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NMAT

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Answers

Section I. Quantitative Skills

Question 1

The integers 1, 2 ... 40 are written on the blackboard. The following operation is then repeated 39 times. In each repetition, any two numbers, say a and b , currently on the blackboard are erased and a new number $a + b - 1$ is written. What will be the number left on the board at the end?

- ☐ A. 780
- ☐ B. 781
- ☐ C. 819
- ☐ D. 820
- ☐ E. 821

Question 2

How many 4-digit numbers of the form AB61 are there that are divisible by 11 (where A and B are distinct digits)?

- ☐ A. 3
- ☐ B. 4
- ☐ C. 7
- ☐ D. 13
- ☐ E. 14

Question 3

Sumeet spends 10% of his salary on his child's education, 20% of the remainder on rent and 25% of the balance on garments. Finally, he is left with \$ 5,400. What is his salary?

- ☐ A. \$ 10,000
- ☐ B. \$ 11,000
- ☐ C. \$ 12,000
- ☐ D. \$ 13,000
- ☐ E. \$ 14,000

Question 4

A dishonest dealer claims to sell his goods at 20% discount, but uses a weight of 800 grams for weighing 1 kilogram of goods. What is the profit or loss being made by the dealer?

- ☐ A. 40% loss
- ☐ B. 5% loss
- ☐ C. No profit or loss
- ☐ D. 5% profit
- ☐ E. 10% profit

Question 5

Given the quadratic equation $x^2 - (A - 3)x - (A - 7) = 0$, for what value of A is the sum of squares of the roots 0?

- ☐ A. -2
- ☐ B. 3
- ☐ C. 5
- ☐ D. 10
- ☐ E. 13

Question 6

The vice-chancellor of ABC University decided to form a committee to look into the feasibility of introduction of semester systems at the undergraduate level. Five members from the Executive Council and 7 members from the Academic Council were found to be suitable for the job. In how many ways can the vice-chancellor form the committee of 6 members such that at least 4 members of the committee belong to the Academic Council?

- ☐ A. 350
- ☐ B. 420
- ☐ C. 455
- ☐ D. 456
- ☐ E. 462

Question 7

Directions: Go through the given table and solve the questions based on it.

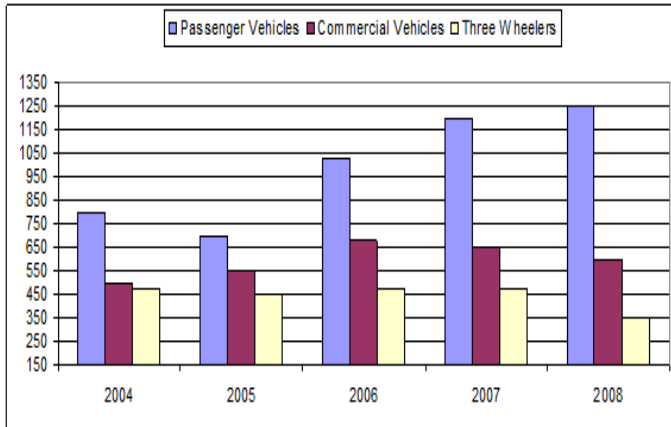
State	Total Population (in Lakhs)		Male Population (in Lakhs)		Rural Population (%)		Area (In Sq. Km)
	2001	2006	2001	2006	2001	2006	
Uttar Pradesh	1660	1731	875	911	71	70	2,38,576
Madhya Pradesh	603	674	314	360	72	71	3,08,144
Andhra Pradesh	761	823	385	417	69	68	2,75,068
Tamil Nadu	624	697	315	348	70	67	1,30,058
Orissa	368	384	186	195	73	72	1,55,707
Maharashtra	968	1013	504	527	68	66	3,07,713
West Bengal	802	865	412	446	69	68	88,752

- What is the percentage increase in the female population in Uttar Pradesh from 2001 to 2006?
 - ☐ A. 3.6%
 - ☐ B. 4%
 - ☐ C. 4.2%
 - ☐ D. 4.3%
 - ☐ E. 4.5%
- In which of the following states is the number of males per square metre the least in 2006?
 - ☐ A. Uttar Pradesh
 - ☐ B. Madhya Pradesh
 - ☐ C. Andhra Pradesh
 - ☐ D. Tamil Nadu
 - ☐ E. Orissa
- What is the simple annual growth rate (SAGR) of the female population in Uttar Pradesh from 2001 to 2006?
 - ☐ A. 0.68%
 - ☐ B. 0.74%
 - ☐ C. 0.82%
 - ☐ D. 0.89%
 - ☐ E. 1.11%
- What is the average percentage of rural population in the given states in the year 2001?
 - ☐ A. 68.12%
 - ☐ B. 68.85%
 - ☐ C. 69.12%
 - ☐ D. 70.28%
 - ☐ E. 71.36%

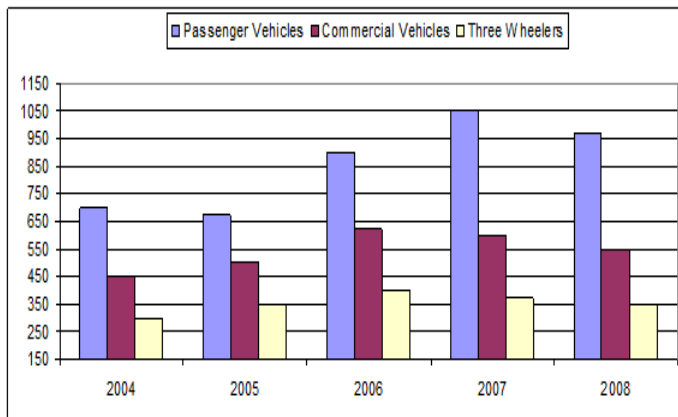
Question 8

Directions: Go through the given graphs and solve the questions based on them.

Automobile Production Trends



Automobile Domestic Sales Trends



- Which of the following years exhibits the highest percentage decrease over the preceding year in automobile production?
 - ☐ A. 2004
 - ☐ B. 2005
 - ☐ C. 2006
 - ☐ D. 2007
 - ☐ E. 2008
- Assuming that whatever was not sold domestically was exported, which year registered max. growth in exports of automobiles?
 - ☐ A. 2004
 - ☐ B. 2005
 - ☐ C. 2006
 - ☐ D. 2007
 - ☐ E. 2008
- If the ratio of the domestic sale price of a commercial vehicle, a passenger vehicle, and a three-wheeler is 5 : 3 : 2, then approximately what percent of earnings is contributed by the commercial vehicle segment to the overall earnings from domestic sales during the period 2004–2008?
 - ☐ A. 11%
 - ☐ B. 27%
 - ☐ C. 45%
 - ☐ D. 47%
 - ☐ E. 52%
- The ratio between absolute increase in domestic sales over preceding year and absolute increase in production over the preceding year is highest during which year?
 - ☐ A. 2004
 - ☐ B. 2005
 - ☐ C. 2006
 - ☐ D. 2007
 - ☐ E. 2008

Question 9

Directions: A question is followed by two statements, numbered (1) and (2). Using the information provided and general knowledge, decide whether the information given is sufficient to solve the problem.

Is $x^2 - y^2$ even?

- (1) $x + y$ is even.
- (2) $x - y$ is odd.

- ☐ A. Statement (1) ALONE is sufficient, but statement (2) ALONE is not sufficient.
- ☐ B. Statement (2) ALONE is sufficient, but statement (1) ALONE is not sufficient.
- ☐ C. BOTH statements TOGETHER are sufficient, but NEITHER statement ALONE is sufficient.
- ☐ D. EACH statement ALONE is sufficient.
- ☐ E. Statements (1) and (2) TOGETHER are NOT sufficient.

Section II. Logical Reasoning

Question 1

Automation, however essential it may be to maximise a country's economic production and minimise its costs, should be rejected. The health care industry wants to increase revenues while reducing costs. Hence, it proposes greater automation of health care. This radical automation of health care would cause patients to lose trust in the system as the health care they would receive would lack the personal touch that, according to several studies, patients desire.

Which of the following expresses the main point of the argument?

- ☐ A. Due to economic forces, automation of health care is inevitable.
- ☐ B. Patients desire personalised care.
- ☐ C. Trends in the general economy do not apply to the health care industry.
- ☐ D. The health care industry is becoming too greedy.
- ☐ E. The health care industry should not be heavily automated.

Question 2

Directions: In the question there is a statement followed by two conclusions, numbered I and II. You have to assume everything in the statement to be true, then consider the two conclusions together and decide which of them logically follows from the information given in the statement.

Statements: Government has spoiled many top ranking financial institutions by appointing bureaucrats as directors of these institutions.

Conclusions:

- I. Government should appoint directors of the financial institutions taking into consideration the expertise of the person in the area of finance.
- II. The director of the financial institution should have expertise commensurate with the financial work carried out by the institution.

- ☐ A. Only Conclusion I follows.
- ☐ B. Only Conclusion II follows.
- ☐ C. Either Conclusion I or Conclusion II follows.
- ☐ D. Neither Conclusion I nor Conclusion II follows.
- ☐ E. Both Conclusions I and II follow.

Question 3

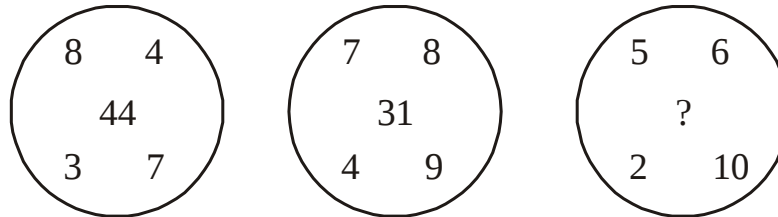
Directions: Read the passage below. Solve the question based on the information in the passage.

Ajay would do five tasks: A, B, C, D and E, starting at 9:00 a.m. A is the first task and takes 2 hours. B can be done after A is complete and requires 1 hour. Work on C, which would take 1 hour, can start only after A and B are completed. Ajay can do task D along with B and C, and would take 3 hours. Activity E, with duration of 1 hour, can start upon completion of A, B, C and D.

1. What is the earliest time Ajay could complete task C?
 - ☐ A. 11:00 a.m.
 - ☐ B. 12:00 noon
 - ☐ C. 1:00 p.m.
 - ☐ D. 2:00 p.m.
 - ☐ E. 3:00 p.m.
2. If Ajay takes 2 hours for task B and completes other preceding tasks without delay, when can he start task E?
 - ☐ A. 12:00 noon
 - ☐ B. 1:00 p.m.
 - ☐ C. 2:00 p.m.
 - ☐ D. 3:00 p.m.
 - ☐ E. 4:00 p.m.
3. What is the earliest time Ajay could complete all tasks?
 - ☐ A. 12:00 noon
 - ☐ B. 1:00 p.m.
 - ☐ C. 2:00 p.m.
 - ☐ D. 3:00 p.m.
 - ☐ E. 4:00 p.m.
4. If Ajay were to start task D after the completion of task C, and take a break for an hour, then when would he complete all tasks?
 - ☐ A. 3:00 p.m.
 - ☐ B. 4:00 p.m.
 - ☐ C. 5:00 p.m.
 - ☐ D. 6:00 p.m.
 - ☐ E. 7:00 p.m.

Question 4

Which number should replace the question mark?



- ☐ A. 18
- ☐ B. 38
- ☐ C. 50
- ☐ D. 62
- ☐ E. 70

Question 5

Directions: In a marriage party, 278 guests were present. Twenty guests took Pepsi and Dew, 23 guests took Dew and Sprite, 21 guests took Pepsi and Sprite, and 9 guests took all three cold drinks (Pepsi, Sprite and Dew). It is also known that there were equal numbers of bottles of each of the three kinds (Pepsi, Dew and Sprite).

1. How many guests enjoyed Dew or Sprite but not Pepsi?
 - ☐ A. 167
 - ☐ B. 176
 - ☐ C. 199
 - ☐ D. 143
 - ☐ E. None
2. How many guests enjoyed Pepsi and Dew but not Sprite?
 - ☐ A. 189
 - ☐ B. 271
 - ☐ C. 24
 - ☐ D. 39
 - ☐ E. None

Question 6

Directions: The question presents a situation and asks you to make a judgment regarding that particular circumstance. Answer the question solely on the basis of the information given.

Illegal adulterated and local alcohol that is largely in supply in the city has become a matter of concern for the citizens and administration. A meeting was called up, which involved local people as well, to discuss the situation. The local people claimed that the administration is not doing enough to deal with the situation. You are representing the administration in the meeting. What should be your reaction to these claims?

- ☐ A. Tell them that the real problem lies with people of the city who support the business by buying illegal and adulterated alcohol, and not the district administration.
- ☐ B. Tell the citizens to refrain from buying local liquor.
- ☐ C. Explain that this problem occurs quite frequently and it is the responsibility of individuals in the city only who run such business to stop such activity. It is not the duty of the district administration to handle such situations.
- ☐ D. Begin by telling to the group that the district administration needs the cooperation of citizens to find a solution for this problem.
- ☐ E. Don't say anything; let others speak on the issue.

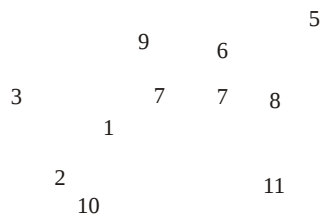
Question 7

How many pairs of letters are there in the word 'CHILDREN' such that each pair has as many letters between them in the word 'CHILDREN' as they have in the English alphabet series?

- ☐ A. 2
- ☐ B. 3
- ☐ C. 4
- ☐ D. 5
- ☐ E. None of these

Question 8

Directions: Answer the question based on the following diagram.



The rectangle represents bachelors.
The square represents Delhi metropolis.
The circle represents English language.
The triangle represents tourists.

Which of the following is **not** true?

- ☐ A. Some English speaking bachelors live in Delhi.
- ☐ B. Some bachelors do not know the English language but they are in Delhi.
- ☐ C. Some English speaking persons are neither tourists nor are they in Delhi.
- ☐ D. Some bachelors are tourists who live in Delhi.
- ☐ E. None of the above statements is true.

Question 9

Directions: In the question two statements are given which are followed by four conclusions (1), (2), (3) and (4). Choose the conclusions which logically follow from the given statements.

Statements: All pens are instruments. Some green things are instruments.

Conclusions:

- (1) All pens are green.
- (2) All green things are pens.
- (3) Some instruments are green.
- (4) All instruments are pens.

- ☐ A. Only (4)
- ☐ B. Only (3)
- ☐ C. Only (2)
- ☐ D. Only (1)
- ☐ E. Only (1) & (3)

Section III. Language Skills

Question 1

Excess inventory, a massive problem for many businesses, has several causes, some of which are unavoidable. Overstocks may accumulate through production overruns or Certain styles and colors prove unpopular. With some products-computers and software, toys, and books-last year's models are difficult to move even at huge discounts. Occasionally the competition introduces a better product. But in many cases the public's buying tastes simply change, leaving a manufacturer or distributor with thousands (or millions) of items that the fickle public no longer wants.

One common way to dispose of this merchandise is to sell it to a liquidator, who buys as cheaply as possible and then resells the merchandise through catalogs, discount stores, and other outlets. However, liquidators may pay less for the merchandise than it cost to make it. Another way to dispose of excess inventory is to dump it. The corporation takes a straight cost write-off on its taxes and hauls the merchandise to a landfill. Although it is hard to believe, there is a sort of convoluted logic to this approach. It is perfectly legal, requires little time or preparation on the company's part, and solves the problem quickly. The drawback is the remote possibility of getting caught by the news media. Dumping perfectly useful products can turn into a public relations nightmare. Children living in poverty are freezing and XYZ Company has just sent 500 new snowsuits to the local dump. Parents of young children are barely getting by and QRS Company dumps 1,000 cases of disposable diapers because they have slight imperfections.

The managers of these companies are not deliberately wasteful; they are simply unaware of all their alternatives. In 1976 the Internal Revenue Service provided a tangible incentive for businesses to contribute their products to charity. The new tax law allowed corporations to deduct the cost of the product donated plus half the difference between cost and fair market selling price, with the proviso that deductions cannot exceed twice cost. Thus, the federal government sanctions-indeed, encourages-an above-cost federal tax deduction for companies that donate inventory to charity.

1. The passage is primarily concerned with
 - ☐ A. pointing out a problem
 - ☐ B. criticizing a particular course of action errors.
 - ☐ C. discussing possible responses to a problem
 - ☐ D. analyzing the causes of a repeated occurrence
 - ☐ E. evaluating two different approaches
2. It can be inferred from the passage that manufacturers would be most likely to avoid using a liquidator to dispose of excess inventory for which of the following reasons?
 - ☐ A. Using a liquidator has questionable legal status.
 - ☐ B. Using a liquidator requires costly preparation on the part of the manufacturer.
 - ☐ C. Having the products appear in discount outlets can damage the manufacturers' public image.
 - ☐ D. The liquidator often pays less for the inventory than the manufacturer spent to produce it.
 - ☐ E. The manufacturer is allowed no tax write-off for the loss incurred when excess inventory is sold to a liquidator.
3. The passage provides information that supports which of the following statements?
 - ☐ A. Excess inventory results most often from insufficient market analysis by the manufacturer.
 - ☐ B. Products with slight manufacturing defects may contribute to excess inventory.
 - ☐ C. Few manufacturers have taken advantage of the changes in the federal tax laws.
 - ☐ D. Manufacturers who dump their excess inventory are often caught and exposed by the news media.
 - ☐ E. Most products available in discount stores have come from manufacturers' excess inventory stock.
4. Information in the passage suggests that which of the following, if true, would make donating excess inventory to charity less attractive to manufacturers than dumping?
 - ☐ A. The costs of getting the inventory to the charitable destination are greater than the above-cost tax deduction.
 - ☐ B. The news media give manufacturers' charitable contributions the same amount of coverage that they give dumping.
 - ☐ C. No straight-cost tax benefit can be claimed for items that are dumped.
 - ☐ D. The fair-market value of an item in excess inventory is 1.5 times its cost.
 - ☐ E. Items end up as excess inventory because of a change in the public's preferences.

Question 2

Directions: Rearrange the jumbled sentences to show the appropriate sequence.

- (A) For example, when the early homo sapiens left their homes in search for food, they would risk death and injury from dangerous animals.
- (B) Throughout human history, the universe has presented an innumerable amount of dangers to explorers.
- (C) Today, many adventure enthusiasts seek to find the thrills and adrenaline rush which their ancestors had experienced in the wild.
- (D) The tradition of humans going out to experience the dangers of unknown nature still exists.

- ☐ A. ABCD
- ☐ B. ABDC
- ☐ C. BADC
- ☐ D. DABC
- ☐ E. CBAD

Question 3

Directions: In the given question, the sentence has four underlined words or phrases. Identify the one underlined work or phrase that must be changed in order to make the sentence correct. Mark E for no error.

Though they were written almost a year after they separated, Salim and Javed's stories were published on the same day.

- ☐ A. Though
- ☐ B. almost
- ☐ C. Salim and Javed's
- ☐ D. were published
- ☐ E. No error

Question 4

Directions: Choose the set of prepositions whose meaning and sequence best fits the 3 given sentences.

1. After the burglary, the office bought a sophisticated security system as an insurance_____any such losses.
2. She put_____a brave front at the end of the meeting.
3. Sunil decided to avail himself_____the opportunity to go to Australia for training.

- (A) on
- (B) of
- (C) at
- (D) against
- (E) up
- (F) with

- ☐ A. ACE
- ☐ B. ADB
- ☐ C. DAB
- ☐ D. DEB
- ☐ E. FCD

Question 5

allusion : reference :: _____: _____

Directions: Choose the word or pair of words that best completes the relationship to the given pair:

- ☐ A. bombast : broadcast
- ☐ B. dearth : affection
- ☐ C. opulence : grandiloquence
- ☐ D. ostentation : swagger
- ☐ E. paucity : scarcity

Section I. Quantitative Skills

Question 1

Given that the integers 1, 2, 3 ... 40 are written on the blackboard. Any two numbers, say a and b , are erased and a new number $a + b - 1$ is written. This operation is repeated 39 times.

In this manner, the numbers 1, 2, 3 ... 40 are added and 1 is subtracted 39 times.

So, number left on the blackboard

$$= 1 + 2 + 3 \dots 40 - (39 \times 1)$$

$$= \frac{40 \times 41}{2} - 39$$

$$= 20 \times 41 - 39$$

$$= 820 - 39 = 781$$

The correct answer is B.

Question 2

Divisibility rule of 11 says that the difference of the alternative sum of the digits should be a multiple of 11.

Therefore, the number AB61 will be a divisible by 11 if $(A - B + 6 - 1)$ is multiple of 11.

That is, $A - B + 6 - 1 = 11k$

$$\Rightarrow A - B = 11k - 5$$

$$\Rightarrow A - B = -5$$

Therefore, possible pairs of A and B are (1, 6), (2, 7), (3, 8) and (4, 9).

Hence, 4 such four-digit numbers are possible.

The correct answer is B.

Question 3

Let Sumeet's salary be \$ x .

Amount spent on child's education = 10% of \$ x = \$ $0.1x$

Remaining amount = \$ x - \$ $0.1x$ = \$ $0.9x$

Amount spent on rent = 20% of \$ $0.9x$ = \$ $0.18x$

Remaining amount = \$ $0.9x$ - \$ $0.18x$ = \$ $0.72x$

Amount spent on garments = 25% of \$ $0.72x$ = \$ $0.18x$

Remaining amount = \$ $0.72x$ - \$ $0.18x$ = \$ $0.54x$

According to the question,

$$\$ 0.54x = \$ 5400$$

$$\Rightarrow x = \$ 10,000$$

Hence, Sumeet's salary = \$ 10,000

The correct answer is A.

Question 4

Suppose the price of 1 kg of a goods be Rs. 100.

So, the price of 800 gm of the goods = Rs. 80

Discount offered on the goods = 20% of Rs. 100 = Rs. 20

So, the selling price of the goods = Rs. 80 per kg

Therefore, the cost price and the selling price of 800 gm of the goods are same.

Hence, there is no profit or loss.

The correct answer is C.

Question 5

$$x^2 - (A - 3)x - (A - 7) = 0$$

The sum of the roots ($\alpha + \beta$) and the product of the roots ($\alpha \beta$) for a quadratic equation, $ax^2 + bx + c = 0$, is given by

$$\alpha + \beta = -\frac{b}{a} = A - 3$$

$$\alpha \beta = \frac{c}{a} = -(A - 7)$$

According to the question,

$$\alpha^2 + \beta^2 = 0$$

$$\Rightarrow (\alpha + \beta)^2 - 2\alpha \beta = 0$$

$$\Rightarrow (A - 3)^2 + 2(A - 7) = 0$$

$$\Rightarrow A^2 - 6A + 9 + 2A - 14 = 0$$

$$\Rightarrow A^2 - 4A - 5 = 0$$

$$\Rightarrow A^2 - 5A + A - 5 = 0$$

$$\Rightarrow A(A - 5) + 1(A - 5) = 0$$

$$\Rightarrow (A - 5)(A + 1) = 0$$

$$\Rightarrow A = 5 \text{ or } -1$$

The correct answer is C.

Question 6

Number of members from Executive Council = 5

Number of members from Academic Council = 7

A committee of 6 members is to be formed such that at least 4 members of the committee should belong to the Academic Council.

So, required number of ways

$$= {}^7C_4 \times {}^5C_2 + {}^7C_5 \times {}^5C_1 + {}^7C_6$$

$$= \frac{5 \times 6 \times 7}{2 \times 3} \times \frac{4 \times 5}{2} + \frac{6 \times 7}{2} \times 5 + 7$$

$$= 350 + 105 + 7 = 462$$

The correct answer is E.

Question 7

1.

Total population in Uttar Pradesh in 2001 = 1660 lakhs

Male population in Uttar Pradesh in 2001 = 875 lakhs

So, female population in Uttar Pradesh in 2001 = (1660 - 875) lakhs = 785 lakhs

Total population in Uttar Pradesh in 2006 = 1731 lakhs

Male population in Uttar Pradesh in 2006 = 911 lakhs

So, female population in Uttar Pradesh in 2006 = (1731 - 911) lakhs = 820 lakhs

Increase in female population in Uttar Pradesh from 2001 to 2006 = (820 - 785) lakhs = 35 lakhs

$$\text{So, required percentage} = \frac{35}{785} \times 100 = 4.46\%$$

The correct answer is E.

2.

$$\text{Number of males per square metre in Uttar Pradesh in 2006} = \frac{911 \text{ lakhs}}{2,38,576} \approx 382$$

$$\text{Number of males per square metre in Madhya Pradesh in 2006} = \frac{360 \text{ lakhs}}{3,08,144} \approx 177$$

$$\text{Number of males per square metre in Andhra Pradesh in 2006} = \frac{417 \text{ lakhs}}{2,75,068} \approx 152$$

$$\text{Number of males per square metre in Tamil Nadu in 2006} = \frac{348 \text{ lakhs}}{1,30,058} \approx 268$$

$$\text{Number of males per square metre in Orissa in 2006} = \frac{195 \text{ lakhs}}{1,55,707} \approx 125$$

Therefore, the number of males per square metre is the least in Orissa in 2006.

The correct answer is E.

3.

The simple annual growth rate (SAGR) is simply the percent growth divided by N, the number of years.

In question (1), we calculated the percentage increase in the female population in Uttar Pradesh from 2001 to 2006 = 4.46%

$$\text{Therefore, SAGR of the female population in Uttar Pradesh from 2001 to 2006} = \frac{4.46}{5} = 0.89\%$$

The correct answer is D.

4.

The average percentage of rural population in the given states in the year 2001

$$= \frac{71+72+69+70+73+68+69}{7} = \frac{492}{7} = 70.28\%$$

The correct answer is D.

Question 8

Common solution for question 1-4:

Given information can be tabulated as below:

Table 1: Automobile Production Trends				
	Passenger Vehicles	Commercial Vehicles	Three Wheelers	Total
2004	800	500	475	1775
2005	700	550	450	1700
2006	1025	675	475	2175
2007	1200	650	475	2325
2008	1250	600	350	2200

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Table 2: Automobile Domestic Sales Trends				
	Passenger Vehicles	Commercial Vehicles	Three Wheelers	Total
2004	700	450	300	1450
2005	675	500	350	1525
2006	900	625	400	1925
2007	1050	600	375	2025
2008	975	550	350	1875
Total	4300	2725	1775	8800

Now, all questions can be solved easily.

1.

From table 1, we have the following data:

$$\text{Percentage increase in automobile production in 2005 over 2004} = \frac{1700 - 1775}{1775} \times 100 = -4.22\%$$

$$\text{Percentage increase in automobile production in 2006 over 2005} = \frac{2175 - 1700}{1700} \times 100 = 27.94\%$$

$$\text{Percentage increase in automobile production in 2007 over 2006} = \frac{2325 - 2175}{2175} \times 100 = 6.89\%$$

$$\text{Percentage increase in automobile production in 2008 over 2007} = \frac{2200 - 2325}{2325} \times 100 = -5.37\%$$

Hence, 2008 exhibits the highest percentage decrease over 2007 in automobile production.

The correct answer is E.

2.

Since, whatever was not sold domestically was exported, the annual export data can be tabulated as below:

Automobile Export Sales Trends				
	Passenger Vehicles	Commercial Vehicles	Three Wheelers	Total
2004	100	50	175	325
2005	25	50	100	175
2006	125	50	75	250
2007	150	50	100	300
2008	275	50	0	325

$$\text{Growth in exports of automobiles in 2005} = \frac{175 - 325}{325} \times 100 = -46.15\%$$

$$\text{Growth in exports of automobiles in 2006} = \frac{250 - 175}{175} \times 100 = 42.85\%$$

$$\text{Growth in exports of automobiles in 2007} = \frac{300 - 250}{250} \times 100 = 20\%$$

$$\text{Growth in exports of automobiles in 2008} = \frac{325 - 300}{300} \times 100 = 8.33\%$$

Hence, the maximum growth is in the year 2006 and the minimum growth is in the year 2008.

The correct answer is C.

3.

From table 2, we have the following data:

Domestic sale of commercial vehicle during the period 2004–2008 = 2725

Domestic sale of passenger vehicle during the period 2004–2008 = 4300

Domestic sale of three-wheeler during the period 2004–2008 = 1715

Ratio of the domestic sale price of a commercial vehicle, a passenger vehicle, and a three-wheeler = 5 : 3 : 2

Required percentage

$$\begin{aligned} &= \frac{2725 \times 5}{2725 \times 5 + 4300 \times 3 + 1715 \times 2} \times 100 \\ &= \frac{13625}{13625 + 12900 + 3430} \times 100 \\ &= \frac{13625}{29955} \times 100 = 45.48\% \approx 45\% \end{aligned}$$

The correct answer is C.

4.

From table 2, we conclude that domestic sale increases in the years 2005, 2006 and 2007 only.

From table 1, we conclude that production increases in the years 2006 and 2007 only.

So, we have to compare the ratios for the years 2006 and 2007 only.

Ratio between absolute increase in domestic sales and absolute increase in production in the year 2006 =

$$\frac{400}{475} = 0.84$$

Ratio between absolute increase in domestic sales and absolute increase in production in the year 2007 =

$$\frac{100}{150} = 0.67$$

Therefore, the ratio is highest during 2006.

The correct answer is C.

Question 9

From statement 1:

$$x + y = \text{Even}$$

$$x^2 - y^2 = (x + y)(x - y) = (\text{Even}) \times (x - y)$$

When an even number is multiplied by another even number, the result is always an even and when an even number is multiplied by an odd number, again the result is always an even. Therefore, we get a unique answer from statement 1 alone.

So, statement 1 alone is sufficient.

From statement 2:

$$x - y = \text{Odd}$$

$$x^2 - y^2 = (x + y)(x - y) = (x + y) (\text{Odd})$$

When an odd number is multiplied by another odd number, the result is always an odd number while when an odd number is multiplied by an even number, the result is always an even number. Therefore, we do not get a unique answer from statement 2.

So, statement 2 alone is not sufficient.

The correct answer is A.

Section II. Logical Reasoning

Question 1

Argument Construction:

Though automation is essential for cost management, it should not be adopted in the healthcare industry as it will take away the human touch which, as per several studies, is strongly desired by many patients.

- A. The author makes no statement about the surety of automation being adopted in healthcare. He/she merely highlights the disadvantages of such action.
- B. Though this is an inference that can be drawn from the passage, it is not the central idea being discussed.
- C. This statement goes beyond the scope of the passage.
- D. This is a judgmental and moralistic statement.
- E. Correct. The author, while accepting the benefits of automation, is essentially highlighting the negative outcomes of automation in the health care industry in order to reinforce its undesirability.

The correct answer is E.

Question 2

Conclusion I: The statement says that the government has spoiled many top ranking financial institutions by appointing bureaucrats as directors of these institutions. However, we can draw no conclusions about the reasons why these bureaucrats have had this negative impact. It is possible that bureaucrats also have the required expertise in finance but are indulging in nepotism or corruption and it is this conduct that has spoiled these institutions. Thus, conclusion I cannot be drawn.

Conclusion II: This is a vague conclusion that has no direct bearing on the argument. The scope of 'financial work' of an institution is not defined and might include normal financial dealings of any institution. Such interactions don't require any financial expertise on part of the directors.

The correct answer is D.

Question 3

Common solution for questions 1 to 4:

Time duration for tasks A, B, C, D and E are given below:

Task A: 9:00 am – 11:00 am

Task B: 11:00 am – 12:00 pm

Task C: 12:00 pm – 1:00 pm

Task D: 11:00 am – 2:00 pm

Task E: 2:00 pm – 3:00 pm

1.

The earliest time at which Ajay could complete task C is 1:00 pm.

The correct answer is C.

2.

If Ajay takes 2 hours for task B, then the time duration for tasks A, B, C, D and E are given below:

Task A: 9:00 am – 11:00 am

Task B: 11:00 am – 1:00 pm

Task C: 1:00 pm – 2:00 pm

Task D: 11:00 am – 2:00 pm

Task E: 2:00 pm – 3:00 pm

So, Ajay can start task E at 2:00 pm.

The correct answer is C.

3.

The earliest time at which Ajay could complete all tasks is 3:00 pm.

The correct answer is D.

4.

If Ajay were to start task D after the completion of task C, and take a break for an hour, then the new time duration for tasks A, B, C, D and E are given below:

Task A: 9:00 am – 11:00 am

Task B: 11:00 am – 12:00 pm

Task C: 12:00 pm – 1:00 pm

Task D: 1:00 pm – 4:00 pm

Rest time: 4:00 pm – 5:00 pm

Task E: 5:00 pm – 6:00 pm

Therefore, Ajay completes all tasks at 6:00 pm.

The correct answer is D.

Question 4

The pattern followed is as below:

$$8 \times 7 - 4 \times 3 = 56 - 12 = 44$$

$$7 \times 9 - 8 \times 4 = 63 - 32 = 31$$

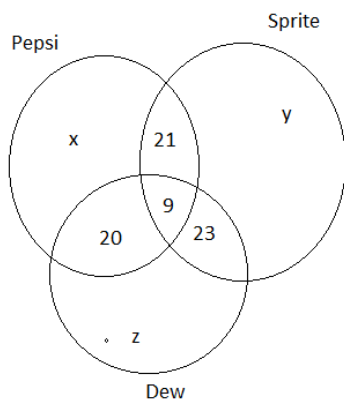
$$\text{Similarly, } 5 \times 10 - 6 \times 2 = 50 - 12 = 38$$

The correct answer is B.

Question 5

Common solution for questions 1 to 2:

From the information given in the question, we can draw the following Venn diagram:



Total number of guests = 278

So, $x + y + z + 21 + 20 + 9 + 23 = 278$

Or, $x + y + z = 205$ --- (1)

As, there were equal numbers of bottles of each of the three kinds (Pepsi, Dew and Sprite), we have:

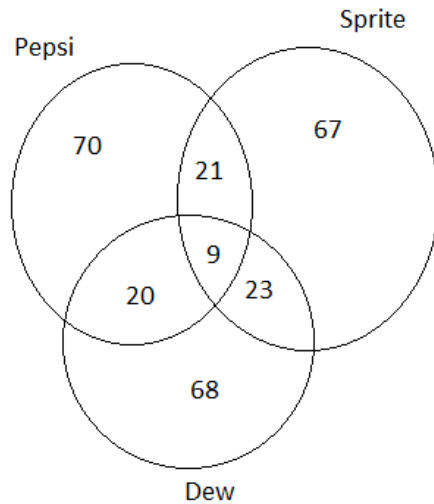
$x + 21 + 9 + 20 = y + 21 + 9 + 23 = z + 20 + 23 + 9$

Or, $x + 50 = y + 53 = z + 52$ --- (2)

On solving Eq. (1) and (2), we get:

$x = 70$, $y = 67$ and $z = 68$

So, final Venn diagram is as below:



1.

Number of guests who enjoyed Dew or Sprite but not Pepsi = $68 + 23 + 67 = 158$

The correct answer is E.

2.

Number of guests who enjoyed Pepsi and Dew but not Sprite = $70 + 20 + 68 = 158$

The correct answer is E.

Question 6

Argument Construction:

The supply of illegal, adulterated and local alcohol has become a major concern for both citizens and local administration. A meeting of all the stakeholders has been organized that includes members of the local community as well. The response has to be delivered from the perspective of the district administration.

- A. Telling people that the problem lies solely with them, without taking any responsibility for the issue is only going to make matters worse. The passage states that the local people are already upset with the administration for not doing enough. In this case, placing all the blame on the people will further aggravate them.
- B. This is a vague and insufficient response. Merely asking people to refrain from indulging in this behavior exhibits a passive and desultory approach that does not address the central issue.
- C. Just like option A, this response also absolves the administration of all accountability and will only result in escalation of people's anger.

- D. Correct. Such issues require a coordinated and comprehensive approach. While the administration cannot tackle the problem on its own, it also cannot place the entire burden of responsibility on the people. Therefore, acknowledging the importance of local participation and inviting collaboration will pave the way for a concerted effort on the part of the local people. This will also help assuage the feeling of anger amongst the community.
- E. This is again a vague and passive approach that can devolve into apathy and unrest amongst the people.

The correct answer is D.

Question 7

This question actually expects the test takers to identify the number of pairs of letters in a word in which the number of letters between the first letter and the second letter of a pair must have the same number of letters as in English alphabet. For example, the positional difference between **E and I** in English alphabet is three (F,G and H are between them); the positional difference between **E and I** in the word CHILDREN is also three (L,D and R are between them). Hence, **(E, I)** is one such pair.

Similarly, in the word 'CHILDREN', the other pairs can be identified as below:

- (H, I): The number of letter between 'H' and 'I' in English alphabet is **zero** as there is no letter between 'H' and 'I'. Similarly in the word 'CHILDREN' the number of letter between 'H' and 'I' is also zero as there is no letter between 'H' and 'I'.
- (H, N): The number of letter between 'H' and 'N' in English alphabet is **five** as there are five letters between 'H' and 'N'. Similarly in the word 'CHILDREN' the number of letter between 'H' and 'N' is also five as there are five letters between 'H' and 'N'.
- (I, N) : The number of letter between 'I' and 'N' in English alphabet is **four** as there are four letters between 'I' and 'N'. Similarly in the word 'CHILDREN' the number of letter between 'I' and 'N' is also **four** as there are four letters between 'I' and 'N'.

Therefore, there are four such pairs – (E, I), (H, I), (H, N) and (I, N).

The correct answer is C.

Question 8

Option A: English speaking bachelors living in Delhi are indicated by region 7. So, this option is true.

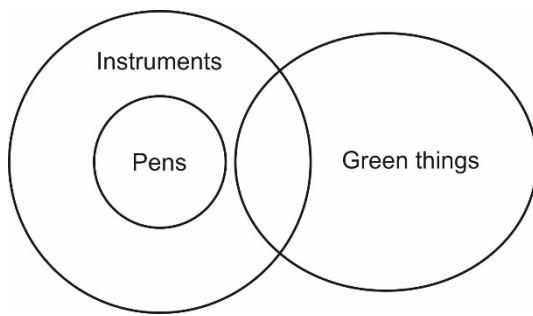
Option B: Region 8 indicates the bachelors who do not know the English language but they are in Delhi. So, this option is true.

Option C: Regions 7 and 9 indicates English speaking persons who are neither tourists nor are they in Delhi. So, this option is true.

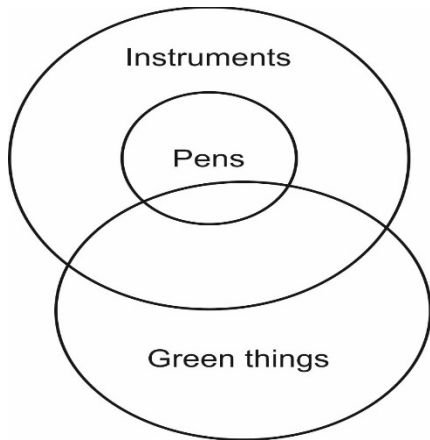
Option D: No region indicates bachelors who is tourists and lives in Delhi. So, this option is **not** true.

The correct answer is D.

Question 9



OR



Option A: We know all pens are instruments. However, this does not mean that all instruments are pens. Thus, option A is not necessarily true.

Option B: Correct. As can be seen from the Venn diagrams, if some green things are instruments then it follows that some instruments are green.

Option C: We only know that some green things are instruments. From this we cannot draw any conclusion regarding the relation between pens and green things.

Option D: As explained above, we cannot establish a conclusive relationship between pens and green things.

Option E: Only statement (3) is correct.

The correct answer is B.

Section III. Language Skills

Question I

Topic- Excessive Inventory

Scope- The various ways in which overstocks can be disposed

Passage Map

P 1- The causes that lead to accumulation of extra stocks

P 2- Two ways of disposing extra stocks- through liquidator or dumping

P 3- An alternative approach to deal with this repeated occurrence

1. (A) The passage is not pointing out a problem. It is analyzing a phenomenon and the different approaches to deal with it.
(B) The tone of the author is not negative or critical at all.
(C) Correct. The author has highlighted a problem and then discussed the various ways in which it can be dealt with.
(D) This is the main idea of the first paragraph, not the entire passage.
(E) The passage goes beyond mere evaluation of two approaches. It also presents a third, more viable alternative and discusses its merits.
The correct answer is C.
2. (A) This information is not available in the passage.
(B) This information is not available in the passage.
(C) This goes beyond the scope of the argument.
(D) Even if this were true, the organizations would stand to make some money on merchandise that is otherwise an absolute waste for them. Also, the passage merely states that the 'liquidators may pay less'. This does not mean that they often do so.
(E) Correct. It is stated in the passage that organizations get a straight tax write-off for dumping their products. This clearly implies that dumping entails a financial benefit for the organizations. Since both the options (using liquidators and dumping) provide some tangible advantage to the organization, the reason manufacturers will most likely avoid using a liquidator is that using liquidators provide no tax write-offs.
The correct answer is E.
3. (A) Correct. Refer to the following lines from the first paragraph- *"Certain styles and colors prove unpopular..... Occasionally the competition introduces a better product.....But in many cases the public's buying tastes simply change....."*. All these statements indicate that excess inventory is largely a product of insufficient market analysis.
(B) The concluding lines of the second paragraph are merely presenting the various public relations' scenarios that might result from dumping products. Hence, this option is incorrect.
(C) This is a tricky option. Though it appears correct, please note that the option talks about 'changes' in the federal tax laws whereas the third paragraph only talks about new provisions in the law.

- (D) This statement conflicts with the information provided in the passage.
(E) This is beyond the information provided in the passage.

The correct answer is A.

4. (A) Correct. Since the government is incentivizing the organizations to contribute their products to charity; the only reason manufactures will find this option less viable is when the costs exceed the benefits being provided.
(B) This information is contradicted by the information provided in the passage. Refer the lines, "*The drawback is the remote possibility of getting caught by the news media.*"
(C) This information is contradicted by the information provided in the passage. Refer the lines, "*The corporation takes a straight cost write-off on its taxes and hauls the merchandise to a landfill....*".
(D) Even if this were true, the new tax allows the corporations to deduct the cost of the product donated plus half the difference between cost and fair market selling price, with the proviso that deductions cannot exceed **twice cost**. Therefore, the organizations stand to gain more by contributing their product to charity.
(E) This option is not relevant to the argument being presented.

The correct answer is A.

Question 2

Sentences B and A form a mandatory pair as A gives an example of the opinion expressed in B. The order of C and D can be decided by applying chronology. While D states that the tradition still exists; statement C talks about how it is manifested today. This makes BADC the correct sequence.

The correct answer is C.

Question 3

The aim is to find the phrase which is making the given statement grammatically incorrect. The clue word in the given sentence is 'separated'. This indicates that the subjects are distinct. Keeping this in mind one may analyze the given sentence.

- (A) 'Though' is correct.
(B) 'almost' is correctly used.
(C) Correct. Since they are not together anymore, Salim's and Javed's stories are also separate. Thus, both the nouns will take an apostrophe ('s).
(D) 'were published' is a grammatically correct expression.
(E) There is an error in C.

The correct answer is C.

Question 4

Option D is the right answer as 'deb' is the correct sequence of prepositions to be used in the given set of sentences.

As we can see:

1. After the burglary, the office bought a sophisticated security system as an insurance *against* any such losses. We use *against* to refer to negative, hostile or opposing actions to an event.
2. She put *up* a brave front at the end of the meeting. *Put up* refers to exhibiting determination or strength in a difficult situation.
3. Sunil decided to avail himself *of* the opportunity to go to Australia for training. To *avail oneself of something* is to take advantage of it.

The correct answer is D.

Question 5

This is an analogy based question. The idea here is to find the option which draws a similar relationship to that of the given pair. Start by making a bridge between the words given in the question stem— ‘allusion’ and ‘reference’ are synonyms that refer to ‘the action of mentioning or remarking about something’. The relationship shared is that of synonyms.

Now, plug the bridge into the answer choices:

(A) ‘Bombast’ refers to pompous language, intended to impress people. ‘Broadcast’ means to transmit a program through radio or television. The words are unrelated to each other. Incorrect.

(B) ‘Dearth’ indicates a lack or scarcity of something while ‘affection’ indicates a feeling of fondness or liking. Incorrect.

(C) While ‘opulence’ indicates great wealth or luxury; ‘grandiloquence’ is a synonym of ‘bombast’. It refers to loud, pompous talk that contains no real substance. These words are unrelated. Incorrect.

(D) ‘Ostentation’ refers to the pretentious show of wealth. ‘Swagger’ refers to arrogant behavior or conduct. Incorrect.

(E) ‘Paucity’ and ‘scarcity’ are synonyms that refer to the dearth or shortage of something. Correct.

The correct answer is E.

XAT 2021

Previous Year Question Papers
with **Solutions**

Verbal Ability & Logical Reasoning

Instructions

For the following questions answer them individually

Question 1

Which of the following sentences are grammatically CORRECT ?

1. Have you any clothes to dispose of?
2. I saw a pleasant dream last night.
3. I have done it many a times safely.
4. Students struggle to cope up with academic pressure.
5. You need not give negative feedback to your employees.

A 4,5,6

B 1,5,6

C 2,3,4

D 3,4,5

E 1,2,3

Answer: B

Question 2

Read the poem carefully, and answer the following question.

I smiled at you because I thought that you
Were someone else; you smiled back; and there
grew
Between two strangers in a library
Something that seems like love; but you loved
me
(If that's the word) because you thought that I
Was other than I was. And by and by
We found we'd been mistaken all the while
From that first glance, that first mistaken smile
Which of the following CANNOT be inferred from the poem?

- A The idea of love is different for the parties involved.
- B Love may start with small acts like glancing and smiling.
- C We make mistakes in love.
- D We don't fall in love with others but with ourselves.
- E We fall in love with strangers.

Answer: D

Question 3

Carefully read the following statement:

The moment we no longer have a free press, anything can happen. What makes it ____ for a totalitarian or any other dictatorship to rule is that ____ are not informed; how can you have an opinion if you are not informed? If everybody always lies to you, the ____ is not that you believe the lies, but rather that nobody believes anything any longer. This is because lies, by their very nature, have to be changed, and a lying government has ____ to rewrite its own history.
Which of the following options will BEST fill up the above blanks meaningfully?

- A Possible, people, consequence, constantly
- B Absurd, subjects, beauty, no reason
- C Unique, senators, reason, enough
- D Necessary, citizens, joy, unusually
- E Unpleasant, plebeians, fact, forced

Answer: A

Question 4

Read the passage carefully and answer the following question.

Geologists have been investigating a potential cycle in geological events for a longtime. Back in the 1920s and 30s, scientists of the era had suggested that the geological record had a 30-million-year cycle, while in the 1980s and 90s researchers used the best-dated geological events at the time to give them a range of the length between 'pulses' of 26.2 to 30.6 million years. Now, everything seems to be in order - 27.5 million years is right about where we'd expect. A study late last year suggested that this 27.5-million-year mark is when mass extinctions happen, too.

Which of the following statements can be BEST concluded from the passage?

- A Not all species go extinct once every 27.5 million years
- B "Pulse" between geological events is constant
- C All species go extinct once every 27.5 million years
- D Geological disasters happen sporadically
- E Mass extinctions and "geological pulse" are correlated

Answer: E

Question 5

Carefully read the following statement:

When I ask people to name three recently implemented technologies that most impact our world today, they usually propose the computers, the Internet and the laser. All three were unplanned, _____, and _____ upon their discovery and remained _____ well after their initial use.

Which of the following options will BEST fill up the above blanks meaningfully?

- A Unpredicted, Unappreciated, Unappreciated
- B Amazing, Shocking, Shocking
- C Surprising, Fulfilling, Unfulfilling
- D Astonishing, Amazing, Amazing
- E Astonishing, Superb, Superb

Answer: A

Question 6

Which of the following sentences have INCORRECT usage of preposition?

1. The manager was sitting at the desk.
2. My work is superior to yours.
3. I prefer coffee than tea.
4. She was accused for stealing gold.
5. This is an exception to the rule.
6. They are leaving to England soon.

A 1,2,3

B 3,4,5

C 3,4,6

D 2,3,4

E 1,3,6

Answer: C

Question 7

Arrange the following sentences in a LOGICAL sequence:

1. But when it comes to companies that lack computer programmers, the government is far more sympathetic.
2. As a result, limited access to foreign talent is a common gripe of tech founders and venture capitalists.
3. And, demand for the latter has soared among British startups.
4. This is less inconsistent than it may seem.
5. An HGV driver takes between six and ten weeks to train; a competent coder several years.

A 3,4,2,1,5

B 1,4,5,3,2

C 3,5,1,2,4

D 1,2,5,3,4

E 3,5,4,2,1

Answer: B

Question 8

Arrange the following sentences in a LOGICAL sequence:

1. In America, primary-age pupils are on average five months behind where they would usually be in maths, and four months in reading, according to McKinsey, a consultancy.
2. As a new school year gets under way in many countries, the harm caused by months of closure is becoming ever clearer.
3. The crisis will accelerate that trend.
4. The damage is almost certainly worse in places such as India and Mexico, where the disruption to schooling has been greater.
5. Even before pandemic, parents around the world were growing more willing to pay for extra lessons in the hope of boosting their children's education.

A 2,1,4,5,3

B 5,1,3,2,4

C 3,5,2,4,1

D 2,3,1,4,5

E 5,3,2,1,4

Answer: A

Question 9

Read the passage carefully and answer the following question.

One theory of accidents is what experts call the Swiss Cheese model. A slab of Swiss cheese has several holes, randomly and unevenly distributed over its surface. If several slabs are stacked together, it would be impossible for something to slip through unless all the holes happen to line up.

If even one slab doesn't align, the impending catastrophe will meet a layer of resistance, and the worst is averted. Aviation professionals will tell you that plane crashes never happen for a single reason. There may be an identifiable primary factor, but it's usually a chain of events, an array of circumstances neatly piling up.

Which of the following statements can be BEST concluded from the passage?

- A Averting catastrophe is actually easier than it seems
- B Any historically relevant event is an accident because it involves a chain of preceding events
- C Accidents cannot be averted since a chain of events have to be averted to avert accidents
- D A catastrophe can be averted if the preceding array of events meets resistance
- E Any disaster is a culmination of many events happening in a particular order

Answer: D

Instructions

Read the passage carefully and answer the THREE questions that follow.

Comprehension:

Stupidity is a very specific cognitive failing. Crudely put, it occurs when you don't have the right conceptual tools for the job. The result is an inability to make sense of what is happening and a resulting tendency to force phenomena into crude, distorting pigeonholes.

This is easiest to introduce with a tragic case. British high command during the First World War frequently understood trench warfare using concepts and strategies from the cavalry battles of their youth. As one of Field Marshal Douglas Haig's subordinates later remarked, they thought of the trenches as 'mobile operations at the halt': i.e., as fluid battle lines with the simple caveat that nothing in fact budged for years. Unsurprisingly, this did not serve them well in formulating a strategy: they were hampered, beyond the shortage of material resources, by a kind of 'conceptual obsolescence', a failure to update their cognitive tools to fit the task in hand. In at least some cases, intelligence actively abets stupidity by allowing pernicious rationalisation.

Stupidity will often arise in cases like this, when an outdated conceptual framework is forced into service, mangling the user's grip on some new phenomenon. It is important to distinguish this from mere error. We make mistakes for all kinds of reasons. Stupidity is rather one specific and stubborn cause of error. Historically, philosophers have worried a great deal about the irrationality of not taking the available means to achieve goals: Tom wants to get fit, yet his running shoes are quietly gathering dust. The stock solution to Tom's quandary is simple willpower. Stupidity is very different from this. It is rather a lack of the necessary means, a lack of the necessary intellectual equipment. Combatting it will typically require not brute willpower but the construction of a new way of seeing our self and our world. Such stupidity is perfectly compatible with intelligence: Haig was by any standard a smart man.

Question 10

Which of the following statements BEST summarizes the author's view on stupidity?

- A Comprehending a problem by applying our existing world view is stupidity
- B The inability to avoid forcing our current views on a new situation is stupidity
- C Pushing our extant solution to fix an alien problem is stupidity
- D The inability to comprehend what is happening around us is stupidity
- E The novelty of the problem, in relation to our cognitive capacity, is the cause of stupidity

Answer: A

Question 11

Which of the following statements BEST explains why stupidity for a smart person is “perfectly compatible with intelligence”?

- A Intelligence is poorly defined, and is usually a perception, making it compatible with stupidity.
- B A new phenomenon creates fear, rushing intelligent people to explain it to put others at ease.
- C Past successes make us believe that we are intelligent and capable of explaining any new phenomenon.
- D Intelligent people are scared to admit their lack of knowledge, and therefore, try to explain everything including things they do not understand.
- E Intelligence, when perceived through past successes, makes any rationalization of a new phenomenon acceptable.

Answer: E

Question 12

Based on the passage, which of the following can BEST help a leader avoid stupidity?

- A Be ready to discuss with everyone before taking a decision
- B Being aware that our current answers are only applicable to the current context
- C Being aware that we are short of the required resources
- D Be cautious in taking a decision until the future unfolds
- E Being aware that we must handle future with a different cognitive tool

Answer: B

Instructions

For the following questions answer them individually

Question 13

Read the excerpt carefully and answer the following question.

The over-whelming preponderance of people have not freely decided what to believe, but, rather, have been socially conditioned (indoctrinated) into their beliefs. They are unreflective thinkers.

Which of the following statements CANNOT be concluded from the excerpt?

- A A normal thinker finds it difficult to recognize what is happening to them
- B Beliefs that appear normal and natural heighten their acceptance
- C A lot of people end up believing what they passionately oppose
- D Things that we do automatically need to be reflected upon
- E The inability to criticize one's belief leads to indoctrination

Answer: C

Instructions

Read the passage carefully and answer the THREE questions that follow.

Comprehension:

What bullshit essentially misrepresents is neither the state of affairs to which it refers nor the beliefs of the speaker concerning that state of affairs. Those are what lies misrepresent, by virtue of being false. Since bullshit need not be false, it differs from lies in its misrepresentational intent. The bullshitter may not deceive us, or even intend to do so, either about the facts or about what he takes the facts to be. What he does necessarily attempt to deceive us about is his enterprise. His only indispensably distinctive characteristic is that in a certain way he misrepresents what he is up to. This is the crux of the distinction between him and the liar. Both he and the liar represent themselves falsely as endeavoring to communicate the truth. The success of each depends upon deceiving us about that. But the fact about himself that the liar hides is that he is attempting to lead us away from a correct apprehension of reality; we are not to know that he wants us to believe something he supposes to be false. The fact about himself that the bullshitter hides, on the other hand, is that the truth-values of his statements are of no central interest to him; what we are not to understand is that his intention is neither to report the truth nor to conceal it. This does not mean that his speech is anarchically impulsive, but that the motive guiding and controlling it is unconcerned with how the things about which he speaks truly are. It is impossible for someone to lie unless he thinks he knows the truth. Producing bullshit requires no such conviction. A person who lies is thereby responding to the truth, and he is to that extent respectful of it. When an honest man speaks, he says only what he believes to be true; and for the liar, it is correspondingly indispensable that he considers his statements to be false.

Question 14

Which of the following statements can be BEST inferred from the passage?

- A Both the liar and the bullshitter misrepresent the truth
- B Both the liar and the bullshitter intend to deceive in their own ways
- C Both the liar and the bullshitter are guided by the truth
- D Both the liar and the bullshitter live in their own worlds of realities
- E Both the liar and the bullshitter are not bound by any conviction

Answer: B

Question 15

Why does the author say that the bullshitter's intention "is neither to report the truth nor to conceal it?"

- A Because bullshitters are not convinced about the truth
- B Because bullshitters know the truth
- C Because bullshitters do not like to deceive
- D Because bullshitters do not find the truth useful
- E Because bullshitters are respectful to the truth

Answer: D

Question 16

When will a liar BEST turn into a bullshitter?

- A When a liar stops responding to the truth
- B When a liar stops worrying about the correct comprehension of reality
- C When a liar focusses only on the outcome and not on telling lies
- D When a liar lies to people about his intention
- E When a liar stops misrepresenting the state of affairs

Answer: B

Instructions

Read the passage carefully and answer the THREE questions that follow.

Comprehension:

What does a good life look like to you? For some, the phrase may conjure up images of a close-knit family, a steady job, and a Victorian house at the end of a street arched with oak trees. Others may focus on the goal of making a difference in the world, whether by working as a nurse or teacher, volunteering, or pouring their energy into environmental activism. According to Aristotelian theory, the first kind of life would be classified as “hedonic”—one based on pleasure, comfort, stability, and strong social relationships. The second is “eudaimonic,” primarily concerned with the sense of purpose and fulfillment one gets by contributing to the greater good. The ancient Greek philosopher outlined these ideas in his treatise

Nicomachean Ethics

, and the psychological sciences have pretty much stuck to them ever since when discussing the possibilities of what people might want out of their time on Earth. But a new paper, published in the American Psychological Association’s *Psychological Review*, suggests there’s another way to live a good life. It isn’t focused on happiness or purpose, but rather it’s a life that’s “psychologically rich.”

What is a psychologically rich life? According to authors Shige Oishi, a professor of psychology at the University of Virginia, and Erin Westgate, an assistant professor of psychology at the University of Florida, it’s one characterized by “interesting experiences in which novelty and/or complexity are accompanied by profound changes in perspective.”

Studying abroad, for example, is one way that college students often introduce psychological richness into their lives. As they learn more about a new country’s customs and history, they’re often prompted to reconsider the social mores of their own cultures. Deciding to embark on a difficult new career path or immersing one’s self in avant-garde art (the paper gives a specific shout-out to James Joyce’s *Ulysses*

) also could make a person feel as if their life is more psychologically rich.

Crucially, an experience doesn’t have to be fun in order to qualify as psychologically enriching. It might even be a hardship. Living through war or a natural disaster might make it hard to feel as though you’re living a particularly happy or purposeful life, but you can still come out of the experience with psychological richness. Or you might encounter less dramatic but nonetheless painful events: infertility, chronic illness, unemployment. Regardless of the specifics, you may experience suffering but still find value in how your experience shapes your understanding of yourself and the world around you.

Question 17

Which of the following statements BEST contrasts Hedonic from Eudaimonic?

- A Hedonic focuses on the emptiness from seeking pleasure, while Eudaimonic focuses on the fulfillment by giving pleasure to others
- B Hedonic focuses on what gives pleasure to self, while Eudaimonic focuses on what he/she believes benefits the society
- C Hedonic believes that pleasure leads to fulfillment while Eudaimonic believes that fulfillment leads to pleasure
- D Hedonic believes in seeking pleasure while Eudaimonic focuses on depriving oneself of pleasure
- E Hedonic focuses on pleasure to self while Eudaimonic focuses on pleasure to the other

Answer: B

Question 18

Which of the following statements BEST defines a “psychologically rich life”?

- A A life that offers interesting experiences that makes you question what life is
- B Any novel experience that affects us cognitively makes us psychologically rich
- C A life that is filled with learning opportunities that makes us an expert in a particular area
- D A life that is filled with novel experiences which changes our view of what a good life is
- E A life where novel experiences result in a fundamental change to our existing views

Answer: E

Question 19

Which of the following statements can be BEST concluded from the passage?

- A A psychologically rich life is a good life.
- B A bad experience can enrich someone psychologically.
- C An unpleasant experience can enable a good life.
- D A good life should not be seen in binary terms.
- E Life need not be good, but can still be psychologically rich.

Answer: B

Instructions

Read the passage carefully and answer the THREE questions that follow.

Comprehension:

What Arendt does for us is to remind us that our “publicness” is as important to our flourishing as our sociability and our privacy. She draws a distinction between what it means to act “socially” and what it means to act “politically.” The social realm for Arendt is both the context where all our basic survival needs “are permitted to appear in public” and also the realm of “behaviour.” One of the things she fears about modern societies is that society - focused on how we behave and what we will permit for ourselves and others - becomes the realm of conformism. This is worrying not just because we don’t really get vibrant societies out of conformism and sameness, but also, Arendt says because there is a risk that we think this is all there is to our living together. We lose ourselves in the tasks of managing behaviour and forget that our true public task is to act, and to distinguish ourselves in doing so. The risk, says Arendt, is therefore that we confuse behaviour with action, that in modern liberal societies “behaviour replaces action as the foremost mode of human relationship.” This confusion can happen in any area of our modern lives and institutions, secular or faith-based. None is immune.

Arendt wants to drive home the point that the healthy public life requires that we do not just see ourselves as social actors but also as fully public persons, committed to judging and acting as members of a common world we want to inhabit and pass on. Arendt tells us that public action is action in which we stand out, are individuated, become in some way excellent in a manner that is of service to others and a greater good. This is the space where we take risks, subject our common life to scrutiny, seek justice (that sometimes requires us to transgress what seem like accepted laws) in order to be increasingly open to the claims and needs of other humans - ones who are not our household and our kin.

Question 20

According to the passage, who can be BEST categorised as a “public person”?

- A An NGO employee who was tasked to lead a campaign against tribal land acquisition.
- B A wildlife photographer who highlighted the plight of poverty-stricken migrants by posting their pictures.
- C An online fraud victim who ran a campaign against online fraudsters.
- D A parent who organized protests against the random fee hike by a local school.
- E A local politician who filed RTI applications to unearth financial scams by a village panchayat.

Answer: B

Question 21

Based on the passage, which of the following options BEST describes “public action”?

- A Acting based on our core beliefs while being mindful of what society thinks
- B Acting for a just cause regardless of what society thinks about it

- C Acting in a way that is perceived to be anti-social
- D Acting based on our conviction regardless of what society thinks
- E Acting in a way that is seen as acceptable to the society

Answer: B

Question 22

Which of the following is the BEST reason for focusing on behaviour instead of acting in public?

- A We are dependent on each other, leading to focus on what is accepted by others
- B Our fear of being called out on our imperfect thoughts leads us to behave
- C Our focus is to survive and not to flourish
- D To survive is not to distinguish ourselves from others
- E The foundation of any vibrant society is based on cooperation and not confrontation

Answer: A

Instructions

Read the poem carefully, and answer the TWO questions that follow.

Comprehension:

It hurts to walk on new legs:

The curse of consonants. The wobble of vowels.

And you for whom I gave up a kingdom

Can never love that thing I was.

When you look into my past

You see

Only weeds and scales.

Once I had a voice.

Now I have legs.

Sometimes I wonder

Was it a fair trade?

Question 23

Which of the following statements BEST reflects the theme of the poem?

- A Our concern for loss is more than what we gain.
- B Our quest for love is accompanied with pain.
- C Our loss of identity is irreparable.
- D As the future unfolds, our distant past looks pleasant.
- E Nostalgic recollection undermines materialistic gains.

Answer: B

Question 24

What does the author BEST mean by "Once I had a voice. /Now I have legs?"

- A The poet is contemplative of his/her identity

- B** The poet has lost his/her speech
- C** The poet puts less value on the new world
- D** The poet's actions speak louder than his/her words now
- E** The poet is indecisive about choosing between the two worlds

Answer: A

Instructions

For the following questions answer them individually

Question 25

Which of the following conditional sentences are grammatically INCORRECT?

1. If Sandhya had started from the hotel on time, she would have not missed the flight.
2. The students wouldn't have completed their assignment even if the professor would have been there.
3. I had travelled across Europe if I weren't afraid of airplane crashes.
4. Saurav won't join music classes unless his father will ask him.
5. Should you wish to join the party, you must let me know by this evening.
6. We would be stupid if we shared our strategy with her.

- A** 4,5,6
- B** 1,5,6
- C** 2,3,4
- D** 3,4,5
- E** 1,2,3

Answer: C

Question 26

Read the passage carefully and answer the following question.

Labouring is simply what we do to survive. We labour to eat. To keep our bodies healthy. To keep roof over our heads, and to keep life reproducing. All animals labour, with or without coaxing.... There's nothing special about labour, save for the fact that without it we would die.

Work, on the other hand, gives collective meaning to what we do. When we work to produce something we both put something into and leave something lasting in the world: a table, a house, a book, a car, a rug, a high precision piece of engineering with which we can order the days into time, or keep a body breathing.

Which of the following statements can be BEST concluded from the passage?

- A** Labour enables us to survive while work makes survival meaningful
- B** Doing what is asked of a role is labour, while going beyond the role is work
- C** Unacknowledged work is labour, while acknowledgement makes it work
- D** To be healthy needs labour, while making others healthy is work
- E** Terrace gardening is labour, while producing a vaccine is work

Answer: A

Decision Making

Instructions

Read the following scenario and answer the THREE questions that follow.

Comprehension:

Raghubir, a reputed doctor, practices medicine in a tier-three city. He owns an imported SUV which he bought 10 years ago, using his hard-earned savings of nearly 5 years. Initially, he used to take it for long rides, but for the last 6-7 years, he only commutes to his clinic, a 10-minute drive from his home.

The SUV has been his proud possession but it demands high maintenance. Also, the diesel-guzzling SUV does not comply with the new emission norms being introduced in the tier-one and tier-two cities. Of late, a few newspapers reported that the new emission norms may be introduced in tier-three cities as well. This news has worried Raghubir.

Question 27

Raghubir is afraid that once the new emission norms are rolled out, he might not be able to use his SUV anymore. Which of the following options will BEST put Raghubir at ease with using his SUV for some more time?

- A His mechanic assures him that the new norms will not be introduced anytime soon
- B His lawyer friends in his city recently bought non-compliant SUVs from tier-two cities
- C His city has many other SUVs which are as old as his
- D As a sought-after doctor, all the law enforcement officials are his patients
- E Non-compliant SUVs are still plying in tier-two cities

Answer: E

Question 28

Anya, Raghubir's daughter, works in a metro city. She is concerned about private transport emissions and is unhappy with her father's diesel-guzzling SUV. Though she wants her father to be more environmentally responsible, she is aware that any drastic suggestion might attract strong resistance. Hence, she wants a solution, acceptable to Raghubir, that gently dissuades him from using his SUV on a daily basis.

Which of the following actions by Anya will BEST dissuade Raghubir from using his SUV on a daily basis?

- A Request Raghubir to use public transport for his daily commute, and use the SUV sparingly
- B Ask his mechanic to explore if the SUV can be retrofitted with a CNG kit
- C Take away Raghubir's SUV to the metro city and gift him a new SUV
- D Gift Raghubir a small petrol car and convince him to sell his SUV
- E Ask Raghubir's secretary to ferry him to the clinic daily in her car, except for the weekends

Answer: D

Question 29

The new emission norms are about to get implemented in tier-three cities, and Raghubir's city will follow suit shortly. Hence, Raghubir starts exploring options of buying an electric vehicle (EV). He lists the following factors that will guide him on buying an electric car:

P. EVs within Raghubir's budget can cover his daily commute, but not the long rides.

Q. A new electric SUV in the market, within his budget, nearly has the same look and feel of his present SUV.

R. EVs cannot be driven beyond a speed of 70 kmph.

S. New charging stations on the main highway, connecting his city to the closest metro city, may come up in another year.

T. The only shop, selling EVs in his city, is ready to trade in Raghubir's SUV at a reasonable price.

The above listed factors have been arranged in a DECREASING order of influence in the options given below.

Which of the following options will BEST help Raghubir buy an electric vehicle immediately?

A TQRPS

B QRTPS

C QTPSR

D TQRSP

E SPTQR

Answer: A

Instructions

Read the following scenario and answer the THREE questions that follow.

Comprehension:

Future Leaders is one of the most prestigious private schools in a small town, next to an industrial hub. Most of its students come from affluent families, but there are some who belong to middle-income and lower middle-income families as well. The school charges an annual fee of ₹2 lakhs, inclusive of all charges, payable at the beginning of the academic year. Roughly 20% of the fees collected goes into paying the salaries of the teachers, another 30% for the upkeep of the school, and roughly 20% for miscellaneous expenses in running day-to-day businesses like supply, cleaning etc. The remaining goes into an exigency corpus.

This year, like the rest of the country, the town has been hit by the coronavirus pandemic. The classes have been shifted online. The local authorities have mandated that all schools have to reduce their fees by 20%. Further, parents should be given extended time to pay the fees if they are in financial distress. Six months into the academic year, only 40% of the parents have paid even the reduced annual fees.

Question 30

Ajay Biswas, the rector of the school, is alarmed by the shortfall in fee payments and wants to find the best solution to manage the situation. He does not want to trouble parents who might be genuinely in financial distress, but feels that there may be a possibility that many parents are taking advantage of the situation.

Which of the following actions by the school will BEST make financially capable parents pay the fees?

A Call parents every three days, requesting them to pay the fees and help their school out

B Share through local newspapers that the school is facing financial crunch and may have to close down if parents don't pay fees

C Offer 10% and 5% discounts to parents paying fees within the next one week and two weeks respectively

D Give a 10% bonus marks to all those students who have paid the fees

E Ask parents to submit a proof of financial distress within two weeks, failing which can bar their wards from attending classes

Answer: E

Question 31

The board of trustees of the school is concerned about the current financial situation and has called Biswas for a meeting. The trustees have thought of the following actions, as listed below, to improve the school finances immediately:

P. Appeal to the local industrialists to donate to the school

Q. Withhold 20% of teachers' salary till the situation improves

R. Ask parents to pay up within a week or show a proof of financial distress

S. Stop online classes for a week to signal the desperate financial crunch

T. Start an extra section in every class and offer admission to whoever is willing to pay fees

Biswas is tasked to find the most feasible way of alleviating the financial crunch immediately.

Which of the following combinations of the above listed actions, in a DECREASING order of preference, will BEST help Biswas in achieving his goal?

A PRSQT

- B TSRPQ
- C QRSPT
- D PSTRQ
- E RSQTP

Answer: E

Question 32

Teachers of Future Leaders contribute to its stellar reputation. Moreover, they assist the school in arriving at several critical decisions. Biswas resents their involvement in school matters as he has to listen to their collective voice rather than the other way around. Biswas feels that the current situation offers him an opportunity to get back at the teachers. He wants to discuss the possibility of reducing teachers' salaries by 20% with the board of trustees. Which of the following, if true, will BEST enable Biswas to present his case for reducing teachers' salaries?

- A Two other well-known private schools in the city, struggling to survive, have resorted to a pay cut
- B Future Leaders pays higher salaries to its teachers in comparison to the other schools in the city.
- C Most of the teachers are alumni of the school, and hence, should be asked to give back to the school through a pay cut
- D 30% of the most experienced teachers may resign if there is a pay cut
- E Teachers' salaries are a significant part of the school's operating cost

Answer: A

Instructions

Read the following scenario and answer the THREE questions that follow.

Comprehension:

Fundamental Research in Science for Corporate Applications (FuRSCA) is an R&D unit of a Public Sector Undertaking (PSU). FuRSCA's employees are research scientists who assist the Public Sector Undertaking through their R&D. Given the far-reaching implications of its research, FuRSCA was established as a separate entity near the factory of the PSU. FuRSCA has three levels of hierarchy viz.: junior, senior and chief scientists and all of them reside on the campus. Hence, every scientist, regardless of hierarchy, resides in a house that is similar in all aspects. Though the scientists are entitled to a house rent allowance (HRA), given the distance of FuRSCA from the city, housing them on the campus makes sense.

The new recruits are provided a transit accommodation in the institute's studio apartments, until vacant houses are available. For these recruits, a queue has been created on the basis of their date of joining and not on hierarchy, with the most recent recruit going to the last in the queue. Execution of this policy is the responsibility of the FuRSCA Chief Administrative Officer (CAO), who reports to the Director of FuRSCA.

Question 33

Harsh Kohli resides in house no. 324. Since long, Harsh wants to move from a 3 series house to a 2 series house because his mother-in-law, a chief scientist, lives alone in house no. 225. A few years back, Harsh formally requested the CAO to allow him to move to a 2 series house whenever available. Recently, when house no. 224 becomes vacant, Harsh appeals to the CAO for that house, citing his earlier request. Currently, there are five scientists waiting in the queue and Sauf Tangud is on the top of the queue. From the following options, choose the BEST action to be taken by the CAO without violating the existing housing policy.

- A Allot house no. 224 to Sauf, asking Harsh to negotiate a possible swap with Sauf
- B Ask Harsh to join the queue because scientists in the queue should be given priority
- C Ignore Harsh's request since it violates the housing policy
- D Ask Harsh to move to the house no. 224 immediately, and allocate Harsh's house to Sauf
- E Create a separate queue for extant residents and give them the first right to refuse

Answer: E

Question 34

Rawng Regrud joins FuRSCA recently and is placed third in the housing queue. He has been temporarily housed in a studio apartment. Given that the studio apartment is too small, he requests his sister to take care of their ailing parents while he awaits a regular house allotment. As months pass, his sister finds it difficult to accommodate her parents along with her in-laws. She requests Rawng to accommodate them with his family. Since he is third in the queue, he may not get a house allotted in the near future. He approaches the CAO with a request to be moved up the queue on humanitarian grounds.

Which of the following responses by the CAO shall be perceived as the MOST appropriate by all the stakeholders?

- A Ask Rawng to meet with the director of FuRSCA and present his case to get an exception
- B Ask Rawng to negotiate and arrive at a consensus with the two scientists ahead in the queue which the CAO shall implement
- C Inform Rawng that nothing can be done since violation of rules will set a wrong precedence
- D Facilitate Rawng in getting a house in the city, along with a free commutation for the first three months
- E Move Rawng to the top of the queue, and make a rule that scientists with ailing parents shall be given preference

Answer: D

Question 35

Of late, the CAO has received several requests from the residents of 3 series houses to move to other series houses. The CAO is aware that this is largely because of their own noisy factory nearby. Due to limited housing available on the campus, he must do something before the problem worsens. He wants to find a solution that makes the lives of 3 series residents more comfortable.

Which of the following actions can BEST help the CAO in achieving his goal?

- A Provide 3 series residents with a hardship allowance of 15% of basic salary
- B Offer a higher HRA to 3 series residents, nudging them to move to the city
- C Introduce a policy of accelerated promotion for junior scientists living in 3 series quarters
- D Appeal to the top management to make the factory work for only five days a week
- E Install expensive sound proof windows in the 3 series quarters

Answer: E

Instructions

Read the following scenario and answer the THREE questions that follow.

Comprehension:

Korkai is a serene village, nestled in a small island, separated from the mainland by a strait— the world forgot to name. Its inhabitants are mostly fishermen; a few are cattle-grazers too. A boat ride across the strait is the only mode of transport to the mainland. Budugu, the boatman, ferries people, cattle, and bicycles across the strait in his boat for a living. The remoteness and the lack of connection to the mainland has served him well. He has a family of five. His two daughters are away studying in a city college and dream of corporate jobs in the cities. His ailing mother and wife complete his family. Budugu sent his daughters to study in the city as there is only one school in Korkai, run by an NGO. The NGO prepares the village kids for higher studies. For those who cannot go to cities, the NGO teaches them about the virtues of the local way of life. Budugu is a member of the village Panchayat that runs the village administration. At Korkai, hardly anyone remembers the local MLA or MP. Interestingly, the local MLA visited last week, and informed the islanders of major changes planned for the region: urgent construction of a bridge connecting the island to the mainland, and real estate development. She announced that the island will become a well-known eco-tourism destination in the state. She stressed that the local livelihood, dependent on fortunes at these, might enjoy the certainty in minimum wages, meted out by the eco-resort owners. Nevertheless, some villagers fear that the bridge will irreversibly change their lives and livelihoods.

Question 36

Budugu fears that the proposed bridge will leave him jobless, and is determined to do something about it. He wants to gather effective support in order to get the construction of the proposed bridge delayed.

Which of the following will be the MOST feasible option for Budugu to gather effective support?

- A Form a boat rowers' association and sit on a hunger strike to protest the proposed bridge
- B Inform the environmental experts in the nearby cities that the strait is home to rare fish, frogs and turtles
- C Suspend his boat services till the villagers start supporting his cause
- D Partner with the local NGO and campaign that the developments will ruin the local way of life
- E Get a resolution passed by the Panchayat that the bridge will ruin the local way of life

Answer: D

Question 37

The local MLA is worried about the resistance to the project. This project, like her other successful projects in nearby villages, was supposed to garner a significant amount of funding. Moreover, it would make her the face of development in the state; perhaps, even would land her a ministerial berth. However, Budugu's activism has cast the project in a bad light among the popular minds. The MLA wants to protect her pro-development image.

Which of the following is the BEST course of action for the MLA?

- A Create a fishermen and boat rowers' cooperative in the island and donate generously to it
- B Invite the village Panchayat for a discussion on a possible compromise solution
- C Appoint a task force to find alternative land nearby for the project
- D Discredit Budugu in a public meeting by announcing that he is putting his interests over and above the village development
- E Publicise widely that the project will improve the socio-economic condition of the island

Answer: E

Question 38

As the project gets delayed, Budugu becomes a well-known social activist with a lot of followers. When Pragati, his elder daughter, finishes her education and starts looking for employment, a few known corporates refuse her a job because of her father's "anti-development" stand.

Which of the following options BEST communicates to the corporates that Pragati has an identity of her own?

- A Start a blog and update it regularly with views on current affairs
- B Discuss in a social media post why she supports the proposed development in her island village
- C Showcase on social media the accolades and awards she received in her college
- D Stop using her last name in her job applications
- E Go all out on social media to explain how her father's activism is misconstrued by certain corporates

Answer: D

Instructions

Read the following scenario and answer the THREE questions that follow.

Comprehension:

Dileep Dosan sells dosas in front of an upscale hospital at a city in Punjab. He only sells two varieties of dosas: plain for ₹25 and masala for ₹40.

His dosa stall is popular amongst the hospital staff members, who mostly hail from South India and form his core clientele. They frequent his stall during office hours as they find his dosas to be reasonably priced. Though the hospital staff members can visit the upscale food court on the top floor of the hospital, they prefer his stall for breakfast and lunch, and even for occasional evening snacks. His daily sale volume varies between 300 and 400 dosas, in which the demand for masala dosas is around 50-60%.

Question 39

One day, Dileep, while walking through the hospital food court, sees a vacant spot. He wonders if he can shift his stall to that spot. Which of the following information will dissuade him the MOST from shifting his stall to the food court?

- A The food court closes by 10:30 pm, though his current stall is open till midnight.
- B The food court has no other stall selling dosas.
- C The food court sees a daily footfall of about 5000 people.
- D All the restaurants in the food court, except the fast-food stalls, sell North Indian meal during lunch time.
- E On enquiry, he learnt that the cheapest dish in the food court is priced at ₹200.

Answer: E

Question 40

Dileep shifts his stall to the hospital food court. He prices his plain dosa at ₹40 and masala dosa at ₹60. However, two months on, he is serving only about 150 dosas per day. The clientele is mostly the same hospital staff members, who had been his customers before he moved to the food court.

Which of the following actions will BEST help Dileep in increasing his sales?

- A Reduce price by 20% for hospital staff, and increase the price by 50% for others
- B Introduce a South Indian meal, exclusively for the hospital staff members at a discounted rate of ₹40 per plate
- C Increase prices of all the food items by 50% and introduce a new Shezwan dosa at ₹200 a plate
- D Add more varieties of dosas at higher price points, and reduce plain and masala dosa prices to ₹25 and ₹40 respectively
- E Introduce a North Indian meal, and give a discount of 20% to the hospital staff members

Answer: D

Question 41

On the first anniversary of his stall at the food court, Dileep reviews his customer base. Almost all of his customers are the hospital staff members. Though he wishes to serve the general visitors at the hospital, they avoid his stall. On enquiring, he discovers that visitors generally avoid his stall because it is majorly frequented by the hospital staff members, giving it a feel of a staff canteen. Dileep realizes his best efforts have not given him any extra sales and the visitors can potentially increase his revenue by a considerable amount.

Which of the following options can BEST help Dileep in discouraging hospital staff members from visiting his stall while increasing his overall revenue?

- A Charge the hospital staff members a premium to offset the losses due to their presence
- B Request the hospital management to prohibit hospital staff from entering the food court
- C Introduce a massive discount on price for the next two months to increase the footfall
- D Appeal to the hospital management to give a space in the staffroom where an exclusive dosa counter can be set up by Dileep

E Provide a discount to those hospital staff members who order on phone, and deliver food in their staffroom

Answer: E

Instructions

Read the following scenario and answer the THREE questions that follow.

Comprehension:

A2Z is a state-funded leading engineering college in the country, renowned for its teaching and placements. Now, A2Z aspires to be a global leader in research as well. A2Z has, therefore, decided to push for better quality research from its newly recruited faculty members. In the past, a few faculty members were confirmed because of their exceptional teaching feedback even though their research output was below par. Currently, the Dean, in consultation with the academic council, has included the quality of research as a mandatory requirement along with teaching excellence for the confirmation of the newly recruited faculty members. (The academic council comprises of the senior faculty members from different departments.)

Initially, newly recruited faculty members are put on a probation for three years. Either they are confirmed or their probation is extended or their services are terminated, based on teaching and research contributions. Once confirmed, their job is secure along with other additional perquisites.

Aparna joined the social sciences department of A2Z two years back. She is amongst the many faculty members, recruited after the new norms for confirmation were introduced. She completed her doctorate from a reputed university in the USA, with a significant research contribution. However, after joining A2Z, Aparna got deeply involved in social outreach as COVID-19 was spreading. Though her social outreach has given her immense satisfaction, she has nothing to show against research contributions; further, it has impacted her teaching effectiveness. Her confirmation is due in a year.

Question 42

The Dean, during the annual appraisal of Aparna, realizes that her research contribution needs considerable investment of time and efforts. He is concerned that her performance could set a wrong precedent for the new faculty recruits. The dean wants to communicate to the new faculty recruits that research contribution is critical.

Which of the following actions will BEST help the Dean in achieving the objective, while being fair to Aparna?

- A** Appreciate Aparna's social outreach, but advise her to focus on research and teaching contributions as they are essential for confirmation
- B** Extend Aparna's probation period by an additional year, while reminding her about the research and teaching contributions needed for confirmation
- C** Increase her teaching and research requirements, while extending her probation period by two years
- D** Exhort Aparna to suspend her social outreach activities till the end of her probation, and to focus on research and teaching instead
- E** Suggest Aparna to start looking for a new job in the time available to her

Answer: C

Question 43

One year on, Aparna continues with her social work. Gradually, she gets closer to the end of her probation and she has not much to show against her teaching and research contributions. However, her social work has been widely appreciated by the local media. The Chief Minister of the state wants Aparna to take a larger role in social outreach and assist the government.

The Dean is afraid that not confirming Aparna might prompt her to leave the institution, sending a wrong signal to the outside world. However, he also wants to send a message to the newly joined faculty members that teaching and research contributions are essential for confirmation.

Which of the following actions by the Dean is the MOST sustainable given the circumstances?

- A** Confirm Aparna, but freeze her increments and promotions until her research contributions are as per the expected standards
- B** Offer Aparna a five-year contractual position after which she has to leave irrespective of her contributions
- C** Declare that Aparna's extraordinary achievement deserves to be treated exceptionally, and confirm her

- D** Extend Aparna's probation by three years, and tell her that she would have to leave if her research and teaching do not improve in that period
- E** Offer to create a non-teaching position of outreach officer for Aparna, but terminate her from the teaching position

Answer: E

Question 44

expresses her fear that she might be let go by A2Z because she has not met its teaching and research requirements. Consequently, the academic council urges the Dean to review the faculty confirmation policy. The Dean, however, believes that any change in the policy will be a setback to the institute's aspirations of becoming a global leader in research.

Which of the following actions by the Dean will be the MOST appropriate, given the circumstances?

- A** Give an interview to a local newspaper and share Aparna's lack of research and poor teaching feedback
- B** Confirm Aparna, but ask her to issue a public statement, acknowledging the importance A2Z gives to research contributions
- C** Convey to Aparna that the institute is eager to retain her; however, emphasize that she should focus on research to get confirmed
- D** Tell Aparna that she is being let go for insulting the college on a public platform
- E** Confirm Aparna, but make it clear that her future promotions will be tied to her research contribution and teaching feedback

Answer: C

Instructions

Read the following scenario and answer the THREE questions that follow.

Comprehension:

Sundaresan was a professor of Corporate Responsibility at a premium management institution. As a requirement of his course, students had to synthesize sustainability challenges, faced by thermal power companies and submit an assignment on them. Though it was an individual assignment, some students sought permission from Sundaresan to work on the assignment as a team. Sundaresan knew that collaboration fosters peer learning, and therefore, allowed them to work in teams. However, he mandated that a team should not exceed three members. While 15 students elected to work individually, other 15 formed teams of three each, and another 10 formed teams of two members each.

Question 45

As assignment deadline came closer, Sundaresan was approached by Abbas Warram, who chose to work in a team of three members. He informed Sundaresan that Venkamma, his team member, distressed by the death of her grandmother, could not work on her bit of the assignment. Abbas requested for a deadline extension so that she could finish her part of the assignment. By then, many students who were working alone had already submitted their assignments.

Which of the following actions by Sundaresan is the MOST appropriate, given the circumstances?

- A** Give extra time to Venkamma to work individually and ask the other two to stick to the original deadline as a team
- B** Extend the deadline for the team while imposing a one-grade penalty for the deadline extension
- C** Warn Abbas that such issues should not be flagged to the professor and should be handled within the team
- D** Give the students a deadline extension, but add an extra assignment for the team as a new requirement
- E** Disband the team and ask each student to work individually

Answer: D

Question 46

When Sundaresan was about to grade the assignments, he received a request from the class representative regarding the students who worked individually. The request was to give those students additional marks because they handled the entire workload. This would improve their course grade significantly.

Which of the following is the MOST appropriate action by Sundaresan to mark the assignments?

- A Reduce marks for those who worked in teams by 10%
- B Divide the total marks awarded to a team by the number of team members
- C Give 10% extra marks to all those who worked individually
- D Convert the assignment into a non-graded assignment because both the individuals and the teams worked on the same assignment
- E Treat both individual work and team work equally

Answer: E

Question 47

Sundaresan was going through the submitted assignments. Team 9, with three members, had impressive exhibits and charts. Later, he discovered that Team 13, with three members, also had the same exhibits and charts. He realized that one of the teams had copied from the other. Hence, he informed both the teams that he would award an F-grade (fail grade) to both the teams for copying. Later that evening, Aashi from Team 9 called and admitted to sharing exhibits and charts with Aanvi of Team 13. Further, she mentioned that Aanvi could not put enough efforts since she lost significant amount of time due to COVID-19. Therefore, Aanvi requested for help. However, Aanvi assured Aashi that she would not reproduce the shared content. Aashi requested Sundaresan to punish her and Aanvi and spare others as they were not involved.

Which of the following actions by Sundaresan is the MOST appropriate?

- A Ask both the teams to work on an extra assignment to avoid an F-grade.
- B Award an F-grade to both Aashi and Aanvi, and spare others
- C Spare both the teams as such a confession is rare
- D Punish Aanvi with an F-grade and spare others
- E Punish both the teams by giving F-grades

Answer: B

Quant

Instructions

For the following questions answer them individually

Question 48

A supplier receives orders from 5 different buyers. Each buyer places their order only on a Monday. The first buyer places the order after every 2 weeks, the second buyer, after every 6 weeks, the third buyer, after every 8 weeks, the fourth buyer, every 4 weeks, and the fifth buyer, after every 3 weeks. It is known that on January 1st, which was a Monday, each of these five buyers placed an order with the supplier.

On how many occasions, in the same year, will these buyers place their orders together excluding the order placed on January 1st?

- A 1
- B 5

C 2

D 4

E 3

Answer: C

Explanation:

The supplier receives his orders from the five buyers once every 2 weeks, once every 6 weeks, once every 8 weeks, once every 4 weeks, and once every 3 weeks.

The number of occasions where all the five buyers place the order on the same day is :

The LCM of the 5-time frames during which the 5 buyers place their orders :

Hence the LCM is :

(2, 6, 8, 4, 3).

= 24 weeks.

Once every 24 weeks, all five of them place the order simultaneously.

A year has 53 weeks in total :

Hence all five of them place the orders after 24 weeks, 48 weeks.

Question 49

Some members of a social service organization in Kolkata decide to prepare 2400 laddoos to gift to children in various orphanages and slums in the city, during Durga puja. The plan is that each of them makes the same number of laddoos. However, on the laddoo-making day, ten members are absent, thus each remaining member makes 12 laddoos more than earlier decided.

How many members actually make the laddoos?

A 100

B 50

C 90

D 24

E 40

Answer: E

Explanation:

Initially considering the number of members = a

The number of laddoos each member is required to make as per the original plan = b.

Given : $a \cdot b = 2400$.

Given that 10 members were absent and each member had to make an additional 12 laddoos :

$(a-10) \cdot (b+12) = 2400$.

$ab - 10b + 12a - 120 = 2400$.

Since $a \cdot b = 2400$.

Hence $12a - 10b = 120$.

Substituting $b = 120/a$. $12a - 10 \cdot \left(\frac{2400}{a}\right) = 120$

$= 12a^2 - 24000 - 120a = 0$

The roots are $a = 50$, $a = -40$.

Hence $a = 50$, $b = 48$.

The number of people who took part in making ladoos $= a - 10 = 40$

Question 50

Ramesh and Reena are playing with triangle ABC. Ramesh draws a line that bisects $\angle BAC$; this line cuts BC at D. Reena then extends AD to a point P. In response, Ramesh joins B and P. Reena then announces that BD bisects $\angle PBA$, hat a surprise! Together, Ramesh and Reena find that $BD = 6$ cm, $AC = 9$ cm, $DC = 5$ cm, $BP = 8$ cm, and $DP = 5$ cm.

How long is AP?

A 11.5 cm

B 11.75 cm

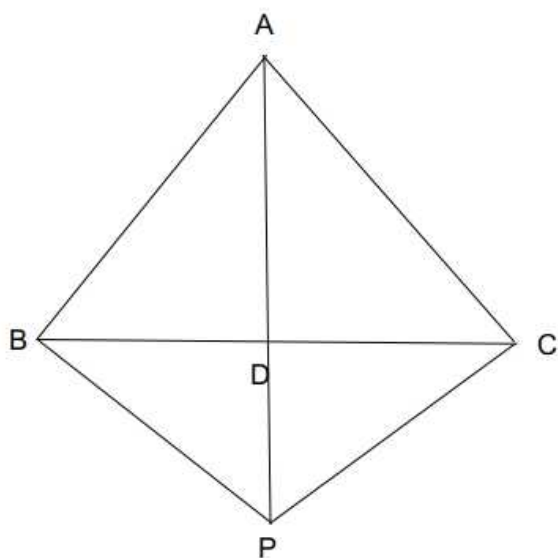
C 10.5 cm

D 11 cm

E 10.75 cm

Answer: B

Explanation:



Given:

$BD = 6$ cm, $AC = 9$ cm, $DC = 5$ cm, $BP = 8$ cm, and $DP = 5$ cm.

Since AD is the angular bisector applying the angular bisector theorem we have :

$$\frac{AB}{BD} = \frac{AC}{CD}$$

Hence : Considering $AB = x$ cm.

$$\frac{9}{5} = \frac{x}{6}$$

$x = 10.8$ cm.

Now since BD is the angular bisector for angle PBA we have :

Applyinh the internal angle bisector theorem :

$$\frac{PB}{PD} = \frac{BA}{AD}$$

Considering $AD = y$ cm.

$$\frac{8}{5} = \frac{10.8}{y}$$

$y = 6.75$ cm.

$$AP = AD + DP.$$

$$= 6.75 + 5 = 11.75 \text{ cm}$$

Question 51

Sheela purchases two varieties of apples - A and B - for a total of Rupees 2800. The weights in kg of A and B purchased by Sheela are in the ratio 5 : 8 but the cost per kg of A is 20% more than that of B. Sheela sells A and B with profits of 15% and 10% respectively.

What is the overall profit in Rupees?

A 340

B 600

C 240

D 480

E 380

Answer: A

Explanation:

The two types of apples sold A and B are bought in the ratio of 5: 8.

Considering the weights to be 5x and 8x.

The cost price of A is 20 percent higher than that of B.

Considering the cost price of B = y, A = 6y/5.

The total cost price of A = $(5x) \cdot \left(\frac{6y}{5}\right)$

The total cost price of B = $(8x) \cdot (y)$

The total cost price = $8xy + 6xy = 14xy$

$14xy = 2800$.

$xy = 200$.

The cost price of A = 1200.

The cost price of B = 1600.

A is sold at a profit of 15 percent. 15 percent of 1200 = 180.

B is sold at a profit of 10 percent. 10 percent of 1600 = 160.

The total profit is $180 + 160$

$= 340$

Question 52

A marble is dropped from a height of 3 metres onto the ground. After hitting the ground, it bounces and reaches 80% of the height from which it was dropped. This repeats multiple times. Each time it bounces, the marble reaches 80% of the height previously reached. Eventually, the marble comes to rest on the ground.

What is the maximum distance that the marble travels from the time it was dropped until it comes to rest?

A 15 m

B 27 m

C 24 m

D 12 m

E 30 m

Answer: B

Explanation:

Given the ball falls from a height of 3 meters.

The ball reaches a height which 0.8 times the original height every time.

Hence this is in the form of a geometric progression. We need to count distance when the ball flies upward and downward.

Hence considering every time the ball flies upward to a series with terms :

$h_1, h_2, \dots$

Every time the ball falls down to be

$d_1, d_2, \dots$

$h_1 = (0.8) \cdot 3, h_2 = (0.8) \cdot (0.8) \cdot 3, \dots$

$d_1 = 3, d_2 = 3 \cdot (0.8), d_3 = 3 \cdot (0.8) \cdot (0.8), \dots$

$h_1 + h_2 + \dots = \text{Sum of an infinite geometric progression.} = 3 \cdot 0.8(1 + 0.8 + 0.64 + \dots)$

The sum of an infinite GP with r less than 1 is : $\frac{a}{1-r}$

$$= 2.4 \cdot \left(\frac{1}{1-0.8} \right) = 12 \text{ meters}$$

The sum of $d_1 + d_2 + \dots$

$$= 3 + (h_1 + h_2 + \dots) = 15.$$

The total distance = $15 + 12 = 27$ meters.

Question 53

The sum of the cubes of two numbers is 128, while the sum of the reciprocals of their cubes is

2. What is the product of the squares of the numbers?

A 64

B 256

C 16

D 48

E 32

Answer: C

Explanation:

Considering the two numbers to a, b :

We were given that :

$$a^3 + b^3 = 128$$

$$\frac{1}{a^3} + \frac{1}{b^3} = 2$$

$$\frac{(a^3 + b^3)}{a^3 \cdot b^3} = 2 = \frac{128}{k}$$

$k = 64$.

$$\text{Hence } a^3 \cdot b^3 = 64$$

$$a \cdot b = 4 \text{ and } a^2 \cdot b^2 = 16$$

Question 54

Nadeem's age is a two-digit number X , squaring which yields a three-digit number, whose last digit is Y . Consider the statements below:

Statement I: Y is a prime number

Statement II: Y is one-third of X

To determine Nadeem's age uniquely:

- A either of I and II, by itself, is sufficient.
- B only II is sufficient, but I is not.
- C only I is sufficient, but II is not.
- D it is necessary and sufficient to take I and II together.
- E even taking I and II together is not sufficient.

Answer: D

Explanation:

The age of Nadeem is a two-digit number. When squared yields a three-digit number whose last digit is Y . Y is a prime number.

Using statement 1:

When a number is squared :

The last digit of the number can be :

1, 2, 3, 4, 5, 6, 7, 8, 9. When squared the last digit can be :

For a number ending with 1: 1

For a number ending with 2: 4

For a number ending with 3: 9

For a number ending with 4: 6

For a number ending with 5: 5

For a number ending with 6: 6

For a number ending with 7: 9

For a number ending with 8: 4

For a number ending with 9: 1

The only possible prime number is 5.

Hence the last digit of X is 5 and Y is 5.

Using statement 2 : $Y = X/3$.

This alone cannot be sufficient to determine the possibilities for Y and X .

Combining both the statements :

Since $Y = 5$, then the value of $X = 15$.

The age is equal to 15.

Question 55

A tall tower has its base at point K . Three points A , B and C are located at distances of 4 metres, 8 metres and 16 metres respectively from K . The angles of elevation of the top of the tower from A and C are complementary.

What is the angle of elevation (in degrees) of the tower's top from B ?

- A 60

B 30

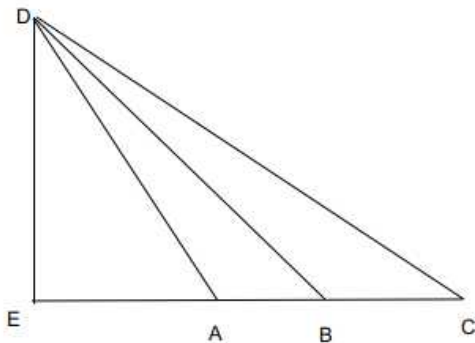
C 45

D We need more information to solve this.

E 15

Answer: C

Explanation:



Given the distances are :

AE = 4 meters , EB = 8 meters and EC = 16 meters.

Considering the length of ED = K.

Given the angles DAE and angle DCE are complementary.

Hence the angles are A and 90 - A.

$\tan(90-A) = \cot A$

$$\tan DAE = \frac{k}{4} \text{ and } \tan DCE = \tan DAE = \frac{k}{16}$$

$$\text{Hence } \frac{k}{16} = \frac{4}{k}$$

k = 8 meters.

The angle DBE is given by

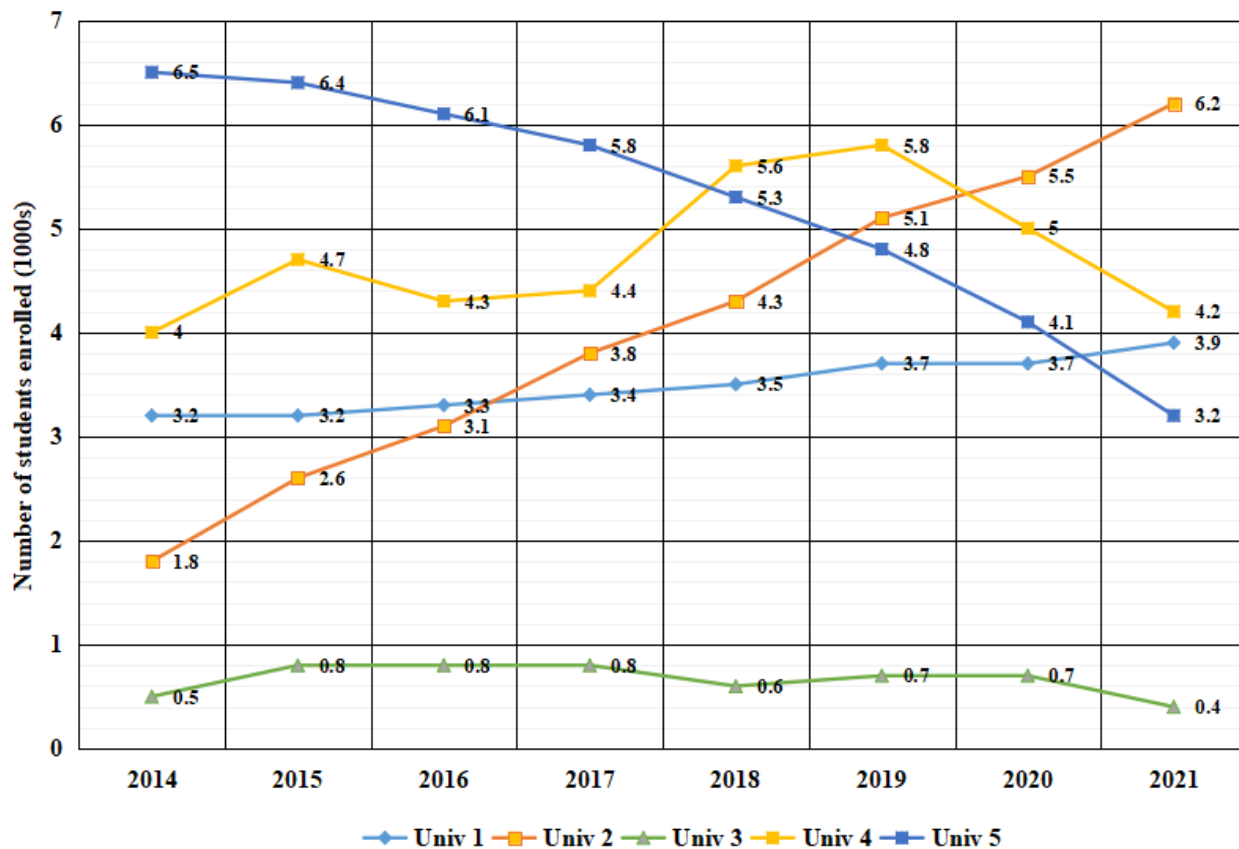
$$\tan DBE = \frac{k}{8} = 1$$

Hence the angle is equal to 45 degrees.

Instructions

Read the following scenario and answer the THREE questions that follow.

The enrolment of students (in 1000s) at each of the five universities named – MPU, JSU, LTU, PKU and TRU – during each of the eight years from 2014 to 2021 is represented in the following chart. The names of these universities are not shown in the chart, Stead they are labelled Unit 1, Unit 2, Unit 3, Unit 4 and Unit 5.



However, these four pieces of information are available:

W: The magnitudes of TRU's and MPU's net change in enrolment between 2014 and 2021 are the closest among any two universities.

X: LTU had the same enrolment in consecutive years at least twice between 2014 and 2021.

Y: The increase in JSU's enrolment from 2015 to 2019 is about 50% of TRU's total enrolment in 2020.

Z: The enrolment in one of LTU and PKU had a steady decline between 2014 and 2021, while the enrolment in the other had no decline between any two consecutive years in the same period.

Question 56

Which of the five universities can Univ 4 possibly be?

- A Either TRU or MPU
- B Either MPU or PKU
- C Only PKU
- D Only TRU
- E Only MPU

Answer: D

Explanation:

Using condition W :

The magnitudes of the net change in enrollment between 2014 and 2021 is closest among any two universities for TRU and MPU.

Going by the color of the lines the net change for different universities is:

Univ 1: 0.7

Univ 2: 4.4

Univ 3: 0.1

Univ 4: 0.2

Univ 5: 3.3

The closest among these are: Univ 3 and Univ 4. They can possibly be : (TRU/MPU)

Using condition X :

The university LTU must have the same enrollment in consecutive years at least twice :

LTU can either be Univ 3 or Univ 1 but since Univ 3 must be among TRU and MPU. LTU is university 1.

Using condition Y :

The increase in the enrollment of JSU between the years 2015 and 2019 is 50 percent of TRU's total enrollment in 2020.

Considering :

TRU = Univ 4

The enrollment is 5.

TRU = Univ 3

The enrollment is 0.7

For TRU as Univ 3, there is no university whose increase in enrollment between 2015 and 2019 is 50 percent of TRU.

Hence TRU = Univ 4.

Since the increase in enrollment for JSU is half of TRU. The increase must be half of 5 = 2.5

The only possible case is JSU = Univ 2.

MPU = Univ 3.

LTU = Univ 1

PKU = Univ 5.

Question 57

Which Univ's enrolment was around twice that of LTU in 2014?

A Only JSU's

B Only PKU's

C Either PKU's or TRU's

D Either JSU's or MPU's

E Only MPU's

Answer: B

Explanation:

Using condition W :

The magnitudes of the net change in enrollment between 2014 and 2021 is closest among any two universities for TRU and MPU.

Going by the color of the lines the net change for different universities is:

Univ 1: 0.7

Univ 2: 4.4

Univ 3: 0.1

Univ 4: 0.2

Univ 5: 3.3

The closest among these are: Univ 3 and Univ 4. They can possibly be : (TRU/MPU)

Using condition X :

The university LTU must have the same enrollment in consecutive years at least twice :

LTU can either be Univ 3 or Univ 1 but since Univ 3 must be among TRU and MPU. LTU is university 1.

Using condition Y :

The increase in the enrollment of JSU between the years 2015 and 2019 is 50 percent of TRU's total enrollment in 2020.

Considering :

TRU = Univ 4

The enrollment is 5.

TRU = Univ 3

The enrollment is 0.7

For TRU as Univ 3, there is no university whose increase in enrollment between 2015 and 2019 is 50 percent of TRU.

Hence TRU = Univ 4.

Since the increase in enrollment for JSU is half of TRU. The increase must be half of 5 = 2.5

The only possible case is JSU = Univ 2.

MPU = Univ 3.

LTU = Univ 1

PKU = Univ 5.

Since LTU is Univ 1 the university with an enrollment twice that of LTU = $2 \times (3.2)$

= 6.4.

Hence the only possible case close by is Univ 5 (PKU)

Question 58

Which amongst the pieces of information mentioned below, if removed, will not prevent us from uniquely identifying the five universities?

A Either X or Y

B Y

C Z

D NONE, since all four pieces of information are necessary to uniquely identify the five universities.

E X

Answer: C

Explanation:

Using condition W :

The magnitudes of the net change in enrollment between 2014 and 2021 is closest among any two universities for TRU and MPU.

Going by the color of the lines the net change for different universities is:

Univ 1: 0.7

Univ 2: 4.4

Univ 3: 0.1

Univ 4: 0.2

Univ 5: 3.3

The closest among these are: Univ 3 and Univ 4. They can possibly be : (TRU/MPU)

Using condition X :

The university LTU must have the same enrollment in consecutive years at least twice :

LTU can either be Univ 3 or Univ 1 but since Univ 3 must be among TRU and MPU. LTU is university 1.

Using condition Y :

The increase in the enrollment of JSU between the years 2015 and 2019 is 50 percent of TRU's total enrollment in 2020.

Considering :

TRU = Univ 4

The enrollment is 5.

TRU = Univ 3

The enrollment is 0.7

For TRU as Univ 3, there is no university whose increase in enrollment between 2015 and 2019 is 50 percent of TRU.

Hence TRU = Univ 4.

Since the increase in enrollment for JSU is half of TRU. The increase must be half of 5 = 2.5

The only possible case is JSU = Univ 2.

MPU = Univ 3.

LTU = Univ 1

PKU = Univ 5.

All the universities can be uniquely determined without using the condition Z.

Instructions

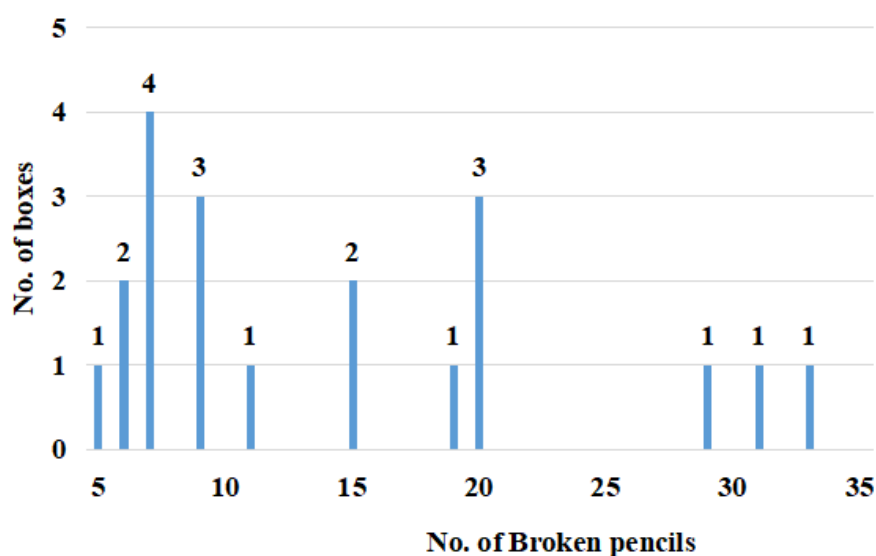
Read the following scenario and answer the THREE questions that follow.

A pencil maker ships pencils in boxes of size 50, 100 and 200. Due to packaging issues, some pencils break. About the 20 boxes he has supplied to a shop, the following information is available:

* Box no. 1 through 6 have 50 pencils, Box no. 7 through 16 have 100 pencils and Box no. 17 through 20 have 200 pencils.

* No box has less than 5% or more than 20% broken pencils.

Following is the frequency table of the number of broken pencils for the twenty boxes:



Question 59

Which of the following can possibly be the sequence of the number of broken pencils in Boxes 7-16?

- A 6,7,9, 11,15,19,20,20,20,29
- B 5,6,6,6,11,15,15,20,20,20
- C 7,7,7,7,11,15,15,19,20,20
- D 7,7,9,9,11,13,15,19,20,20
- E 5,7,7,7,9,11,15,20,20,20

Answer: C

Explanation:

Boxes 7 to 16 contain a total of 100 pencils each. The minimum number of broken pencils the box can hold is 5 percent of the total

pencils and a maximum of 20 percent of the total pencils.

5 percent of 100 = 5 and 20 percent of 100 = 20 pencils.

Hence the number of broken pencils must be in the range of 5 to 20.

The frequency of the different number of broken pencils is :

5 - 1

6 - 2

7 - 4

9 - 3

11 - 1

15 - 2

19 - 1

20 - 3

29 - 1

31 - 1

33 - 1

The boxes cannot contain 29, 31, 33 to be the number of broken pencils because they are beyond 20 percent.

Since boxes 1- 6 can contain only between 2.5 to 10 pencils. The remaining boxes which include broken pencils of numbers less than 10 must be a part of 7 - 16. Because boxes 17 - 20 cannot contain broken pencils of numbers less than 10.

Hence 7 - 16 must have 4 boxes that contain less than 10 broken pencils.

Going through the options :

Option A fails because this includes only 3 boxes with less than 10 pencils.

Option B fails because we only have 2 boxes with 6 broken pencils but this includes 3.

Option D fails because it does not include a box of 15 and a box of 20 pencils which can only be a part of boxes with 100 or boxes with 200 pencils. Since boxes 17 - 20 can include only one among 15 or 20 because 29, 31, 33 are a part of this group. Hence this case fails.

Option E fails because this includes 5 boxes with broken pencils less than 10 but this is not possible because this must exactly contain 4 boxes with less than 10 pencils.

Option C is a feasible case containing :

1-6 (5, 6, 6, 9, 9, 9)

7 - 16 (7, 7, 7, 7, 11, 15, 15, 19, 20, 20)

17 - 20 (20, 29, 31, 33)

Question 60

Which of the following cannot be inferred conclusively from the given information?

- A No box numbered 1-6 has more broken pencils than any box numbered 17-20.
- B A box with the highest percentage of broken pencils has 100 pencils.
- C Four among the boxes numbered 7 to 16 have less than 10 broken pencils.
- D Exactly three boxes have 20% broken pencils.
- E Three among the boxes numbered 17 to 20 have 29, 31 and 33 broken pencils in some order.

Answer: D

Explanation:

Going by the given options :

Option A: The boxes numbered 1- 6 have a capacity of 50 pencils. The maximum number of broken pencils they can contain is 20 percent of 20 pencils = 10 pencils. For boxes numbered 17 to 20 they must contain a minimum of 5 percent which is equivalent to 5 percent of

200. Hence this is true.

Option B: Boxes with broken pencils of 29, 31, 33 must be a part of 17 - 20. There must be one box containing broken pencils in the range of 10 to 20. There are three boxes in total containing exactly 20 pencils. A maximum of only one of the three can be a part of 17 - 20. The remaining must be a part of boxes 7- 16 because they cannot be a part of 1-6. Hence at least one box among 7 - 16 contains 20 percent of broken pencils which is the highest.

Option C: There are a total of ten boxes with less than 10 broken pencils. They can either be a part of boxes 1-6 or 7 - 16. Since boxes 1-6 can only take broken pencils with less than 10 in number. Hence of the 10 six must be a part of 1-6 and the remaining 4 must be a part of 7 - 16.

Option D: The only possibility for containing 20 percent of the broken pencils is only possible for 20 broken pencils which is 20 percent of 100. There must be at least 2 boxes in the range of 7 - 16 which contain 20 broken pencils which is equal to 20 percent. The third box can either be a part of (7-16) to (17-20). If this belongs to 17 - 20 then the case is not possible and hence cannot be concluded.

Option E: Boxes containing 29, 31, and 33 broken pencils must be a part of boxes 17 -20 because they are higher than the 20 percent range of boxes (1-6) and (7-16). Hence this can be concluded.

Question 61

Suppose that additionally it is known that the number of broken pencils in Boxes 17-20 are in increasing order. Which among the following additional information, if true, is not sufficient to uniquely know the number of defective pencils in each of the boxes numbered 17-20?

- A Boxes no. 7-16 contains a total of 124 defective pencils.
- B Boxes no. 17-20 contain a total of 108 defective pencils.
- C Boxes no. 11-16 contain a total of 101 defective pencils.
- D Box no. 17 contains more defective pencils than any box from among boxes no. 1-14.
- E Boxes no. 7-16 contain a total of 133 defective pencils.

Answer: E

Explanation:

Going by the options :

Option A: Boxes 7- 16 contain a total of 124 pencils. Boxes (1-6) has 6 boxes with broken pencils which can be included from :

(5, 6, 6, 7, 7, 7, 9, 9, 9). The minimum possible sum of the 6 pencils is : $(5+6+6+7) = 24$ and the maximum possible sum is $(7+9+9+9) = 34$.

Boxes 7 - 16 contains all the boxes with broken pencils except one among the boxes with broken pencils among 11 - 20 and hence ;

This can contain : $(11+15+15+19+20+20)$ or $(15+15+19+20+20+20)$ or $(11+15+15+20+20+20)$ or $(11+15+19+20+20+20)$ $= 100/109/101/105$.

The only possible case to contain 124 pencils is by considering the case : $(24+100) = (5, 6, 6, 7, 11+15+15+19+20+20) = 124$.

Hence box 17 - 20 must contain (20, 29, 31, 33).

Option B: Boxes 17 - 20 contain a total of 108 pencils. Since 29, 31, 33 pencils must be a part of 17 - 20 boxes. The remaining box must contain $108 - (29 + 31 + 33) = 15$ pencils. Hence the order is (15, 29, 31, 33).

Option C: Boxes 11- 16 contain a total of 101 defective pencils. This is only possible if the boxes here contain : (20, 20, 20, 15, 15, 11) pencils. Hence the box containing 19 pencils must be a part of boxes 17 - 20 and the remaining three contain 29, 31, 33. (19, 29, 31, 33)

Option D : Box number 17 containing more pencils than any box from box number 1- 14. Hence this only possible if Box 15, 16, 17 contains 20 pencils each and 18, 19, 20 contain (29, 31, 33).

Option E : Box 7-16 containing 133 broken pencils :

Boxes (1-6) has 6 boxes with broken pencils which can be included from :

(5, 6, 6, 7, 7, 7, 9, 9, 9). The minimum possible sum of the 6 pencils is : $(5+6+6+7) = 24$ and the maximum possible sum is $(7+9+9+9) = 34$.

Boxes 7 - 16 contains all the boxes with broken pencils except one among the boxes with broken pencils among 11 - 20 and hence ;

This can contain : (11+15+15+19+20+20) or (15+15+19+20+20+20) or (11+15+15+20+20+20) or (11+15+19+20+20+20) =100/109/101/105.

This has multiple possibilities which include (109 + 24) or (101+32) or (105+28). Hence cannot be uniquely determined

Instructions

Read the following scenario and answer the THREE questions that follow.

An examination had ten multiple choice questions; labelled Q1 to Q10 respectively. Each question had four answer options – A, B, C and D – of which one and only one was the correct answer. For each correct answer, the candidate obtained 1 mark. There were no negative marks for wrong answers. The answers chosen by six candidates named Om, Pavan, Qadir, Rakesh, Simranjeet and Tracey to each of the ten questions and the total marks obtained by each of them are shown in the table.

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Total Marks
Om	D	B	C	B	C	C	B	C	A	C	2
Pavan	D	B	A	B	B	D	A	C	B	D	5
Qadir	A	A	A	C	C	D	B	D	D	A	7
Rakesh	A	C	D	A	B	C	A	C	B	C	3
Simranjeet	D	B	A	B	C	C	A	D	B	A	7
Tracey	A	C	B	B	B	D	B	C	D	C	2

Question 62

What is the correct answer for Q5?

- A Not possible to determine uniquely
- B A
- C B
- D C
- E D

Answer: D

Explanation:

As per the given conditions :

Qadir and Simarjeet both of them scored a score of 7 each.

In the table, it can be found that both Qadir and Simarjeet marked the same answer for exactly four questions. They are :

Q3, Q5, Q8, and Q10.

Both of them had 3 more questions correctly. Hence for the rest 6 questions 3 of them must have been answered by one of them correctly and the other three by another one of them.

Hence the answers must have been :

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
A/D	A/B	A	B/C	C	C/D	A/B	D	B/D	A

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
A/D	A/B	A	B/C	C	C/D	A/B	D	B/D	A

Now looking at the score of Rakesh he scored a total of 3 marks.

All the questions for which both Qadir and Simarjeet have answered correctly he has marked them wrong. He for whatever question he must have answered correctly exactly one among Qadir and Simarjeet must answer the same. Because at least one of them answered each question correctly.

Hence he must have answered correctly 3 questions among (1, 6, 7, 9)

Of the different possibilities are (1, 6, 7), (1, 6, 9), (6, 7, 9), (1, 7, 9).

But the cases 6, 7, 9 fails because if he answered all three of them correctly then he must have answered 1 wrongly but since if 1 is answered wrong then all of 1, 6, 7, 9 are answered correctly by Simarjeet when Simarjeet can answer actually a total of 3 questions only correctly hence this case fails.

Similarly if considered the cases (1, 6, 7) and (1, 6, 9) as the questions which were answered correctly. The cases fail because if they are answered correctly we cannot possibly have Pavan answering 5 questions correctly.

Hence the only possibility is he must have answered the questions :

(1, 7, 9) correctly.

Hence the correct answers are :

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
A	A/B	A	B/C	C	C/D	A	D	B	A

Now drawing the table based on the answers marked by them :

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Total Marks
OM	W		W		C		W	W	W	W	2
Pavan	W		C		W		C	W	C	W	5
Qadir	C		C		C		W	C	W	C	7
Rakesh	C		W		W		C	W	C	W	3
Simar	W		C		C		C	C	C	C	7
Tracey	C		W		W		W	W	W	W	2

Simarjeet must have answered 1 question of the Q2, Q4, and Q6 correctly. Qadir must have answered the remaining two of them correctly.

If Simarjeet answered Q4 correctly and Q2, Q6 wrong the answers for Q2, Q4 and Q6 will be: B, B, and D

But if Q2 and Q4 are answered as B then Om must have scored 3 marks instead of 2 and hence the case fails.

If Simarjeet answered Q6 correctly and Q2, Q4 wrong the answers for Q2, Q4 and Q6 will be: A, C, and C.

But Pavan cannot score 5 marks.

Hence Simarjeet must have answered Q2 correctly and answers for Q2, Q4, and Q6 will be :

(B, C, D).

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Total Marks
OM	W	C	W	W	C	W	W	W	W	W	2
Pavan	W	C	C	W	W	C	C	W	C	W	5
Qadir	C	W	C	C	C	C	W	C	W	C	7
Rakesh	C	W	W	W	W	W	C	W	C	W	3
Simar	W	C	C	W	C	W	C	C	C	C	7
Tracey	C	W	W	W	W	C	W	W	W	W	2

The correct answer for Q5 is C.

Question 63

For which of these questions is D the correct answer?

A Both Q1 and Q9

B Both Q1 and Q8

C Q8

D Q1

E Q9

Answer: C

Explanation:

As per the given conditions :

Qadir and Simarjeet both of them scored a score of 7 each.

In the table, it can be found that both Qadir and Simarjeet marked the same answer for exactly four questions. They are :

Q3, Q5, Q8, and Q10.

Both of them had 3 more questions correctly. Hence for the rest 6 questions 3 of them must have been answered by one of them correctly and the other three by another one of them.

Hence the answers must have been :

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
A/D	A/B	A	B/C	C	C/D	A/B	D	B/D	A

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
A/D	A/B	A	B/C	C	C/D	A/B	D	B/D	A

Now looking at the score of Rakesh he scored a total of 3 marks.

All the questions for which both Qadir and Simarjeet have answered correctly he has marked them wrong. He for whatever question he must have answered correctly exactly one among Qadir and Simarjeet must answer the same. Because at least one of them answered each question correctly.

Hence he must have answered correctly 3 questions among (1, 6, 7, 9)

Of the different possibilities are (1, 6, 7), (1, 6, 9), (6, 7, 9), (1, 7, 9).

But the cases 6, 7, 9 fails because if he answered all three of them correctly then he must have answered 1 wrongly but since if 1 is answered wrong then all of 1, 6, 7, 9 are answered correctly by Simarjeet when Simarjeet can answer actually a total of 3 questions only correctly hence this case fails.

Similarly if considered the cases (1, 6, 7) and (1, 6, 9) as the questions which were answered correctly. The cases fail because if they are answered correctly we cannot possibly have Pavan answering 5 questions correctly.

Hence the only possibility is he must have answered the questions :

(1, 7, 9) correctly.

Hence the correct answers are :

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
A	A/B	A	B/C	C	C/D	A	D	B	A

Now drawing the table based on the answers marked by them :

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Total Marks
OM	W		W		C		W	W	W	W	2
Pavan	W		C		W		C	W	C	W	5
Qadir	C		C		C		W	C	W	C	7
Rakesh	C		W		W		C	W	C	W	3
Simar	W		C		C		C	C	C	C	7
Tracey	C		W		W		W	W	W	W	2

Simarjeet must have answered 1 question of the Q2, Q4, and Q6 correctly. Qadir must have answered the remaining two of them correctly.

If Simarjeet answered Q4 correctly and Q2, Q6 wrong the answers for Q2, Q4 and Q6 will be: B, B, and D

But if Q2 and Q4 are answered as B then Om must have scored 3 marks instead of 2 and hence the case fails.

If Simarjeet answered Q6 correctly and Q2, Q4 wrong the answers for Q2, Q4 and Q6 will be: A, C, and C.

But Pavan cannot score 5 marks.

Hence Simarjeet must have answered Q2 correctly and answers for Q2, Q4, and Q6 will be :

(B, C, D).

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Total Marks
OM	W	C	W	W	C	W	W	W	W	W	2
Pavan	W	C	C	W	W	C	C	W	C	W	5
Qadir	C	W	C	C	C	C	W	C	W	C	7
Rakesh	C	W	W	W	W	W	C	W	C	W	3
Simar	W	C	C	W	C	W	C	C	C	C	7
Tracey	C	W	W	W	W	C	W	W	W	W	2

Q6 and Q8 have D as the correct answer.

Question 64

Which of these questions witnessed the least number of the students answering correctly?

A Both Q3 and Q4

B Q4

C Q5

D Q10

E Q2

Answer: B

Explanation:

As per the given conditions :

Qadir and Simarjeet both of them scored a score of 7 each.

In the table, it can be found that both Qadir and Simarjeet marked the same answer for exactly four questions. They are :

Q3, Q5, Q8, and Q10.

Both of them had 3 more questions correctly. Hence for the rest 6 questions 3 of them must have been answered by one of them correctly and the other three by another one of them.

Hence the answers must have been :

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
A/D	A/B	A	B/C	C	C/D	A/B	D	B/D	A

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
A/D	A/B	A	B/C	C	C/D	A/B	D	B/D	A

Now looking at the score of Rakesh he scored a total of 3 marks.

All the questions for which both Qadir and Simarjeet have answered correctly he has marked them wrong. He for whatever question he must have answered correctly exactly one among Qadir and Simarjeet must answer the same. Because at least one of them answered each question correctly.

Hence he must have answered correctly 3 questions among (1, 6, 7, 9)

Of the different possibilities are (1, 6, 7), (1, 6, 9), (6, 7, 9), (1, 7, 9).

But the cases 6, 7, 9 fails because if he answered all three of them correctly then he must have answered 1 wrongly but since if 1 is answered wrong then all of 1, 6, 7, 9 are answered correctly by Simarjeet when Simarjeet can answer actually a total of 3 questions only correctly hence this case fails.

Similarly if considered the cases (1, 6, 7) and (1, 6, 9) as the questions which were answered correctly. The cases fail because if they are answered correctly we cannot possibly have Pavan answering 5 questions correctly.

Hence the only possibility is he must have answered the questions :

(1, 7, 9) correctly.

Hence the correct answers are :

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
A	A/B	A	B/C	C	C/D	A	D	B	A

Now drawing the table based on the answers marked by them :

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Total Marks
OM	W		W		C		W	W	W	W	2
Pavan	W		C		W		C	W	C	W	5
Qadir	C		C		C		W	C	W	C	7
Rakesh	C		W		W		C	W	C	W	3
Simar	W		C		C		C	C	C	C	7
Tracey	C		W		W		W	W	W	W	2

Simarjeet must have answered 1 question of the Q2, Q4, and Q6 correctly. Qadir must have answered the remaining two of them correctly.

If Simarjeet answered Q4 correctly and Q2, Q6 wrong the answers for Q2, Q4 and Q6 will be: B, B, and D

But if Q2 and Q4 are answered as B then Om must have scored 3 marks instead of 2 and hence the case fails.

If Simarjeet answered Q6 correctly and Q2, Q4 wrong the answers for Q2, Q4 and Q6 will be: A, C, and C.

But Pavan cannot score 5 marks.

Hence Simarjeet must have answered Q2 correctly and answers for Q2, Q4, and Q6 will be :

(B, C, D).

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Total Marks
OM	W	C	W	W	C	W	W	W	W	W	2
Pavan	W	C	C	W	W	C	C	W	C	W	5
Qadir	C	W	C	C	C	C	W	C	W	C	7
Rakesh	C	W	W	W	W	C	W	C	W	W	3
Simar	W	C	C	W	C	W	C	C	C	C	7
Tracey	C	W	W	W	W	C	W	W	W	W	2

Q4 was answered wrong by 5 members.

Instructions

For the following questions answer them individually

Question 65

Shireen draws a circle in her courtyard. She then measures the circle's circumference and its diameter with her measuring tape and records them as two integers, A and B respectively. She finds that A and B are co-primes, that is, their greatest common divisor is 1. She also finds their ratio, A:B, to be: $3.141614161416...$ (repeating endlessly).

What is A - B ?

A 21414

B 7138

C 21417

D 21413

E 15

Answer: B

Explanation:

We have

$3.1416141614161416.....$

$= 3 + 0.1416 + 0.00001416 + 0.000000001416.....$

$= 3 + \frac{1416}{10^4} + \frac{1416}{10^8} + \frac{1416}{10^{12}} +$

Now excluding 3 we get a series with infinite Geometric progression such that first term is $\frac{1416}{10^4}$ and common ratio is $\frac{1}{10^4}$

Therefore we get sum as $\frac{a}{1-r}$

$$= \frac{\frac{1416}{10^4}}{1 - \frac{1}{10^4}}$$

we get sum as $\frac{1416}{10^4 - 1}$

$$= \frac{1416}{9999}$$

Now adding 3 we get value as :

$$\frac{31413}{9999}$$

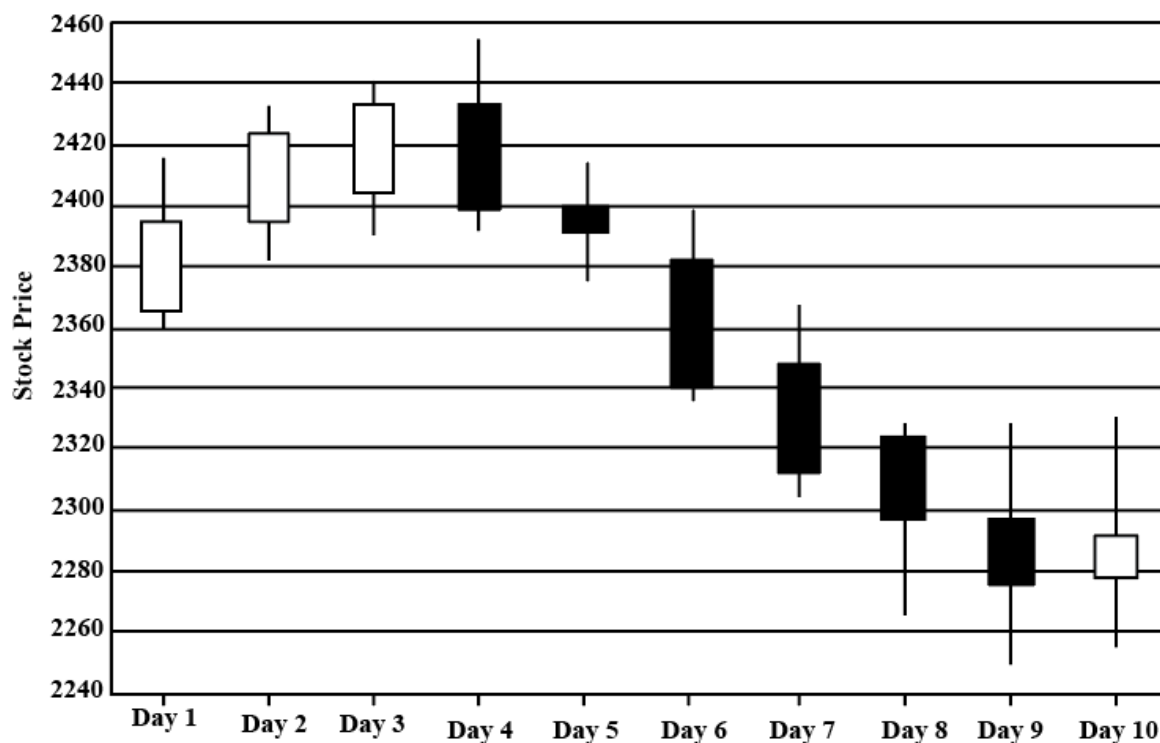
Now taking 3 common we get ratio of A:B as

$$\frac{10471}{3333}$$

So A-B will be = 7138

Instructions

Read the following scenario and answer the THREE questions that follow.



The given candlestick chart depicts the prices of a particular stock over 10 consecutive days. A candlestick comprises of a rectangular box pieced by a line. The top and bottom ends of the line respectively indicate the maximum and minimum prices of the stock on that day, while the horizontal edges of the rectangle correspond to the stock's opening and closing prices. If the rectangle is white, the opening price is lower than the closing price, but if the rectangle is black, then it is the other way around.

Using the above information, answer the questions that follow:

Question 66

Which day saw the maximum percentage increase in the stock price at closing from the opening?

- A Day 10
- B Day 2
- C Day 1
- D Day 6
- E Day 7

Answer: C

Explanation:

Going by the cases in the option for the five days :

Day 1 : (Opening price, Closing Price) : (2365, 2395)

Day 2 : (Opening price, Closing Price) : (2395, 2425)

Day 6 : (Opening price, Closing Price) : (Closing price is lower than the opening price)

Day 7 : (Opening price, Closing Price) : (Closing price is lower than the opening price)

Day 10 : (Opening price, Closing Price) : (2277.5, 2292.5)

The percentage increase for day 1 : $\frac{(2395-2365)}{(2365)} \cdot 100 = 1.26\%$

The percentage increase for day 2 : $\frac{(2425-2395)}{(2395)} \cdot 100 = 1.252\%$

The percentage increase for day 10 : $\frac{(2492.5-2377.5)}{(2377.5)} \cdot 100 = 0.65\%$

Hence Day 1 is the highest

Question 67

What is the highest magnitude of change over two consecutive days (for example, Day 1 → Day 3 or Day 5 → Day 7), in the maximum price touched by the stock during the 10-day period(choose the closest amongst the options given)?

- A 60
- B 70
- C 80
- D 50
- E 40

Answer: B

Explanation:

Among the given days the magnitude of change in difference of the maximum price in an interval of two days is :

Day 1 - Day 3 : (2415, 2440) : 25

Day 2 - Day 4 : (2432.5, 2455) : 22.5

Day 3 - Day 5 : (2440, 2415) = 25

Day 4 - Day 6 : (2455, 2400) = 55

Day 5 - Day 7 : (2415, 2367.5) = 47.5

Day 6 - Day 8 : (2400, 2330) = 70

Day 7 - Day 9 : (2367.5, 2330) = 52.5

Day 8 - Day 10 : (2330, 2332.5) = 2.5

The maximum difference among the possible cases is : 70

Question 68

On which day is the ratio of the maximum price to the opening price, the highest across the ten days?

- A Day 3
- B Day 4
- C Day 10

D Day 1

E Day 9

Answer: C

Explanation:

Going by considering the given options :

The ratio is given by :

$$\frac{(\text{Maximum price})}{\text{Opening price}}$$

Day 3 : (Maximum price, Opening price) : (2440, 2405) = the ratio = 1.014

Day 4 : (Maximum price, Opening price) : (2455, 2432.5) = ratio = 1.009

Day 10 : (Maximum price, Opening price) : (2330, 2292.5) = 1.016

Day 1 : (Maximum price, Opening price) : (2415, 2395) = 1.008

Day 9 : (Maximum price, Opening price) : (2330, 2297.5) = 1.014

Day 10 has the maximum ratio.

Instructions

For the following questions answer them individually

Question 69

Wilma, Xavier, Yaska and Zakir are four young friends, who have a passion for integers. One day, each of them selects one integer and writes it on a wall. The writing on the wall shows that Xavier and Zakir picked positive integers, Yaska picked a negative one, while Wilma's integer is either negative, zero or positive. If their integers are denoted by the first letters of their respective names, the following is true:

$$W^4 + X^3 + Y^2 + Z \leq 4$$

$$X^3 + Z \geq 2$$

$$W^4 + Y^2 \leq 2$$

$$Y^2 + Z \geq 3$$

Given the above, which of these can $W^2 + X^2 + Y^2 + Z^2$ possibly evaluate to?

A 9

B 0

C 4

D 6

E 1

Answer: D

Explanation:

Given that X, Z are positive Y is negative and W can be either positive or zero or negative.

The given conditions are :

$$W^4 + X^3 + Y^2 + Z \leq 4$$

$$X^3 + Z \geq 2$$

$$W^4 + Y^2 \leq 2$$

$$Y^2 + Z \geq 3$$

For $W^4 + Y^2 \leq 2$. Since Y is negative *but* Y^2 is always positive and must be less than 2 because W^4 is a non-negative value. Hence $Y = -1$ is the only possibility. For W this can take any value among -1, 0, 1.

$Y^2 + Z \geq 3$. Since $Y = -1$, Z must be at least equal to 2 so the value of $Y^2 + Z \geq 3$ is greater than 2.

X is a positive value and must at least be equal to 1.

The condition: $W^2 + X^2 + Y^2 + Z^2$ here has all the independent values: X^2, Y^2, Z^2, W^2 are nonnegative.

$$W^4 + X^3 + Y^2 + Z \leq 4:$$

Since the value of Z is at least equal to 2 the value of Y^2 is equal to 1.

Since X is a positive number in order to have the condition of $W^4 + X^3 + Y^2 + Z \leq 4$ satisfied. The value of Z must be the minimum possible so that $X^3 + Y^2 + Z$ to have a value equal to 4 when X takes the minimum possible positive value equal to 1.

Hence X must be 1. W must be equal to 0 so that :

$$W^4 + X^3 + Y^2 + Z \leq 4. = \text{The sum} = (0+1+1+2) = 4. \text{ The only possible case.}$$

$$\text{The value of } W^2 + X^2 + Y^2 + Z^2 = (0+1+1+4) = 6.$$

Question 70

If both the sequences x, a_1, a_2, y and x, b_1, b_2, z are in A.P. and it is given that $y > x$ and $z < x$, then which of the following values can $\left\{ \frac{(a_1 - a_2)}{(b_1 - b_2)} \right\}$ possibly take?

A 2

B 5

C -1

D 1

E 0

Answer: C

Explanation:

The two given sequences in AP are :

x, a_1, a_2, y and x, b_1, b_2, z .

Additionally, it is given that : $y > x$ and $z < x$.

Hence the common difference is not zero for both the series :

Since $y > x$ the common difference is positive for the first series. (Considering the common difference to be d_1)

Similarly $z < x$ the common difference is negative for the given series. (Considering the common difference to be d_2)

Now for the given value :

$$\frac{(a_1 - a_2)}{(b_1 - b_2)}$$

The value of $a_1 - a_2$ is less than zero which is equal to the negative common difference of the series ($-d_1$)

The value of $b_1 - b_2$ is the negative common difference that is equal to the negative common difference of the series ($-d_2$).

Hence the value of $\frac{(a_1 - a_2)}{(b_1 - b_2)}$ is a negative value :

The only possible option is -1.

Question 71

Kim's wristwatch always shows the correct time, including 'am' and 'pm'. Jim's watch is identical to Kim's watch in all aspects except its pace, which is slower than the pace of Kim's watch. At 12 noon on January 1st, Jim sets his watch to the correct time, but an hour later, it shows 12:57 pm. At 12 noon on the next June 1st, Jim resets his watch to the correct time.

On how many instances between, and including 12 noon on the two dates mentioned, do Jim's and Kim's watches show the exact same time, including the 'am' and the 'pm'?

A 10

- B 7
- C 15
- D 9
- E 17

Answer: D

Explanation:

The pace of Jim's watch is slower by 3 minutes in comparison with Kim's watch for every one hour. The difference increases as the hours pass by.

The time and "am" and "pm" of the watch coincide when the difference between the two clocks reduces to 24 hours. The two clocks display the same time including "am" and "pm".

For a difference of 24 hours, the clock needs to lag by 1440 minutes.

For every one hour, the clock lags by 3 minutes. Hence in order to have a difference of 1440 minutes, it takes $\frac{1440}{3} = 480$ hours. This is equivalent to 20 days of time.

Hence for every twenty days, they display the same time.

In the period of Jan 1 and June 1, there are 150 days which includes 7, 20-day intervals. Along with the 7 times once on Jan 1st and once on June 1st, they display the same time.

A total of 9 times.

Question 72

Fatima found that the profit earned by the Baladosa stall today is a three-digit number. She also noticed that the middle digit is half of the leftmost digit, while the right most digit is three times the middle digit. She then randomly interchanged the digits and obtained a different number. This number was more than the original number by 198.

What was the middle digit of the profit amount?

- A 1
- B 2
- C 6
- D This cannot be solved with only the given information
- E 8

Answer: B

Explanation:

From the given conditions :

Considering the three-digit number to be a b c.

With the given conditions :

$$a = 2b, c = 3b.$$

Hence the number is of the form : 2b b 3b.

Since all three of the values must be less than 10 and non-negative:

This takes values : b = 1, b = 2, b = 3.

Hence the possible numbers are : (213, 426, 639) :

The interchanged number must be greater than the original by 198.

Hence the different rearrangements for the three numbers are :

213 : (312, 321, 132, 123, 231).

426 : (462, 624, 642, 246, 264)

639 : (693, 963, 936, 396, 369)

The only possible value which is higher than the original by 198 is :

(426, 624).

The middle digit is 2.

Question 73

I have five 10-rupee notes, three 20-rupee notes, and two 50-rupee notes in my wallet.

If three notes were taken out randomly and simultaneously, what is the probability that at least 90 rupees were taken out?

A $\frac{1}{20}$

B $\frac{7}{60}$

C $\frac{1}{15}$

D $\frac{11}{60}$

E $\frac{3}{20}$

Answer: B

Explanation:

The total number of ways of selecting 3 notes from the :

five 10-rupee notes, three 20-rupee notes, and two 50-rupee notes = 10 notes in total.

${}^{10}C_3$

= 120

The possibilities for the value of the three notes combined is at least 90 :

Rs 50 + Rs 20 + Rs 20 : The possibilities for this selection is :

${}^2C_1 \cdot {}^3C_2$. Selection of one Rs 50 note from the two and selection of 2 Rs 20 notes from the three.

Rs 50 + Rs 50 + Rs 10 :

$({}^2C_2) \cdot ({}^5C_1)$: Selection of two Rs 50 notes from the two and selection of 1 Rs 10 notes from the five.

Rs 50 + Rs 50 + Rs 20 :

$({}^2C_2) \cdot ({}^3C_1)$: Selection of two Rs 50 notes from the two and selection of 1 Rs 20 notes from the three.

A total of 6+5+3 = 14 possibilities

The probability is $\frac{14}{120} = 7/60$.

Question 74

The Madhura Fruits Company is packing four types of fruits into boxes. There are 126 oranges, 162 apples, 198 guavas and 306 pears. The fruits must be packed in such a way that a given box must have only one type of fruit and must contain the same number of fruit units as any other box.

What is the minimum number of boxes that must be used?

A 21

B 18

C 44

D 42

Answer: C

Explanation:

The number of oranges, apples, guavas, and pears = 126, 162, 198, and 306.

Each box must contain an equal number of fruits with only one type of fruit. The additional condition provided is that there should be a minimum number of boxes in total.

The distribution is possible in multiple ways in such a way that distribution in each box is placed in such that each box contains a certain number of fruits n which is a factor for all the four given number of fruits :

Arrangement of 1 fruit of one kind in a basket.

2 is a factor of 126, 162, 198, and 306. So we can place 2 fruits of a particular kind in a basket.

Since we were asked for the minimum number of boxes this is possible when a maximum number of fruits of a kind are placed in a box.

Hence each box must contain the Highest common factor for the four numbers :

The prime factorization for the four numbers :

$$126 : 2 \cdot 7 \cdot 9, 162 : 2 \cdot 9 \cdot 9, 198 : 2 \cdot 9 \cdot 11, 306 = 2 \cdot 9 \cdot 17$$

The HCF is 18.

The number of boxes required for each :

$$\frac{126}{18}, \frac{162}{18}, \frac{198}{18}, \frac{306}{18}$$

$$7+9+11+17 = 44.$$

Question 75

Consider the real-valued function $f(x) = \frac{\log(3x-7)}{\sqrt{2x^2-7x+6}}$ Find the domain of $f(x)$.

A $(\frac{7}{3}, \infty)$

B $R - \{\frac{7}{3}\}$

C $R - \{\frac{3}{2}, 2\}$

D $R - \{\frac{3}{2}, 2, \frac{7}{3}\}$

E $(-\infty, \frac{7}{3})$

Answer: A

Explanation:

The function $f(x) = \frac{\log(3x-7)}{\sqrt{2x^2-7x+6}}$ is only defined when both the numerator and the denominator of the function are defined and the denominator is not equal to zero.

The logarithm of the function is only defined for positive values :

Hence $3x-7$ is greater than zero. Hence

$$x > 7/3.$$

The value inside square root are defined for positive values. The value of the quadratic equation in the square root must be positive.

Hence $2x^2 - 7x + 6 = 0$ has the roots :

$$\frac{(7+\sqrt{49-48})}{4}, \frac{(7-\sqrt{49-48})}{4} : 2, 3/2$$

The quadratic equation is positive for :

$$(-\infty, \frac{3}{2}) \cup (2, \infty)$$

Since in order to be a part of the domain the values of x must be greater than $7/3$ and $7/3$ is greater than 2 all values of x which are

greater than $\frac{7}{3}$ must be a part of the domain for x .

General Knowledge

Instructions

For the following questions answer them individually

Question 76

Which of the following 2018 Commonwealth Games Gold medalists has successfully contested the 2020 Bihar Legislative Assembly elections?

- A Shreyashi Singh
- B Heena Sidhu
- C Manika Batra
- D Manu Bhaker
- E Tejaswini Samant

Answer: A

Question 77

What is OSIRIS-REx?

- A It is the moon mission of JAXA
- B It is the last satellite launched by ISRO
- C It is a NASA asteroid-study mission
- D It is the name of the latest launch vehicle of ESA
- E It is a new variant of the novel Coronavirus

Answer: C

Question 78

Match the following UNSECO world heritage sites with the states to which they belong.

UNESCO World Heritage Sites	States
P. Khajuraho Group of Monuments	I. Telangana
Q. Kakatiya Rudreshwara Temple	II. gujarat
R. Dholavira	III. Karnataka
S. Group of Monuments at Hampi	IV. Sikkim
T. Khangchendzonga National Park	V.Madya Pradesh

- A P-IV, Q-III, R-V, S-II, T-I
- B P-V, Q-I, R-II, S-III, T-IV
- C P-IV, Q-I, R- V, S-II, T-III

D P-V, Q-IV, R-I, S-III, T-II

E P-III, Q-V, R-I, S-II, T-IV

Answer: B

Question 79

Which of the following politicians has served for the longest years consecutively, or otherwise, as the Chief Minister of any Indian state or Union Territory?

A Naveen Patnaik

B Jyoti Basu

C Virbhadr Singh

D Pawan Kumar Chamling

E Gegong Apang

Answer: D

Question 80

Who is the first Field Marshal of independent India?

A Sam Manekshaw

B A.S. Vaidya

C KM Cariappa

D Bipin Rawat

E Krishnaswamy Sundarji

Answer: A

Question 81

Which of the following companies has acquired 100% stake in Air India?

A Tata Group

B Adani Group

C Mahindra Group

D Reliance Industries

E Aditya Birla Group

Answer: A

Question 82

Which of the following spacecrafts by the NASA entered the Sun's upper atmosphere - the Corona?

A Luminous Solar Probe

- B** Helios Solar Probe
- C** Arka Solar Probe
- D** Parker Solar Probe
- E** James Webb Solar Probe

Answer: D

Question 83

Which of the following footballing legends had never won the prestigious Ballond'Or Award?

- A** Paolo Maldini
- B** Pavel Nedvěd
- C** Andriy Shevchenko
- D** Ricardo Kaka
- E** Luca Modric

Answer: A

Question 84

Which of the following wild animal has the sub-species as Sri Lankan, Indian, Sumatran and Bornean?

- A** Spotted Deer (*Axis axis*)
- B** Asian Elephant (*Elephas maximus*)
- C** Sarus Crane (*Antigone antigone*)
- D** Tiger (*Panthera tigris*)
- E** Rhinoceros (*Rhinoceros unicornis*)

Answer: B

Question 85

According to the venture capital industry, what is a unicorn?

- A** Any start-up that gives a dividend of \$1 billion to its shareholders
- B** Any start-up that makes its owner a billionaire
- C** Any start-up that raises \$1 billion in venture capital
- D** Any start-up that reaches the valuation of \$1 billion
- E** Any start-up that reaches to employ 1000 people

Answer: D

Question 86

Which of the following Indian states does not have an “Indian Institute of Technology (IIT)”?

- A Assam
- B Chhattisgarh
- C Karnataka
- D Haryana
- E Punjab

Answer: D

Question 87

Match the following literary works with their authors.

Literary Works	Authors
P. Mrcchakatika	I. Kalidasa
Q. Mudrarakhasa	II. Shudraka
R. Abhijnanashakuntalam	III. Banabhatta
S. Rasamanjari	IV. Vishakhadatta
T. Harshacharita	V. Krishadevaraya

- A P-III, Q-V, R-I, S-II, T-IV
- B P-II, Q-V, R- I, S-IV, T-III
- C P-V, Q-IV, R-I, S-III, T-II
- D P-II, Q-IV, R-I, S-V, T-III
- E P-V, Q-I, R-III, S-II, T-IV

Answer: D

Question 88

What is the full form of NFT in the context of blockchain?

- A Non-fakable token
- B Non-fungible token
- C Neo-fictitious token
- D Non-fundable tax
- E Non-functional tax

Answer: B

Question 89

From the following options, choose the one which arranges the given Queens’ascension to the throne in a chronological order.

- A** Rudrama Devi, Razia Sultana, Durgavati, Lakshmi Bai, Ahilyabai Holkar
- B** Razia Sultana, Rudrama Devi, Durgavati, Ahilyabai Holkar, Lakshmi Bai
- C** Razia Sultana, Ahilyabai Holkar, Durgavati, Lakshmi Bai, Rudrama Devi
- D** Razia Sultana, Rudrama Devi, Ahilyabai Holkar, Durgavati, Lakshmi Bai
- E** Ahilyabai Holkar, Durgavati, Razia Sultana, Rudrama Devi, Lakshmi Bai

Answer: B

Question 90

Match the animals listed below with the most common collective noun used to represent a group of them (e.g. wolves - Pack).

Animals	Collective Nouns
P. Eagles	I. Tower
Q. Apes	II. Quiver
R. Giraffes	III. Kaleidoscope
S. Butterflies	IV. Shrewdness
T. Cobras	V. Convocation

- A** P-II, Q-V, R- I, S-IV, T-III
- B** P-V, Q-IV, R-I, S-III, T-II
- C** P-II, Q-IV, R-I, S-V, T-III
- D** P-V, Q-I, R-III, S-II, T-IV
- E** P-III, Q-V, R-I, S-II, T-IV

Answer: B

Question 91

Match the following classic movies with their directors.

Movies	Directors
P. Agantuk	I. Adoor Gopalakrishnan
Q. Thaneer Thaneer	II. Shyam Bengal
R. Drohkaal	III. Satyajit Ray
S. Elipatthayam	IV. K Balachander
T. Bhumika	V. Govind Nihalani

- A** P-V, Q-I, R-II, S-III, T-IV
- B** P-III, Q-IV, R-V, S-I, T-II
- C** P-I, Q-IV, R- V, S-II, T-III
- D** P-IV, Q-V, R-II, S-III, T-I
- E** P-III, Q-I, R-V, S-IV, T-II

Answer: B

Question 92

Match the following districts with the states to which they belong.

Districts	States
P. Muktsar	I. Bihar
Q. Rohtas	II. Assam
R. Nanded	III. Tamil Nadu
S. Kamrup	IV. Punjab
T. Salem	V. Maharashtra

- A P-IV, Q-III, R-V, S-II, T-I
- B P-III, Q-V, R-I, S-II, T-IV
- C P-IV, Q-I, R- V, S-II, T-III
- D P-II, Q-IV, R-I, S-V, T-III
- E P-V, Q-IV, R-I, S-III, T-II

Answer: C

Question 93

What is Zoonosis?

- A A disease which can be transmitted to humans from animals
- B The study of Oonosis
- C A disease which can be transmitted to humans from zoo animals
- D A disease which can be transmitted to humans from zygotes
- E A state of affairs where human behaviour imitates that of zoo animals

Answer: A

Question 94

Maitri and Bharati are the names of:

- A Indian research stations in Arctic
- B Indian underwater missions in the North China Sea
- C Indian peace missions to Somalia
- D Indian diplomatic missions to Iceland
- E Indian research stations in Antarctica

Answer: E

Question 95

From which location, India test-fired the new generation Agni Prime missile in 2021?

- A** Vikram Sarabhai Space Centre, Thiruvananthapuram (Thumba), Kerala
- B** Gan (Addu Atoll), Maldives
- C** Satish Dhawan Space Centre (Sriharikota), Andhra Pradesh
- D** APJ Abdul Kalam island, Odisha
- E** LAPAN Rocket Launcher Station, Pameungpeuk, Garut, Indonesia

Answer: D

Question 96

Identify the XLRI alumnus, who has recently been appointed as the Deputy National Security Advisor?

- A** Parikshit Gautam
- B** Parthapriya Ghosh
- C** Arun Mani Dixit
- D** S. Sathya Kumar
- E** Vikram Misri

Answer: E

Question 97

Monosodium glutamate is:

- A** The reason one cries while peeling onions
- B** The name of the company that makes Ajinomoto
- C** Found in tomatoes
- D** Not found in any fruit or vegetable
- E** A misnomer since it does not contain sodium

Answer: C

Question 98

Match the following books with their authors.

Books	Authors
P. The Fractured Himalaya: India Tibet China 1949-1962	I. Dinayar Patel
Q. False Allies: India's Maharajahs in the Age of Ravi Varma	II. Tamal Bandyopadhyay
R. VP Menon: The Unsung Architect of Modern India	III. Manu S Pillai
S. Pandemonium: The Great Indian Banking Tragedy	IV. Nirupama Menon Rao
T. Naoroji: Pioneer of Indian Nationalism	V. Narayani Basu

- A** P-V, Q-IV, R-I, S-III, T-II
- B** P-II, Q-V, R- I, S-IV, T-III
- C** P-III, Q-V, R-I, S-II, T-IV
- D** P-IV, Q-III, R-V, S-II, T-I
- E** P-II, Q-IV, R-I, S-V, T-III

Answer: D

Question 99

What is a grey market?

- A** The trade of a commodity which is recognized as a counterfeit product
- B** The trade of a commodity which is unbranded
- C** The trade of a commodity for which the country of origin is not mentioned
- D** The trade of a commodity for which the taxes are evaded
- E** The trade of a commodity through distribution channels not authorized by the manufacturer

Answer: E

Question 100

What is the Large Hadron Collider (LHC)?

- A** The world's largest and most powerful particle accelerator
- B** The world's largest and most powerful Aperture Spherical radio telescope
- C** The world's largest and most powerful nuclear reactor
- D** The world's largest and most powerful water laser gun
- E** The world's largest and most powerful electron beam

Answer: A

Essay

Instructions

Maximum 250 words.

Question 101

Essay 1

Capitalism and democracy follow different paths: Unequally distributed property rights on the one hand, equal civic and political rights on the other; hierarchical decision making by managers and capital owners versus debate, compromise and majority decision-making within democratic politics. Therefore, they cannot co-exist.

Answer:e

Question 102

Essay 2

In management, we do not need people who never experienced a setback; such people are highly averse to taking risks. Because, business schools majorly focus on stellar academic achievements during admissions, the selected students often turn into average managers.

Answer:e