



Your Personal Exams Guide



NDA



CDS



SSC CGL



CBSE UGC NET



IAS



SSC CHSL



CTET



MPSC



AFCAT



CSIR UDC NET



IBPS PO



UP POLICE



SSC MTS



SBI PO



BPSC



UP TET



IBPS RRB



IBPS CLERK



IES



UPSC CAPF



SSC Stenogr..



RRB NTPC



SSC GD



RBI GRADE B



RBI Assistant



DSSSB

UPSC CSE 2021 (Prelims Paper-2: CSAT) Previous Year Paper (10-Oct-2021)

Total Time: 2 Hour

Total Marks: 200

Instructions

Sl No.	Section Name	No. of Question	Maximum Marks
1	Part B	80	200

- 1.) A total of 120 minutes is allotted for the examination.
- 2.) The server will set your clock for you. In the top right corner of your screen, a countdown timer will display the remaining time for you to complete the exam. Once the timer reaches zero, the examination will end automatically. The paper need not be submitted when your timer reaches zero.
- 3.) There will, however, be sectional timing for this exam. You will have to complete each section within the specified time limit. Before moving on to the next section, you must complete the current one within the time limits.

Your Personal Exams Guide

Part B

1. Read the following passage and answer the question that follows. Your answers to these items should be based on the passage only. (+2.5, -0.83)

India faces a challenging immediate future in energy and climate policy-making. The problems are multiple: sputtering fossil fuel production capabilities; limited access to electricity and modern cooking fuel for the poorest; rising fuel imports in an unstable global energy context; continued electricity pricing and governance challenges leading to its costly deficits or surplus supply; and not least, growing environmental contestation around land, water and air. But all is not bleak: growing energy efficiency programmes; integrated urbanisation and transport policy discussion; inroads to enhancing energy access and security; and bold renewable energy initiatives, even if not fully conceptualised, suggest the promise of transformation.

Which one of the following statements **best reflects the critical message** conveyed by the passage given above?

- a. India's energy decision-making process is ever more complex and interconnected.
- b. India's energy and climate policy is heavily tuned to sustainable development goals.
- c. India's energy and climate actions are not compatible with its broader social, economic and environmental goals.
- d. India's energy decision-making process is straightforward supply-oriented and ignores the demand side.

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2. Read the following passage and answer the question that follows. Your answers to these items should be based on the passage only. (+2.5, -0.83)

There are reports that some of the antibiotics sold in the market are fed to poultry and other livestock as growth promoters. Overusing these substances can create superbugs, pathogens that are resistant to multiple drugs and could be passed along humans. Mindful of that, some farming companies have stopped using the drugs to make chickens gain weight faster. Since Denmark banned antibiotic growth promoters in the 1990s, the major pork exporter says it is producing more pigs – and the animals get fewer diseases.

Which one of the following statements **best reflects the critical message** conveyed by the passage given above?

- a. People should avoid consuming the products of animal farming.
- b. Foods of animal origin should be replaced with foods of plant origin.
- c. Using antibiotics on animals should be banned.
- d. Antibiotics should only be used to treat diseases.

3. Read the following passage and answer the question that follows. Your answers to these items should be based on the passage only. (+2.5, -0.83)

Policymakers and media have placed the blame for skyrocketing food prices on a variety of factors, including high fuel prices, bad weather in key food producing countries, and the diversion of land to non-food production. Increased emphasis, however, has been placed on a surge in demand for food from the most populous emerging economics. It seems highly probable that mass consumption in these countries could be well poised to create a food crisis.

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

1. Oil producing countries are one of the reasons for high food prices.

2. If there is a food crisis in the world in the near future, it will be in the emerging economies.

Which of the above assumptions is/are valid?

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

4. Read the following passage and answer the question that follows. Your answers to these items should be based on the passage only. (+2.5, -0.83)

A central message of modern development economics is the importance of income growth, by which is meant growth in Gross Domestic Product (GDP). In theory, rising GDP creates employment and investment opportunities. As incomes grow in a country where the level of GDP was once low, households, communities, and governments are increasingly able to set aside some funds for the production of things that make for a good life. Today GDP has assumed such a significant place in the development lexicon, that if someone mentions "economic growth", we know they mean growth in GDP.

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

- 1. Rising GDP is essential for a country to be a developed country.
- 2. Rising GDP guarantees a reasonable distribution of income to all households.

Which of the above assumptions is/are valid?

- a. 1 only

- b. 2 only
 - c. Both 1 and 2
 - d. Neither 1 nor 2
-

5. Seven books P, Q, R, S, T, U and V are placed side by side. R, Q and T have blue covers and other books have red covers. Only S and U are new books and the rest are old. P, R and S are law reports; the rest are Gazetteers. Books of old Gazetteers with blue covers are (+2.5, -0.83)

- a. Q and R
 - b. Q and U
 - c. Q and T
 - d. T and U
-

6. Replace the incorrect term by the correct term in the given sequence (+2.5, -0.83)

3, 2, 7, 4, 13, 10, 21, 18, 31, 28, 43, 40

where odd terms and even terms follow the same pattern.

- a. 0
 - b. 1
 - c. 3
 - d. 6
-

7. Following is a matrix of certain entries. The entries follow a certain trend (+2.5, -0.83) row-wise. Choose the missing entry (?) accordingly.

7B	10A	3C
3C	9B	6A
10A	13C	?

- a. 9B
- b. 3A
- c. 3B
- d. 3C

8. You are given two identical sequences in two rows: (+2.5, -0.83)

Sequence-I:	8	4	6	15	52.5	236.25
Sequence-II:	5	A	B	C	D	E

What is the entry in the place of C for the Sequence-II?

- a. 2.5
- b. 5
- c. 9.375
- d. 32.8125

9. A person X from a place A and another person Y from a place B set out at the same time to walk towards each other. The places are separated by a distance of 15 km. X walks with a uniform speed of 1.5 km / hr and Y walks with a uniform speed of 1 km / hr in the first hour, with a uniform speed of 1.25 km / hr in the second hour and with a uniform speed of 1.5 km / hr in the third hour and so on. (+2.5, -0.83)

Which of the following is / are correct?

1. They take 5 hours to meet.
2. They meet midway between A and B.

Select the correct answer using the code given below:

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

10. A student appeared in 6 papers. The maximum marks are the same for each paper. His marks in these papers are in the proportion of 5 : 6 : 7 : 8 : 9 : 10. Overall he scored 60%. In how many number of papers did he score less than 60% of the maximum marks? (+2.5, -0.83)

- a. 2
- b. 3
- c. 4
- d. 5

11. Read the following passage and answer the question that follows. Your answers to these items should be based on the passage only. (+2.5, -0.83)

Researchers simulated street lighting on artificial grassland plots containing pea-aphids, sap-sucking insects, at night. These were exposed to two different types of light – a white light similar to newer commercial LED lights and an amber light similar to sodium street lamps. The low intensity amber light was shown to inhibit, rather than induce, flowering in a wild plant of the pea family which is a source of food for the pea-aphids in grasslands. The number of aphids was also significantly suppressed under the light treatment due to the limited amount of food available.

Which one of the following statements **best reflects the most critical inference** that can be made from the passage given above?

- a. Low intensity light has more adverse effect on the plants as compared to high intensity light.
- b. Light pollution can have a permanent adverse impact on an ecosystem.
- c. White light is better for the flowering of plants 'as compared to the light of other colours.
- d. Proper intensity of light in an ecosystem is important not only for plants but for animals too.

12. Read the following passage and answer the question that follows. Your answers to these items should be based on the passage only. (+2.5, -0.83)

Approximately 80 percent of all flowering plant species are pollinated by animals, including birds and mammals, but the main pollinators are insects. Pollination is responsible for providing us with a wide variety of food, as well as many plant-derived medicines. At least one-third of the

world's agricultural crops depend upon pollination. Bees are the most dominant taxa when it comes to pollination and they are crucial to more than four hundred crops. Pollination is an essential service that is the result of intricate relationships between plants and animals, and the reduction or loss of either affects the survival of both. Effective pollination requires resources, such as refuges of pristine natural vegetation.

On the basis of the passage given above, the following assumptions have been made:

1. Sustainable production of India's cereal food grains is impossible without the diversity of pollinating animals.
2. Monoculture of horticultural crops hampers the survival of insects.
3. Pollinators become scarce in cultivated areas devoid of natural vegetation.
4. Diversity in insects induces diversity of plants.

Which of the above assumptions is/are valid?

- a. 1 only
- b. 2, 3 and 4 only
- c. 1 and 2 only
- d. 3 and 4 only

-
13. Read the following passage and answer the question that follows. Your answers to these items should be based on the passage only. (+2.5, -0.83)

A study conducted on the impacts of climate change over the Cauvery basin of Tamil Nadu using regional climate models showed an increasing trend for maximum and minimum temperatures, and a

decrease in the number of rainy days. These climatic shifts will have an impact on the hydrological cycles in the region, lead to more run-off and less recharge, and affect the groundwater tables. Further, there has been an increase in the frequency of droughts in the State. This has driven farmers to increase dependency on groundwater resources to secure their crops.

Which one of the following statements **best reflects the crux** of the passage given above?

- a. Development of regional climate models helps in choosing climate-smart agricultural practices.
- b. Heavy dependence on groundwater resources can be reduced by adopting dry-land cropping systems.
- c. Climate changes increase the criticality of water resources while simultaneously threatening it.
- d. Climate changes cause the farmers to adopt unsustainable livelihoods and risky coping strategies.

14. Read the following passage and answer the question that follows. Your answers to these items should be based on the passage only. (+2.5, -0.83)

Researchers were able to use stem cells to gauge the neurotoxic effects of the environmental pollutant Bisphenol A (BPA). They used a combination of biochemical and cell-based assays to examine the gene expression profile during the differentiation of mouse embryonic stem cells upon treatment with BPA, a compound known to diabetes, and heart diseases, cause developmental abnormalities in humans. They were able to detect and measure BPA toxicity towards the proper specification of primary germ layers, such as endoderm and ectoderm, and the establishment of neural progenitor cells.

On the basis of the passage given above, the following assumptions have been made :

1. BPA may alter embryonic development in vivo.
2. Biochemical and cell-based assays are useful in finding out treatments for pollution-induced diseases.
3. Embryonic stem cells could serve as a model to evaluate the physiological effects of environmental pollutants.

Which of the above assumptions are valid?

- a. 1 and 2 only
- b. 2 and 3 only
- c. 1 and 3 only
- d. 1, 2 and 3

15. If 3^{2019} is divided by 10, then what is the remainder? (+2.5, -0.83)

- a. 1
- b. 3
- c. 7
- d. 9

16. The number 3798125P369 is divisible by 7. What is the value of the digit P? (+2.5, -0.83)

- a. 1

b. 6

c. 7

d. 9

17. From January 1, 2021, the price of petrol (in Rupees per litre) on m^{th} day of the year is $80 + 0.1m$, where $m = 1, 2, 3, \dots, 100$ and thereafter remains constant. On the other hand, the price of diesel (in Rupees per litre) on n^{th} day of 2021 is $69 + 0.15n$ for any n . On which date in the year 2021 are the prices of these two fuels equal? (+2.5, -0.83)

a. 21st May

b. 20th May

c. 19th May

d. 18th May

18. A biology class at Central High School predicted that a local population of animals will double in size every 12 years. The population at the beginning of 2021 was estimated to be 50 animals. If P represents the population n years after 2021, then which of the following equations represents the class model of the population over time? (+2.5, -0.83)

a. $P = 12 + 50n$

b. $P = 50 + 12n$

c. $P = 50 (2)^{12n}$

d. $P = 50 (2)^{n/12}$

19. In a class, 60% of students are from India and 50% of the students are girls. If 30% of the Indian students are girls, then what percentage of foreign students are boys? (+2.5, -0.83)

- a. 45%
- b. 40%
- c. 30%
- d. 20%

20. A Statement followed by Conclusion-I and Conclusion-II is given below. (+2.5, -0.83)
You have to take the Statement to be true even if it seems to be at variance from the commonly known facts. Read all conclusions and then decide which of the given Conclusion(s) logically follows/follows from the statement, disregarding the commonly known facts.

Statement: Some radios are mobiles. All mobiles are computers. Some computers are watches.

Conclusion I: Certainly some radios are watches.

Conclusion II: Certainly some mobiles are watches.

Which one of the following is correct?

- a. Only Conclusion - I
- b. Only Conclusion - II
- c. Both Conclusion-I and Conclusion - II
- d. Neither Conclusion-I nor Conclusion - II

21. Read the following passage and answer the question that follows. Your answers to these items should be based on the passage only. (+2.5, -0.83)

With respect to what are called denominations of religion, if everyone is left to be a judge of his own religion, there is no such thing as religion that is a but if they are to be a judge of each other's religion, there is no such thing as a religion that is right, and therefore all the world is right or all the world is wrong in the matter of religion.

What is the **most logical assumption** that can be made from the passage given above?

- a. No man can live without adhering to some religious denomination.
- b. It is the duty of everyone to propagate one's religious denomination.
- c. Religious denominations tend to ignore the unity of man.
- d. Men do not understand their own religious denomination.

22. Read the following passage and answer the question that follows. Your answers to these items should be based on the passage only. (+2.5, -0.83)

It is certain, that seditions, wars, and contempt or breach of the laws are not so much to be imputed to the wickedness of the subjects, as to the bad state of a dominion. For men are not born fit for citizenship, but must be made so. Besides, men's natural passions are everywhere the same; and if wickedness more prevails, and more offences are committed in one commonwealth than in another, it is certain that the former has neither enough pursued the end of unity, nor framed its laws with sufficient forethought; and that, therefore, it has failed in making quite good its right as a commonwealth.

Which among the following is the **most logical and rational inference** that can be made from the passage given above?

- a. Seditions, wars and breach of the laws : are inevitable in every dominion.
- b. It is not the people, but the sovereign who is responsible for all the problems of any dominion.
- c. That dominion is the best which pursues the aim of unity and has laws for good citizenship.
- d. It is impossible for men to establish a good dominion.

23. Read the following passage and answer the question that follows. Your answers to these items should be based on the passage only. (+2.5, -0.83)

Inequality violates a basic democratic norm: the equal standing of citizens. Equality is a relation that obtains between persons in respect of some fundamental characteristic that they share in common.

Equality is, morally speaking, a default principle. Therefore, persons should not be discriminated on grounds such as race, caste, gender, ethnicity, disability, or class. These features of human condition are morally irrelevant. The idea that one should treat persons with respect not only because some of these persons possess some special features or talent, for example skilled cricketers, gifted musicians, or literary giants, but because persons are human beings, is by now part of commonsense morality.

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

1. Equality is a prerequisite for people to participate in the multiple transactions of society from a position of confidence.
2. Occurrence of inequality is detrimental to the survival of democracy.

3. Equal standing of all citizens is an idea that cannot actually be realised even in a democracy.

4. Right to equality should be incorporated into our values and day-to-day political vocabulary.

Which of the above assumptions are valid?

- a. 1 and 2 only
- b. 2 and 3 only
- c. 1 and 4 only
- d. 3 and 4 only

24. Read the following passage and answer the question that follows. Your answers to these items should be based on the passage only. (+2.5, -0.83)

Aristocratic government ruins itself by limiting too narrowly the circle within which power is confined; oligarchic government ruins itself by the incautious scramble for immediate wealth. But even democracy ruins itself by excess of democracy. Its basic principle is the equal right of all to hold office and determine public policy. This is, at first glance, a delightful arrangement; it becomes disastrous because the people are not properly equipped by education to select the best rulers and the wisest courses. The people have no understanding and only repeat what their rulers are pleased to tell them. Such a democracy is tyranny or autocracy – Plato

Which one of the following statements best reflects the crux of the passage given above?

- a. Human societies experiment with different forms of governments.

- b. Any form of government tends to deteriorate by excess of its basic principle.
- c. Education of all citizens ensures a perfect, functional and sustainable democracy.
- d. Having a government is a necessary evil because tyranny is inherent in any form of government.

25. In a group of 120 persons, 80 are Indians and rest are foreigners. (+2.5, -0.83)
Further, 70 persons in the group can speak English, The number of Indians who can speak English is

- a. 20
- b. 30
- c. 30 or less
- d. 30 or more

26. Consider all 3-digit numbers (without repetition of digits) obtained using three non-zero digits which are multiples of 3. Let S be their sum. (+2.5, -0.83)

Which of the following is/are correct?

- 1. S is always divisible by 74.
- 2. S is always divisible by 9.

select the correct answer using the code given below:

- a. 1 only
- b. 2 only

- c. Both 1 and 2
- d. Neither 1 nor 2

-
27. There are two Classes A and B having 25 and 30 students respectively. (+2.5, -0.83)
In Class-A the highest score is 21 and lowest score is 17. In Class-B the highest score is 30 and lowest score is 22. Four students are shifted from Class-A to Class-B.

Consider the following statements:

- 1. The average score of Class-B will definitely decrease.
- 2. The average score of Class-A will definitely increase.

Which of the above statements is/are correct?

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

-
28. Consider two Statements and a Question: (+2.5, -0.83)

Statement 1: Priya is 4 ranks below Seema and is 31st from the bottom.

Statement 2: Ena is 2 ranks above Seema and is 37th from the bottom.

Question: What is Seema's rank from the top in the class of 40 students ?

Which one of the following is correct in respect of the Statements and the Question ?

- a. Statement-1 alone is not sufficient to answer the Question
- b. Statement-2 alone is not sufficient to answer the Question
- c. Either Statement-1 alone or Statement-2 alone is sufficient to answer the Question
- d. Both Statement-1 and Statement-2 are required to answer the Question

29. Consider two Statements and a Question:

(+2.5, -0.83)

Statement 1: Each of A and D is heavier than each of B, E and F, but none of them is the-heaviest.

Statement 2: A is heavier than D, but is lighter than C.

Question: Who is the heaviest among A,B,C, D and E?

Which one of the following is correct in respect of the Statements and the Question ?

- a. Statement-1 alone is sufficient to answer the Question
- b. Statement-2 alone is sufficient to answer the Question
- c. Both Statement-1 and Statement-2 are required to answer the Question
- d. Neither Statement-1 alone nor Statement-2 alone is sufficient to answer the Question

30. In the English alphabet, the first 4 letters are written in opposite order; and the next 4 letters are written in opposite order and so on; and at the end Y and Z are interchanged.

(+2.5, -0.83)

Which will be the fourth letter to the right of the 13th letter ?

- a. N
- b. T
- c. H
- d. I

31. Read the following passages and answer the items that follow. Your answers to these items should be based on the passages only. (+2.5, -0.83)

Fig trees (genus Ficus) are considered sacred in India, East Asia and Africa and are common in agricultural and urban landscapes where other large trees are absent. In natural forests, fig trees provide food for wildlife when other resources are scarce and support a high density and diversity of frugivores (fruit-eating animals). If frugivorous birds and bats continue to visit fig trees located in sites with high human sacred fig trees frugivore Under microclimate, plenty of seedlings of other tree disturbance, may promote abundance. favourable species would grow around fig trees.

On the basis of the passage given above, the following assumptions have been made :

1. Fig trees can often be keystone species in natural forests.
2. Fig trees can grow where other large woody species cannot grow.
3. Sacred trees can have a role in biodiversity conservation.
4. Fig trees have a role in the seed dispersal of other tree species.

which of the above assumptions is/are valid ?

- a. 1 and 2 only

- b. 3 only
- c. 2 and 4 only
- d. 1, 3 and 4 only

32. Read the following passage and answer items that follow. Your answers to these items should be based on the passages only. (+2.5, -0.83)

At the heart of agroecology is the idea that agroecosystems should mimic the biodiversity levels and functioning of natural ecosystems. Such agricultural mimics, like their natural models, can be productive, pest-resistant, nutrient conserving, and resilient to shocks and stresses. In ecosystems there is no 'waste', nutrients are recycled indefinitely. Agroecology aims at closing nutrient loops, i.e., returning all nutrients that come out of the soil back to the soil such as through application of farmyard manure. It also harnesses natural processes to control pests and build soil fertility i.e., through intercropping. Agroecological practices include integrating trees with livestock and crops.

Consider the following :

1. Cover crops
2. Fertigation
3. Hydroponics
4. Mixed farming
5. Polyculture
6. Vertical farming

Which of the above farming practices can be compatible with agroecology, as implied by the passage?

- a. 1, 4 and 5 only
- b. 2, 3, 4 and 5 only
- c. 1, 2, 3 and 6 only
- d. 4 and 6 only

33. Read the following passage and answer items that follow. Your answers to these items should be based on the passages only. (+2.5, -0.83)

Computers increasingly deal not just with abstract data like credit card, details and databases, but also with the real world of physical objects and vulnerable human bodies. A modern car is a computer on wheels; an aeroplane is a computer on wings. The arrival of the “Internet of Things” will see computers baked into everything from road signs and MRI scanners to prosthetics and insulin pumps. There is little evidence that these gadgets will be any more trustworthy than their desktop counterparts. Hackers have already proved that they can take remote control of internet connected cars and pacemakers.

Which one of the following statements best reflects the most critical inference that can be made from the passage given above ?

- a. Computers are not completely safe.
- b. Companies producing the software do not take cyber security seriously.
- c. Stringent data security laws are needed.
- d. The present trend of communication technologies will affect our lives in future.

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

(+2.5, -0.83)

A social and physical environment riddled with poverty, inequities, unhygienic and insanitary conditions generates the risk of infectious diseases. Hygiene has different levels: personal, domestic and community hygiene. There is no doubt that personal cleanliness brings down the rate of infectious diseases. But the entry of the market into this domain has created a false sense of security that gets conditioned and reinforced by the onslaught of advertisements. Experience in Western Europe shows that along with personal hygiene, general improvements in environmental conditions and components like clean water, sanitation and food security have brought down infant/child death/infection rates considerably. The obsession with hand hygiene also brings in the persisting influence of the market on personal health, overriding or marginalising the negative impact on ecology and the emergence of resistant germs.

On the basis of the passage given above, the following assumptions have been made :

1. People who are obsessed with personal hygiene tend to ignore the community hygiene.
2. Emergence of multi-drug resistant germs can be prevented by personal cleanliness.
3. Entry of the market in the domain of hygiene increases the risk of infectious diseases.
4. Scientific and micro-level interventions are not sufficient to bring down the burden of infectious diseases.
5. It is community hygiene implemented through public health measures that is really effective in the battle against infectious diseases.

Which of the above assumptions are valid?

- a. 1 and 2 only
- b. 3 and 4 only
- c. 4 and 5 only
- d. 1, 2 and 4 only

35. A Statement followed by Conclusion-I and Conclusion-II is given below, **(+2.5, -0.83)**
You have to take the Statement to be true even if it seems to be at variance from the commonly known facts. Read all conclusions and then decide which of the given Conclusion(s) logically follows/follows from the Statement, disregarding the commonly known facts.

Statement :

Some cats are almirahs.

Some almirahs are chairs.

All chairs are tables.

Conclusion-I: Certainly some almirahs are tables.

Conclusion-II: Some cats may not be chairs.

- a. Only Conclusion-I
- b. Only Conclusion-II
- c. Both Conclusion-I and Conclusion-II
- d. Neither Conclusion-I nor Conclusion-II

36. A boy plays with a ball and he drops it from a height of 1.5 m. Every time the ball hits the ground, it bounces back to attain a height $\frac{4}{5}^{\text{th}}$ of the previous height. The ball does not bounce further if the previous height is less than 50 cm. What is the number of times the ball hits the ground before the ball stops bouncing ? (+2.5, -0.83)

- a. 4
- b. 5
- c. 6
- d. 7

37. Images of consonants of the English alphabet (Capitals) are observed in a mirror. What is the number of images of these which do not look like their original shapes ? (+2.5, -0.83)

- a. 13
- b. 14
- c. 15
- d. 16

38. A bank employee drives 10 km towards South from her house and turns to her left and drives another 20 km. She again turns left and drives 40 km, then she turns to her right and drives for another 5 km. She again turns to her right and drives another 30 km to reach her bank where she works. What is the shortest distance between her bank and her house ? (+2.5, -0.83)

- a. 20 km

- b. 25 km
 - c. 30 km
 - d. 35 km
-

39. Integers are listed from 700 to 1000. In how many integers is the sum of the digits 10 ? (+2.5, -0.83)

- a. 6
 - b. 7
 - c. 8
 - d. 9
-

40. A woman runs 12 km towards her North, then 6 km towards her South and then 8 km towards her East. In which direction is she from her starting point ? (+2.5, -0.83)

- a. An angle less than 45° South of East
 - b. An angle less than 45° North of East
 - c. In angle more than 45° South of East
 - d. An angle more than 45° North of East
-

41. Read the following passage and answer the items that follow. Your answers to these items should be based on the passages only. (+2.5, -0.83)

Can a democracy avoid being a welfare state for long ? Why cannot mass welfare be left entirely to the markets ? There is a built-in tension

between markets and democracy. Markets do not work on a one-person-one-vote principle as democracies do. What one gets out of the market place depends on one's endowments, skills, purchasing power and the forces of demand and supply. Markets reward individual initiative and skill, and may also lift many from the bottom rungs of society, but some people never get the opportunity to develop skills that markets demand; they are simply too poor and too handicapped; or skill formation takes too long. By creating jobs, markets may be able to help even unskilled people, but capitalism has always witnessed bursts of unemployment.

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

1. Modern democracies rely on the forces to enable them to be welfare states.
2. Markets ensure sufficient economic growth necessary for democracies to be effective.
3. Government programmes are needed for those left behind in economic growth.

Which of the above assumptions is/are valid ?

- a. 1 and 3 only
- b. 3 only
- c. 2 and 3 only
- d. 1, 2 and 3

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

(+2.5, -0.83)

In our schools, we teach our children all that is there to know about physics, maths and history and what have you. But do we teach them about the bitter caste divide that plagues the country, about the spectre of famine that stalks large parts of our land, about gender sensitivity, about the possibility of atheism as a choice, etc.? Equally important, do we teach them to ask questions, or do we teach them only to passively receive our wisdom? From the cocooned world of school, suddenly, the adolescent finds himself/herself in the unfettered world of university. Here he/she is swept up in a turmoil of ideas, influences and ideologies. For someone who has been discouraged from asking questions and forming an opinion, this transition can be painful.

Which one of the following statements **best reflects the central idea** of the passage given above ?

- a. School curriculum is not compatible with the expectations of children and parents.
- b. Emphasis on academic achievements does give time for development of personality and skills.
- c. Preparing the children to be better citizens should be the responsibility of the education system.
- d. To be a better citizen, the present world order demands societal and life-coping skills in addition to academic content.

-
43. There are three points P, Q and R on a straight line such that $PQ : QR = 3 : 5$. If n is the number of possible values of $PQ : PR$, then what is n equal to ? (+2.5, -0.83)
- a. 1
 - b. 2

c. 3

d. 4

44. On a chess board, in how many different ways can 6 consecutive squares be chosen on the diagonals along a straight path ? (+2.5, -0.83)

a. 4

b. 6

c. 8

d. 12

45. In the series _b_a_ba_b_abab_aab; (+2.5, -0.83)
fill in the six blanks (_) using one of the following given four choices such that the series follows a specific order.

a. bababa

b. baabba

c. bbaabb

d. ababab

46. Using 2, 2, 3, 3, 3 as digits, how many distinct numbers greater than 30000 can be formed ? (+2.5, -0.83)

a. 3

b. 6

c. 9

d. 12

47. Consider the following statements :

(+2.5, -0.83)

1. The sum of 5 consecutive integers can be 100.

2 The product of three consecutive natural numbers can be equal to their sum.

Which of the above statements is/are correct ?

a. 1 only

b. 2 only

c. Both 1 and 2

d. Neither 1 nor 2

48. A cubical vessel of side 1 m is filled completely with water. How many millilitres of water is contained in it (neglect thickness of the vessel) ?

(+2.5, -0.83)

a. 1000

b. 10000

c. 100000

d. 1000000

49. There are 6 persons arranged in a row. Another person has to shake hands with 3 of them so that he should not shake hands with two

(+2.5, -0.83)

consecutive persons. In how many distinct possible combinations can the handshakes take place ?

- a. 3
- b. 4
- c. 5
- d. 6

50. An amount of money was distributed among A, B and C in the ratio $p : q : r$. (+2.5, -0.83)

Consider the following statements :

- 1. A gets the maximum share if p is greater than $(q + r)$.
- 2. C gets the minimum share if r is less than $(p + q)$.

Which of the above statements is/are correct ?

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

51. Read the following passage and answer the items that follow. Your answers to these items should be based on the passages only (+2.5, -0.83)

Nothing can exist in a natural state which can be called good or bad by common assent, since every man who is in a natural state consults only his own advantage, and determines what is good or bad

according to his own fancy and insofar as he has regard for his own advantage alone, and holds himself responsible to no one save himself by any law; and therefore sin cannot be conceived in a natural state, but only in a civil state, which is decreed by common consent what is good or bad, and each one holds himself responsible to the state.

Which one of the following statements best reflects the central idea of the passage given above?

- a. The conceptions of what is right or wrong exist due to the formation of a state.
- b. Unless a ruling authority decides as to what is right or wrong, no man would be morally right.
- c. Man is inherently immoral and selfish in a natural state.
- d. The idea of what is right or wrong is necessary for the survival of human species

52. Read the following passage and answer the items that follow. Your answers to these items should be based on the passages only (+2.5, -0.83)

In the immediate future, we will see the increasing commodification of many new technologies – artificial intelligence and robotics, 3D manufacturing, custom made biological and pharmaceutical products, lethal autonomous weapons and driverless cars. This will pose conundrums. The moral question of how a driverless car will decide between hitting a jaywalker and swerving and damaging the car has often been debated. The answer is both simple – save the human life – and complex. At which angle should the car swerve – just enough to save the jaywalker or more than enough? If the driverless car is in Dublin, who would take the decision? The Irish Government, or the car's original code writer in California, or a software programmer in Hyderabad to whom maintenance is outsourced? If different national

jurisdictions have different fine print on prioritising a human life, how will it affect insurance and investment decisions, including transnational ones?

Which of the following statements best reflect the rational, plausible and practical implications that can be derived from the passage given above?

1. Too much globalization is not in the best interests of any country.
2. Modern technologies are increasingly blurring the economic borders.
3. Innovation and capital have impinged on the domain of the State.
4. Public policy of every country should focus on developing its own supply chains.
5. Geopolitics will have to reconcile to many ambiguities and uncertainties.

Select the correct answer using the code given below:

- a. 1, 4 and 6 only
- b. 1, 2, 3 and 4 only
- c. 2, 3 and 5 only
- d. 1, 2, 3, 4 and 5

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

(+2.5, -0.83)

The resolution of bankruptcy cases of Indian banks under the Insolvency and Bankruptcy Code should help bring non-performing assets (NPA) situation under some control. Despite the slow pace of resolutions by the National Company Law Tribunal, the Code can be helpful in cleaning up bank books in future credit cycles. The

recapitalisation of public sector banks too can help increase the capital cushion of banks and induce them to lend more and boost economic activity. But bad debt resolution and recapitalisation are only a part of the solution as they, by themselves, can do very little to rein in reckless lending that has pushed the Indian banking system to its current sorry state. Unless there are systemic reforms that address the problem of unsustainable lending, future credit cycles will continue to stress the banking system.

Which one of the following statements best reflects the most logical, rational and practical suggestion implied by the passage given above?

- a. Lending by the banks should be closely monitored and regulated by the Central Government
- b. Interest rates should be kept low so as to induce banks to lend more, promote credit growth and thereby boost economic activity
- c. Merger of many banks into a few large banks alone is the long-term solution to make them viable and prevent their bad performance
- d. Indian banking system requires structural as a long-term solution for bad loans problem

54. Read the following passage and answer the items that follow. Your answers to these items should be based on the passages only **(+2.5, -0.83)**

In India, the objective of macroeconomic policy is to enhance the economic welfare of the people, and any one wing of such macro policy, monetary or fiscal, cannot independently work without active support of another.

Which one of the following statements **best reflects the corollary** to the passage given above?

- a. The central bank cannot work independently of the Government.
- b. Government should regulate financial markets and institutions closely.
- c. Market economy is not compatible with the socialist policies of the Government.
- d. Financial sector reforms are required for enhancing the economic welfare of the people.

55. Consider the following Table:

(+2.5, -0.83)

Player	Runs scored in the First Innings	Balls faced in the First Innings	Runs scored in the Second Innings	Balls faced in the Second Innings
A	61	99	14	76
B	05	12	50	85
C	15	75	20	50
D	13	55	12	50

Who is the fastest run scorer in the Test Match ?

- a. A
- b. B
- c. C
- d. D

56. Half of the villagers of a certain village have their own houses. One-fifth of the villagers cultivate paddy. One-third of the villagers are literate. Four-fifth of the villagers are under 25 years of age. Which one of the following statements is certainly correct ? (+2.5, -0.83)

- a. All the villagers who have their own houses are literate.
- b. Some villagers under 25 years of age are literate.
- c. Only half of the villagers who cultivate paddy are literate.
- d. No villager under 25 years of age has his own house.

57. Consider two Statements and a Question : (+2.5, -0.83)

Statement-1 : The last day of the month is a Wednesday.

Statement-2 : The third Saturday of the month was the seventeenth day.

Question : What day is the fourteenth of the given month ?

Which one of the following is correct in respect of the Statements and the Question ?

- a. Statement-1 alone is sufficient to answer the Question
- b. statement-2 alone is sufficient to answer the Question

- c. Both Statement-1 and Statement-2 are required to answer the Question
 - d. Neither Statement-1 alone nor Statement-2 alone is sufficient to answer the Question
-

58. Which day is 10th October, 2027 ? (+2.5, -0.83)

- a. Sunday
 - b. Monday
 - c. Tuesday
 - d. Saturday
-

59. Consider two Statements and four Conclusions given below. You have to take the Statements to be true even if they seem to be at variance from the commonly known facts. Read all Conclusions and then decide which of the given Conclusion(s) logically follows/follow from the Statements, disregarding the commonly known facts. (+2.5, -0.83)

Statement - 1 : Some greens are blues.

Statement - 2 : Some blues are blacks.

Conclusion - 1 : Some greens are blacks.

Conclusion - 2 : No green is black.

Conclusion - 3 : All greens are blacks.

Conclusion - 4 : All blacks are greens.

Which one of the following is correct ?

- a. Conclusion-1 and Conclusion-2 only
- b. Conclusion-2 and Conclusion-3 only
- c. Conclusion-3 and Conclusion-4 only
- d. Neither Conclusion 1 nor 2 nor 3 nor 4

60. What is the value of 'X' in the sequence (+2.5, -0.83)

2, 7, 22, 67, 202, X, 1822, ?

- a. 603
- b. 605
- c. 607
- d. 608

61. Read the following two passages and answer the items that follow. Your (+2.5, -0.83)
answers to these items should be based on the passages only.

Our cities are extremely vulnerable to climate change because of large concentrations of populations and poor infrastructure. Moreover, population densities are increasing in them but we have not yet developed the systems to address climate change impacts. Our cities contribute to 65 per cent of the GDP, but there are not enough facilities to cater to the needs of the people. It is important to address the issues of air quality, transport, etc., that are vital to identifying sustainable solutions. We need to involve citizens in city planning and create an ecosystem that meets the needs of the people.

Which among the following is the most logical and rational inference that can be made from the passage given above?

- a. Our cities need to have well-defined administrative set-up with sufficient autonomy.
 - b. Ever increasing population densities is a hindrance in our efforts to achieve sustainable development.
 - c. To maintain and develop our cities we need to adopt sustainability related interventions.
 - d. Public-Private Partnership mode of development is the viable long-term solution for the infrastructure and sustainability problems of India.
-

62. Read the following two passages and answer the items that follow. (+2.5, -0.83)
Your answers to these items should be based on the passages only.

".... most people would agree that telling deliberate lies is wrong, except perhaps in certain special situations where more harm will be done by telling the truth. Even the most truthful people probably tell a good many more lies that might be regarded as semantic lies; their use of words contains some measure of falsehood, more or less deliberate."

The idea which the first part of the passage mentions is

- a. Agreement about telling lies
 - b. Disagreement about telling lies
 - c. Disagreement about telling the truth
 - d. Disagreement about the harm in telling the truth
-

63. Read the following two passages and answer the items that follow. (+2.5, -0.83)
Your answers to these items should be based on the passages only.

".... most people would agree that telling deliberate lies is wrong, except perhaps in certain special situations where more harm will be done by telling the truth. Even the most truthful people probably tell a good many more lies that might be regarded as semantic lies; their use of words contains some measure of falsehood, more or less deliberate."

Which one of the following habits is found more often in good people?

- a. Mixing up the true and false
- b. Intentional mixing up of truth with the false
- c. Falsification of facts
- d. Complete concealment of truth

64. A pie diagram shows the percentage distribution of proteins, water and other dry elements in the human body. Given that proteins corresponds to 16% and water corresponds to 70%. If both proteins and the other dry elements corresponds to $p\%$, then what is the central angle of the section representing p on the pie diagram? (+2.5, -0.83)

- a. 54°
- b. 96°
- c. 108°
- d. 120°

65. Joseph visits the club on every 5th day, Harsh visits on every 24th day, while Sumit visits on every 9th day. If all three of them met at the club on a Sunday, then on which day will all three of them meet again? (+2.5, -0.83)

- a. Monday
- b. Wednesday
- c. Thursday
- d. Sunday

66. The difference between a 2-digit number and the number obtained by interchanging the positions of the digits is 54. (+2.5, -0.83)

Consider the following statements:

1. The sum of the two digits of the number can be determined only if the product of the two digits is known.
2. The difference between the two digits of the number can be determined.

Which of the above statements is/are correct?

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

67. X said to Y, "At the time of your birth I was twice as old as you are at present." If the present age of X is 42 years, then consider the following statements: (+2.5, -0.83)

1. 8 years ago, the age of X was five times the age of Y.
2. After 14 years, the age of X would be two times the age of Y.

Which of the above statements is/are correct?

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

68. If the price of an article is decreased by 20% and then the new price is increased by 25%, then what is the net change in the price? (+2.5, -0.83)

- a. 0%
- b. 5% increase
- c. 5% decrease
- d. Cannot be determined due to insufficient data

69. When a certain number is multiplied by 7, the product entirely comprises ones only (1111....). What is the smallest such number? (+2.5, -0.83)

- a. 15713
- b. 15723
- c. 15783
- d. 15873

70. A man completes $\frac{7}{8}$ of a job in 21 days. How many more days will it take him to finish the job if quantum of work further increased by 50%? (+2.5, -0.83)

- a. 24
- b. 21
- c. 18
- d. 15

71. Read the following two passages and answer the items that follow. Your (+2.5, -0.83) answers to these items should be based on the passages only.

Medieval merchants risked the hazards of the Silk Road to reach the markets of China; Portuguese caravels in the 15th century sailed beyond the bounds of the known world, searching less for knowledge than for gold and spices. Historically, the driver for opening frontiers has always been the search for resources. Science and curiosity are weaker drivers. The only way to open up space, whether the space of solar system or interstellar space is to create an economic engine and that engine is resource extraction.

Which one of the following statements best sums up the passage given above?

- a. Wealth generation is the primary motive for any human endeavour.
- b. Space, whether space in solar system or interstellar space, will govern our future economy.
- c. Human beings are motivated to explore new frontiers principally by economic considerations.
- d. Wealth generation is based on the risk-taking behaviour of some men.

- 72. Read the following two passages and answer the items that follow. (+2.5, -0.83)**
Your answers to these items should be based on the passages only.

The best universities like Harvard and MIT, despite having the luxury of having some truly excellent teachers on their payroll, are increasingly embracing the "flipped classroom" format, where students listen to video lectures at home, and spend class time applying their knowledge, solving problems, discussing examples, etc. Professors guide that discussion and fill in wherever necessary, explaining those bits that seem to be eluding the students and throwing in advanced ideas that happen to be topical. These universities have made their video lectures available free for anyone in the world. They are also encouraging colleges and universities all over the world to integrate these online courses into their own pedagogy, picking the pieces that are appropriate for their needs and building a package around them.

Which one of the following statements best reflects the central idea of the passage given above?

- a. Efficacy of universities would be better in online mode of conducting classroom tuition as compared, to conventional method
- b. Availability of higher education can be made easier and cheaper without diluting the content.
- c. We need not invest much in infrastructure related to higher education and yet develop better human and social capital.
- d. Private sector institutions in higher education, as well as coaching institutes, can take advantage of this opportunity and thrive well.

73. Jay and Vijay spent an equal amount of money to buy some pens and special pencils of the same quality from the same store. If Jay bought 3 pens and 5 pencils, and Vijay bought 2 pens and 7 pencils, then which one of the following is correct? **(+2.5, -0.83)**
- a. A pencil costs more than a pen
 - b. The price of a pencil is equal to that of a pen
 - c. The price of a pen is two times the price of a pencil
 - d. The price of a pen is three times the price of a pencil
-
74. P scored 40 marks more than Q in the examination. If Q scores 10% less marks than P, then how much did Q score? **(+2.5, -0.83)**
- a. 360
 - b. 380
 - c. 400
 - d. 420
-
75. A person P asks one of his three friends X as to how much money he had. X replied, "If Y gives me Rs. 40, then Y will have half of as much as Z, but if Z gives me Rs. 40, then three of us will have equal amount." What is the total amount of money that X, Y and Z have? **(+2.5, -0.83)**
- a. Rs. 420
 - b. Rs. 360
 - c. Rs. 300

d. Rs. 270

76. In a certain code language 'MATHEMATICS' is written as 'LBSIDNZUHDR'. (+2.5, -0.83)
How is 'CHEMISTRY' written in that code language?

a. DIDLHRSSX

b. BIDNHTSSX

c. BIDLHTSSX

d. DGFLIRUQZ

77. At which one of the following times, do the hour hand and the minute (+2.5, -0.83)
hand of the clock make an angle of 180° with each other?

a. At 7:00 hours

b. Between 7:00 hours and 7:05 hours

c. At 7:05 hours

d. Between 7:05 hours and 7:10 hours

78. In an objective type test of 90 questions, 5 marks are allotted for every (+2.5, -0.83)
correct answer and 2 marks are deducted for every wrong answer.
After attempting all the 90 questions, a student got a total of 387
marks. What is the number of incorrect responses?

a. 9

b. 13

c. 27

d. 43

79. Consider the following addition problem: (+2.5, -0.83)

$3P + 4P + PP + PP = RQ2$; where P, Q and R are different digits.

What is the arithmetic mean of all such possible sums?

a. 102

b. 120

c. 202

d. 220

80. Consider the following multiplication problem: (+2.5, -0.83)

$(PQ) \times 3 = RQQ$, where P, Q and R are different digits and $R \neq 0$.

What is the value of $(P + R) \div Q$?

a. 1

b. 2

c. 45

d. Cannot be determined due to insufficient data

Answers

1. Answer: a

Explanation:

The correct answer is **India's energy decision-making process is ever more complex and interconnected.**

★ Key Points

- **Message** – A significant point or central theme.
- The theme of the passage – India's energy hurdles and response
- **Option 1 gives the central theme of the passage**, India's energy decision-making process is ever more complex and interconnected due to the various hurdles like cheap fuel, energy imports, demand-supply issues.
- Option 2 is not correct because the passage doesn't point towards the SDG goals and the extreme word 'heavily tuned' is not compatible with the tone of the passage.
- Option 3 cannot be implied from the given passage as the author is pointing towards the initiatives taken to address the issue. Non-compatibility doesn't come into the picture.
- Option 4 is out of context as it says that there are costly deficits or surplus supply in the energy supply. The lacunae in the energy supply and energy decision-making process are rather complex.

2. Answer: d

Explanation:

The correct answer is **Antibiotics should only be used to treat diseases.**

★ Key Points

- Options 1 and 2 are out of the context, cannot be a message drawn from the passage, doesn't focus on avoiding consumption or plant-based diet.
- Option 3 ban on total antibiotics is extreme in nature, this doesn't specify that antibiotics be banned on farming animals alone.
- Option 4 is the most suitable message that can be drawn from the given passage.

3. Answer: d

Explanation:

The correct answer is **Neither 1 nor 2.**

★ Key Points

- Assumption 1 is not valid as the passage **doesn't link the high food prices to oil producing countries**, higher fuel prices **may have different reasons**.
- Assumption 2 is also not valid, the passage does highlight the reason for the food crisis however, **it doesn't say that it will be in emerging countries**.

4. Answer: d

Explanation:

The correct answer is **Neither 1 nor 2.**

★ Key Points

- Assumption 1 is not correct as the **passage doesn't define what a developed country is**.
- Assumption 2 is also not correct, as the passage **doesn't reflect that rise in GDP is guarantees the reasonable distribution of income to all sections of society**.

5. Answer: c

Explanation:

Given that we have seven books P, Q, R, S, T, U, and V.

Basically, this question is based on its cover's color, its condition, and its type. We can proceed step by step using the tabular form.

Statement 1 :Based on the cover's color of books, i.e., R, Q, and T have blue covers and other books have red covers.

Name	P	Q	R	S	T	U	V
Cover's Color	Red	Blue	Blue	Red	Blue	Red	Red

Statement 2 : Based on the condition of books, i.e., Only S and U are new books and the rest are old.

Name	P	Q	R	S	T	U	V
Cover's Color	Red	Blue	Blue	Red	Blue	Red	Red
Condition	Old	Old	Old	New	Old	New	Old

Statement 3 : Based on the type of books, i.e., P, R, and S are law reports; the rest are Gazetteers.

Name	P	Q	R	S	T	U	V
Cover's Color	Red	Blue	Blue	Red	Blue	Red	Red
Condition	Old	Old	Old	New	Old	New	Old
Type	Law reports	Gazetteers	Law reports	Law reports	Gazetteers	Gazetteers	Gazetteers

On analyzing the final table we get two books of old gazetteers with blue covers, i.e., Q and T.

Hence Books of old Gazetteers with blue covers are Q and T.

6. Answer: a

Explanation:

Given that even and odd terms follow the same pattern. So, we can separate both odd terms and even terms.



Taking the difference of consecutive odd terms we get the addition of 2 in consecutive difference starting with 4 while taking the same pattern in even terms we get consecutive difference is increasing by 2 except the first consecutive difference. So we need to correct the consecutive difference of 2 to 4 and change the term '2' with '0' to make it correct.



Therefore, the incorrect term '2' is replaced by the correct term '0'.

Hence, option 1 is the correct answer.

7. Answer: c

Explanation:

On analyzing the given matrix, we find two patterns in each cell of a Row, Numerical and alphabetical.

- **Numerical pattern:** Here we saw that when we subtract column 1 from column 2 we get column 3

Column 2 - Column 1 = Column 3 ;

Row 1 : **10** (column 2) - **7** (column1) = **3** (column 3)

Row 2 : **9**(column 2) - **3** (column1) = **3** (column 3)

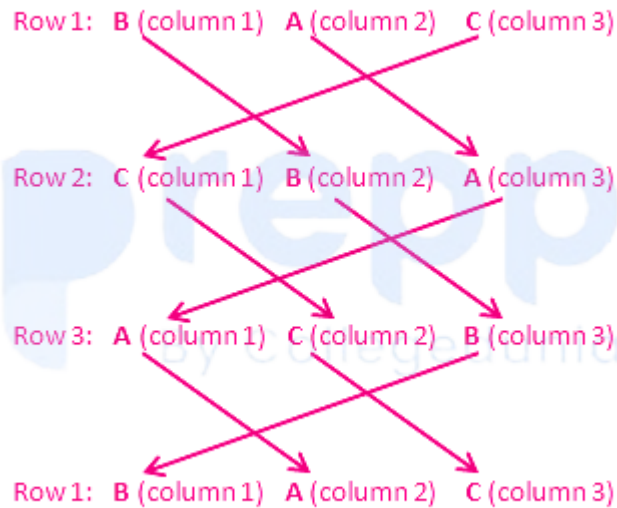
Similarly, same pattern is following in Row 3 .

So column 3 numerical value for Row 3 = **13** (column 2) -
10 (column 1) = 3 (column 3).

Hence, the Numerical part for Row 3 column 3 is '**3**' .

- **Alphabetical Pattern:** A, B, and C are used in a cyclic manner.

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So column 3 alphabetical value for Row 3 = 'B'.

Combining both patterns, we get the missing entry, i.e. '3B'

Hence, Missing Entry is '3B'.

8. Answer: c

Explanation:

Analyzing Sequence - I;

$$1^{\text{st}} \text{ term} = 8$$

$$2^{\text{nd}} \text{ term} = 8 \times \frac{1}{2} = 4$$

$$3^{\text{rd}} \text{ term} = 8 \times \frac{1}{2} \times \frac{3}{2} \text{ or, } 4 \times \frac{3}{2} = 6$$

$$4^{\text{th}} \text{ term} = 8 \times \frac{1}{2} \times \frac{3}{2} \times \frac{5}{2} \text{ or, } 6 \times \frac{5}{2} = 15$$

So we can now see the pattern and use it to find Sequence - II as shown below

$$1^{\text{st}} \text{ term} = 5$$

2nd term, $A = 5 \times \frac{1}{2} = 2.5$

3rd term, $B = 5 \times \frac{1}{2} \times \frac{3}{2}$ or, $2.5 \times \frac{3}{2} = 3.75$

4th term, $C = 5 \times \frac{1}{2} \times \frac{3}{2} \times \frac{5}{2}$ or, $3.75 \times \frac{5}{2} = 9.375$

Hence, option 3 is the correct answer.

9. Answer: c

Explanation:

Given:

Distance between place A and place B = 15 km.

Speed of X = 1.5 km/hr and is uniform

Speed of Y = 1 km/hr in the 1st hour, 1.25 km/hr in the 2nd hour, 1.5 km/hr in the 3rd hour and so on..

Calculation:

Solving it by using relative velocity method approach with respect to X.

As both X and Y are moving towards each other so relative velocity of X and Y will add up.

For the first hour,

$$\text{Relative velocity} = 1.5 + 1 = 2.5 \text{ km/hr}$$

$$\text{time} = 1 \text{ hr}$$

$$\text{Distance travelled} = 2.5 \times 1 = 2.5 \text{ km. Similarly, a}$$

		Time (hr)	Relative Velocity (km/hr)	Distance travelled(km)	Cummulative Distance(km)	
For the first hour		1	$1.5 + 1 = 2.5$	2.5	2.5	
In the second hour		1	$1.5 + 1.25 = 2.75$	2.75	5.25	
In the third hour		1	$1.5 + 1.5 = 3$	3	8.25	
In the fourth hour		1	$1.5 + 1.75 = 3.25$	3.25	11.50	
In the fifth hour		1	$1.5 + 2 = 3.5$	3.5	15	

So, after 5 hours they will meet. **Statement 1 is correct**

Now as they both travelled for 5 hours. So distance travelled by

- $X = 1.5 \times 5 = 7.5$ km
- $Y = 15 - 7.5 = 7.5$ km

Hence, they will meet in the middle. **Statement 2 is correct**

So, option 3 is correct.

10. Answer: b

Explanation:

Given:

Ratio of the marks scored in papers = 5 : 6 : 7 : 8 : 9 : 10

$$\frac{\text{Sum of marks scored}}{\text{Total marks}} \times 100 = 60$$

Calculation:

Assume maximum marks for each subject = 100

⇒ Total marks in 6 subjects = 600

Now, taking the values of marks scored in each paper as 5x, 6x, 7x, 8x, 9x and 10x

Total marks scored = $5x + 6x + 7x + 8x + 9x + 10x$

= 45x

Since, Overall Score = 60%

⇒ $\frac{45x}{600} \times 100 = 60$

⇒ $x = 360/45 = 8$

Marks obtained in subjects are **40, 48, 56, 64, 72, 80**

Now, to score more than 60% in each paper

marks required = $\frac{60}{100} \times 100 = 60$

Marks of three paper i.e. 40, 48 and 56 are less than 60.

Hence, option 2 is correct.

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11. Answer: d

Explanation:

The correct answer is **Proper intensity of light in an ecosystem is important not only for plants but for animals too.**

★ Key Points

- Option 4 tells us in generalized learning from the para. Hence it is the most critical inference.
- Option 2 cannot be concluded from the given passage, permanent adverse impact cannot be inferred from the given passage.

- The passage compares LED lights and amber lights, the impact of other colour lights is not discussed.
 - Option 1 is a direct conclusion, not the most critical inference.
-

12. Answer: d

Explanation:

The correct answer is **3 and 4 only**.

★ Key Points

- Assumption 1 is not correct, the scenario of India doesn't come into picture in the given passage.
 - Assumption 2 is not valid as horticulture crops not mentioned in the passage.
 - **Assumptions 3 and 4 are valid** from the given passage, '*...Pollination is an essential service that is the result of intricate relationships between plants and animals, and the reduction or loss of either affects the survival of both...*'
 - This implies a lack of natural vegetation is linked with the presence of pollinators.
-

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13. Answer: c

Explanation:

The correct answer is **Climate changes increase the criticality of water resources while simultaneously threatening it**.

★ Key Points

- **Option 3 is the most suitable answer, reflects the crux of the passage.**
- Option 1: climate smart agricultural practice is out of context.
- Option 2: dryland cropping system is not discussed in the passage, passage is not anticipating a solution.

- Option 4: is not wrong but it only reflects one part of the issue.

14. Answer: c

Explanation:

The correct answer is **1 and 3 only**.

★ Key Points

- Assumption 2 is invalid, as specified by the passage biochemical and cell-based assays are being used to find the effects of the environmental pollutant Bisphenol A (BPA), and not the treatment.
- **Assumptions 1 and 3 are valid.**
- *'...They were able to detect and measure BPA toxicity towards the proper specification of primary germ layers, such as endoderm and ectoderm, and the establishment of neural progenitor cells'*
- This implies that BPA may alter embryonic development.
- The given passage explains the effect of environmental pollutants by using embryonic stem cells.

15. Answer: c

Explanation:

★ Important Points

- As the number is getting divided by 10 the remainder will be the digit in the units place.
- Also the unit place digit repeats as the power increases at fixed intervals

Calculation:

$$3^1 = \underline{3}$$

$$3^6 = 72 \underline{9}$$

$$3^2 = 9$$

$$3^7 = 2187$$

$$3^3 = 27$$

$$3^8 = 6561$$

$$3^4 = 81$$

$$3^9 = 19683$$

$$3^5 = 243$$

Here if 3 is raised to the powers of 1, 5, 9, 13 the digit at units place = 3

and the powers are following an arithmetic progression with initial term (a_0) = 1 and common difference (d) = 4.

Therefore, the last term ($a_n = a_0 + (n-1)d$) which comes out to be 2017 with $n = 505$.

$$\text{So, } 3^{2019} = 3^{2017} \times 3^2 = 3^{2017} \times 9$$

The units place digit in $3^{2017} = 3$ and when multiplied by 9 we will get 7 at the units place which will also be the remainder.

★ Alternate Method

3 raised to power 4, 8, 12, 16 and so on results 1 in the units place So it can be generalized that units place for $3^{4n} = 1$

$$\text{Now, } 3^{2019} = 3^{4(504)} \times 3^3 = 3^{2016} \times 27$$

The units place digit in $3^{2016} = 1$ and when multiplied by 7 which is the last digit in 27 we will get $1 \times 7 = 7$.

Hence, option 3 is correct.

16. Answer: b

Explanation:

★ Shortcut Trick

STEP – I: Three digit number blocks are formed from right to left.

$$\Rightarrow 369, 25P, 981, 037$$

STEP – II: Now Adding and subtracting the numbers formed alternatively

$$\Rightarrow 369 - 25P + 981 - 37$$

$$\Rightarrow 369 - 250 - P + 981 - 37$$

$$\Rightarrow 1063 - p$$

STEP – III: The result obtained in STEP – II should be divisible by 7

$$\Rightarrow 1063 - P = 151 \times 7 + 6 - P$$

For 3798125P369 to be divisible by 7,

$$6 - P = 0$$

$$\Rightarrow P = 6$$

Hence, option 2 is correct.

17. Answer: b

Explanation:

Given:

m and n are the days in 2021

Price of Diesel (in Rupees per litre) = $69 + 0.15n$

Till 100th day

Price of petrol (in Rupees per litre) = $80 + 0.1m$

After 100th day it remains constant

Price of petrol (in Rupees per litre) = $80 + 0.1 * 100$

= 90

Calculation:

As the prices are going to be same on a particular day

$\Rightarrow m = n$

Case - I: when m^{th} day is less than 100 and price of petrol = price of diesel

$\Rightarrow 80 + 0.1 m = 69 + 0.15 n$

$\Rightarrow 0.15 m - 0.1 m = 80 - 69$ (as $m = n$)

$\Rightarrow m = 220$ which is not possible since we have assumed $m < 100$.

Case - II: when m^{th} day is greater than or equal to 100, we get

$\Rightarrow 69 + 0.15 m = 90$

$\Rightarrow m = 140$

So, on 140^{th} day the prices of petrol and diesel will be same. Also in 2021 the date on this day is **20th May**.

Hence, option 2 is correct.

18. Answer: d

Explanation:

Given:

Population of animals in the beginning of 2021 = 50

Thereafter the population of animals will double in every 12 years

Calculation:

Since, the population is doubling every 12 years the equation will be exponential such that $P = 50 \times (2)^x$

Now when $n = 0$, $P = 50$

We get $50 = 50 \times 2^x$

$$\Rightarrow 2^0 = 2^x$$

$$\Rightarrow x = 0$$

when $n = 12$, $P = 100$ (as it doubles in 12 years)

So we get $100 = 50 \times 2^x$

$$\Rightarrow 2^1 = 2^x$$

$$\Rightarrow x = 1$$

Similarly, $n = 24$, $P = 200$ and we get $x = 2$

So, the relation between x and n is $x = n/12$ and the equation for the model becomes $P = 50 \times 2^{n/12}$.

Hence, option 4 is correct.

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19. Answer: d

Explanation:

Let's assume total number of students is x

Students from India = $0.6x \Rightarrow$ Foreign Students = $0.4x$

Number of girl students = $0.5x \Rightarrow$ Number of boys = $0.5x$

Number of girls who are Indian Students = $0.3 \times 0.6x = 0.18x$

Number of foreign girl students = All girl students - Indian girl students

$$\Rightarrow 0.5x - 0.18x = 0.32x$$

Number of foreign boys = Total Foreign students - Foreign girl students

$$\Rightarrow 0.4x - 0.32x = 0.08x$$

$$\% \text{ foreign boys student} = \frac{\text{number of foreign boys}}{\text{Total foreign students}} \times 100$$

$$\Rightarrow \frac{0.08x}{0.4x} \times 100$$

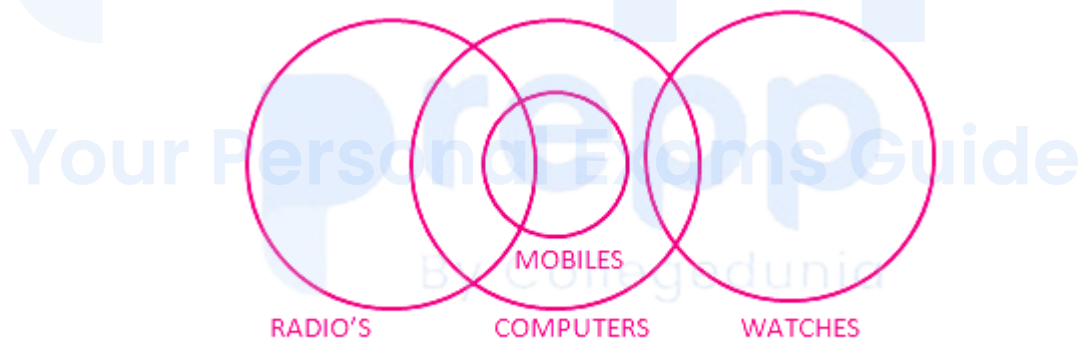
$$\Rightarrow 20\%$$

Hence, option 4 is correct.

20. Answer: d

Explanation:

The least possible logical Venn diagram according to given statements is,



Conclusion I: Certainly some radios are watches - **False** (It can be **possible**, but not **a definite**, Not possible condition is given in above Venn diagram).

Conclusion II: Certainly some mobiles are watches - **False** (It can be **possible**, but not **a definite**, Not possible condition is given in above Venn diagram).

Hence, Neither Conclusion-I nor Conclusion - II Follows.

★ Shortcut Trick

In these types of questions, we need to eliminate conclusions. If the conclusion has 'may' or 'possible' or 'possibility' types of words, then you need to take **only one possible** Venn diagram which makes that **conclusion true**. Else you need to take **only one possible** Venn diagram which makes that **conclusion false**.

21. Answer: c

Explanation:

The correct answer is **Religious denominations tend to ignore the unity of man.**

★ Key Points

- Option 1 is not correct as it is not essential for a man to follow religion to live.
 - Option 2 is also not correct as the propagation of religion is not mentioned.
 - Option 4 is wrong as men have a particular understanding of their own religion.
 - Option 3 is right, as all men think that other religions are wrong and their own is right, thereby undermining the 'unity of man' badly.
-

22. Answer: c

Explanation:

The correct answer is **That dominion is the best which pursues the aim of unity and has laws for good citizenship.**

★ Key Points

- Option 1 is not the valid inference as wars and sedition may not be inevitable in every dominion.
- Option 2 is not correct, the passage talks about the dominion rather than a sovereign.

- Option 4 cannot be true as the passage hints at the use of laws with sufficient forethought, The impossible word is extreme.
 - **Option 3 is the most logical inference that can be drawn.**
-

23. Answer: a

Explanation:

The correct answer is **1 and 2 only**.

★ Key Points

- Assumption 1 is correct as it is evident from the passage that equality is a must in society.
 - Assumption 2 is not wrong, equality is the prime motive of democracy where everyone exercises their political right.
 - Assumption 3 is not correct, as it says equality as an idea is impossible even in a democracy. The paragraph denotes the opposite view.
 - Assumption 4 is not correct as there is no discussion on a 'Right to equality', It is spoken of as a default principle.
-

24. Answer: b

Explanation:

The correct answer is **Any form of government tends to deteriorate by excess of its basic principle**.

★ Key Points

- Option 1 is not wrong, but it does not reflect the crux of the passage.
- Option 3 is not the crux and is also not correct, note the use of 'perfect' democracy, hypothetical in nature.

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- Option 4 is not correct, the use of the word 'tyranny' is extreme. Inherent is not explicitly mentioned in the passage.
- Option 2 is the best crux of the passage, explaining the core theme of the passage.

25. Answer: d

Explanation:

★ Confusion Points

The question doesn't clearly mentions that the foreigners can speak English or not. Only after looking the options we have to solve.

Given:

Total persons in the group = 120

Number of Indian people = 80

Number of foreigners = $120 - 80 = 40$

Number of persons in the group who can speak English = 70

Calculation:

Assuming all the foreigners speak English we will get the minimum number of Indians who can speak English i.e.

Minimum number of Indians speaking English = Total English speaking people - Maximum number of foreigners speaking English

$$\Rightarrow 70 - 40 = 30$$

Hence, as the number of foreigners speaking English will decrease the number of Indians speaking English will increase.

So, we will have 30 or more Indians speaking English.

Hence, option 4 is correct.

26. Answer: c

Explanation:

Given:

Digits are non-zero and multiple of 3 i.e. 3, 6, 9

Number doesn't have repetition of digits.

Calculation:

The numbers thus formed are

369, 396, 639, 693, 936, 963

Sum of these numbers = 3996 and it is divisible by both 74 as well as 9.

Hence, option 3 is correct.

27. Answer: a

Explanation:

Given:

	Class A	Class B
Number of Students	25	30
Maximum marks	21	17
Minimum marks	30	22

Concept:

The average will lie between the maximum and minimum score.

$$\text{Average} = \frac{\text{Sum of individual scores}}{\text{Total number of students}}$$

Calculation:

Average score of class B will lie between 22 and 30 and

Average score of class A will lie between 17 and 21.

Hence average score of Class B will be higher than that of class A students.

In case of class B overall average will definitely decrease as the students coming from class A have lower score than the average score of class

In case of class A we cannot say surely that average score will definitely increase as it will depend on the score of the 4 students who are shifting to class B.

Class A average score will decrease if top 4 scoring students from class A shifts to class B and if the bottom 4 scoring students shifts to class B then Class A average score will increase.

Hence, option 1 is correct.

28. Answer: c

Explanation:

According to the given question, we have 40 students in class.

Statement 1: Priya's rank is 31st from the bottom means Priya is above 30 persons in a class of 40 and below the 9 persons in a class of 40. so, Priya's rank out of 40 from the top is 10th (40 - 30). Also given in this statement that Priya is 4 ranks below Seema, So Seema's rank is 6th (10 - 4).

From Bottom	From Top
40	1
39	2
38	3
37	4
36	5
35 Seema	6
34	7
33	8
32	9
31 Priya	10
30	11
.	.
.	.
.	.
.	.
3	38
2	39
1	40

Therefore **statement 1 alone is sufficient to answer the question.**

Statement 2 : Ena is 37th from the bottom means Ena is above 36 persons in a class of 40 and below the 3 persons in a class of 40, So Ena's rank out of 40 from the top is 4th ($40 - 36$). Also given in this statement that Ena is 2 ranks above Seema, So Seema's rank is 6 th ($4 + 2$).

From Bottom		From Top
40		1
39		2
38		3
37	Eha	4
36		5
35	Seema	6
34		7
33		8
32		9
31		10
30		11
.		.
.		.
.		.
.		.
3		38
2		39
1		40

Therefore statement 2 alone is sufficient to answer the question.

Hence, Either Statement-1 alone or Statement-2 alone is sufficient to answer the question.

★ Important Points

For the reverse positional value/ Ranking, we can easily get it by subtracting the value from the total and adding +1 to the resultant.

e.g. 35th rank from bottom = 6th rank from the top. $(40-35+1)$

29. Answer: c

Explanation:

Statement 1: According to this statement both A and D are greater than B, E, and F but none of these is the heaviest.



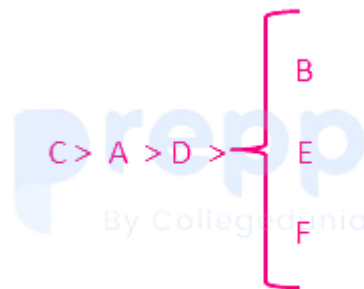
In this statement, we don't know whether A is heavier than D or vice-versa. Similarly, we don't know the sequence of B, E, and F although they are lighter than A and D. We can assume that C is the heaviest as out of A, B, C, D, E, and F, as it is given that none of A, B, D, E, or F is the heaviest, but it's just an assumption. C may be less than F too because we don't know whether we have only these six. So, **statement 1 alone is not sufficient**.

Statement 2: According to this statement A is heavier than D but lighter than C. But this statement does not tell us about the rest (B, E).

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So, **statement 2 alone is not sufficient**.

On combining both statements we get :



Which clearly derived that C is the heaviest amongst A, B, C, D, E.

Hence, we required Both Statement-1 and Statement-2 to answer the question.

30. Answer: b

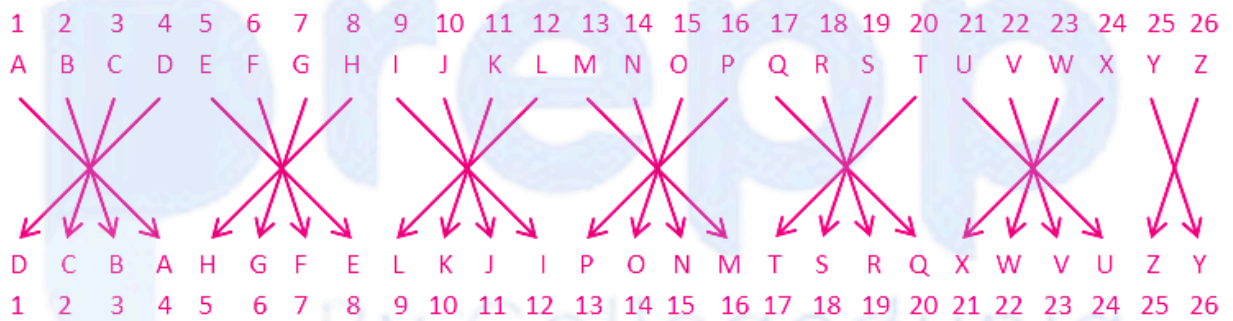
Explanation:

Alphabets	A	B	C	D	E	F	G	H	I	J	K	L	M
Positional value	1	2	3	4	5	6	7	8	9	10	11	12	13
Positional value	26	25	24	23	22	21	20	19	18	17	16	15	14
Alphabets	Z	Y	X	W	V	U	T	S	R	Q	P	O	N

4th letter from the right of the 13th letter (by default we count from left) is the 17th (13+4)letter (If **opposite combination (left - right)** appears then the resultant position is the **addition** of the letter's position, while if the **same combination (left - left / right-right)** appears in question then the resultant position is the **subtraction** of letter's position)

Approach 1:

Change the whole alphabet series :

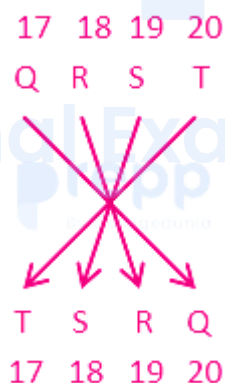


Here we can clearly see the alphabetically series changes to a given pattern and the 17th letter is T.

Hence, the correct answer is T.

Approach 2:

As we know the series is changing in a combination of 4 letters, so we can **skip the series till multiple of 4** which is less than the required position, for this case we can skip the series till 16th position, then start with 17th, 18th, 19th, 20th.



On reversing we get T is at the required Position.

Hence, the correct answer is T.

★ Important Points

For fast calculation we use the 'EJOTY' concept where the positional value of EJOTY is multiple of 5. E=5, J=10, O=15, T=20, Y=25.

31. Answer: d

Explanation:

The correct answer is **1, 3 and 4 only**.

★ Key Points

- Assumption 1 is valid as the passage explains the importance of the fig tree species in natural forests (Ecosystem).
- Assumption 2 cannot be concluded from the given passage, as the definition of large woody species is not specified.
- Assumption 3 is evident from the passage, as the sacred grooves have protection from the humans, resulting in conservation of the same.
- Assumption 4 is valid, as given in the passage '*...plenty of seedlings of other tree disturbance, **may promote abundance. favourable species** would grow around fig trees...*'

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32. Answer: a

Explanation:

The correct answer is **1, 4 and 5 only**.

★ Key Points

- This given question is a tough one, based on the GK.
- Fertigation is a method of fertilizer application in which fertilizer is incorporated within the irrigation water by the drip system.
- The application of fertilizers is not agroecological in nature.
- Hydroponics also involves adding nutrients which is not natural.

- Therefore the options 2 and 3 are wrong.
- In vertical farming involves growing crops under artificial conditions of light and temperature. Hence vertical farming is not an agroecological practice.
- Fertigation, hydroponics and vertical farming are not consistent with indefinite recycling.
- Whereas other methods like cover crops, mixed farming and polyculture are agroecological in nature.
- Hence the correct answer is 1, 4 and 5.

33. Answer: a

Explanation:

The correct answer is **Computers are not completely safe.**

★ Key Points

- Option 2 is not mentioned anywhere in the passage so cannot be inferred.
- Option 3 is a final goal we have to target, but that's not the inference that can be drawn from the passage.
- Option 4 talks about communication technology, however, the passage talks about computers.
- The author does warn about the threats on the internet and computers.
- Therefore option 1 is the most critical inference that can be drawn.

34. Answer: c

Explanation:

The correct answer is **4 and 5 only.**

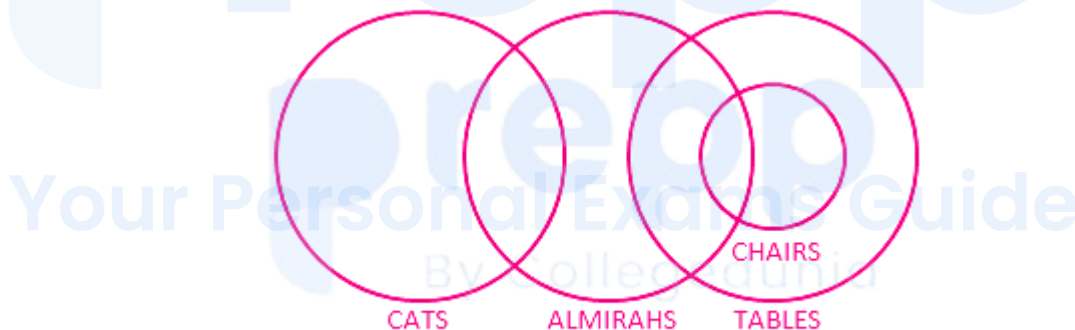
★ Key Points

- Assumption 1 is not correct, people who are obsessed with personal hygiene are not necessarily ignoring community hygiene.
- Assumption 2 cannot be concluded from the given passage, it is opposite to the view mentioned in the passage.
- Assumption 3 is also not correct because it doesn't mention the entry of the market into personal hygiene.
- **Assumptions 4 and 5 are correct.**
- **As stated in the passage along with personal hygiene, general improvements in environmental conditions and components like clean water, sanitation and food security are also necessary.**

35. Answer: c

Explanation:

The least possible logical Venn diagram according to given statements is,



Conclusion I: Certainly some almirahs are tables – True (as some almirahs are chairs and all chairs are tables).

Conclusion II: Some cats may not be chairs – **True** (It can be possible as shown above, but not a definite).

Hence, **Both Conclusion-I and Conclusion-II Follow.**

★ Shortcut Trick

In these types of questions, we need to eliminate conclusions. If the conclusion has 'may' or 'possible' or 'possibility' types of words, then you need to take only one possible Venn diagram which makes that conclusion true. Else you need to take only one possible Venn diagram which makes that conclusion false.

36. Answer: c

Explanation:

Given:

Ball is dropped from a height of 1.5 m

The ball bounces back to $\frac{4}{5}$ th of the previous height and if the height is less than 50 cm then it does not bounce back.

Calculation:

Initial height of the drop = 1.5 m = 150 cm

Drop	Previous Height(cm)	Height after Bouncing Back(cm)
1	150	$150 \times \frac{4}{5} = 120$
2	120	$120 \times \frac{4}{5} = 96$
3	96	$96 \times \frac{4}{5} = 76.8$
4	76.8	$76.8 \times \frac{4}{5} = 61.44$
5	61.44	$61.44 \times \frac{4}{5} = 49.152$
6	49.152	0

So, the ball touches the ground for 6 times.

Hence, option 3 is correct.

37. Answer: c

Explanation:

Mirror images of the consonants when the mirror is placed vertically :

B	B ✓
C	C ✓
D	D ✓
F	F ✓
G	G ✓
H	H ✓
J	J ✓
K	K ✓
L	L ✓
M	M ✓
N	N ✓
P	P ✓
Q	Q ✓
R	R ✓
S	S ✓
T	T ✓
V	V ✓
W	W ✓
X	X ✓
Y	Y ✓
Z	Z ✓

So, the number of images of these that do not look like their original shapes = 15 .

Mirror images of the consonants when the mirror is placed horizontally :

B	C	D	F	G	H	J	K	L	M	N	P	Q	R	S	T	V	W	X	Y	Z
<hr/>																				
B	C	D	E	G	H	I	K	L	N	O	P	Q	R	S	T	V	W	X	Y	Z
	✓	✓			✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

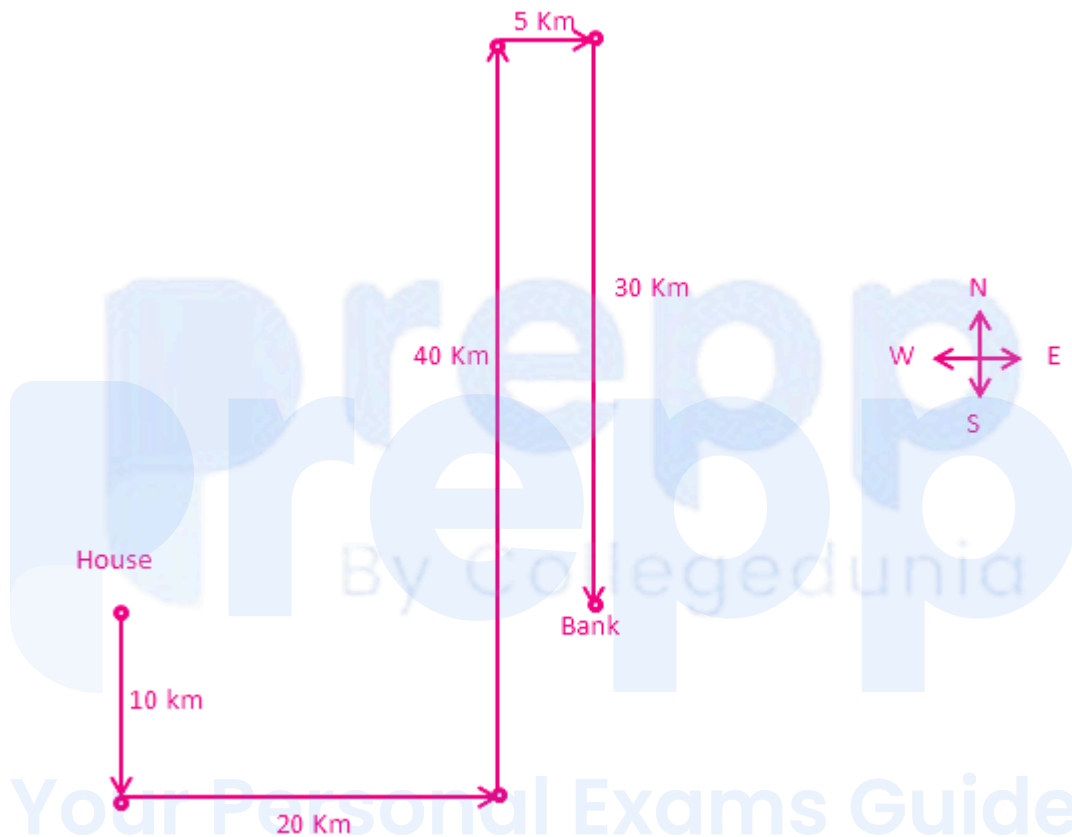
So, the number of images of these that do not look like their original shapes = 15 .

Hence, the number of images that do not look like their original shapes is 15.

38. Answer: b

Explanation:

According to the given information the figure is shown below,



On analyzing the above figure we get the person travelled 40 km Southward and 40 km Northward, so the **northward and southward distance cancelled out**. The person has travelled **25 Km** (20 Km + 5 Km) **eastward**.

Hence, the shortest distance between her bank and her house is 25 Km.

39. Answer: d

Explanation:

Possible combination of three digits whose sum is 10 and the numbers formed with these three digits greater than 700 and less than 1000 are

- 0, 1, 9 \Rightarrow 901, 910
- 0, 2, 8 \Rightarrow 802, 820
- 0, 3, 7 \Rightarrow 703, 730
- 1, 1, 8 \Rightarrow 811
- 1, 2, 7 \Rightarrow 712, 721

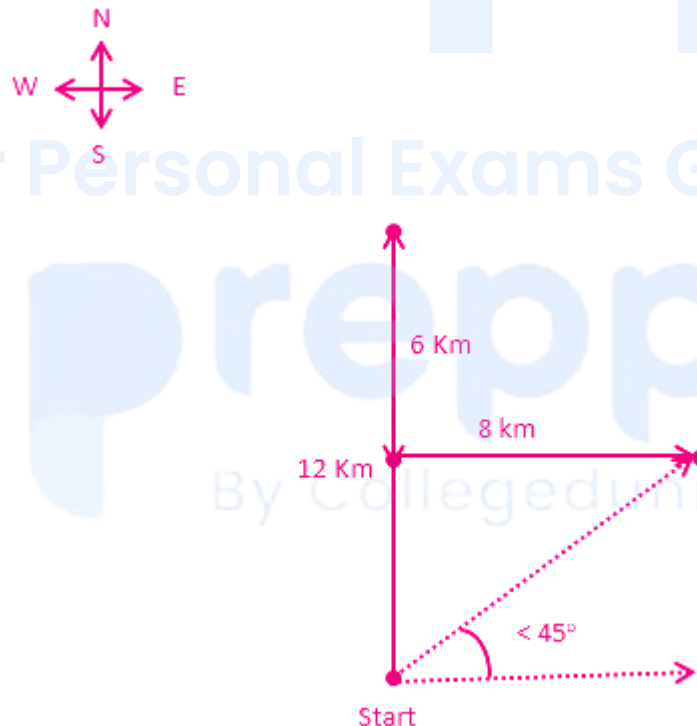
So, we have 9 such numbers.

Hence, option 4 is correct.

40. Answer: b

Explanation:

According to the given information the figure is shown below,



On analyzing the above figure we get the woman travelled 12 km Northward and 6 km Southward, so she **travelled 6 Km northward** and she also travelled 8 Km eastward. So the direction from start point to endpoint is **Northeast and angle is less than 45°** as she travels more distance towards east than resultant North.

Hence, she is at a n angle less than 45° North of the East.

★ Key Points

- Here, we follow the theorem of the right-angled triangle where the angles other than the right angle varies with the opposite side. If the opposite side is greater than the other, then the angle opposite to the greater side is more than 45° or vice versa.

41. Answer: b

Explanation:

The correct answer is **3 only**.

★ Key Points

- Statement 1 is not correct, nothing has been mentioned about the forces involved in the democracy in the passage.
- Statement 2 is wrong, it is opposite to the view mentioned in the passage.
- **Statement 3 is correct. Those at the bottom of the pyramid can only be lifted by the government.**

42. Answer: d

Explanation:

The correct answer is **To be a better citizen, the present world order demands societal and life-coping skills in addition to academic content.**

★ Key Points

- Option 1 is not correct, as expectations of parents are not clarified anywhere in the passage.
- Option 2 is opposite to the view mentioned in the passage.
- **Option 3 seems to be correct but option 4 best reflects the central idea, as the passage does discuss the inequality and choices that a person can make.**

43. Answer: b

Explanation:

Given:

$$PQ : QR = 3 : 5$$

Calculation:

CASE - 1

Assuming $PQ = 3x$, $QR = 5x$ and $PR = PQ + QR$, we get

$$PQ : PR = 3x : (3x + 5x)$$

$$\Rightarrow PQ : PR = 3 : 8$$

CASE - 2

Assuming $PQ = 3x$, $QR = 5x$ and $PR = QR - PQ$, we get

$$PQ : PR = 3x : (5x - 3x)$$

$$\Rightarrow PQ : PR = 3 : 2$$

So, we have $n = 2$ possible values.

Hence, option 2 is correct.

The order of points is not fixed. So, we have to check for all other possible cases.

★ Mistake Points

44. Answer: b

Explanation:

There are 2 diagonals with 8 squares each on the chess board and we have to choose 6 consecutive square.

We will assume block of 6 consecutive squares as one.

So we are left with 3 places on the chess board where it can be arranged by selecting any one of the place out of three i. e. ${}^3C_1 = 3$.

Similarly, for other diagonal too we will get 3 different ways

So, in total we have 6 different ways of choosing 6 consecutive squares.

Hence, option 2 is correct.

45. Answer: d

Explanation:

In these types of questions, we need to go through options one by one.

On applying option 1 we get

b b a a b b a a b b a b a a a b

On applying option 2 we get

b b a a a b a b b b a b a b a a b

On applying option 3 we get

b b b a a b a a b b a b a b b a a b

On applying option 4 we get

a b b a a b a b b a a b a b b a a b

As shown above, only on applying option 4 do we get the specific pattern.

Hence, option (4) 'ababab' is correct.

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46. Answer: b

Explanation:

For numbers greater than 30000, 2 will not be placed as the first digit. So there are 4 places to fill with 2, 2, 3, 3.

Distinct numbers greater than 30000 formed = $\frac{4!}{2! \times 2!}$

$$= \frac{24}{2 \times 2} = 6$$

Hence, option 2 is correct.

★ Important Points

The number of ways of arranging n objects, of which p of one type are alike, q of a second type are alike, r of a third type are alike, is $\frac{n!}{p!q!r!}$

47. Answer: c

Explanation:

Let us assume 5 consecutive numbers as $n - 2, n - 1, n, n + 1, n + 2$

$$\Rightarrow (n - 2) + (n - 1) + n + (n + 1) + (n + 2) = 100$$

$$\Rightarrow 5n = 100$$

$$\Rightarrow n = 20$$

So the numbers are 18, 19, 20, 21, 22 and **statement 1 is correct**.

Let us assume 3 consecutive numbers as $n - 1, n, n + 1$

$$\Rightarrow (n - 1) + n + (n + 1) = (n - 1) \times n \times (n + 1)$$

$$\Rightarrow 3n = n^3 - n$$

$$\Rightarrow n(n^2 - 4) = 0 \Rightarrow n = 0 \text{ or } n = -2 \text{ or } n = 2$$

Since number are natural so $n = 0$ and $n = -2$ is not possible,

So, the numbers are 1, 2 and 3 and **statement 2 is correct**.

Hence, option 3 is correct.

48. Answer: d

Explanation:

Given:

Vessel is a cube of side 1 m

★ Important Points

Volume of a cube = (side)³

1 m³ = 1000 litres

1 litre = 1000 millilitres or 1000 ml

Calculation:

Volume of the cubical vessel, $V = (\text{side of the vessel})^3$

$$\Rightarrow V = (1\text{m})^3 = 1\text{ m}^3$$

Since, $1\text{ m}^3 = 1000 \times 1000\text{ ml} = 1000000\text{ ml}$

Hence, option 4 is correct.

★ Mistake Points

Carefully calculate the unit conversions.

49. Answer: b

Explanation:

Starting from left to right, the person will be omitted standing next to the person shaking hand.

As the person shake hands with 3 so starting from left and shaking hands with first person we will omit the next one. Shaking hands with third person, the fourth person will be omitted.

So we have 4 persons left after omitting 2 and to find distinct possible combinations we will any 3 among them for handshakes

$$\Rightarrow \text{Number of distinct possible handshakes} = \binom{4}{3}$$

$$= \frac{4!}{3! \times 1!} = 4$$

Hence, option 2 is correct.

50. Answer: a

Explanation:

★ Important Points

Money is distributed among A, B and C in the ratio $p : q : r$ then

$$\text{A's share} = \frac{p}{(p + q + r)}$$

$$\text{B's share} = \frac{q}{(p + q + r)}$$

$$\text{C's share} = \frac{r}{(p + q + r)}$$

and it is clear that higher value of numerator will give larger share of money.

Calculation:

If p is greater than $q + r$ then, we can surely say that

- $p > q$
- $p > r$

So, A will get the maximum share.

Statement 1 is correct.

If r is less than $p + q$ then we can't say surely that

- $r < p$
- $r < q$

e.g. $p = 2, q = 3$ and $r = 4$

$\Rightarrow r < p + q$ but, $r > p, r > q$

Statement 2 is incorrect.

Hence, option 1 is correct.

51. Answer: a

Explanation:

The correct answer is **The conceptions of what is right or wrong exist due to the formation of a state.**

★ Key Points

- Option 2 is not correct, as in the natural state the concept of sin does not even exist!
 - Option 3 is not correct, as man's natural state of being is natural, not immoral or selfish or anything else, and the concept of ruling authority is not mentioned in the passage.
 - Option 4 is wrong as man existed in a natural state also, without the definition of right or wrong (or "sin"), the Human species survived.
 - Hence option 1 is the correct answer.
-

Your Personal Exams Guide

52. Answer: c

Explanation:

The correct answer is **2, 3 and 5 only.**

★ Key Points

- Statement 1 is extreme in nature, cannot be implied from the given passage.
- Statement 2 can be implied as the evergrowing technology does have an impact on the economic borders due to the involvement of various stakeholders and countries.

- Statement 3 can be implied because innovation and globalization have made many things cross the border of a country.
- Statement 4 cannot be implied nothing has been mentioned strengthening the supply chain of a country.
- Statement 5 can be implied from the given passage, as there is a need to frame certain laws to clear the ambiguities and uncertainties.

53. Answer: d

Explanation:

The correct answer is **Indian banking system requires structural as a long-term solution for bad loans problem.**

★ Key Points

- Options 2 and 3 are not correct, as they are not mentioned anywhere in the passage.
- Option 1 cannot be implied as it talks of monitoring by central government, whereas that is not mentioned anywhere.
- Option 4 is the best practical suggestion that can be implied from the given passage.

54. Answer: a

Explanation:

The correct answer is **The central bank cannot work independently of the Government.**

★ Key Points

- Option 1 is the best corollary that can be drawn from the passage.
- Options 2 is not correct, regulating the bodies is not discussed here.

- Option 3 is also not correct, socialist policies by the government are not discussed in the passage.
- Option 4 is not correct either, reforms of the financial institutions is not mentioned in the passage.

55. Answer: b

Explanation:

★ Important Points

The player having the best strike-rate will be the answer.

strike-rate is the average number of runs scored per 100 balls.

Calculation:

Total runs scored by a player = Runs scored in first innings + Runs scored in second innings

Total balls faced = Balls faced in first innings + Balls faced in second innings

$$\text{Strike-rate} = \frac{\text{Total runs scored}}{\text{Total balls faced}} \times 100$$

Player	Total runs scored	Total Balls faced	Strike-rate
A	75	175	42.86
B	55	97	56.7
C	35	125	28
D	25	105	23.81

Hence, option 2 is correct.

56. Answer: b

Explanation:

Given:

Half of the villagers have their own houses

One-fifth of the villagers cultivate paddy

One-third of the villagers are literate

Four-fifth of the villagers are under 25 years.

Calculation:

Let the number of villagers = x

So we have the number of villagers who

- have their own house = $(1/2) x = 0.50x$
- cultivates paddy = $(1/5) x = 0.20x$
- are literate = $(1/3) x = 0.33x$
- are under 25 years = $(4/5) x = 0.80x$

★ Mistake Points

As we have been asked to choose the statement which is **certainly** true so the statements will be discarded where there is a possibility of other outcomes than it is asked.

statement 1 is wrong as number of villagers having their houses($0.50x$) are greater than the number of literate people($0.33x$).

statement 2 is certainly correct as the number of villagers under 25 years($0.80x$) is greater than that the number of villagers who are literate($0.33x$).

Also if we assume that both group of people are different then their sum $0.80x + 0.33x = 1.13x$ which is more than the number of villagers(x) itself. So, both groups will

have some people in common.

statement 3 is wrong as we cannot surely say that half of the villagers who cultivates paddy are literate.

statement 4 is wrong as we can certainly say some of the villagers who have their own house are under 25 years.

Hence, option 2 is correct.

57. Answer: b

Explanation:

According to the given question, we need to find the day of the 14th of the given month.

Statement 1: The last day of the month is a Wednesday.

If the last day is Wednesday we are not able to find a day on the 14th of that month because we don't know whether the month is of 28 days or 29 days or 30 days or 31 days.

Therefore, Statement-1 alone is not sufficient to answer the question.

Statement 2: The third Saturday of the month was the 17th day.

If the 17th day of the given month is Saturday then we can easily find the 14th day by subtracting 3 odd days from Saturday i.e., $(6 - 3) = 3$. means Wednesday.

Therefore, Statement-2 alone is sufficient to answer the question.

Here we use odd days as Sunday = 0 , Monday = 1, Tuesday = 2, Wednesday = 3, Thursday = 4, Friday = 5, and Saturday = 6.

★ Important Points

58. Answer: a

Explanation:

We need to find the day on 10th October 2027,

10.10.2027 = 2026 years + period from 1.1.2027 to 10.10.2027.

Counting number of odd days :

The number of odd days in **2000 years** = 0. (odd days is 0 for every 400 years)

Number of odd days in **26 years** = 6 leap years + 20 Ordinary years = $6 \times 2 + 20 \times 1 = 32$ days = 4 weeks + 4 days = **4 odd days**.

Number of odd days from **1.1.2027 to 10.10.2027** = 31(Jan) + 28(Feb) + 31(March) + 30(April) + 31(May) + 30(June) + 31(July) + 31(Aug) + 30(Sep) + 10(Oct) = 283 days = 40 weeks + 3 days = **3 odd days**

Total number of odd days till 10.10.2027 = $4 + 3 = 7 = 0$ odd days.

Therefore, the day on 10th October 2027 is Sunday.

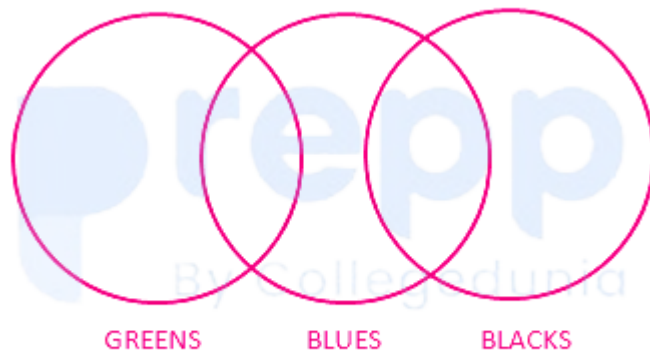
Here we use odd days as Sunday = 0 , Monday = 1, Tuesday = 2, Wednesday = 3, Thursday = 4, Friday = 5, and Saturday = 6.

★ Important Points

59. Answer: d

Explanation:

The least possible logical Venn diagram according to given statements is,



Conclusion - 1: Some greens are blacks - False (It can be possible, but not a definite).

Conclusion - 2: No green is black - False (It can be possible, but not a definite).

Conclusion - 3: All greens are blacks - False (It can be possible, but not a definite).

Conclusion - 4: All blacks are greens - False (It can be possible, but not a definite).

Hence , **Neither Conclusion 1 nor 2 nor 3 nor 4 follows.**

★ Important Points

- If you analyze conclusions you get conclusion 2 is complementary pair with any other conclusion, so if we have the option either conclusion 2 and conclusion 1 follows or either conclusion 2 and conclusion 3 follows or either conclusion 2 and conclusion 4 follows, that will be answered.

★ Shortcut Trick

In these types of questions, we need to eliminate conclusions. If the conclusion has 'may' or 'possible' or 'possibility' types of words, then you need to take only one possible Venn diagram which makes that conclusion true . Else you need to take only one possible Venn diagram which makes that conclusion false .

60. Answer: c

Explanation:

$$1^{\text{st}} \text{ term} = 2$$

$$2^{\text{nd}} \text{ term} = 7 = 2 \times 3 + 1$$

$$3^{\text{rd}} \text{ term} = 22 = 7 \times 3 + 1$$

we can write the pattern followed by the number in this series as

$$n^{\text{th}} \text{ number} = (n - 1)^{\text{th}} \text{ number} \times 3 + 1$$

Therefore, X which is 6th number in the series (n = 6) is

$$X = 202 \times 3 + 1$$

$$= 607$$

Hence, option 3 is correct.

61. Answer: c

Explanation:

The correct answer is **To maintain and develop our cities we need to adopt sustainability related interventions.**

★ Key Points

- The most generalised statement is option 3, reflects the need for a sustainability related intervention to develop the cities.
- Option 1 cannot be an inference administrative set up is not discussed in the passage.
- Option 2 cannot be true as the population is being addressed as a challenge and not a hindrance to achieve sustainable development.
- Option 4 is wrong as public private partnership is out of the context nothing has been discussed regarding this.

62. Answer: a

Explanation:

The correct answer is **Agreement about telling lies**.

★ Key Points

- The first part tells us that there is an agreement about telling lies, when the truth would do more harm.

63. Answer: b

Explanation:

The correct answer is **Intentional mixing up of truth with the false**.

★ Key Points

- The second half of the passage mentions that good people often tell lies which contains some kind of truth.
- Hence there is an intentional mix up of truth and false.

64. Answer: c

Explanation:

Given:

Proteins – 16%

water – 70%

Calculation:

All three proteins, water, and dry elements combined will correspond to 100%.

So dry elements contribution = Total - that of proteins and water

$$= 100\% - (16 + 70)\%$$

$$= 14\%$$

Now, p% corresponds to both proteins and dry elements combined

$$\Rightarrow p = 16 + 14 = 30\%$$

As in case of circle total angle at the center = 360°

So central angle of the section representing p on the pie diagram

$$= \frac{30}{100} \times 360$$

$$= 108^\circ.$$

Hence, option 3 is correct.

65. Answer: b

Explanation: **Your Personal Exams Guide**

Given:

Joseph visits the club on every 5th day ,

Harsh visits the club on every 24th day and

Sumit visits the club on every 9th day .

All three of them met at the club on a **Sunday**.

Calculation:

Taking LCM of their visiting intervals

$$3 \mid \underline{5}, \underline{24}, \underline{9}$$

$$5, 8, 3$$

$$\Rightarrow \text{LCM} = 3 \times 5 \times 8 \times 3 = 360$$

\Rightarrow All three will meet 360^{th} day.

Now as 1^{st} time they meet is on Sunday which occurs after every 7 days.

$$\Rightarrow 360 = 51 \times 7 + 3$$

$\Rightarrow 357^{\text{th}}$ day will be Sunday and hence, 360^{th} day will be on **Wednesday**.

So, option 2 is correct.

66. Answer: b

Explanation:

Calculation:

Let us assume the number has y in units place and x in tens place.

So, the number can be written as $10x + y$

Now,

if we interchange the digits $\Rightarrow x$ in units place and y in tens place

The number obtained = $10y + x$

As given in the question we can write

$$(10x + y) - (10y + x) = 54$$

$$\Rightarrow 9x - 9y = 54 = 9(x - y) = 54$$

$$\Rightarrow x - y = 6$$

$$\Rightarrow x = y + 6$$

Here y can't be 0 as after interchanging the digits the number formed will not be a 2-digit number. So the possible outcomes are

If $y = 1$, $x = 7$ and the numbers are 71 and 17

If $y = 2$, $x = 8$ and the numbers are 82 and 28

If $y = 3$, $x = 9$ and the numbers are 93 and 39

Statement 1 is incorrect as by knowing the products of digit is not the only way. If their ratios are given then also we can find the numbers.

Statement 2 is correct as the difference of the digits is obtained by the equation $x - y = 6$.

Hence, option 2 is correct.

67. Answer: b

Explanation:

Given:

X's age was twice that of Y's present age when Y was born

Present age of X = 42 years

Calculation:

Let us assume present age of Y is y years.

So y years ago (time when Y was born), the age of X is twice of Y's present age

$$\Rightarrow \text{Age of X, } y \text{ years ago} = 42 - y$$

So the equation becomes $42 - y = 2y$

$$\Rightarrow y = 14$$

Present age of Y = 14 years

Statement 1

8 years ago, age of X = $42 - 8 = 34$

age of Y = $14 - 8 = 6$

Hence, statement 1 is wrong

Statement 2

14 years later, age of X = $42 + 14 = 56$

age of Y = $14 + 14 = 28$

Hence, statement 2 is correct.

68. Answer: a

Explanation:

Calculation:

Assume initial price of the article = 100

$$\begin{aligned}\text{New price after decreasing by 20\%} &= 100 - \frac{20}{100} \times 100 \\ &= 80\end{aligned}$$

Now the new price is increased by 25%,

$$\begin{aligned}\text{so the final price} &= 80 + \frac{25}{100} \times 80 \\ &= 100\end{aligned}$$

Hence the net change in price = final price - initial price

$$= 100 - 100$$

= 0

So, option 1 is correct.

69. Answer: d

Explanation:

Calculation:

Checking by division;

$$11 \div 7 = 1.571...$$

$$111 \div 7 = 15.857...$$

$$1111 \div 7 = 158.714...$$

$$11111 \div 7 = 1587.28...$$

$$111111 \div 7 = \mathbf{15873}.$$

★ Alternate Method

Checking the options

The number obtained after multiplication by 7 has 1 as its digit only i.e. 11, 111, 1111, 11111, .. etc.

The units place digit is 1 and all options have 3 as the last digit so multiplying by 7 will result in 1 in units place.

$$_ _ _ _ _ 3$$

$$_ \times 7$$

 1 and 2 as carryover

The tens digit place is also 1 but 7 multiplied by 3 will have 2 as carryover and going through the numbers in option 7 multiplied by 7 has 9 as last digit but adding the carryover 2 makes it 1.

_ _ _ 73

_ _ _ $\times 7$

_ _ _ 11 and 5 as carryover

Hence, option 4 is correct.

70. Answer: d

Explanation:

Given;

Time taken to complete $7/8$ of a job = 21 days

Quantum of work further increased by 50%

Calculation:

Time required to complete the job = $\frac{21}{7/8} = 24$ days

So time taken by the man to complete 50% work, $t_1 = 24/2 = 12$ days

Also, remaining work after 21 days = $1 - 7/8 = 1/8$ and

time required to complete $1/8$ of the job, $t_2 =$ Time required to complete whole work - time taken to complete $7/8$ of the job i.e.

$= 24 - 21 = 3$ days

Now the number of days required = $t_1 + t_2$

$= 12 + 3 = 15$ days

Hence, option 4 is correct.

71. Answer: c

Explanation:

The correct answer is **Human beings are motivated to explore new frontiers principally by economic considerations.**

★ Key Points

- Options 2 and 4 are not correct, these statements don't reflect the sum of the passage, as they talk about space exploration and wealth generation with some men which have a narrow meaning.
- Between options 1 and 3, option 3 is the best answer.
- Option 1 only talks about the wealth generation which again has a narrow meaning.

72. Answer: b

Explanation:

The correct answer is **Availability of higher education can be made easier and cheaper without diluting the content.**

★ Key Points

- Option 1 is not correct as the model includes both online and offline mode, discussion of the topics during offline classes.
- Option 2 reflects the central idea of the passage, as the availability of quality content worldwide, free of cost. That is what's happening here.
- Option 3 is not correct nothing has been mentioned about the investment in infrastructure.
- Option 4 is incorrect due to "coaching institutes / private sectors not mentioned in the passage.

73. Answer: c

Explanation:

Given:

Jay bought 3 pens and 5 pencils

Vijay bought 2 pens and 7 pencils

Both Jay and Vijay spent same amount of money.

Calculation:

Let the price of each pen is x and each pencil is y .

Money spent by Jay = $3x + 5y$

Money spent by Vijay = $2x + 7y$

Since both amounts are equal,

$$\Rightarrow 3x + 5y = 2x + 7y$$

$$\Rightarrow x = 2y$$

So, price of pen is double that of pencil.

Hence, option 3 is correct.

74. Answer: a

Explanation:

Given:

Marks scored by P is 40 more than Q

Marks scored by Q is 10% less than P

Calculation:

Let the marks scored by Q be x

Hence, marks scored by P = $x + 40$

Also marks scored by Q is 10% less than that of P

$$\Rightarrow x = 0.9 \times (x + 40)$$

$$\Rightarrow x - 0.9x = 0.9 \times 40$$

$$\Rightarrow 0.1x = 36$$

$$\Rightarrow x = 360$$

Hence, option 1 is correct.

75. Answer: b

Explanation:

Given: Your Personal Exams Guide

1. If Y gives Rs. 40 to X then, Y will have half the amount Z has
2. If Z gives Rs. 40 to X then, everyone will have equal amount

Calculation:

Assume X, Y, Z have Rs. x , Rs. y , Rs. z respectively

From Statement 1

Amount of money with X = initial amount + 40 = $x + 40$

Amount of money with Y = $y - 40$

and it is given that Y has half the amount as Z

$$\Rightarrow y - 40 = z/2 \dots\dots\dots (i)$$

From Statement 2

Amount of money with X = $x + 40$

Amount with Z = $z - 40$

and it is given that everyone has equal amount of money

$$\Rightarrow x + 40 = z - 40 \dots\dots\dots (ii)$$

$$\Rightarrow x + 40 = y \dots\dots\dots (iii)$$

$$\Rightarrow y = z - 40 \dots\dots\dots (iv)$$

From equation (i) & (iv)

$$40 + z/2 = z - 40$$

$$\Rightarrow z = 160$$

Putting the value of $z = 160$ in equation (i);

$$y = 40 + 160/2 = 120$$

From equation (iii), $x = y - 40 \Rightarrow x = 80$

$$\text{Total money with X, Y and Z} = 80 + 120 + 160 = 360$$

Hence, option 2 is correct.

76. Answer: b

Explanation:

Correct Option - 2.

Alphabets	A	B	C	D	E	F	G	H	I	J	K	L	M
Positional value	1	2	3	4	5	6	7	8	9	10	11	12	13
Positional value	26	25	24	23	22	21	20	19	18	17	16	15	14
Alphabets	Z	Y	X	W	V	U	T	S	R	Q	P	O	N

The pattern followed here is:-

For the letters in odd places(1 st ,3 rd .5 th .7 th .9 th ,11 th) Positional value of the letter - 1

For the letters in even places(2 nd .4 th .6 th .8 th ,10 th) Positional value of the letter + 1

M A T H E M A T I C S
 ↓ -1 ↓ +1 ↓ -1 ↓ +1 ↓ -1 ↓ +1 ↓ -1 ↓ +1 ↓ -1
 L B S I D N Z U H D R

similarly,

C H E M I S T R Y
 ↓ -1 ↓ +1 ↓ -1 ↓ +1 ↓ -1 ↓ +1 ↓ -1 ↓ +1 ↓ -1
 B I D N H T S S X

Hence, the code for "CHEMISTRY" is "BIDNHTSSX".

Therefore, option 2 is correct.

77. Answer: d

Explanation:

The hour hand and the minute hand of the clock make an angle of 180° with each other 11 times during 12 hours.

Options clearly mentioned we need to find the time where hour hand and minute hand make an angle of 180° after 7 o'clock.

Angle covered by minute hand in 1 minute $= \left(\frac{360}{60}\right)^\circ = 6^\circ$

Angle covered by hour hand in 1 hour $= \left(\frac{360}{12}\right)^\circ = 30^\circ$

Angle covered by hour hand in 1-minute $= \left(\frac{30}{60}\right)^\circ = \left(\frac{1}{2}\right)^\circ$

From the above equation, we can say that **the minute hand goes ahead by $5\frac{1}{2}^\circ$ in comparison to the hour hand in 1 minute.**

At, 7 o'clock angle made between the hour hand and minute hand $= 7 \times 30^\circ = 210^\circ$. (or it is $360^\circ - 210^\circ = 150^\circ$)

For making an angle of 180° between the hour hand and minute hand, the Minute hand needs to cover 30° with respect to the hour hand.

So, the time required to travel 30° by minute hand with respect to hour hand past 7 o'clock $= \frac{30^\circ}{\left(\frac{1}{2}\right)^\circ} \text{ minutes} = \frac{60}{11} \text{ minutes} = 5\frac{5}{11} \text{ minutes}$

Therefore, the hour hand and the minute hand of the clock make an angle of 180° with each other Between 7:05 hours and 7:10 hours.

★ Shortcut Trick

Between **n o'clock** and **(n + 1) o'clock**, the hands of the clock will be at 180° :

- $(5n - 30) \times \frac{12}{11}$ minutes past n, when $n > 6$
- $(5n + 30) \times \frac{12}{11}$ minutes past n, when $n < 6$

we simply put $n = 7$, we get

$((5 \times 7) - 30) \times \frac{12}{11}$ minutes past 7 o'clock

$$= (35 - 30) \times \frac{12}{11} \text{ minutes past 7 o'clock}$$

$$= \frac{5 \times 12}{11} \text{ minutes past 7 o'clock}$$

$$= \frac{60}{11} \text{ minutes past 7 o'clock}$$

$$= 5\frac{5}{11} \text{ minutes past 7 o'clock.}$$

Therefore, the hour hand and the minute hand of the clock make an angle of 180° with each other Between 7:05 hours and 7:10 hours.

78. Answer: a

Explanation:

Given:

Total number of questions = 90

Marks for every correct answer = 5

Marks deducted for every incorrect answer = 2

Total marks scored = 387

Calculation:

Let the number of incorrect responses be x

\Rightarrow Number of correct responses = $90 - x$

Now as we know total marks scored = 387

$$\Rightarrow 5 \times (90 - x) - 2 \times (x) = 387$$

$$\Rightarrow 450 - 5x - 2x = 387$$

$$\Rightarrow x = (450 - 387)/7 = 9$$

Hence, option 1 is correct.

79. Answer: c

Explanation:

P is added 4 times on LHS resulting 2 in units place on RHS

The values of P such that $P \times 4$ will give 2 in units place are 3 and 8.

If $P = 3$, then on LHS we have $33 + 43 + 33 + 33 = 142$

$\Rightarrow R = 1, Q = 4$ and the number is **142**

If $P = 8$, then LHS = $38 + 48 + 88 + 88 = 262$

$\Rightarrow R = 2, Q = 6$ and the number is **262**

Now arithmetic mean = $\frac{142 + 262}{2} = 202$.

Hence, option 3 is correct.

80. Answer: b

Explanation:

PQ

$\times 3$

RQQ

Here if we take $Q = 5$ then only after multiplication by 3 the units place will also be 5.

P5

$\times 3$

R55

Again putting $P = 8$ we get $85 \times 3 = 255$

$\Rightarrow R = 2, P = 8, Q = 5$

Hence $(P+R) / Q = (8 + 2) / 5 = 2$

Hence, option 2 is correct.

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