

Answer & Explanation for CSAT Test-3 held on 25th March 2018**Directions for the following 8 (eight) items:**

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

PASSAGE 1

On paper, India should be a tourist powerhouse. The country has all the right ingredients - good food, rich culture, beautiful historic monuments, spirituality, and diversity - to lure travellers from all over the world. Yet, India lags behind Asian tourist hubs like Thailand, Malaysia, South Korea and China. While tourism in India continues to increase, with 6.65 million tourists visiting the country in 2012, it grew just 5% over 2011. Bhutan and Sri Lanka - from the same south Asian region - recorded over 17% growth in the same year.

1. Which of the following is the **most logical and rational inference** from the passage?
- (a) The reasons for India's struggle to attract visitors are poor infrastructure and security concerns.
 - (b) India is budget and tourist friendly.
 - (c) Indian tourism is lagging behind other countries despite the country having lots to offer in terms of tourist attractions.
 - (d) Asian tourist hubs are safer for tourist than popular Indian tourist sites.

Answer: (c)

Explanation: The passage clearly states that the Indian tourism industry is having problems with its growth despite having "good food, rich culture, beautiful historic monuments, spirituality, and diversity..." Option c supports this.

Option a gives additional information which the passage does not cover.

Option b with "budget and tourist friendly" is not supported by the passage.

Option d is wrong since no such comparison is made in the passage.

PASSAGE 2

Under the Paris agreement, each country put forward a proposal to curtail its greenhouse-gas emissions between now and 2030. But no major industrialized country is currently on track to fulfil its pledge, according to new data from the Climate Action Tracker. Not the European Union. Not Canada. Not Japan. And not the United States, which under President Trump is still planning to leave the Paris agreement by 2020. Worse, even if governments do take further steps to meet their individual pledges, the world will still be on pace to warm well in excess of 2 degrees Celsius over preindustrial levels, the threshold that world leaders vowed to avoid in Paris because they deemed it unacceptably risky.

2. What does the above passage imply?
- (a) Countries are doing their best to save millions of people from a miserable future.
 - (b) Countries are likely to fail to meet their goals under the Paris agreement to fight climate change.
 - (c) Countries are not obliged to strictly adhere to the Paris agreement.
 - (d) The Paris accord imposes far more onerous measures on the developed countries than under-developed or developing countries.

Answer: (b)

Explanation: The paragraph talks about world nations coming together to take a pledge but not fulfilling it. The problem lies in the countries not adhering to the solution/ pact which is causing risky global warming situations. Option b is apt and supported by – “even if governments do take further steps to meet their individual pledges, the world will still be on pace to warm well in excess....”

Option a contradicts the essence of the passage.

Option c is not implied by the passage.

There is no mention of the pressure put on developed countries versus under-developed and developing countries. Thus, option d can be eliminated.

PASSAGE 3

The greatest defect in the working of democracy lies in the fact that the masses in whom the power is vested are mostly uneducated in the Third-World countries. They do not properly comprehend the political problems of their country and the value of their votes. Lack of consciousness is dangerous in a democracy. Without a spirit of reasonableness, democracy is bound to degenerate into mob rule. This defect can be remedied by universal education and wide dissemination of knowledge.

3. The passage relates to:
- (a) Alacrity of the people in a democracy.
 - (b) The incompetence of politicians.
 - (c) Role of education in the working of a democracy.
 - (d) The blemish of uneducated politicians that mars our democracy.

Answer: (c)

Explanation: The paragraph talks about education, knowledge and reasoning in the working of a democracy. Option c is the only appropriate option. All other options are out of context.

PASSAGE 4

I gaped at him as he continued: "All we did in 1947 was replace a British empire with an Indian empire. We retained most of the laws in the archaic Indian Penal Code which the British had framed to subjugate us, including laws against free speech, homosexuality and even women's rights. The state censors films, bans books, as if we are infants and not adults. I have a friend who started a university in British times without needing a license" — he glanced at Robida — "and today, to start or run a business, we need to beg or bribe brown babus. Robida once told me that the British occupation of India was the 'political symptom of our social disease'. That disease is now terminal."

4. The passage seems to suggest that:
- (a) Our governments rule us instead of serving us and we are willing to be ruled.
 - (b) People are the rulers, and the government is here to serve us.
 - (c) It is the end of freedom, for the government has not changed its views since 1947.
 - (d) Since the end of the British rule, nothing has changed in India.

Answer: (a)

Explanation: The passage talks about the government being coercive and curbing our rights and us being passive spectators, tolerating this social disease (letting ourselves be ruled). This is conveyed aptly in option a.

Option b states the opposite of what is mentioned in the passage.

Option c with “end of freedom” and Option d with “nothing has changed” are unsubstantiated.

PASSAGE 5

In India, open defecation is a well-established traditional practice deeply ingrained from early childhood. Sanitation is not a socially acceptable topic, and as a result, people do not discuss it. Consequently, open defecation has persisted as a norm for many Indians. In addition to tradition and the communication taboo, the practice still exists due to poverty; many of the poorest people will not prioritise toilets and besides, many are living in rented homes without toilets. Society does not view the lack of a toilet as unacceptable. Building and owning a toilet is not perceived as aspirational. Construction of toilets is still seen as the government's responsibility, rather than a priority that individual households should take responsibility for. The challenge is to motivate people to see a toilet as fundamental to their social standing, status and well-being.

5. Which of the following is the most crucial message conveyed by the above passage?
- (a) India needs to combat the lax culture of open defecation.
 - (b) Open defecation has no correlation with financial backwardness.
 - (c) The Government has failed to provide Indians with proper sanitation facilities.
 - (d) Society encourages open defecation and does not penalize those guilty.

Answer: (a)

Explanation: The passage talks about open defecation as a traditional practice, as a norm in India and as lack of awareness from the Indian society. All of this supports option a. Option b is wrong since the passage says that "the poorest people will not prioritise toilets". Option c is wrong since the role of the govt. is not discussed. Option d with "penalize" has no evidence in the passage.

PASSAGE 6

While our politicians stampede to India with promises of a continuance of our self-destructive trade policies, India never offers reciprocal concessions. India imposes very strict tariffs and immigration policies to protect their domestic workforce and industries. India's pervasive trade barriers are enforced with tariffs up to 45% to ensure that foreign competitors can't undercut their own industries. The United States stands alone in its desire to offshore jobs without constraints and to issue temporary guest-worker visas so that foreign workers can take our most coveted jobs.

6. Which of the following is best in line with the above passage?
- (a) There's a huge low-skilled and unskilled workforce in India as compared to the US.
 - (b) One of the most common non-tariff barriers is the prohibition or restrictions on imports maintained through import licensing requirements.
 - (c) The Indian government shows a preference for local suppliers and generally discriminates against foreign suppliers.
 - (d) Lack of transparency with respect to policies and regulations are problems plaguing Indian traders.

Answer: (c)

Explanation: The passage talks about India's strict tariff and immigration policies. Option a is wrong since the size of India's workforce is not discussed. Option b is wrong since "non-tariff" barriers are not mentioned. Option d is wrong since lack of transparency in India is not mentioned. Option c is apt with "preference for local suppliers" and "discriminates against foreign suppliers".

PASSAGE 7

Financial openness is often regarded as providing important potential benefits. Access to world capital markets expands investors' opportunities for portfolio diversification and provides a potential for achieving higher risk-adjusted rates of return. It also allows countries to borrow to smooth consumption in the face of adverse shocks, the potential growth and welfare gains resulting from such international risk sharing can be large. It has also been argued that by increasing the rewards of good policies and the penalties for bad policies, free flow of capital across borders may induce countries to follow more disciplined macroeconomic policies that translate into greater macroeconomic stability. An increasingly common argument in favour of financial openness is that it may increase the depth and breadth of domestic financial markets and lead to an increase in financial inter-mediation process by lowering costs and "excessive" profits associated with monopolistic or cartelized markets, thereby lowering the cost of investment and improving resource allocation.

Increasing integration of financial markets also brings in certain risks. It has been recognized that the risk of volatility and abrupt reversals in capital flows in the context of highly open capital accounts may represent a significant cost. Cyclicalities of capital flows may also increase macroeconomic instability, like favourable shocks may attract large amounts of capital inflows and encourage consumption and spending at levels that are unsustainable in the longer-term, forcing countries to over-adjust to adverse shocks as a result of abrupt capital reversals. The large capital inflows induced by financial openness can have undesirable macroeconomic effects, including rapid monetary expansion (due to the difficulty in managing and cost of pursuing aggressive sterilization policies), inflationary pressures (resulting from the effect of capital inflows on domestic spending), real exchange rate appreciation, and widening current account deficits.

7. It is necessary to be cautious when it comes to creating highly open capital accounts because
- (1) high rates of spending during favourable periods may be unsustainable in the long-term
 - (2) it can lead to undesirable appreciation of currency exchange rates
 - (3) there may be high costs related to volatility of capital flows
 - (4) reversal of capital flows may cause risky over-compensatory behavior by countries
- Which of the statements given above is/are correct?
- (a) 2, 3 and 4 only
 - (b) 1, 2 and 3 only
 - (c) 3 and 4 only
 - (d) 1, 2, 3 and 4

Answer: (d)

Explanation:

The passage mentions several risks resulting from the creation of highly open capital accounts through financial integration. All four statements have been mentioned as risks w.r.t. creating highly open capital accounts.

Statement 1 is supported by "... favourable shocks may attract large amounts of capital inflows and encourage consumption and spending at levels that are unsustainable in the longer-term ..."

Statement 2 is implied in the lines "The large capital inflows induced by financial openness can have undesirable macroeconomic effects ... real exchange rate appreciation ..."

Statement 3 can be inferred from the passage in the lines "It has been recognized that the risk of volatility and abrupt reversals in capital flows in the context of highly open capital accounts may represent a significant cost."

Statement 4 is implied in the lines "... forcing countries to over-adjust to adverse shocks as a result of abrupt capital reversals."

8. What is the central theme of this passage?
- (a) The potential benefits of financial openness.
 - (b) The risks of integrating financial markets in the long-term.
 - (c) The historical balance between the benefits and risks of financial openness.
 - (d) The potential implications of financial openness.

Answer: (d)

Explanation: The overall passage deals with financial openness; and splits the discussion into two halves.

While the first paragraph talks about the potential benefits, the second mentions the likely risks. Thus, the overall theme of the passage is the positive and negative potential implications of financial openness. This is best represented in option (d).

Though option (c) mentions benefits and risks, it can be eliminated as the passage does not look at historical data and does not talk about balancing the benefits and risks.

In this sense, options (a) and (b) are two parts of a whole, and hence, cannot be considered the theme. Hence, they are eliminated.

9. Consider the following statement and the two statements that follow from it:

Only economists can use econometric tools.

- (1) Ravi is an economist and thus, can use econometric tools.
- (2) Ashok cannot use econometric tools and thus, is not an economist.

Which of these statements follows from the main statement?

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

Answer: (d)

10. Consider the following statements:

- (1) All plants are organic and all trees are organic. Therefore, all plants are trees.
- (2) Only phones are cellular. Mobiles are cellular and so, mobiles are phones.

Which of these statements is/are logically consistent?

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

Answer: (b)

11. The difference between two numbers is 966. On dividing the larger number by the smaller, we get 22 as quotient and the 42 as remainder. What is the smaller number?

- (a) 24
- (b) 44
- (c) 55
- (d) 52

Answer: (b)

Explanation:

$$\begin{aligned}
 y-x &= 966 \\
 y &= 966 + x \dots\dots(i) \\
 22x + 42 &= y \dots\dots(ii) \\
 \text{So } 22x + 42 &= 966 + x \\
 21x &= 924 \\
 x &= 44
 \end{aligned}$$

- 12.** If one of the sides of a rectangle is increased by 20% and the other is decreased by 30%, find the percent value by which the area changes?
- (a) 20% increase
 - (b) 20% decrease
 - (c) 16% increase
 - (d) 16% decrease

Answer: (d)

Explanation:

$$\left[20 - 30 + \frac{20 \times (-30)}{100} \right] \% = -16\%$$

- 13.** The cost price of 15 chocolates is equal to the selling price of 30 chocolates. Find the profit/loss percentage.
- (a) 20% Profit
 - (b) 30% Loss
 - (c) 50% Loss
 - (d) 20% Loss

Answer: (c)

Explanation:

$$\frac{C.P.Articles - S.P.Articles}{S.P.Articles} 100\% = \text{loss percent}$$

$$\frac{15-30}{30} 100\% = 50\% \text{ Loss}$$

- 14.** If first day of the year 2017 was a Saturday, what would be the last day of year 2021?
- (a) Sunday
 - (b) Saturday
 - (c) Thursday
 - (d) Friday

Answer: (c)

Explanation:

1st Jan 2017 is Saturday

1st Jan 2021 will be Thursday (From 2017 to 2021 gap of 4 years with one leap year means 5 odd days)

Thus, 31st December 2021 would be Thursday.

Directions for the next three (3) items:

Study the following information and answer the questions that follow:

The premises of a bank are to be renovated. The renovation is in term of flooring. Certain areas are to be floored either with marble or wood. All rooms/halls and pantry are rectangular in shape. The area to be renovated comprises of a hall for customer transaction measuring 23m by 29m, branch manager's room measuring 13m by 17m, a pantry measuring 14m by 13m, a

record keeping cum server room measuring 21m by 13m and locker area measuring 29m by 21m. The total area of the bank is 2000 sq.m. The cost of wooden flooring is Rs. 170 per square metre and cost of marble flooring is Rs. 190 per sqm. The locker area, record keeping cum server room and pantry are to be floored with marble. The branch manager's room and the hall for customer transaction are to be floored with wood. No other area is to be renovated in terms of flooring.

15. What is the respective ratio of the total cost of wooden flooring to the total cost of marble flooring?
- (a) 1879 : 2527
 (b) 1887 : 2386
 (c) 1829 : 2527
 (d) 1887 : 2527

Answer: (d)

Explanation: Total cost of wooden flooring

$$= (23 \times 29 + 13 \times 17) \times 170$$

$$= (667 + 221) \times 170$$

$$= \text{Rs.}150960$$

Total cost of marble flooring

$$= (14 \times 13 + 21 \times 13 + 29 \times 21) \times 190$$

$$= (182 + 273 + 609) \times 190$$

$$= \text{Rs.} 202160$$

∴ Required ratio

$$150960 : 202160$$

$$= 1887 : 2527$$

16. If the four walls and ceiling of the branch manager's room (height of the room is 12 metres) are to be painted at the cost of Rs. 190 per square metre, how much will be the total cost of renovation of the branch manager's room including the cost of flooring?
- (a) Rs. 327450
 (b) Rs. 216360
 (c) Rs. 226460
 (d) None of these

Answer: (b)

Explanation:

Area of ceiling and four walls of branch manager's room

$$= 13 \times 17 + 2 \times 12 (13+17)$$

$$= 221 + 720 = 941 \text{ sqm}$$

$$\therefore \text{Total cost} = 941 \times 190 + 13 \times 17 \times 170$$

$$= 178790 + 37570$$

$$= \text{Rs.} 216360$$

17. What is the percentage area of the bank that is not to be renovated?
- (a) 2.8
 (b) 3.4
 (c) 2.6
 (d) None of the above

Answer: (d)

Explanation:

$$= \frac{48}{2000} \times 100 = 2.4$$

18. In a certain language '6892' is coded as 'NAVDEEP IS AN IAS' but not in the same order. Similarly, '8497' is coded as 'IAS EXAM IS TRICKY', '4759' is coded as 'TRICKY EXAM IS SCORING' and '239' is coded as 'NAVDEEP IS FEMALE'. What is the code for 'TRICKY'?
- (a) 4
 (b) 7
 (c) 5
 (d) Either (a) or (b)

Answer: (d)

Explanation:

NAVDEEP - 2

Is - 9

An - 6

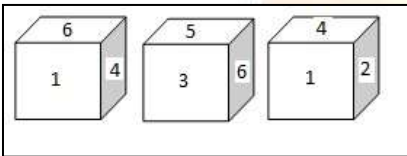
IAS - 8

Scoring - 5

Female - 3

Exam/TRICKY - 4/7

19. Three positions of a cube are given. Based on these, find out the number opposite number 3 in the cube?



- (a) 6
 (b) 5
 (c) 4
 (d) 2

Answer: (c)

Explanation: In 1st view face no. 6 is having 1 and 4 adjacent to it and in 2nd view 5 and 3 are adjacent to 6 hence remaining face 2 will be opposite of 6, in 2nd view 5 and 6 are adjacent to 3 so (a), (b) and (d) are not possible.

20. Two numbers are respectively 50% and 20% less than a third. What percentage is the first number of the second?
- (a) 160%
 (b) 80%
 (c) 62.5%
 (d) None of these

Answer: (c)

Explanation:

Let third number is 100

Then first and second number will be 50 and 80 respectively

$$\frac{50}{80} \times 100\% = 62.5\% \text{ of } 80$$

Directions for the following 8 (eight) items:

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

PASSAGE 1

In India, while cryptocurrencies can be bought and sold on online exchanges, they cannot be used to pay for goods or services in the country. It is understandable why governments are wary of virtual currencies considering the risks involved. In addition to valuation difficulties, the volatility of such currencies is also an issue. This means that the value can fluctuate significantly in a short frame of time such as a single day, leading to a large loss in investment. What makes this situation more problematic is the lack of a historical track record. Without a track record to analyse, it makes it harder to know whether such volatility is normal or abnormal. There is also a lack of clarity as to whether cryptocurrencies like bitcoin can be termed as a currency or a commodity. This lack of definition makes it risky for those trading with and investing in bitcoins, as no tangible asset backs the currency.

The lack of regulation adds to the problem. While the RBI has issued three warnings related to trading in cryptocurrency, there is no explicit ban announcing that it is illegal to do so. This silence by the RBI on its legality further impedes any efforts to regulate such transactions. In case of fraudulent transactions, there is no designated body like the SEBI that can be approached to solve the issue. A supreme court lawyer who specializes in cyber-crimes said - *“Considering cryptocurrencies are here to stay, the government must consider granting limited legality while ensuring that these are not used for crypto crimes.”*

21. With reference to the above passage, consider the following statements:

- (1) It is a possibility that the Government will ban all crypto exchange markets in the near future.
- (2) Cryptocurrency exchanges are thriving in India due to their legal uncertainty.

Which of the above statements can be inferred from the above passage?

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

Answer: (d)

Explanation: Both statements cannot be inferred.

The passage mentions that the RBI has issued three warnings but has never mentioned any likelihood of a ban. The issuance of three warnings without other action seems to imply that the RBI and government might **not** be feeling an immediate need for a blanket ban on all exchanges. In fact, the lawyer’s statement seems to indicate that regulation rather than a ban might be the way forward. Hence, statement 1 cannot be inferred.

Statement 2 cannot be inferred due to two reasons – firstly because no data in the passage suggest that they are “thriving”; and secondly because the legal uncertainty around cryptocurrency makes it risky to use, rather than help it thrive.

22. Which of the following is not stated as a risk or disadvantage related to cryptocurrency?

- (a) The price of cryptocurrency does not remain consistent for substantial amounts of time
- (b) There may be no legal recourse should there be fraud involving cryptocurrency
- (c) Cryptocurrencies could get treated as commodities instead of currency, or vice versa.

- (d) The regulatory body SEBI has no control over cryptocurrency transactions

Answer: (d)

Explanation: The volatility of the price of cryptocurrency has directly been stated as a risk in the passage by stating that there could be huge investment losses due to rapid price changes, in a time frame as short as within a day. Hence, option (a) is mentioned as a valid risk.

The passage states that there is no regulatory body like SEBI currently to regulate cryptocurrency transaction and handle frauds. Hence, a victim may not have legal recourse in such a case. Hence, option (b) is also mentioned as a valid risk.

The phrase "like SEBI" above implies that SEBI is a regulatory body that has control over some other set of transactions but not over cryptocurrency. Hence, SEBI not having control is not a risk, no organization like SEBI not having control is the actual risk. Hence, option (d) is not a valid risk.

The passage mentions that cryptocurrency could be treated as a currency or commodity, which makes it risky for people trading in them. Hence, option (c) is a valid risk.

23. Which of the following is/are assumptions that can be made from the above passage?

- (1) Traders do not trust assets that have physical existence.
- (2) Transactions of cryptocurrency are performed under complete anonymity.
- (3) Crypto crimes are a result of the lack of track record of cryptocurrencies.

Select the correct answer from the codes given below:

- (a) 1 only
- (b) 1 and 2 only
- (c) 2 and 3 only
- (d) None of the above

Answer: (d)

Explanation:

Statement 1 can be eliminated as the opposite is true. The lack of linkage to a physical asset makes trading in cryptocurrency risky.

Statement 2 cannot be assumed as the passage mentions that there aren't tracking mechanisms for volatility and there might not be legal resource. However, it does not imply that the transactions take place under anonymity. The same reason also eliminates statement 3, as the lack of track record makes it difficult to analyse volatility, rather than indulge in crime.

Thus, none of the statements can be assumed.

PASSAGE 2

With agriculture growth rate falling short of the 4 per cent target in last five years, the sector needs urgent reforms to boost crop yields and private investment in infrastructure so as to motivate farmers and feed the growing population. Improvement in yields holds the key for India to remain self-sufficient in food grains and also make a place for itself in many agricultural crops and products in the international market. Measures need to be taken to promote the use of quality seeds, cultivation of drought-resistant varieties of crops, judicious use of available water, balanced use of fertilisers, farm mechanisation to improve efficiency levels, and wider use of irrigation facilities.

These initiatives need to be coupled with skills development and better research and development (R&D) along with improved delivery of credit and seeds. There is need for substantial increase in funds for farm research to address the challenge of producing more with limited resources by adopting a more sustainable agricultural practice in the backdrop of climate

change. Climate change can have serious implications on the agriculture sector and create great instability in food production.

The agriculture sector has broadly been a story of success in the past few years. However, India is at a juncture where further reforms are urgently required to achieve greater efficiency and productivity in agriculture for sustaining growth. There is need for stable policies where markets play an appropriate role, private investment in infrastructure is stepped up, the public distribution system (PDS) is revamped, food price and food stock management improves, and a predictable trade policy is adopted for agriculture.

24. According to the passage, why does the agriculture sector need major reforms?
- (a) Climate change has caused massive amounts of instability in the agricultural sector.
 - (b) The quality of the yield produced is satisfactory.
 - (c) India needs to remain at the forefront of food grain production.
 - (d) India urgently needs to meet its agricultural growth targets.

Answer: (d)

Explanation: Option (d) can be inferred from the first sentence of the passage, "With agriculture growth rate falling ..., the sector needs URGENT reforms to boost...".

The last sentence of the second paragraph states that climate change CAN create great instability in food production, not that it HAS created such instability. Hence, (a) is wrong.

Option (b) is wrong because the first paragraph states that "Improvement in yields holds the key", implying that the yield is not satisfactory.

The passage talks about how India needs to remain self-sufficient in food grains but does not discuss India needing to remain at the forefront of its production. Eliminate option (c).

25. According to the passage, which of the following measures need to be taken to boost crop yield?
- (1) Encouragement of private investment in agriculture.
 - (2) Regulation of the trade policy.
 - (3) Allocation of more funds for agricultural research.
 - (4) Conservative usage of irrigation facilities.

Select the correct answer using the codes given below:

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

Answer: (b)

Explanation: According to the passage, "...India is at a juncture where further reforms are urgently required to achieve greater efficiency and productivity in agriculture...". Statement 1 has been mentioned as one of the measures that will increase productivity which implies a boost in crop yield. The statement is vindicated by, "There is need for... private investment in infrastructure is stepped up...". Eliminate option (a).

The passage does not mention regulation of the trade policy. Thus, statement 2 does not hold. Eliminate option (d).

According to the passage, "These initiatives need to be coupled with skills development and better research and development (R&D)...". "These initiatives" refer to the direct measures to boost crop yield that have been mentioned in the first paragraph. Hence, one may infer that increased investments in research will bolster agricultural productivity. Thus, statement 3 holds. Eliminate option (c).

The passage mentions "...wider use of irrigation facilities.", which statement 4 contradicts.

PASSAGE 3

Conserving biodiversity is about genetic variety, species, habitats and ecosystems. All are important, but it is often most appropriate, practical and effective to focus on species. People can identify and relate to a lapwing much more easily than to coastal floodplain grazing marsh. Species often indicate the health of our environment and can be the easiest and most appropriate level of biodiversity to monitor. Interest in species, such as the bittern, can provide support and impetus for habitat conservation. Conservation is not just about avoiding extinctions but about restoring or recovering species populations to secure levels, and preventing other species from reaching such a perilous situation in the first place. Species, by their very nature, have specific ecological requirements. They may appear to share the same habitat with many others but each has a different, specific niche. It is what sets them apart, and makes them what they are.

Conserving and restoring habitats at a landscape scale is a vital part of nature conservation, especially to make biodiversity robust to environmental change. Habitats must meet the needs of the species that depend on them. Restoring habitat and managing it correctly is not always enough to return species to areas from which they have been lost. Some may not readily recolonise a habitat or will only do so by chance. In these circumstances, it may be appropriate to re-introduce a species to its former range. While this is not a measure to undertake lightly, re-introduction projects can be an important part of the conservation toolkit.

- 26.** According to the passage, conservation of habitats is needed in order to
- (1) further the process of conservation of nature
 - (2) preserve the unique identity of each species
 - (3) maintain biodiversity in a region
 - (4) effect an abatement in environmental change.
 - (5) ensure recolonisation of habitats by species.
- Select the correct answer using the codes given below:
- (a) 2, 3 and 4 only
 - (b) 1, 2 and 3 only
 - (c) 1, 2, 3 and 4 only
 - (d) 1, 2, 3 and 5 only

Answer: (b)

Explanation:

The passage states that “conserving habitats” is a vital part of not only nature conservation but also increasing the immunity and tenacity of biodiversity against environmental change.

Thus, statement 1 is directly mentioned in the passage while statement 3 is implied. If the biodiversity becomes more immune to environmental changes, it has greater chances of surviving in that region. Hence, it becomes easier to maintain biodiversity in a region if habitat conservation is done properly.

The passage also mentions that each species has separate requirements within the same habitat, and that a habitat must meet the unique needs of each species. This implies that habitat conservation is a must to maintain the unique identity and requirements of each species.

Statement 4 is incorrect; habitat conservation does not stay the course of environmental change in any way, it only makes biodiversity more immune to its impact.

Statement 5 is incorrect, as the passage mentions that even habitat conservation may not be a sufficient condition for some species to recolonize it.

27. The passage mentions “Species often indicate the health of our environment”. What are the implications of this statement?

- (1) The ecological requirements of species tell us about the extent of environmental change.
- (2) The biodiversity levels in a habitat are dependent on its species populations.
- (3) The resilience of a species to environmental change indicates the well-being of the habitat.

Select the correct answer from the codes given below:

- (a) 1 only
- (b) 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

Answer: (b)

Explanation:

The ecological requirements of species dictate the type of habitat that they should have. However, the ecological requirement does not indicate the extent or nature of changes in the environment. Hence, statement 1 is incorrect.

Statement 2 reverses the cause-effect relationship. The passage mentions that habitats must meet the needs of the species that depend on them. This implies that species populations are dependent on the biodiversity levels in their habitats and not vice versa. Hence, statement 2 is incorrect.

If a species is resilient to environmental change, it implies that the habitat conservation process has successfully happened. Thus, the diversity of species in a habitat indicate the resilience of species to environmental change, and by extension, the health of the habitat and environment. Hence, statement 3 is a valid implication.

28. With reference to the passage, consider the following statements:

- (1) The habitat niches of different species might seem identical but may not be so.
- (2) Species conservation is that part of biodiversity conservation that is most feasible and impactful.
- (3) Species conservation is necessary for those species alone which have dwindled in numbers.

Which of the statements given above is/are correct?

- (a) 1 only
- (b) 3 only
- (c) 1 and 2 only
- (d) 1, 2 and 3

Answer: (c)

Explanation: The passage clearly mentions that various species in a habitat may appear to share it with many other species but each species has unique requirements and a specific niche within the habitat. Thus, the appearance and reality of habitat niches of different species can clearly differ. Thus, statement 1 is correct.

Statement 2 is directly mentioned in the passage; whereby the passage states that while biodiversity conservation involves genetic variety, species, habitats and ecosystems, species conservation can be the most appropriate, practical and effective method.

Statement 3 is false. The passage mentions that conservation involves bringing depleted species to their former level and ensuring that non-depleted species do not dwindle in the first place. Hence, species conservation is necessary for all kinds of species.

DIRECTIONS for Q. 29-30: Each question describes a situation and is followed by four possible responses. Indicate the response you find most appropriate.

29. You are the Principal of a college where under-privileged but meritorious students are provided with free boarding and lodging. The deadline for this year's applications expired just last week. Today, a student approaches you and assures you that he is very hardworking and sincere but could not apply for the free boarding because of personal problems. He requests you to accept his application because he cannot afford to pay for the boarding. What would you do?
- (a) Accept his application, make necessary corrections to it and make it appear as if it was received last week itself.
 - (b) Ask him to apply to another college since you cannot entertain the application any more.
 - (c) Reject his request since this will teach him an important life-lesson on punctuality.
 - (d) Verify his credentials, whether he has secured admission to your college and then help him in securing requisite assistance.

Answer: (d)

Explanation: Option A is wrong because even if it is compassionate to help someone who is in need, it does not permit one to do something that is illegal and unethical.

Option B is wrong because it merely shifts the responsibility but does not attempt to solve the problem.

Option C is wrong because even if he does deserve to understand the value of punctuality, it should not be at the disproportionately high cost of an entire academic year.

30. There are indications that an increasing number of youth in your District are getting inclined towards substance abuse. The administration has taken strict measures to curb the availability of narcotics but the youth has responded by turning towards every-day items to satiate their addiction. What would you, as the District Collector, do to discourage such habits?
- (a) Issue public broadcasts warning them that strict action would be taken against all offenders.
 - (b) Establish de-addiction centres to help affected youth overcome their addiction and resume normal, healthy lives.
 - (c) Organise seminars and public meetings where those who have been personally affected by the menace can share their experiences.
 - (d) Ask doctors and health experts to give lectures on the problems of substance abuse.

Answer: (c)

Explanation: Options A and D are weak because it is unclear whether they would be well received by the target audience.

Option B is wrong because the problem is *curbing* addiction, not post-addiction care.

Option C is a strong option because it has more credibility and makes it easier for the youth to identify with the dangers and problems of such habits.

31. Ajay can do a piece of work in 30 days; Sanjay is 50% more efficient than Ajay. The number of days taken by Sanjay to do the same piece of work is?
- (a) 45
 - (b) 24
 - (c) 20
 - (d) Cannot be determined

Answer: (c)

Explanation:

	Ajay	:	Sanjay
Efficiency	100%	:	150%
	2	:	3
Time	3	:	3
	30 days	:	20 Days

32. If A+B means A is the father of B; A-B means A is the brother of B; A%B means A is the wife of B and AxB means A is the mother of B, which of the following shows that S is the daughter of M?

- (a) $M \times N \% S + T$
- (b) $M \times N - S \% T$
- (c) $M \times S - N \% T$
- (d) $M \times N \times S \% T$

Answer: (b)

33. In the following question, one term in the number series is not matching with rest of the numbers. Find the odd number out:

9, 25, 49, 121, 169, 225, 289

- (a) 225
- (b) 49
- (c) 9
- (d) 121

Answer: (a)

Explanation: This series is a prime number square series. 225 is 15^2 .

34. Three bells ring together at 10:00 a.m. They ring after 6, 8 and 15 seconds respectively. How many times will they ring together again in the next 2 hours?

- (a) 30
- (b) 24
- (c) 60
- (d) None of these

Answer: (c)

Explanation:

L.C.M. of 6, 8, 15 is 120 seconds= 2 mins

$$\frac{120 \text{ mins}}{2 \text{ mins}} = 60 \text{ times}$$

35. In a 100 metres race, if P gives Q a start of 20 m, then P wins by 5 seconds. Alternatively, if P gives Q a start of 40 metres the race ends in dead heat. How long will P take to run 400 metres?

- (a) 30 seconds
- (b) 60 seconds
- (c) 45 seconds
- (d) 90 seconds

Answer: (b)

Explanation: From the given data, it is clear that the time taken by P to cover 100 metres is equal to the time taken by Q to cover 60 metres. Also, if P gives Q a 20 metres start, he wins by 5 seconds. It implies that Q takes 5 seconds to cover 20 metres.

Thus,

$$S_Q = \frac{20}{5} \text{ m/s} = 4 \text{ m/s}$$

$$S_P : S_Q$$

$$100 : 60$$

$$5 : 3$$

$$\therefore S_P = \frac{5}{3} \times 4 \text{ m/s} = \frac{20}{3} \text{ m/s}$$

$$\text{Thus, time taken by P to cover 400 metres} = \frac{400}{\frac{20}{3}} \text{ seconds} = 60 \text{ seconds}$$

Hence, option (b) is the correct answer.

36. P and Q can do a piece of work in 21 and 24 days respectively. They start the work together but P leaves after some days and Q completes the remaining work in 9 days. Find after how many days did P leave?

- (a) 11 days
- (b) 9 days
- (c) 7 days
- (d) 5 days

Answer: (c)

Explanation: Let P left the work after 'n' days. Then,

$$\frac{n}{21} + \frac{n+9}{24} = 1$$

$$\left(\frac{n}{21} + \frac{n}{24}\right) + \frac{9}{24} = 1$$

$$\frac{15n}{168} = \frac{15}{24}$$

$$n = 7$$

Hence, option (c) is the correct answer.

37. A number $n236n0$ is divisible by 36 for what value of n?(n is single digit)

- (a) 8
- (b) 3
- (c) 1
- (d) Both (a) and (b)

Answer: (a)

Explanation: Two conditions for divisibility by 36 (4x9):

- (i) Last two digits must be divisible by 4 i.e. $n0$ must be divisible by 4. Thus n can be only 0, 2, 4, 6 or 8.
- (ii) Sum of the digits must be divisible by 9 i.e. $n+2+3+6+n+0 = 2n+11$ must be divisible by 9.
- (iii) Thus, $2n+11 = 18$ or $2n + 11 = 27$ are the only two possibilities.
Taking both the conditions into account, only $n=8$ is possible.
 $= 2n+11 = 2 \times 8 + 11 = 27$ divisible by 9. Hence option (a) is the correct answer.

38. A trader makes a profit equal to selling price of 75 articles when he sold 100 articles. Find his percentage of profit in the transaction.

- (a) 300%
- (b) 100%
- (c) 33.33%
- (d) 25%

Answer: (a)

Explanation: Let the selling price of 1 article be Re. 1

Then, Selling Price of 100 articles = Rs. 100

Profit = Selling price of 75 articles = Rs. 75

Thus, cost price of 100 articles = Rs.100 – Rs. 75 = Rs.25

∴ Profit = $75/25 \times 100$

= 300%

Hence, option (a) is the correct answer.

39. The average of 4 distinct prime numbers p, q, r, s is 35, where $p < q < r < s$. p and s are equidistant from 36 and q and r equidistant from 34; and p and q are equidistant from 30; and r and s from 40. The difference between p and s is:

- (a) 14
- (b) 7
- (c) 11
- (d) Can't be determined

Answer: (a)

Explanation:

From the given data

$$p < 36 < s \quad \text{(i)}$$

$$q < 34 < r \quad \text{(ii)}$$

$$p < 30 < q \quad \text{(iii)}$$

$$r < 40 < s \quad \text{(iv)}$$

From eq. (ii) and (iv), we get $34 < r < 40$

So, only possibility is $r = 37$

Thus, from eq. (iv) we get $s = 43$

Again, combining (ii) and (iii), we get $30 < q < 34$

So only possibility is $q = 31$

Therefore, from eq. (iii), we get $p = 29$

Thus, the difference between p and s is 14.

Hence, option (a) is the correct answer.

40. A 4 cm cube is cut into 1 cm cubes. What is the percentage increase in the surface area after forming new cubes?

- (a) 100%
- (b) 25%
- (c) 400%
- (d) 300%

Answer: (d)

Explanation:

Number of small cubes formed from the larger cube = $\frac{4^3}{1^3} = 64$

Total surface area of original cube = $6 \times 4^2 \text{ cm}^2 = 6 \times 16 \text{ cm}^2 = 96 \text{ cm}^2$

Total surface area of 64 smaller cubes = $64 \times 6 \times 1^2 \text{ cm}^2 = 384 \text{ cm}^2$

Increase in surface area = $384 - 96 \text{ cm}^2 = 288 \text{ cm}^2$

\therefore Percentage increase = $\frac{288}{96} \times 100 = 300\%$.

Hence, option (d) is the correct answer.

41. The sum of a number and its reciprocal is thrice the difference of the number and its reciprocal. The number is:

- (a) $\pm\sqrt{2}$
- (b) $\pm\sqrt{3}$
- (c) ± 2
- (d) ± 3

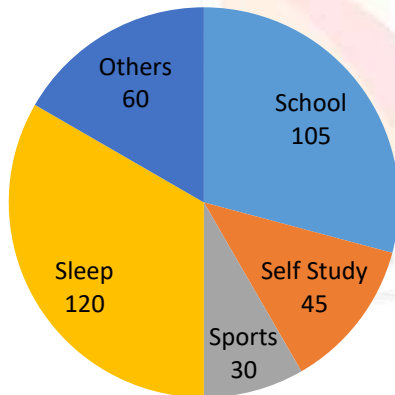
Answer: (a)

Explanation: Let the number be n, then,

$$\begin{aligned} n + \frac{1}{n} &= 3 \left(n - \frac{1}{n} \right) \\ &= \frac{n^2 + 1}{n} = \frac{3(n^2 - 1)}{n} \\ &= n^2 + 1 = 3n^2 - 3 \\ &= 2n^2 = 4 \\ n^2 &= 2 \\ n &= \pm\sqrt{2} \end{aligned}$$

Directions for questions No. 42 to 45:

The following pie chart shows the hourly distribution (in degrees) of all major activities of a student in a day.



42. How much time (in per cent) does the student spend on sports in comparison with sleep?

- (a) 50%
- (b) 25%
- (c) 20%
- (d) 100%

Answer: (b)

Explanation: The required percentage = $\frac{30^\circ}{120^\circ} \times 100 = 25\%$

- 43.** If the student starts spending in sports equal to his self study (from his sleeping time) and other terms remain constant, then find the percentage decrease in time of sleeping?
- (a) 12.5%
 (b) 15%
 (c) 10%
 (d) 25%

Answer: (a)

Explanation: Initially, sports = 30° and self study = 45°

Thus, increase in sports = decrease in sleep = 15°

\therefore Percent decrease in sleep = $\frac{15^\circ}{120^\circ} \times 100 = 12.5\%$

- 44.** What is the difference in time (in hours) spent in school and self study?
- (a) 6 hours
 (b) 2 hours
 (c) 3 hours
 (d) 4 hours

Answer: (d)

Explanation: Difference in degree = $105^\circ - 45^\circ = 60^\circ$

Difference in hours = $\frac{60^\circ}{360^\circ} \times 24 \text{ hours}$

= 4 hours

- 45.** If the student spends $1/3^{\text{rd}}$ time of the self study in Mathematics, then find the number of hours he spends in rest of the subject in self study?
- (a) 2
 (b) 4
 (c) 1
 (d) 3

Answer: (a)

Explanation:

Time spent in self study = $\frac{45^\circ}{360^\circ} \times 24 \text{ hours} = 3 \text{ hours}$

Hence, time spent in Mathematics = $1/3^{\text{rd}}$ of 3 hours i.e. 1 hr.

Thus, time spent in other subjects = 2 hours.

Directions for the following 5 (five) items: 46 to 50

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

PASSAGE 1

A robust intellectual property (IP) rights framework encourages investment in innovation and promotes the development of new product and processes. We are now at the cusp of a transformation to becoming a knowledge, science and technology driven economy, as we try to expand our share in global markets and raise per capita incomes. To do so, we will have to move up on the technology ladder and compete not only on the basis of lower cost but also by coming up with new products. This is true of all sectors including of course the pharmaceutical sector in which it is a mistake to view patents as an obstacle to life-saving drugs. Indeed, there can be no access to drugs that no one has patented.

46. Which among the following is the most logical inference based on the passage?
- (a) The discovery and development of new drugs is a long and resource intensive process.
 - (b) Patented medicines feed the pipeline for generic medicines.
 - (c) Unlike patents in other industries, pharmaceutical patents cover products that take a long time to develop.
 - (d) India's objective of 'health for all' cannot be achieved, unless we incentivize investment in medical innovation.

Answer: (b)

Explanation: Options a and c with "long, intensive process" and "other industries" is not corroborated.

Option d does not talk about the main themes of the passage which is IP of pharmaceutical drugs. Also, "India" and "health for all" have no reference in the passage.

Option b is apt. The last line of the passage – "there can be no access to drugs that no one has patented" supports it.

PASSAGE 2

As India urbanises, it will make sense for the authorities to change the way they do town planning. This is the clear lesson from urban sprawl around the developing world, which accounts for the bulk of incremental urbanization that has put more than half the world's population in towns already. As India's Smart City programme rolls on, it must go beyond making the city safe, productive and energy-efficient to include being prepared for future growth as a necessary condition of smartness. And this cannot come from planning just one city. Ideally, a number of urban clusters can be envisaged across the nation and the growth of each cluster planned taking the rest into account.

India values capital too much to adopt a policy of building towns first, expecting them to be filled up sooner or later. Demand has to precede supply. That is at the level of actual construction. But planning can and should run ahead of actual demand. This is vital, for example, to ensure that a sufficiently large part of the surface of a planned town's future expansion is made up of roads, parks, playgrounds and other public spaces.

This will mean a detailed planning process in the periphery of a new town, such as Andhra Pradesh's new capital Amaravati under construction right now, demarcating areas that cannot be encroached on or utilized for any purpose. Retrofitting vital infrastructure on a densely settled stretch of urban sprawl will be hugely expensive. The challenge here is not just deploying sound planning expertise but summoning the political will to stop encroachment as well. For example, even after a Supreme Court directive, the government of Chhattisgarh is finding it difficult to demolish a temple built on unauthorized land. Smart Cities do not come from smart talk.

47. Which of the following can be **critically inferred** from the above passage?
- (a) Improving infrastructure is one of the most important criteria behind smart city development.
 - (b) Smart city planning should prioritize the preservation of adequate public spaces.
 - (c) The smart city will cause a demarcation of economic opportunity versus inequity.
 - (d) A smart city should ultimately ensure safety of its citizens.

Answer: (b)

Explanation: The passage states that balancing current infrastructure needs w.r.t. safety, energy etc need to be balanced with future growth requirements. In fact, the passage has an opinion that improving infrastructure later might be more difficult. Hence, “improving infrastructure” cannot be a critical criteria behind smart city development.

The passage clearly mentions that when a smart city is being planned, it should clearly demarcate suitable area as public spaces and ensure that future planning does not involve any development in those spaces. Thus, it can be inferred that preservation of public spaces is a critical component of smart city planning.

The concepts of inequity and economic opportunity have not been compared w.r.t. smart cities in the passage. Hence, this is not a valid inference.

The passage states a smart city has to go beyond being safe for citizens. Hence, while safety has to be ensured, it cannot be the ultimate goal. Hence, this is an invalid inference.

Hence, the correct answer is **option b**.

48. Consider the following statements:

- (1) India’s Smart City programmes must aim to be adaptable toward the unpredictable needs of the future
- (2) A well planned smart city does not require political clout or involvement
- (3) Building towns will cost the government more than retrofitting infrastructure in urban sprawls

Which of the above statements can be assumed from the passage?

- (a) 1 only
- (b) 1 and 2 only
- (c) 1 and 3 only
- (d) None of the above

Answer: (a)

Explanation: Statement 1 can be assumed as the passage mentions “being prepared for future growth” as a necessary condition of smartness.”

Statement 2 contradicts the passage which mentions that political will is required to create a well-planned smart city.

Statement 3 cannot be considered a valid assumption as a comparison between the expenses involved in ‘building towns’ versus ‘retrofitting infrastructure in urban sprawls’ cannot be drawn from the passage. The passage just states that it would be very expensive, but not how much.

Hence, the correct answer is **option a**.

49. Which of the following statements is/are correct according to the passage?

- (1) Lack of proper planning of towns leads to urban sprawl
- (2) A smart city should not be devoid of open public spaces
- (3) Andhra Pradesh’s new capital Amaravati can be considered an ideal Smart City.

Select the correct answer from the codes given below:

- (a) 1 and 2 only
- (b) 2 only
- (c) 3 only
- (d) 1, 2 and 3

Answer: (a)

Explanation: Statement 1 is clearly mentioned in the passage and forms the basis of the first paragraph. Hence, statement 1 is correct.

Statement 2 has also been mentioned in the passage as a necessary requirement of a smart city. Hence, statement 2 is correct.

Statement 3 is incorrect, as Amaravati is still being constructed and the passage makes no predictions as to whether it will be an ideal Smart City.
Hence, the correct answer is **option a**.

PASSAGE 3

The Human Development Index (HDI) is a simplification and an admittedly limited evaluation of human development. The HDI does not specifically reflect quality of life factors, such as empowerment movements or overall feelings of security. In recognition of these facts, the Human Development Report Office (HDRO) provides additional composite indices to evaluate other life aspects, including inequality issues such as gender disparity or racial inequality. Examination and evaluation of a country's HDI is best done in concert with examining these and other factors, such as the country's rate of economic growth, expansion of employment opportunities and the success of initiatives undertaken to improve the overall quality of life within a country.

- 50.** Which among the following is the most rational and logical inference based on the passage?
- (a) Governments are incapable of taking care of citizens' needs and overall quality of life.
 - (b) There is absolutely no need for HDI evaluation of human development.
 - (c) The HDI evaluation has its share of limitations.
 - (d) The HDRO is a comprehensive evaluation of human development.

Answer: (c)

Explanation: The passage states at the beginning that HDI has limitations – “HDI is a simplification and an admittedly limited evaluation of human development. The HDI does not specifically reflect quality of life factors, such as” This is supported by option c.

Option a with “governments” is not supported by the passage.

Option b does not have evidence to support it either and is not a fair inference as the passage says it's limited in its approach but not unnecessary.

Option d is also not a correct inference as the HDRO is stated as an “additional” source.

- 51.** The probability that a leap year selected at random contains either 53 Fridays or 53 Saturdays is
- (a) $\frac{53}{366}$
 - (b) $\frac{4}{7}$
 - (c) $\frac{2}{7}$
 - (d) $\frac{3}{7}$

Answer: (d)

Explanation: A leap year contains 366 days i.e. 52 weeks and 2 days.

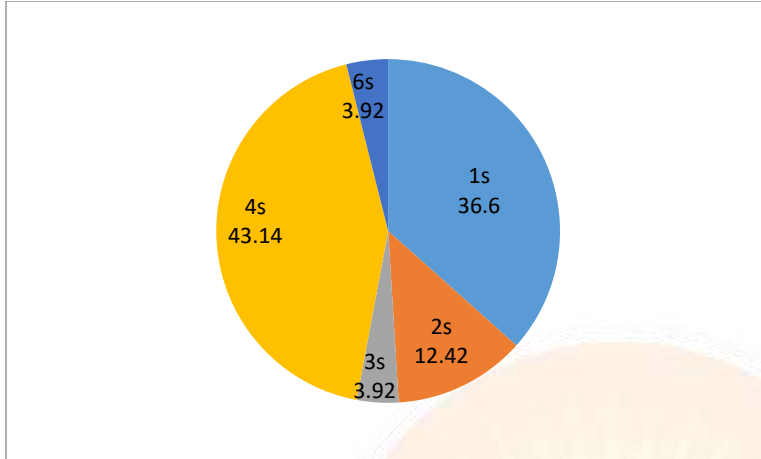
So these 2 days can be

- Sunday and Monday
- Monday and Tuesday
- Tuesday and Wednesday
- Wednesday and Thursday
- Thursday and Friday
- Friday and Saturday
- Saturday and Sunday

Therefore, there are total 7 possible outcomes of which 3 are favourable.
Thus, probability = $\frac{3}{7}$.

Directions for questions 52 and 53:

The following pie chart shows the percentage distribution of runs scored by a batsman in a test innings. If he has scored 306 runs, then answer the two questions (take approximation):



52. How many 4s and 6s did he hit?

- (a) 31 and 3
- (b) 33 and 3
- (c) 31 and 2
- (d) 33 and 2

Answer: (d)

Explanation: Total runs scored through 4's = 306×0.4314

$$\therefore \text{Number of 4s} = \frac{306 \times 0.4314}{4} = 33$$

Total runs scored through 6s = 306×0.0392

$$\therefore \text{Number of 6s} = \frac{306 \times 0.0392}{6} = 2$$

53. If 5 of the dot balls had been hit for 4s and if two of the shots for which the batsman scored 3 runs each had fetched him one run each instead, what would have been the central angle of the sector corresponding to the percentage of runs scored in 4s?

- (a) 160°
- (b) 170°
- (c) 155°
- (d) 165°

Answer: (b)

Explanation: Earlier total runs = 306

New total runs = $306 + [5 \times 4 + (2 \times 1 - 2 \times 3)] = 322$ runs

Earlier score through 4s = 132

New score through 4s = $132 + 20 = 152$

$$\therefore \text{Central angle formed by 4s} = \frac{152}{322} \times 360^\circ = 170^\circ$$

54. Abhishek prepares solution of alcohol in water according to customers' need. This morning Abhishek has prepared 27 litres of a 12% alcohol solution and kept it ready in a

27 litre delivery container to be shipped to the customer. Just before delivery, he finds out that the customer had asked for 27 litre of 21% alcohol solution. To prepare what the customer wants, Abhishek replaces a portion of 12% solution by 39% solution. How many litres of 12% solution is replaced?

- (a) 9 litre
- (b) 18 litre
- (c) 12 litre
- (d) 15 litre

Answer: (a)

Explanation: Let n litre of 12% alcohol is replaced with 30% alcohol. Then
 $0.12(27-n) + 0.39n = 0.21 \times 27$
 $n = 9$ litre

55. If $\frac{x}{y} = \frac{7}{4}$, find the value of $\frac{x^2 - y^2}{x^2 + y^2}$
- (a) $\frac{32}{65}$
 - (b) $\frac{27}{65}$
 - (c) $\frac{33}{65}$
 - (d) $\frac{49}{16}$

Answer: (c)

Explanation: If $\frac{x}{y} = \frac{7}{4}$, then let $x = 7k$ & $y = 4k$

$$\begin{aligned} \text{Thus, } \frac{x^2 - y^2}{x^2 + y^2} &= \frac{(7k)^2 - 4k^2}{(7k)^2 + (4k)^2} \\ &= \frac{k^2[7^2 - 4^2]}{k^2[7^2 + 4^2]} \\ &= \frac{49 - 16}{49 + 16} \\ &= \frac{33}{65} \end{aligned}$$

Directions for the following 5 (five) items:

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

PASSAGE 1

The twin goals of Indian manufacturing policy over the past few decades have been to help Indian firms move up the value-chain and to create more factory jobs. But the two goals have often been in conflict. The increase in value addition (and productivity) since liberalization of the Indian economy has precisely been in those sectors which have replaced labour with machines. The challenge for the 'Make in India' initiative is to facilitate the creation of high productivity jobs in labour-intensive sectors. With China attempting to rebalance its economy and lower its dependence on exports, there is an opportunity for India to step in and carve out a space for manufacturing labour-intensive products for the world.

56. Which among the following strengthens the "Make in India" initiative based on the passage?

- (1) Textiles and electrical equipment, two relatively labour-intensive sectors with export potential, are two of the top three gainers in new projects since the Make in India initiative kick started.
- (2) While India already enjoys a comparative advantage in textile exports, it is a small player in the global electrical equipment market.
- (3) While manufacturing exports as a share of India's aggregate output has increased in recent years, the contribution of the manufacturing sector to India's gross domestic product (GDP) has not increased.

Select the correct answer from the codes given below:

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) None of these

Answer: (a)

Explanation: The only statement that "strengthens" what is mentioned in the passage is Statement 1. The passage states - there is an opportunity for India to step in and carve out a space for manufacturing labour-intensive products for the world- Statement 1 strengthens this. Statements 2 and 3 are pessimistic and do not strengthen the "Make in India" initiative.

PASSAGE 2

Untreated sewage is a pollutant, with adverse health and ecological consequences for water bodies into which they are discharged. However, discharge of sewage that has only been subject to primary treatment is still likely to cause eutrophication because it remains rich in organic matter and nutrients. Moreover, even secondary treatment removes only the organic matter, leaving waste water rich in plant nutrients. The sludge that accumulates in settling tanks is itself a pollutant that has to be disposed off, usually by dumping at sea or burying in landfill sites. Buried sludge decomposes anaerobically, sometimes taking more than 20 years to mineralize completely, and it produces methane which is a greenhouse gas that contributes to global climate change. Sludge can be more appropriately used as a fertilizer, either dried as or a liquid sprayed onto the land; in this way the nutrient cycle can be reconstituted by returning nutrients, assimilated from crops by people, to agricultural land to be taken up by future crops.

57. How does the discharge of sewage, which has been subject to primary and secondary treatments, lead to adverse ecological consequences?
- (a) It contains high amounts of matter that adversely affect health.
 - (b) Buried sludge results in production of greenhouse gases responsible for climate change.
 - (c) It contains residual matter that causes eutrophication and environmental pollution.
 - (d) All of options (a), (b) and (c) given above are correct.

Answer: (c)

Explanation: According to the passage, primary treatment of sewage contains organic matter and nutrients that are responsible for causing eutrophication. Sewage that undergoes secondary treatment is rich in plant nutrients and the accumulated sludge which "decomposes anaerobically, sometimes taking more than 20 years to mineralize...global climate change.". This is put forth the best in option (c).

Option (a) does not pertain to the question asked and unnecessarily brings the impact on health into the picture.

Option (b) only discusses sludge and does not take other residual matter into account. Hence, the correct answer is option c.

- 58.** What does the passage imply?
- (a) Treatment of sewage reduces the extent of ecological damage it can cause.
 - (b) Despite treatments, sewage causes adverse damage to health and ecology.
 - (c) Sludge is the most useful amongst all the residues of treated sewage.
 - (d) Eutrophication can be avoided through treatment of sewage water.

Answer: (a)

Explanation: According to the passage, untreated sewage water adversely impacts health and ecology. Primary treatment of sewage water contains substances that can cause eutrophication and secondary treatment provides sludge which has some merits when used as a fertilizer. Eventually, the nutrient cycle can be restored by the returning of nutrients to agricultural land. Hence, one may infer that treatment of sewage water reduces the extent of ecological damage caused as indicated in option (a).

Option (b) contradicts the information given in the passage. What it states is true for untreated sewage water and not for treated.

The passage does not draw a comparison between the residues of sewage water treatments. Hence, option (c) does not hold.

According to the passage, "... discharge of sewage that has only been subject to primary treatment is still likely to cause eutrophication...". Option (d) contradicts the same.

PASSAGE 3

It's well established that to limit spending, leave the credit cards at home. When it comes to currency notes, people want to rid themselves of worn bills because they are disgusted by the contamination from others. This suggests that the physical appearance of money matters more than traditionally thought.

- 59.** When it comes to spending by using currency notes, the author assumes that:
- (a) People are more likely to spend when given old currency notes.
 - (b) People are more likely to spend when given new and crisp currency notes.
 - (c) People are less likely to spend if they have credit cards.
 - (d) If physical appearance of money is good, people spend more.

Answer: (a)

Explanation: The keywords "people want to rid themselves of worn bills" suggest that people are more likely to spend when they have old currency notes since they want to get rid of them. Option a supports this idea whereas options b and d are contrary to this idea. The question is not about using credit cards; therefore, option c can be eliminated.

Hence, the correct answer is option a.

PASSAGE 4

When Karl Marx said that he didn't want to understand the world, he wanted to change it, that is a classic dominant motivation. We say that if you try to change the world without understanding it, you're setting yourself up for a lot of failure and frustration. But at the same time, real social change is such a big thing that nobody understands it, and actual progress has mostly come about through sheer persistence, trying things until you hit on something that works, then trying to figure out what you did right so you can do it again.

- 60.** What does the above passage imply?

- (a) A dominant motivated person has a vision for the future, and always needs to have a plan.
- (b) A dominant motivated person is a social engineer, trying to change the world for the better.
- (c) A dominant motivated person takes a more passive accepting attitude toward the world as they find it.
- (d) Dominant motivators make good followers because they don't bring a lot of vision with them.

Answer: (b)

Explanation: The passage states that a dominant motivated person goes out to change the world even if he or she doesn't fully understand it.

Option (a) with "vision" is not quite right.

Option c and option d describe the opposite of what is described in the passage.

Option b is the closest fit.

Hence, the correct answer is option b.

- 61.** If 2, a, b, c, d, e, f, 65 forms an arithmetic progression, find out the value of 'e'.
- (a) 56
 - (b) 47
 - (c) 38
 - (d) 45

Answer: (b)

Explanation: If 2, a, b, c, d, e, f, 65 forms an AP, then 2 is the first term, i.e. 'a' and 65 is the eighth term i.e. 'a' + '7d'

Thus $a = 2$

$$a + 7d = 65$$

$$2 + 7d = 65$$

$$7d = 63$$

$$d = 9$$

$$\therefore e = a + 5d \text{ (sixth term)}$$

$$= 2 + 5 \times 9 = 47$$

- 62.** Mr. Smith has three kinds of wine. Of the first kind 372 litres, of the second 434 litres and of the third 465 litres. What is the least number of full carks of equal size required in which this can be stored without mixing?
- (a) 31
 - (b) 41
 - (c) 1
 - (d) 1271

Answer: (b)

Explanation: Since the number of carks has to be minimum, then the size of the carks must be as large as possible as well as equal. Thus, the size of each cark will be **the HCF of 372 l, 434 l and 465 l = 31 l**.

Therefore, the number of carks required

$$= \frac{372+434+465}{31}$$

$$= \frac{1271}{31} = 41$$

- 63.** Alan, Bolan and Chalan start from the same point and walk in the same direction around Nehru Park 6 km in circumference. Alan walks at the speed of 3 km/hr., Bolan at $2\frac{1}{2}$ km/hr and Chalan at $1\frac{1}{4}$ km/hr. If they walk non-stop, then after how many hours will they all be at the starting point again?
- (a) 3 hours
 (b) 12 hours
 (c) 24 hours
 (d) Never

Answer: (c)

Explanation: Time taken by each to complete one round:

$$\text{Alan} = \frac{6}{3} = 2 \text{ hours}$$

$$\text{Bolan} = \frac{6}{2.5} = \frac{12}{5} \text{ hours}$$

$$\text{Chalan} = \frac{6}{1.25} = \frac{24}{5} \text{ hours}$$

Thus, they all will be at the starting point again after

$$\begin{aligned} &= \text{LCM of } 2, \frac{12}{5}, \frac{24}{5} \\ &= \frac{\text{LCM of } 2, 12, 24}{\text{HCF of } 1, 5, 5} = 24 \\ &= 24 \text{ hours.} \end{aligned}$$

- 64.** If $x + y = 2z$, what is the value of $\frac{x}{x-z} + \frac{y}{y-z}$?
- (a) 1
 (b) 0
 (c) 2
 (d) Cannot be determined

Answer: (c)

Explanation:

$$\begin{aligned} \Rightarrow \frac{x}{x-z} + \frac{y}{y-z} &= \frac{x(y-z) + y(x-z)}{(x-z)(y-z)} \\ \Rightarrow \frac{xy - xz + xy - zy}{xy - zy - xz + z^2} \\ \Rightarrow \frac{2xy - z(x+y)}{xy - z(y+x) + z^2} \\ \Rightarrow \frac{2xy - z(2z)}{xy - z(2z) + z^2}, &\text{ since } x+y = 2z \\ \Rightarrow \frac{2xy - 2z^2}{xy - 2z^2 + z^2} \\ \Rightarrow \frac{2(xy - z^2)}{xy - z^2} &= 2 \end{aligned}$$

- 65.** Inside a square plot a circular garden is developed which exactly fits in the square plot and the diameter of the garden is equal to the side of the square plot which is 28 metres. What is the area of the space left out in the square plot after developing the garden?
- (a) 164 m^2
 (b) 172 m^2
 (c) 168 m^2
 (d) None of these

Answer: (c)

Explanation: Radius of Circular garden = $\frac{28}{2} = 14 \text{ m}$

$$\begin{aligned} \therefore \text{its area} &= \pi r^2 \\ &= \frac{22}{7} \times 14 \times 14 = 22 \times 28 \\ &= 616 \text{ m} \end{aligned}$$

$$\text{Area of square plot} = 28 \times 28 = 784 \text{ m}^2$$

$$\therefore \text{Area of left space} = 784 - 616 = 168 \text{ m}^2$$

66. An urn contains 9 red, 7 white and 4 black balls. How many minimum number of balls shall be picked so that one can get at least one set of three balls of different colours?

- (a) 12
- (b) 14
- (c) 17
- (d) 3

Answer: (c)

67. In a residential gated society there is a custom during Holi festival that each family residing in the society greets every other family by exchanging a sweet box. If there were altogether 2450 sweet boxes exchanged, what is the total number of families residing in that society?

- (a) 49
- (b) 50
- (c) 55
- (d) Can't be determined

Answer: (b)

Explanation: Let the number of families residing in the society be 'n'

$$\therefore \text{number of sweet box exchanged} = n(n-1)$$

$$= n(n-1) = 2450$$

$$\therefore n = 50$$

68. In a class of 180, where girls are twice the number of boys, Gaurav, a boy is ranked thirty-fourth from the top. If there are eighteen girls ahead of Gaurav, how many boys are after him in the rank list?

- (a) 42
- (b) 45
- (c) 44
- (d) Can't be determined

Answer: (c)

Explanation: Let number of boys be 'x' and girls be 2x

$$x + 2x = 180$$

$$3x = 180$$

$$x = 60$$

$$\therefore \text{No. of boys} = 60$$

$$\text{No. Of girls} = 120$$

$$\text{Boys ahead of Gaurav} = 34 - 18 - 1 = 15$$

$$\text{Boys after Guarav} = 60 - 16 = 44$$

69. A worker reaches his factory 5 minutes late if his speed from his house to the factory is 5 km/hr. If he walks at a speed of 6 km/hr, he reaches the factory 5 minutes early. What is the distance of the factory from his house?
- (a) 4 kms
 (b) 6 kms
 (c) 5 kms
 (d) 3 kms

Answer: (c)

Explanation: Let the distance between his house and factory be 'x' km.

$$\therefore \frac{x}{5} - \frac{x}{6} = \frac{10}{60}$$

$$X = 5 \text{ km}$$

Directions for Questions 70 to 72:

Read the following information carefully and answer the questions given below:

A, B, C, D, E, F and G are seven students in a class. They are sitting on three benches I, II and III in such a way that there is at least two of them on each bench and there is at least one girl on each bench. C, a girl student, does not sit with A, E and D. F, a boy student, sits with only B. A sits with his best friend on bench I. G sits on bench III. E is brother of C.

70. How many girl students are there?
- (a) 3
 (b) 4
 (c) 3 or 4
 (d) None of these

Answer: (c)

71. Who sits with C?
- (a) F
 (b) B
 (c) G
 (d) None of these

Answer: (c)

72. On which bench do three students sit?
- (a) II
 (b) III
 (c) I
 (d) None of these

Answer: (c)

Explanation:

Bench	Students
I	A(+), D(-), E (+)
II	F(+), B(-)
III	G (?), C(-)

Directions for Questions 73 to 75: Read the following information and answer the questions given below.

- (1) A, B, C, D, E, F and G are sitting in a circle facing the centre and playing cards.
- (2) E is the neighbour of A and D.
- (3) G is not between F and C.
- (4) F is on the immediate right of A.
- (5) Only one person is sitting between F and C.

73. Which of the following has the persons sitting adjacent to each other with first person sitting to the immediate left of second?

- (a) G D E
- (b) B C G
- (c) Both (a) and (b)
- (d) None of these

Answer: (c)

74. Who are the neighbours of B?

- (a) C and F
- (b) C and D
- (c) F and A
- (d) None of these

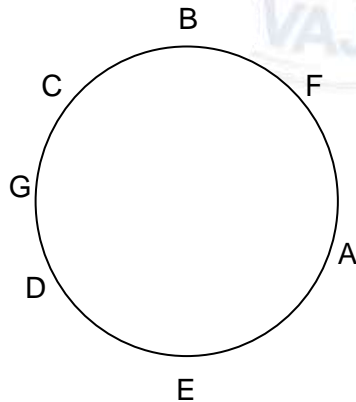
Answer: (a)

75. Which pair given below has the second person sitting immediately on the right of the first?

- (a) A E
- (b) D G
- (c) E A
- (d) None of these

Answer: (c)

Explanation:



Directions for the following 5 (five) items:

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

PASSAGE 1

In India, we have followed the US model of funding innovation through government entities like Department of Science and Technology (DST), Department of Biotechnology (DBT) and various ministries. However bureaucratic bottlenecks to funding by Government departments have stifled innovation, and it is clearly reflected in the dismal innovation ranking of India. Out of 130 countries, whose data was collected to create the 2017 Global Innovation Index, India has a miserable rank of 60! For a major world economy, this ranking of 60th in the world shows how poor our innovation ecosystem is.

76. Which among the following is the most logical, rational and critical inference that can be made from the above passage?
- (a) One of the major constrictions in funding innovation in India is government bureaucracy.
 - (b) Innovation, invention and discovery are processes that look at extraordinary and new things, which is out of scope for Indians.
 - (c) As the chances of failure in innovation are high, the Indian government prefers not to allocate a majority of funds to these uncharted areas.
 - (d) The role of Government is extremely important in boosting innovation, but corruption has impeded progress of innovation.

Answer: (a)

Explanation: Only option a talks about India and its hurdle in terms of funding innovation which is supporting the paragraphs claims of India ranking low at the global level.

Options b and c are not corroborated by the passage.

Option d with "corruption" is out of context.

Hence, the correct answer is option a.

PASSAGE 2

Parliament has the power of 'extraterritorial legislation' which means that laws made by the Union Parliament will govern not only persons and property within the territory of India, but also Indian subjects resident and their property situated anywhere in the world. Only some provisions for scheduled areas, to some extent, limit the territorial jurisdiction of Parliament.

77. Which of the following views corroborates the above statement?
- (a) Parliament can have the power to make laws with respect to any matter.
 - (b) Parliament has the assertion of legal power beyond territorial borders.
 - (c) The laws made by the Union Parliament are obsolete.
 - (d) Under the provisions of the Parliament, there is no extrapolation of legal powers to Indians residing anywhere in the world.

Answer: (b)

Explanation: The passage talks about 'extraterritorial legislation'. Only option b covers this.

Options a and d are not corroborated by the passage.

Option c is contrary to the passage.

PASSAGE 3

Ocean acidification refers to the changing pH of ocean waters. As humans emit more greenhouse gases (carbon dioxide in particular) into the atmosphere, the chemistry of the oceans change. The effect is that the organisms living in the oceans are experiencing an environmental change that is separate from changing temperatures due to global warming.

Scientists want to know how these changes will affect these organisms, in particular because the biodiversity in the oceans is so very important to us as humans.

- 78.** Which among the following is the most rational and logical assumption based on the passage?
- (a) The change in ocean chemistry is likely to influence ocean organisms.
 - (b) The new chemistry of the ocean changes the ocean organisms' metabolism.
 - (c) The relationship between emission of greenhouse gases and ocean acidification is not yet understood.
 - (d) Ocean acidification takes place only when greenhouse gases change the pH of ocean waters.

Answer: (a)

Explanation: The passage talks about pollution in the atmosphere, its effect on oceans and its possible effect on ocean organisms.

Option (b) with metabolism is uncalled for.

Option (c) cannot be assumed as the passage states the contrary. Option d with "only" is an unfair assumption.

Option (a) is a fair assumption as the passage states – "organisms living in the oceans are experiencing an environmental change..... Scientists want to know how these changes will affect these organisms." Hence, the correct answer is option (a).

- 79. Consider the following statements:**

- (1) Only bachelors are happy.
- (2) If you are happy, you are content with life.
- (3) None of those who are content with life are materialistic.

Which of the following conclusions can be drawn from the above statements?

- (a) No bachelor is materialistic.
- (b) Those who are not content with life are not bachelors.
- (c) All bachelors are content with life.
- (d) None of these.

Answer: (a)

- 80. Consider the following statements:**

- (1) If black is white, then bad is good.
- (2) If men are mortal, then all men must die.
- (3) If bad is good, then men are mortal.

Based upon these statements, which of the following conclusions is true?

- (a) If all men must die, then black is white.
- (b) If bad is not good, then all men must not die.
- (c) If men are mortal, then bad is good.
- (d) If all men must not die, then black is not white.

Answer: (a)