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TEST BOOKLET

C

CSAT APTITUDE TEST– (4287) – 2024

Time Allowed: Two Hours

Maximum Marks: 200

INSTRUCTIONS

1. IMMEDIATELY AFTER THE COMMENCEMENT OF THE EXAMINATION, YOU SHOULD CHECK THAT THIS BOOKLET **DOES NOT** HAVE ANY UNPRINTED OR TORN OR MISSING PAGES OR ITEMS ETC. IF SO, GET IT REPLACED BY A COMPLETE TEST BOOKLET.
2. ENCODE CLEARLY THE TEST BOOKLET SERIES **A, B, C** OR **D** AS THE CASE MAY BE IN THE APPROPRIATE PLACE IN THE ANSWER SHEET.
3. You have to enter your Roll Number on the Test Booklet in the Box provided alongside. **DO NOT** write *anything else* on the Test Booklet.
4. This Test Booklet contains **80** items (Questions). Each item is printed in **English**. Each item comprises four responses (answers). You will select the response which you want to mark on the Answer Sheet. In case you feel that there is more than one correct response, mark the response which you consider most appropriate. In any case, choose **ONLY ONE** response for each item.
5. You have to mark all your responses **ONLY** on the separate Answer Sheet provided. See direction in the answers sheet.
6. All items carry equal marks. Attempt all items. Your total marks will depend only on the number of **correct responses** marked by you in the answer sheet. For **every incorrect** response **one-third** of the allotted **Marks** will be deducted.
7. Before you proceed to mark in the Answer sheet the response to various items in the Test booklet, you have to fill in some particulars in the answer sheets as per the instruction sent to you with your Admission Certificate.
8. After you have completed filling in all responses on the answer sheet and the examination has concluded, you should hand over to Invigilator only the answer sheet. You are permitted to take away with you the Test Booklet.
9. Sheets for rough work are appended in the Test Booklet at the end.

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE ASKED TO DO SO

Directions for the following 3 (three) 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

Think back to the last mistake that you made at work. Even if it was a minor one, like spilling coffee on a document seconds before you were due to present it, you'll likely have felt a rush of panic and then had the inconvenience of putting things right. No one is immune to making mistakes – we are human, after all! But if we simply apologize and carry on as before, we're in danger of repeating the same errors. When we don't learn from our mistakes, we inflict unnecessary stress on ourselves and others, and we risk losing people's confidence and trust in us.

1. Which of the following statements **best reflects the message** implied by the passage?
 - (a) Learning from mistakes is important not only for self-improvement, but also for the sake of others.
 - (b) Every mistake has an important learning for self-growth.
 - (c) That humans are a pillar of mistakes is a myth and demeans the importance of introspection.
 - (d) Apologizing for your mistakes is much more important than the lessons learnt from that mistake.

Passage – 2

Changing values in Western society indicate that the context of human experience is changing into a more spiritual quest for wholeness, meaning, identity, and happiness. Hence, we appear to be in the midst of a transition period to a more spiritual and holistic era. This new era is characterised by a calling to find a balance between - and ultimately an integration of - science and spirituality into a greater whole. As a result, there is a need to redefine the purpose of businesses: Profit can no longer be the only purpose. Future organisations must be both morally and socially responsible and profitable. This in turn affects the leadership role and tasks. Indeed, the philosophical foundations of 21st-century leadership tasks are found in several contemporary spiritual leadership theories.

2. Which of the following statements **best reflects the crux** of the passage?
 - (a) Values in Western society treat science and spirituality as the two sides of the same coin.
 - (b) Materialism is a thing of the past, and it is time for compassionate capitalism.
 - (c) In the future, science, spirituality, profits and moral leadership will be integral parts of compassionate capitalism.
 - (d) With a rise in spiritual quest by people, the end of consumerism is near, not only for people but also businesses.

Passage – 3

Generally, vocation and career are used interchangeably. Vocational education might be classified as teaching procedural knowledge. This may be contrasted with declarative knowledge, as used in education in a usually broader scientific field, which might concentrate on theory and abstract conceptual knowledge, characteristic of tertiary education. Vocational education can be at the secondary or post-secondary level and can interact with the apprenticeship system. Increasingly, vocational education can be recognised in terms of recognition of prior learning and partial academic credit towards tertiary education (e.g., at a university) as credit; however, it is rarely considered in its form to fall under the traditional definition of higher education. Up until the end of the twentieth century, vocational education focused on specific trades such as automobile mechanics or welding and was therefore associated with the activities of lower social classes. Therefore, it attracted a level of stigma. Vocational education is related to the age-old apprenticeship system of learning.

3. Based on the above passage, the following *assumptions* have been made:

1. Skills developed through vocational training can address the unemployment caused due to skills mismatch.
2. Offering vocational education in higher education could help address the stigma attached to it.

Which of the above assumptions is/are *invalid*?

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

4. In a physical examination camp, a kilometre long race was held. In that race, candidate A defeated candidate B by 100 metres and candidate B defeated candidate C by 100 metres. By how many metres did candidate A defeat candidate C?

- (a) 200 meters
- (b) 180 meters
- (c) 190 meters
- (d) 210 meters

5. If p varies inversely as q and $p = 4$ when $q = 6$, then which of the following is another solution for p and q ?

- (a) $p = 8$ and $q = 12$
- (b) $p = 8$ and $q = 10$
- (c) $p = 12$ and $q = 1$
- (d) $p = 12$ and $q = 2$

6. A set of n numbers has an average of $3k$ and a sum of $12m$, where k and m are both positive numbers. Which of the following is equivalent to n ?

- (a) $4m/k$
- (b) $4k/m$
- (c) $k/4m$
- (d) $m/4k$

7. A hare runs at a constant rate of ' a ' miles per hour, and a tortoise runs at a constant rate of ' b ' miles per hour, where $0 < b < a$. How many more hours will it take the tortoise to finish a race of ' d ' miles than the hare?

- (a) $(a + b)/2a$
- (b) $(ad - bd)/ab$
- (c) $(b - a)/d$
- (d) $(ab - bd)/ad$

8. A pool that holds 20,000 kilo litres is $\frac{1}{4}$ th full. A pump can deliver 'g' kilo litres of water every 'm' minutes. If the pumping company charges 'r' rupees per minute, then how much will it cost to fill the pool?
- (a) Rs. 5,000 mr/g
(b) Rs. 5,000 gr/m
(c) Rs. 15,000 mr/g
(d) Rs. 15,000 gr/m
9. If the population of town B is 50% more than the population of town A, and the population of town C is 20% more than the population of town A, then what percent more is the population of town B as compared to the population of town C?
- (a) 20%
(b) 25%
(c) 30%
(d) 40%
10. How many two-digit numbers are there which when divided by 4, leave a remainder of 1 and when divided by 5 leave a remainder of 2?
- (a) 5
(b) 6
(c) 7
(d) 8
11. Shubham has 24 mobiles, 72 tablets and 60 laptops. He gives them to 'n' children in such a way that each type of item is distributed equally among them. What is the minimum possible number of items that each child can get?
- (a) 11
(b) 13
(c) 17
(d) 21
12. Find the larger of the two positive numbers, whose sum is 24 and twice the square of the smaller number is 4 more than the square of the larger number.
- (a) 17
(b) 18
(c) 14
(d) 12
13. The present age of Alok is more than that of Vinay, whose age is more than that of Chandan. Once Vinay attains Alok's present age, the ratio of the ages of Alok and Chandan will be 18:13. When Alok was as old as Chandan is now, the ratio of the ages of Vinay and Chandan was 7:5. Find the ratio of the present ages of Alok and Vinay.
- (a) 5:4
(b) 4:3
(c) 6:5
(d) 7:6
14. Sunny told Lucky, "I am thrice as old as you were when I was as old as you are". Lucky told Sunny, "the sum of our ages today is 80 years". After listening to them, Raman, a mathematician, said, "Sunny is x years elder to Lucky". Find the value of x.
- (a) 20 years
(b) 14 years
(c) 16 years
(d) 12 years
15. To make a certain purple dye, red dye and blue dye are mixed in a ratio of 3:4. To make a certain orange dye, red dye and yellow dye are mixed in a ratio of 3:2. If equal amounts of purple and orange dye are mixed, then what fraction of the new mixture is red dye?
- (a) $\frac{9}{20}$
(b) $\frac{1}{2}$
(c) $\frac{18}{35}$
(d) $\frac{27}{40}$

16. Three positive integers, a , b , c are such that $a > b > c$. Also, a and b are divisible by 2, while c is not. Which of the following is/are always odd?

I. $(a + 2b)(a - 4b + 5c)$

II. $(2a + b + 5c)(a - b)$

Select the correct answer using the codes given below.

- (a) I only
- (b) II only
- (c) Both I and II
- (d) Neither I nor II

Directions for the following 3 (three) items:

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

Passage – 1

Although the science of sustainable land management has been gaining support, the socio-economic context often makes implementation difficult. Sustainable land practices need to be financially viable for farmers. Anti-erosion measures have a median cost of Rs.50000 per hectare, a considerable investment for a farmer. Governments and banks must help farmers get access to credit and support in implementing erosion prevention. This is not only a good deal for the farmer but for the whole community. The cost of erosion prevention is far lower than the price of land restoration and rehabilitation, which one source estimated to be around Rs.1,20,000–Rs.1,60,000 per hectare. Another source found it could reach Rs.12,00,000 per hectare. The key to managing and reducing soil erosion is to rehabilitate already-damaged land, stop further degradation and put erosion-preventative measures at the core of land management policy. In this way, we can help prevent hunger and mitigate the climate crisis.

17. Which of the following is/are the **most rational and logical inference/inferences** that can be made from the passage?

- 1. More than increasing crop production, farmers should focus on the prevention of soil erosion.
- 2. Considering the high costs of land restoration, governments should offer loans and subsidies to the farmers.

Select the correct answer from the code given below:

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

18. With reference to the passage, which one of the following statements is correct?

- (a) High cost of prevention of soil erosion calls for more research in this area for cost reduction sake.
- (b) Dealing with hunger and climate crisis not only needs land conservation, but also enhanced crop yields.
- (c) The government should formulate a insurance policy to support farmers in their land management.
- (d) Erosion prevention should be valued over land restoration for sustainable land management.

Passage – 2

One of the main reasons for women's high attrition rate in the workforce is the burden of simultaneously carrying out unpaid work at home and paid work in their professions, especially after starting families. The flexibility offered by gig platforms allows workers to better manage unpaid care and paid work, by letting workers determine their work hours and reducing their dependence on a static physical space. As the gig economy gained more ground, it was assumed that more women would come into the ambit of the workforce in India, leading to an overall improvement in the workforce participation rate. Statistically, however, little improvement has been seen. Not only is the work mandated by socio-cultural norms, but the flexibility offered by gig work depends largely on whether it is a primary or supplementary source of income. Gig work as a primary source of income allows for less flexibility, compared to when such work is a source of additional earnings.

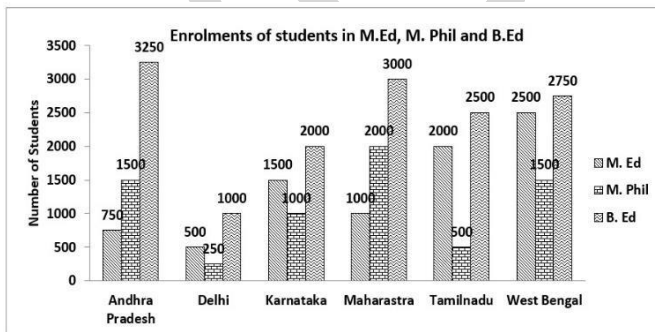
19. Which of the following statements *best reflects the crux* of the passage?
- (a) The potential of the gig economy as a tool for increasing women's labour force participation is huge but it has seen limited success.
 - (b) Patriarchal norms restricts women from participating fully in workspace and place a glass ceiling on their professional growth.
 - (c) The patriarchal mindset in families post deliveries arrests the growth of women by forcing them to engage only in unpaid work at home.
 - (d) Both (a) and (b)
20. A student appeared in an examination, where maximum score that can be obtained was 'a'. The student secured 'y' marks in that examination and failed by same number of marks. What must be the percentage of marks required to pass the examination?
- (a) $2y/a$ %
 - (b) $a/2y$ %
 - (c) $200y/a$ %
 - (d) None of the above
21. A rectangle has a constant area of 16 square meters. The lengths of the sides of the rectangle are always natural numbers. What is the maximum and the minimum possible parameter of the rectangle?
- (a) 34 m and 16 m
 - (b) 32 m and 16 m
 - (c) 28 m and 14 m
 - (d) 36 m and 18 m
22. Consider the following information and the Statements and Question that follow:
- Pipes A, B and C can be used for filling or emptying with the same capacity. Though the capacities or efficiencies of the three pipes need not necessarily be the same. If pipes A and B are used for filling and C is used for emptying, a tank would get filled in 6 hours.
- Statement-1: If all the pipes are used for filling, the tank would get filled in 2 hours.
- Statement-2: If pipes B and C are used for filling and pipe A is used for emptying, the tank would get filled in 6 hours.
- Question: Find the time taken by pipe C to fill the tank.
- Which one of the following is correct in respect of the above 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) Either Statement 1 alone or Statement 2 alone is sufficient to answer the question.
 - (d) Both the statements together are not sufficient to answer the question.

23. Ankur takes 42 hours to travel from Tripura to Chennai, while Prachi takes 56 hours to travel from Chennai to Tripura. Ankur and Prachi start from Tripura and Chennai respectively at 7:30 am and go towards Chennai and Tripura respectively. If they take the same route, when will they meet?
- (a) 7:48 am next day
(b) 7:51 am next day
(c) 7:54 am next day
(d) None of these
24. Kaviraj sold an article for Rs. 1680 at some loss. Pintu sold the same item for Rs. 1896 and earned a profit, which is 15% less than the loss made by Kaviraj. What is the cost price of the article?
- (a) Rs. 1870
(b) Rs.1430
(c) Rs. 1796
(d) Rs. 1270

Directions for the following 2 (two) items:

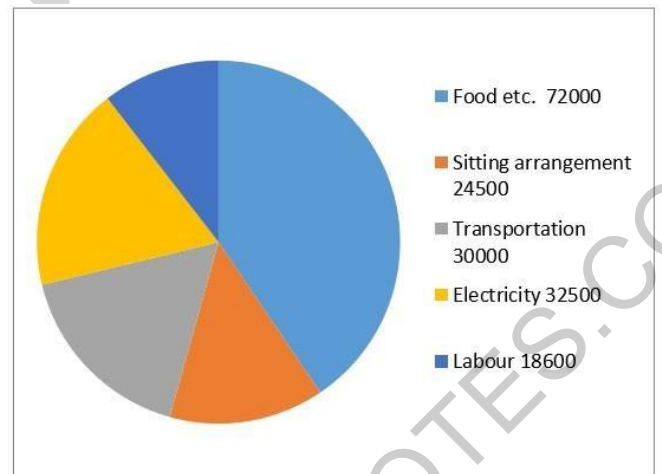
Study the following bar graph carefully and answer the questions that follow.

Consider the graph given below in which enrolment numbers in three courses M. Ed, M. Phil and B. Ed for different Indian states are shown.



The first, second and third bars for each state showcases enrolment numbers for M. Ed, M. Phil and B. Ed respectively.

25. What is the average number of students enrolled in M. Phil course in all the given states?
- (a) 1200
(b) 1150
(c) 1125
(d) 1175
26. The total number of students enrolled in M. Phil in Karnataka and M. Ed in Tamil Nadu, taken together, is how much percent of the total number of students enrolled in B. Ed in Andhra Pradesh, Maharashtra and West Bengal taken together?
- (a) 33.33%
(b) 66.67%
(c) 200/7%
(d) 300/7%
27. The following pie-chart shows the expenses made (in Rs.) in various areas.



What is the central angle made by the section representing the expenses on transportation?

- (a) 72°
(b) 80°
(c) 61°
(d) 50°

28. If total number of students in a school is a prime number, then which of the following must be true?

1. There is no factor other than 1 common to the number of boys and the number of girls studying in the school.
2. Difference between the number of boys and girls in the school is an even number.

Select the correct answer using the codes given below

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

29. $p = xyz$ and $q = zyx$ are 3-digit numbers. If $B = p - q$ and $A = p + q$, then which of the following is *false*?

- I. B is always divisible by 11.
II. If P is even, then A and B are also even.
III. A is always divisible by 9.

Select the correct answer using the codes given below.

- (a) I only
(b) I and II only
(c) II and III only
(d) I and III only

30. If a, b are natural numbers such that $(a + b)/ab$ is also a natural number, then which of the following will always be true?

- (a) it is not possible
(b) It is possible, but the pair (a, b) satisfying the stated condition is unique.
(c) It is possible, and pair (a, b) can be chosen in infinite ways.
(d) It is possible, and there are more than one but a finite number of ways of choosing the pair (a, b) .

31. Three bells chime at intervals of 18 minutes, 24 minutes and 32 minutes respectively. At a certain time, they chime together. What length of time will elapse before they chime together again?

- (a) 2 hours 24 minutes
(b) 4 hours 48 minutes
(c) 3 hours 6 minutes
(d) 1 hour 36 minutes

Directions for the following 4 (four) 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

When someone is angry, it causes their thoughts to not be very clear, which causes them to miss out on key points in what the other person has said. Anger also makes it difficult for a person to think clearly and correctly understand the situation. Intolerance can also cause one's thoughts to not be clear because they are too concerned with the anger, they feel towards something or someone. They are unable to see the truth or correctness in what they are doing and do not consider all the facts before deciding. Therefore, tolerance is just as important as understanding when trying to figure out an issue.

32. Which of the following statements *best reflects the crux* of the passage?

- (a) Anger and intolerance are the worst enemies of a peaceful human society.
(b) Anger and intolerance prevent correct understanding of the situation.
(c) Overcoming anger and intolerance is possible with love and caring.
(d) None of the above

Passage – 2

Migration is a development challenge. About 184 million people—2.3 percent of the world’s population—live outside of their country of nationality. Almost half of them are in low- and middle-income countries. But what lies ahead? As the world struggles to cope with global economic imbalances, diverging demographic trends, and climate change, migration will become a necessity in the decades to come for countries at all levels of income. If managed well, migration can be a force for prosperity and can help achieve the United Nations’ Sustainable Development Goals. World Development Report (WDR) 2023 proposes an integrated framework to maximize the development impacts of cross-border movements on both destination and origin countries and on migrants and refugees themselves. The framework it offers, drawn from labor economics and international law, rests on a “match and motive” matrix that focuses on two factors: how closely migrants’ skills and attributes match the needs of destination countries and what motives underlie their movements. This approach enables policy makers to distinguish between different types of movements and to design migration policies for each. International cooperation will be critical to the effective management of migration. The report’s framework, the Match and Motive Matrix, draws from labor economics and international law to identify priority policies for four types of movements based on who moves and under what circumstances. Where a migrant fits in the Match and Motive Matrix depends in part on their human capital and personal characteristics and, in part, on the policies of the destination countries. Over time, the challenge is to enhance migration outcomes by strengthening the match of all migrants’ skills and attributes with their destinations.

33. Which of the following statements can be *inferred* from the above passage?

1. The World Development Report (WDR) aims to enhance the development impact on both legally and illegally admitted immigrants.
2. For countries of all income levels, migration will become necessary in the ensuing decades.

Select the correct answer using the codes given below.

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

Passage – 3

Millions of visitors from across the globe throng the beach town of Puri in Odisha to take part in the annual Rath Yatra (car festival) of Lord Jagannath, which this year began on June 20. According to Hindu mythology, the Lord along with his siblings — elder brother Lord Balabhadra and sister Devi Subhadra — embarks on a nine-day annual sojourn to his birthplace. The idols are taken to the Gundicha Temple, where they stay till the ‘Bahuda Yatra’ (returning car festival), scheduled on June 28 this time. The Rath Yatra takes place on the second day of the Odia month of Ashadha Shukla Tithi (bright fortnight) every year to commemorate the journey of Lord Jagannath and his two siblings from their abode —the 12th century Jagannath Temple, to the Gundicha Temple, believed to be their aunt’s home. Goddess Ardhasini, also known as Mausima, is believed to be the deities’ aunt. The deities board three huge decorated chariots following the Pahandi ritual (ceremonial procession), before marching for around 3 km to the Gundicha Temple. Millions of devotees pull the chariots on the Bada Danda (Grand Road) of Puri town. The three chariots — Taladhawaja Rath for Lord Balabhadra, the Darpadalan Rath for Goddess Subhadra, and the Nandighosa Rath for Lord Jagannath, have their own colours, height, diameter, wooden horses, guardian deities and even charioteers. They are made from the wood of locally available trees. Over 150 carpenters, labourers, woodcarvers, artists, and painters work for around 12 hours a day from Akshaya Tritiya onwards, nearly two months before the much-awaited event, to shape the chariots.

34. With reference to the above passage, consider the following statements.

1. Jagannath Puri Temple is not a World Heritage Site.
2. The colour and the dimension of the three chariots is changed every year.

Which of the statements given above is/are correct?

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

35. Which of the following best captures the significance of Rath Yatra?

- (a) It commemorates the reincarnation of Vishnu as Lord Jagannath.
- (b) It celebrates Lord Jagannath's voyage with his two siblings.
- (c) It cherishes the victory of Lord Ram over Ravana.
- (d) It celebrates the victory of Pandavas in Mahabharata.

36. Distance between Jim and Della is 300 m. Speed of Jim is 15 kmph and that of Della is 20 kmph. Both are moving in the same direction in a straight line. How long will they walk before meeting each other?

- (a) 206 seconds
- (b) 216 seconds
- (c) 184 seconds
- (d) 222 seconds

37. In a box there are 120 balls - 44 red, 36 yellow, 22 green, 10 blue and 8 pink balls. If a boy picks a ball randomly out of this box, what is the probability that the chosen ball is neither blue nor pink?

- (a) 89%
- (b) 97%
- (c) 85%
- (d) 78%

38. Mr. Suresh owns a 5 metre \times 4 metre coffee shop. He plans to tile the rectangular floor of this shop with grey-coloured square tiles. Each side of the tile measures 20 cm. What must be the total cost of fitting the tiles, if they cost Rs. 40 per piece?

- (a) Rs. 12,000
- (b) Rs. 16,000
- (c) Rs. 24,000
- (d) Rs. 20,000

39. w, x, y and z are four largest single digit numbers. What will be value of the square root of the multiplication of (w + z) and (x + y)?

- (a) 16
- (b) 15
- (c) 12
- (d) Can't be determined

40. ABCDEF is a hexagon. How many distinct quadrilaterals can be drawn using any four of its vertices?

- (a) 16
- (b) 18
- (c) 15
- (d) 12

41. A tyre has 3 punctures. The first puncture alone would have made the tyre flat in 10 minutes, the second alone would have done it in 15 minutes, the third alone would have done it in 20 minutes. If air leaks out at a constant rate, how long (in minutes) does it take for all the punctures together to make the tyre flat?

- (a) 4.27 minutes
- (b) 4.61 minutes
- (c) 4.16 minutes
- (d) 4.06 minutes

42. The ratio of a two-digit natural number to the number formed by reversing its digits is 4:7. What is the difference between the largest possible number which satisfies this condition, and the reverse of this number?

- (a) 36
- (b) 27
- (c) 18
- (d) 9

43. What is the sum of all 4-digit numbers less than 2980 formed by the digits 1, 2, 3 and 4, wherein none of the digits is repeated?

- (a) 21774
- (b) 22793
- (c) 18965
- (d) 21353

44. Six friends Aum, Shubhra, Vivek, Jyoti, Lavanya and Konika started a business together. At the end of the year they shared profit as per their respective contributions.

1. Share of Konika is not the least.
2. Share of Aum is one third of Shubhra's and four times that of Konika's share.
3. Combined profit share of Aum and Vivek is equal to that of the joint profit share of Lavanya and Konika.
4. Profit share of Jyoti is equal to the difference between the profit shares of Vivek and Lavanya. Profit of Lavanya is more than that of Vivek.

If Konika's profit share was Rs. 5000, then profit share of Jyoti must have been:

- (a) Rs. 12500
- (b) Rs. 15000
- (c) Rs. 9000
- (d) Rs. 13000

45. 5 years ago, the average age of a 10-member family was 30 years. If the ages of grandfather and his eldest daughter are removed on the present day, then the present average of the family will decrease by 3 years. If the difference between the ages of grandfather and his eldest daughter is 20 years, find the present age of grandfather.

- (a) 57 years
- (b) 65 years
- (c) 70 years
- (d) 82 years

46. In a 1000 m race, Abhijit beats Bijit by 100 m and Chandrajit by 200 m. In a subsequent race of the same distance, Chandrajit starts at the starting point. Bijit starts 100 m behind Chandrajit and Abhijit starts 100 m further behind Bijit. Which of the following options are correct regarding the outcome of the race?
- Abhijit wins the race when Chandrajit is 20 m from finish line.
 - All finish the race together.
 - Abhijit wins the race when Bijit is 20 m from the finish line.
 - Bijit finishes the race when Chandrajit is 20 m from finish line.
47. How many integers are there between 101 and 200 which have 5 as a digit but only at unit place, and are also divisible by 7?
- There are less than 20 but more than 8 such integers.
 - There are less than 5 such integers.
 - There are only 7 such integers.
 - There are only 22 such integers
48. The annual profit from the sales of an item is equal to the annual revenue from minus the annual cost of that item. The revenue from that item is equal to the number of units sold times the price per unit. If n units of a portable heart monitor were sold in 2012 at a price of Rs. 65 each, and the annual cost to produce n units was Rs. $(20,000 + 10n)$, then which of the following statements indicates that the total profit for this heart monitor in 2012 was greater than Rs. 500,000?
- $500,000 < 55n - 20,000$
 - $500,000 > 55n - 20,000$
 - $500,000 < 55n + 20,000$
 - $500,000 < 75n - 20,000$

49. If the average of a and b is greater than the average (arithmetic mean) of c and $2b$, which of the following must be true?

- $b > 0$
- $a > b$
- $a > b + c$

Select the correct answer using the codes given below.

- II and III only
- I and II only
- II only
- III only

50. The population of a colony of bacteria increases by 200% every 6 hours. If the current population of the colony is 20,000, which expression represents the colony's population h hours from now?

- $20000 \times (2)^{h/6}$
- $20000 \times (3)^{h/6}$
- $20000 \times (3)^{6h}$
- $20000 \times (2)^{6h}$

Directions for the following 5 (five) 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

When a police station receives a complaint regarding an alleged offence that has been committed in the jurisdiction of another police station, it registers an FIR and then transfers it to the relevant police station for further investigation. This is called a Zero FIR. No regular FIR number is given. After receiving the Zero FIR, the relevant police station registers a fresh FIR and starts the investigation. The provision of Zero FIR came up after the recommendation in the report of the Justice Verma Committee, which was constituted to suggest amendments to the Criminal Law in a bid to provide for faster trial and enhanced punishment for criminals accused of committing sexual assault against women, according to a 2020 circular released by the Puducherry government. The committee was set up after the 2012 Nirbhaya gang rape case. Zero FIR ensures that the victim doesn't have to run from pillar to post to get a police complaint registered. The provision is meant to provide speedy redressal to the victim so that timely action can be taken after the filing of the FIR.

51. What is the immediate objective of Zero FIR?
- (a) Quick and timely delivery of justice.
 - (b) Speedy forensic investigation for the registered complaints.
 - (c) To ensure that the victim's complaint is registered without hassles.
 - (d) To ensure proper medical help is given to the victim.
52. Which of the following statements can be *inferred* from the above passage?
1. Zero FIR is registered only in non-jurisdictional Police stations.
 2. The sole purpose behind creation of Justice Verma Committee was to give the accused more severe punishments.
- Select the correct answer using the codes given below.
- (a) 1 only
 - (b) 2 only
 - (c) Both 1 and 2
 - (d) Neither 1 nor 2

Passage – 2

On Monday, the government withdrew The DNA Technology (Use and Application) Regulation Bill 2019 from the Lok Sabha, ending a 20-year effort to build a new regulatory framework for the use of DNA fingerprinting technology in the criminal justice system. The Bill, introduced in Parliament multiple times, faced opposition on grounds of the accuracy of DNA technology, potential threats to individual privacy, and the possibility of abuse. The Bill had three primary objectives. First, it sought to set up a DNA profiling board as the regulatory body, one of the functions of which would be to provide accreditation to laboratories authorised to carry out DNA sample tests. The Bill also provided for the creation of databases — DNA Data Banks — for storing DNA information collected from convicts and accused. This database could be indexed and searched for matching samples from crime scenes. And third, it sought to facilitate collection of DNA samples from the convicts and accused. The primary objections were on grounds of privacy, utility and possibility of misuse. DNA information can be very intrusive, revealing not just identification traits but also many other features that can be liable for misuse. Critics pushed for the inclusion of as many safeguards into the Bill as was possible. Several rounds of discussions, with Members of Parliament, legal experts, law enforcement professionals, activists, and civil society were held. A number of changes were made in the original draft. But it was not acceptable to all. In recent years, apprehensions were raised about the possibility of this law being used for racial profiling. It was even argued that the police could not be trusted to seek DNA tests in their investigations. The Parliamentary Standing Committee had objected to the setting up of DNA banks in every state, and suggested that one national DNA bank was sufficient.

53. Which of the following are the objections against the DNA Technology Bill?

1. Breach of Privacy
2. Profiling on the basis of race
3. Distrust on police
4. Virus attacks on database

Select the correct answer using the codes given below.

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

54. With reference to the above passage, consider the following statements.

1. The legislation aims to create a regulating authority.
2. To save the criminals' DNA information, a database will be made.
3. DNA information will be linked with the Aadhaar card of every individual.

Which of the statements given above are correct?

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

Passage – 3

The securities market regulator has said it is working on real-time settlement of transactions in India's stock exchanges. The announcement by Madhabi Puri Buch, chairperson of the Securities and Exchange Board of India (SEBI), came after the regulator shortened the settlement cycle to trade-plus-one (T+1) from T+2. 'Settlement' is a two-way process that involves the transfer of funds and securities on the settlement date. As of now, there is a lag between trade and settlement — the settlement date is different from the trade date. A trade settlement is said to be complete once purchased securities of a listed company are delivered to the buyer, and the seller gets the money. The current cycle of 'T+1' in India means trade-related settlements happen within a day, or within 24 hours of the actual transaction. The migration to the T+1 cycle came into effect in January this year. India became the second country to start the T+1 settlement cycle in top listed securities after China, bringing operational efficiency, faster fund remittances, share delivery, and ease for stock market participants.

55. Which of the following statements can be *inferred* from the above passage?

1. Currently, the trade date and the settlement date are different.
2. Even if the buyer is not given the listed company's securities, a trade settlement might be considered complete.

Select the correct answer using the codes given below.

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

56. Every athlete in a group of 60 females varsity athletes at Greenwich High School either runs track, plays soccer, or does both. If one-third of the athletes in this group who play on the soccer team also run on the track team, and one-half of the athletes in this group who run on the track team also play on the soccer team, which of the following statements must be true?
- This group contains 40 soccer players.
 - This group contains 20 athletes who play soccer but do not run track.
 - This group contains 20 athletes who play both track and soccer.
 - The number of soccer players in this group is 15 greater than the number of track team members in this group.
57. There are two vessels A and B. Vessel A contains x litres of milk and Vessel B has y litres of water. Sunil takes z litres from each vessel and transfers it to the other, so as to ensure that the percentage of milk becomes the same in these two vessels. Which of the following must be true?
- $yz = x + y$
 - $xz = x + y$
 - $xy = (x + y)z$
 - $y(x + z) = xz$
58. The sum of incomes of A and B is more than that of C and D taken together. The sum of incomes of A and C is the same as the incomes of B and D taken together. Moreover, A earns half as much as the sum of incomes of B and D. Which of the following statements is **not correct**?
- A earns more than B.
 - B earns more than D.
 - C earns more than D.
 - B earns more than C.
59. The data charges of Airtel is Rs. 90 per day. The corresponding charges of Idea are 10% lower than that of Airtel. A person uses Airtel for the first fortnight of a month and Idea for the second fortnight. Had he used Idea for the whole of the month, what percentage of his expenses on data for that month would he had saved (approximately)?
- 5 %
 - 4 %
 - 7 %
 - 6 %
60. In an examination, 38% of the students passed. If the number of students that passed is 60 less than the number of students that failed, find the total number of students who appeared in the examination.
- 210
 - 230
 - 240
 - 250
61. Arjun purchased two sofas whose cost prices were in the ratio 5:3. He made $x\%$ loss on the first sofa set and $2x\%$ profit on the second one. If in the entire transaction he made a net profit of 2.5%, find x .
- 15
 - 20
 - 25
 - 30

62. Two statements S1 and S2 are given below followed by a question.

S1: Its marked price was at most Rs. 30 and profit made was 25%.

S2: Its cost price was Rs. 20.

Question: Was the discount percentage offered on item x less than 16%?

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

- (a) S1 alone is sufficient to answer the question.
- (b) S2 alone is sufficient to answer the question.
- (c) Either S1 alone or S2 alone is sufficient to answer the question.
- (d) Both the statements together are not sufficient to answer the question.

63. In the month of June, Rajeev takes up an assignment on a daily wage basis. If he completes the day's task, he earns Rs. 50 or else, he earns only Rs. 30 per day. He worked every day of the month and at the end of the month he earned Rs. 1420. On how many day/days did he **not** complete the task given to him?

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

64. Kavi borrowed a total of Rs. 72000 from Kanchan and Krishna. Kanchan charges 12% per annum compound interest and Krishna charges 7% per annum compound interest. At the end of one year Kavi paid Rs. 6120 as interest. Find the sum borrowed from Krishna.

- (a) Rs. 50400
- (b) Rs. 57300
- (c) Rs. 49200
- (d) Rs. 48600

65. Two statements S1 and S2 are given below followed by a question.

S1: The angle of elevation of the head of the statue of Shivaji from a distance of 15 m is 60° .

S2: The angle of elevation of the middle of the telephone tower from a distance of 15 m is 45° .

Question: Which is taller - the telephone tower or the statue of Shivaji?

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

- (a) S1 alone is sufficient to answer the question.
- (b) S2 alone is sufficient to answer the question.
- (c) Either S1 alone or S2 alone is sufficient to answer the question.
- (d) Both the statements together are sufficient to answer the question.

66. An old lady spent one twelfth of her life as a child and one seventh was spent as a teenager. One sixth of her life was spent between the time she became an adult and the time she married. Three years after marriage her daughter was born and the daughter died six years before she died. She lived to be twice as old as her daughter did. How long did the lady's daughter live?

- (a) 52 years
- (b) 45 years
- (c) 42 years
- (d) None of the above

67. A conical tent has a base radius of 7 m and a height of 24 m. What is the length of the canvas required to cover the conical portion if it is stitched from a rectangular sheet of breadth 11 m?

- (a) 45 m
- (b) 50 m
- (c) 63 m
- (d) 73 m

68. In an experiment, a ball is thrown vertically downwards from an altitude of 3000 m. The distance through which the ball falls in successive seconds is 6 m, 16 m, 26 m and so on. What is the distance through which the ball falls in the 20th second?
- (a) 196 m
 - (b) 200 m
 - (c) 220 m
 - (d) 240 m

Directions for the following 4 (four) 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

The US Justice Department sued the state of Texas and its Republican Governor Greg Abbott on Monday (July 24) for installing floating barriers in the Rio Grande River to stop migrants crossing from Mexico. The lawsuit, filed in federal court in Austin, is the latest escalation in tensions between the President Joe Biden administration and Abbott over the issue of immigration. A 3,051-km-long river, the Rio Grande runs from Colorado to the Gulf of Mexico and is the effective US-Mexican border through most of Texas. But it is also a key route for migrants from Mexico to try and enter the United States. A DW report said hundreds of migrants everyday attempt to reach the American land through the river. In a bid to stop this influx, Abbott in June announced his plan to build a barricade in the Rio Grande, near the border city of Eagle Pass in Texas. According to media reports, the barricade, whose installation is almost complete now, is essentially a 1,000-foot (305-meter) line of bright orange, wrecking ball-sized buoys. According to a Politico report, Associate Attorney General Vanita Gupta said in a statement, “This floating barrier poses threats to navigation and public safety and presents humanitarian concerns. Additionally, the presence of the floating barrier has prompted diplomatic protests by Mexico and risks damaging US foreign policy.” The nine-page lawsuit of the Justice Department seeks the removal of the barricade by Texas officials at the state’s expense. Notably, it has come around a week after the Mexican government complained to the Biden administration regarding the structure.

69. Why is the US Justice Department opposing the installation of floating barriers?

- 1. It creates safety risks for the general public.
- 2. It complicates US Foreign Policy.
- 3. It will create a refugee crisis.

Select the correct answer using the codes given below.

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

Passage – 2

The United States has identified five cases of malaria in people without any history of international travel in Florida and Texas over the last two months. This has led to the US Centres for Disease Control and Prevention (CDC) issuing an alert asking clinicians to consider malaria as a diagnosis in persons with fever of unknown origin, laboratories and public health experts to aid clinicians in identifying and diagnosing malaria cases, and people to take precautions to prevent mosquito bite. The five cases have raised alert because this is the first time in 20 years that there has been local transmission of malaria in the United States. The last time the infection was transmitted by a mosquito locally in the country was in 2003 when eight people in Florida were infected. While there hasn’t been local transmission in years, United States has been reporting around 2,000 cases of malaria every year mostly among international travellers from regions where the disease is still in transmission. Around 300 of these persons end up developing severe disease and between five and ten persons die of the infection each year in the United States, according to the CDC. The alert raised by the organisation also said that there could be an uptick in the number of imported malaria cases with summer travel increasing to the pre-pandemic levels in 2023.

70. Why did just five cases in the US prompt such an alert?

- (a) It is expected that very soon, these five cases will cause other variants of malaria to develop.
- (b) The local transmission of malaria may prove deadly to elders and children.
- (c) Economic cost of immunization will be too high.
- (d) This is the first instance of local malaria transmission in the United States in 20 years.

Passage – 3

Since the 1970s, SHGs have been playing an essential role in different states of India by contributing mostly to democratising many institutions that stand for the deprived sections of society. It tries to create social stability through financial inclusion and play an active role in the social empowerment of the people in rural areas. The theoretical foundations of the SHGs are deeply linked with the framework of sociology. The social impact of SHGs on women's empowerment is noticeable. It brings social cohesion among the poor at the grassroots level. Field evidence shows that SHG members can easily become involved in households' decision-making and bring positive changes in their life. SHGs provide a sufficient platform for social participation and encourage members to better interact with society. Such continuous efforts lead to the societal transformation of women in rural areas.

71. Based on the above passage, the following *assumptions* have been made:

- 1. SHGs have given a platform to rural people to overcome socio-economic marginalisation.
- 2. The social status of women has improved making them the real beneficiaries of the SHG programs.

Which of the above assumptions is/are valid?

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

72. Which of the following statements best reflects the *crux* of the passage?

- (a) SHGs are a tool for the social transformation of rural people, which also impact their economic and personal lives.
- (b) Given the importance of SHGs, they should be expanded to other states and not be limited to a few states only.
- (c) There is a need for SHGs to touch the lives of the urban poor as well and expedite their social mainstreaming.
- (d) SHGs should focus not only on the societal empowerment of children, but also make them financially independent.

73. Ajay, a clerk in a bank, takes a bus to his bank. On one particular day, he left home 15 minutes earlier than usual and reached the bus stop at 8:40 am. He needs to walk for ten minutes to reach to the bus stop. What time does he usually leave home for the bus stop?

- (a) 8:30 am
- (b) 8:45 am
- (c) 8:55 am
- (d) None of the above

74. There is 10 litres of milk in a container A and 10 litres of water in container B. One litre of milk is transferred from A to B. After that one litre of the contents of B are transferred back to A. What is the final amount of milk in container A?
- (a) 10/11 litres
(b) 109/121 litres
(c) 1010/121 litres
(d) 100/11 litres
75. If $10 \leq x \leq 20$ and $2y - x = 2$, then the maximum value of $x/(x + y)$ is:
- (a) 20/31
(b) 5/6
(c) 5/8
(d) 20/11
76. If $f(x) = ax^5 + bx^3 - cx + 3$ and $f(4) = 10$, then $f(-4) = ?$
- (a) -3
(b) 2
(c) -4
(d) -7
77. A monkey is climbing a tall tree. He climbs for some time and then rests for some time every hour and then starts climbing again. In the process, every hour, he climbs 30 feet and then slips back 20 feet while resting. If he starts climbing at 9:00 am, at what time will he first touch a flag 120 feet from the ground?
- (a) Between 5 pm and 6 pm
(b) Between 6 pm and 7 pm
(c) After 7 pm
(d) None of the above
78. The odds in favour of a player being selected for the national team with three independent selectors are 4:3, 2:1 and 1:4 respectively. What is the probability that out of the three selectors a majority will favour the player?
- (a) 2/5
(b) 10/21
(c) 6/35
(d) 2/21
79. Rohan, Sohan and Mohan can do a piece of work separately in 5 days, 10 days and 12 days respectively. If they work together, what should be Mohan's share out of the total wage of Rs. 1380?
- (a) Rs. 280
(b) Rs. 300
(c) Rs. 430
(d) Rs. 500
80. What is the total time taken by a boat in downstream to cover a distance of 12 km from A to B and 18 km from B to C, if it is given that its own speed from A to B is 4 kmph and from B to C is 7 kmph and the stream is flowing at 2 kmph?
- (a) 6 hours
(b) 5 hours
(c) 4 hours
(d) None of these

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