and not want toilets or, if they have them, only use them sometimes? Recent research has shown two critical elements: ideas of purity and pollution, and not wanting pits or septic tanks to fill they have to be emptied. These are the issues that nobody wants to talk about, but if we want to eradicate the practice of open defecation, they have to be confronted and dealt properly.

- 64.** Which among the following is the most crucial message conveyed by the above passage?
- (a) The ideas of purity and pollution are so deep-rooted that they cannot be removed from the minds of the people.
 - (b) People have to perceive toilet use and pit-emptying as clean and not polluting.
 - (c) People cannot change their old habits.
 - (d) People have neither civic sense nor sense of privacy.

Ans. (b)

The passage talks about confronting and dealing with the ideas of purity and pollution. In this context, the most crucial message conveyed by the passage is option (b), "People have to perceive toilet use and pit-emptying as clean and not polluting."

Passage-5

In the last two decades, the world's gross domestic product (GDP) has increased 50 percent, whereas inclusive wealth has increased by a mere 6 percent. In recent decades, GDP-driven economic performance, has only harmed inclusive wealth like human capital; and natural capital like forests, land and water. While the world's human capital which stands at 57 percent of total inclusive wealth grew by only 8 percent, the natural which is 23 percent of total inclusive wealth declined by 30 per cent worldwide in the last two decades.

65. Which of the following is the most crucial inference from the above passage?
- (a) More emphasis should be laid on the development of natural capital.
 - (b) The growth driven by GDP only is neither desirable nor sustainable.
 - (c) The economic performance of the countries of the world is not satisfactory.
 - (d) The world needs more human capital under the present circumstances.

Ans. (b)

Option (c) does not resonate with the passage and hence incorrect.

Options (a) and (d) are only partially correct as they talk about either natural or human capital.

The best choice and the most crucial inference seems to be option (b)

Passage-6

By 2020, when the global economy is expected to run short of 56 million young people, India, with its youth surplus of 47 million, could fill the gap. It is in this context that labour reforms are often cited as the way to unlock double-digit growth in India. In 2014, India's labour force was estimated to be about 40 per cent of the population, but 93 per cent of this force was in unorganized sector. Over the last decade, the compound annual growth rate (CAGR) of employment has slowed to 0.5 per cent, with about 14 million jobs created during last year when the labour force increased by about 15 million.

66. Which of the following is most rational inference from the above passage?
- (a) India must control its population growth so as to reduce its unemployment rate.
 - (b) Labour reforms are required in India to make optimum use of its vast labour force productively
 - (c) India is poised to achieve the double-digit growth very soon
 - (d) India is capable of supplying !It, skilled young people to oil, countries.

Ans. (b)

Option (d) can be ruled out for being too specific where the passage is silent.

Options (a) and (c) cannot be inferred directly from the passage.

Option (b) is supported by the passage overall, especially line 2 of the passage.

Hence, Option (b) is the correct answer

Passage-7

The very first lesson that should be taught to us when are old enough to understand it, is that complete freedom from the obligation to work is unnatural, and ought to be illegal, as we can escape our share of the burden of work only by throwing it on someone else's shoulders. Nature ordains that the human race shall perish of famine if it stops working. We cannot escape from this tyranny. The question we have to settle is how much leisure we can afford to allow ourselves.

67. The main idea of the passage is that
- (a) it is essential for human beings to work
 - (b) there should be a balance between work and leisure

- (c) working is a tyranny which we to face
- (d) human's understanding of the nature of work is essential

Ans. (b)

Main idea of a passage is the brief, but all-encompassing summary. It covers everything the paragraph talks about, but nothing in particular.

The passage explains that though we desire leisure, working is essential and ends by prodding extent of amount of leisure time.

Hence, the main idea here is "there should be a balance between work and leisure".

Option (b) is the correct answer

Passage-8

There is no harm in cultivating habits so long as they are not injurious. Indeed, most of us are little more than bundle of habits. Take away our habits and the residuum would hardly be worth bothering about. We could not get on without them. They simplify the mechanism of life. They enable us to do a multitude of things automatically, which, if we had to give fresh and original thought to them each time, would make existence an impossible confusion.

- 68.** The author suggests that habits
- (a) tend to make our lives difficult
 - (b) add precision to our lives
 - (c) make it easier for us to live
 - (d) tend to mechanize our lives

Ans. (c)

As per the passage, habits make it easier for us to live, as seen clearly in the last line "...make it easier for us to live."

Hence option (c) is correct

Directions for the following 2 (two) items: - Consider the given information and answer the two items that follow.

No supporters of 'party X', who knew Z and supported his campaign strategy, agreed for the alliance with 'party Y'; but some of them had friends in 'party Y'.

- 69.** With reference to the above information, which one among the following statements must be true?
- (a) Some supporters of 'party Y' did not agree for the alliance with the 'party X'.
 - (b) There is at least one supporter of 'party Y' who knew some supporters of 'party X' as a friend.
 - (c) No supporters of 'party X' supported Z's campaign strategy.
 - (d) No supporters of 'party X' knew Z.

Solution for 69 and 70

From the data given, we know

1. some supporters of party X -> knew Z -> none agreed for alliance with party Y
2. some supporters of party X -> knew Z -> some had friends in party Y

Ans. (b)

Option (a) is incorrect because we are not given information about opinion of supporters of party Y

Similarly, given data does not support option (c) or (d)

From 2, we can say that "There is at least one supporter of 'party Y' who knew some supporters of 'party X' as a friend". Hence option (b) is correct

70. With reference to the above information, consider the following statement
1. Some supporters of 'party X' knew Z
 2. Some supporters of 'party X', who opposed Z's campaign strategy, knew Z.
 3. No supporters of 'party X' supported Z's campaign strategy.
- Which of the statements given above, is/are not correct?
- (a) 1 only
 - (b) 2 and 3 only
 - (c) 3 only
 - (d) 1, 2 and 3

Ans. (b)

Statement 1 is correct as per 1 and 2 both

Statements 2 and 3 are incorrect as using the data they cannot be concluded satisfactorily.

Hence option (b) is correct

71. If second and fourth Saturdays and ,all the Sundays are taken as only holidays for an office, what would be the minimum number of possible working days of any month of any year?
- (a) 23
 - (b) 22
 - (c) 21
 - (d) 20

Ans. (b)

To minimize the number of working days let us consider February month of a non-leap year, i.e. a month of 28 days.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28

In it all the Sundays, i.e. 1, 8, 15 and 22 will be holidays. Also, 2nd and 4th Saturdays, i.e. 14 and 28 will be holidays too.

Hence, minimum possible working days of any month of any year = 28 – 6 = 22 days

72. If there is a policy that 1/3rd of population of a community has migrated every year from one place, to some other place, what is the leftover population of that community after the sixth year, if there is no further growth in the population during this period?
- (a) 16/243rd part of the population
 - (b) 32/243rd part of the population
 - (c) 32/729th part of the population
 - (d) 64/729th part of the population

Ans. (d)

One third of the population migrates every year. If initially the population was x , after the first year it will be $x - x/3 = x(1 - 1/3) = 2x/3$

After second year, population = $(2x/3) \times (1 - 1/3) = (2/3)^2 x$

Similarly, after sixth year, population = $(2/3)^6 x = (64/729) x$, i.e. $64/729^{\text{th}}$ part of the original population.

73. Four tests—Physics, Chemistry, Mathematics and Biology are to be conducted on four consecutive days, not necessarily in the same order. The Physics test is held before the test which is conducted after Biology. Chemistry is conducted exactly after two tests are held. Which is the last test held?
- (a) Physics
 - (b) Biology
 - (c) Mathematics
 - (d) Chemistry

Ans. (c)

Mathematics, Physics, Chemistry and Biology tests have to be held on four consecutive days.

Chemistry is conducted exactly after two tests are held, i.e. it is the 3rd test to be held.

_____ Chemistry _____

Now, Physics test is held before test which is conducted after Biology, i.e. neither Physics nor Biology is the last test. Hence, Mathematics must be the test which is held last.

74. The sum of income of A and B is more than that of C and D taken together. The sum of income of A and C is the same as that of B and D taken together. Moreover, A earns half as much as the sum of the income of B and D. Whose income is the highest?
- (a) A
 - (b) B
 - (c) C
 - (d) D

Ans. (b)

As per the question, $A + B > C + D$ (i)

$A + C = B + D$ (ii)

$A = (B + D)/2$

Or $B + D = 2A$ (iii)

Putting value of $(B + D)$ in (ii), we get:

$A + C = 2A$

Or $A = C$

Using (i), we get:

$A + B > C + D$

or $B > D$

As per equation (iii), A (or C) is the mean of the values of B and D. Hence, its value must fall between B and D.

Hence, $B > A = C > D$. So, B's income is the highest.

75. Consider the following:

Statement:

Good voice is a natural gift but one has to keep practising to improve and well in the field of music.

Conclusions:

I. Natural gifts need nurturing and care.

II. Even though one's voice is not good, one can keep practising.

Which one of the following is correct, in respect of the above statement and conclusions?

- (a) Only conclusion I follows from the statement.

- (b) Only conclusion II follows from the statement.
- (c) Either conclusion I or conclusion II follows from the statement.
- (d) Neither conclusion I nor conclusion II follows from the statement.

Ans. (d)

The characteristic of good voice may not be applicable to all natural gifts. Hence, statement 1 cannot be concluded.

Statement 2 can also not be concluded as passage does not comment on cases where voice is not good.

Hence, option (d) is the correct answer.

76. There are three pillars X, Y and Z of different heights. Three spiders A, B and C start to climb on these pillars simultaneously. In one chance, A climbs on X by 6 cm but slips down 1 cm. B climbs on Y by 7 cm but slips down 3 cm. C climbs on Z by 6.5 cm but slips down 2 cm. If each of them requires 40 chances to reach the top of the pillars, what is the height of the shortest pillar?

- (a) 161 cm
- (b) 163 cm
- (c) 182 cm
- (d) 210 cm

Ans. (b)

Pillar X: In one chance, A climbs on X by 6 cm but slips down 1 cm. Hence, in one chance A climbs $6 - 1 = 5$ cm.

Height attained after 39 chances = $39 \times 5 = 195$ cm

Thereafter in the 40th and last chance it will climb 6 cm to reach the top. So, height of pillar X = $195 + 6 = 201$ cm

Pillar Y: In one chance, B climbs on Y by 7 cm but slips down 3 cm. Hence, in one chance B climbs $7 - 3 = 4$ cm.

Height attained after 39 chances = $39 \times 4 = 156$ cm

Thereafter in the 40th and last chance it will climb 7 cm to reach the top. So, height of pillar Y = $156 + 7 = 163$ cm

Pillar Z: In one chance, C climbs on Z by 6.5 cm but slips down 2 cm. Hence, in one chance C climbs $6.5 - 2 = 4.5$ cm.

Height attained after 39 chances = $39 \times 4.5 = 175.5$ cm

Thereafter in the 40th and last chance it will climb 6.5 cm to reach the top. So, height of pillar Z = $175.5 + 6.5 = 182$ cm

So, height of the shortest pillar (i.e. pillar Y) = 163 cm

77. "Rights are certain advantageous conditions of social well being indispensable to the true development of the citizen."

In the light of this statement, which one of the following is the correct understanding of rights?

- (a) Rights aim at individual good only.
- (b) Rights aim at social good only.
- (c) Rights aim at both individual and social good.
- (d) Rights aim at individual good devoid of social well-being.

Ans. (c)

The statement links the social well being with individual development. Hence, option (c) is the correct answer.

- 78.** 15 students failed in a class of 52. After removing the names of failed students, a merit order list has been prepared in which the position of Ramesh is 22nd from the top. What is his position from the bottom?
- (a) 18th
 (b) 17th
 (c) 16th
 (d) 15th

Ans. (c)

15 students failed in a class of 52. Hence, number of students that passed = $52 - 15 = 37$

In the list of passed students, position of Ramesh is 22nd from the top.

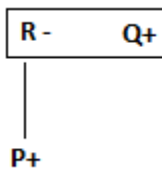
So, his position from the bottom = $(37 + 1) - 22 = 38 - 22 = 16^{\text{th}}$

- 79.** Consider the following:
 A + B means A is the son of B.
 A - B means A is the wife of B.
 What does the expression P + R - Q mean?
- (a) Q is the son of P.
 (b) Q is the wife of P.
 (c) Q is the father of P.
 (d) None of the above

Ans. (c)

A + B means A is the son of B; A - B means A is the wife of B

So, P + R - Q may be depicted as:



It's clear that Q is the father of P.

- 80.** Gopal bought a cell phone and sold it to Ram at 10% profit. Then Ram wanted to sell it back to Gopal at 10% loss. What will be Gopal's position if he agreed?
- (a) Neither loss nor gain
 (b) Loss 1%
 (c) Gain 1%
 (d) Gain 0.5%

Ans. (c)

Let cost price for Gopal = Rs. 100

He sold it to Ram at 10% profit. So, his selling price = $100 + 10\% \text{ of } 100 = 100 + 10 = \text{Rs. } 110$

Now, if Ram resales it to Gopal at 10% loss, his selling price = $110 - 10\% \text{ of } 110 = 110 - 11 = \text{Rs. } 99$

As far as Gopal is concerned, in this second transaction, by buying a Rs. 100 pen at Rs 99, he registers a gain of 1%.