



Mock CAT – 04 2019

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VARC

LRDI

QA

Sec 1

Direction for questions (1-4): Read the given passages and answer the questions that follow.

Passage 1

Knowledge development is needed in several areas. The literature is rather clear that the consensus form of decision-making is preferred when the decision requires the widest possible extent of common acceptance. An area for further investigation is the identification of characteristics of tasks about which a decision is needed. This should include attention to the relative importance of the task to the group and the anticipated effects of the decision outcome. Results of this process might suggest guidelines for choosing between majority-rule and consensus. Furthermore, consideration should be given to the internal status ranking of the group to explore the extent to which a group is hindered or facilitated in reaching a consensus when high status persons are absent. It can be speculated that implementation of a decision, made without influential persons would be difficult, unless they are also supportive.

The literature does not seem to be consistent about conflict and its resolution. Part of this can be attributed to the different ways conflict is understood- natural and helpful or, as a threat to the system. There are some who suggest that the consensus process is used in the field of business to promote harmony and group cohesion among employees, under the rubric of participatory management. This use is a conflict management tool; the tasks assigned are insignificant to both management and employees which degrades the consensus process and participatory management in its intended form. In teaching about consensus, care should be taken to explore fully the issue of conflict and the political implications of its use since it may promote harmony/agreement when diversity/disagreement is needed.

No information was available in the research examples reviewed which addressed the issue of group size. There are reports of attempts of its use with groups of ninety persons. Size as related to time available, member characteristics, familiarity with the process, among other variables, should be examined systematically.

In general, then, consensus as a decision-making process has been used widely. Its proponents argue that its values outweigh problems in use. Some research supports the conclusion that decisions reached by this process are qualitatively better than those achieved by other processes.

Q.1

As per the passage, what might suggest guidelines for choosing between majority-rule and consensus?

- 1 The identification of characteristics of tasks about which decision is needed**
- 2 Attention to the relative importance of the task to the group**
- 3 The anticipated effects of the decision outcome**

4 The results of the process of the area for further investigation

Solution:

Correct Answer : 4

Genre# Human Resource / Management

Word Count# 356

 **Bookmark**

 **Answer key/Solution**

This is an easy fact based question.

Refer to the line: "Results of this process might suggest guidelines for choosing between majority-rule and consensus." The noun corresponding to the pronoun 'this' in the sentence is the answer. The noun can be located in the previous sentence: "This should include attention to the relative importance of the task to the group and the anticipated effects of the decision outcome." Hence, option 4 is the clear answer.

Option 1 – It is close. But, as per the passage, it's not the characteristics but the result of this query, which will provide the guideline.

Options 2 and 3 are out of context.

FeedBack

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Q.2

Which of the following most accurately summarises the main idea of the author?

- 1 The author is trying to explain the various nuances of knowledge development.**
- 2 The author is trying to analyse the various researches in the area of decision making.**
- 3 The author is trying to explore conflicts within groups and their dynamics and how they impact organizational hierarchy.**

- 4 The author is challenging the status quo of accepted research into decision making in the absence of authority.

Solution:

Correct Answer : 2

Genre# Human Resource / Management

Word Count# 356

 **Bookmark**

 **Answer key/Solution**

The author talks about the process of decision making and the importance of consensus in groups regarding this process in the passage. The focus is on analyzing the topic.

Option 1 – The author is not focused on ‘knowledge development’. Hence, this option is wrong.

Option 3 – This is a very narrow point. The author doesn’t analyse the group conflict either.

Option 4 – The author is not challenging anyone.

So, option 2 is the correct answer.

 **FeedBack**

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Q.3

The author's assertion in the last paragraph could be weakened by which of the following maxims?

- 1 Two is company; three is crowd.
- 2 Too many cooks spoil the broth.
- 3 The taste of the pudding is in the eating.

- 4 If you are not confused, you are not paying attention.

Solution:

Correct Answer : 2

Genre# Human Resource / Management

Word Count# 356

 **Bookmark**

 **Answer key/Solution**

The author's main idea in the last paragraph is that in any effective decision making process of an organization, the opinions of all should be taken into consideration. So, the focus is on the aspect of unanimity among the group members.

This can only be challenged by option 2. So, it is the only relevant answer.

Option 1 – The issue is not about the number of people or the aspect of secret keeping.

Options 3 and 4 are irrelevant.

FeedBack

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Q.4

Which of the following is true according to the passage?

- 1 Decisions made without any influential person are always difficult.
- 2 The research was misleading with respect to the group size.
- 3 The consensus process is viewed by some to be more advantageous than other such processes.

4 The consensus form of decision-making is preferred only when the decision requires the widest possible extent of common acceptance.

Solution:

Correct Answer : 3

Genre# Human Resource / Management

Word Count# 356

This is a fact based question. So, we need to eliminate the incorrect options.

Option 1 – It is wrong because of the word ‘always’. The author never states that such a decision is always difficult.

Option 2 – The author doesn’t call the research misleading.

Option 3 – Because of the word ‘some’ it becomes the correct answer.

Option 4 – ‘Only’ makes this option incorrect.

 **Bookmark**

 **Answer key/Solution**

FeedBack

Direction for questions (5 - 9): Read the given passages and answer the questions that follow.

Passage 2

As the issue of inequality becomes increasingly salient, we run a risk of missing the economic forest for the trees if not careful. When data is properly interpreted, we see that claims of growing inequality in the U.S. are vastly overstated. Moreover, proposed solutions such as a heavily progressive tax code are counter-productive.

There are valid reasons to consider the issue of income inequality. Inequality that results from genuine differences in ability, skill and work ethic shouldn't be of much concern from a policy perspective – in a free society, such differing results are not only expected, but are a necessary and desirable part of the competitive system – but when inequality is caused by institutional barriers that hold some groups down, or unfairly benefit others, it is of greater concern.

So is income inequality a problem in the U.S.? There is reason to be skeptical of claims that it is. Arguments that inequality is rising dangerously fast are common, but typically rest on the misinterpretation of economic measures. For instance, it's not unusual to see an argument resting primarily on some sort of chart showing gains made by different income levels – often divided into five quintiles – over the last several decades, with much more going to top earners than anyone else. Proof of growing inequality, right? Not so. Such data tell us nothing about who receives the gains because quintiles are not static. It is not the same people in the top quintile in 2013 as it was in 1980.

A person near the top in earnings today was most likely near the bottom 30 years ago when first entering the work force. Longitudinal studies which actually track the same people over time thus paint a very different picture than snapshots of economic quintiles, and show

significant mobility and increases in wealth for all over time.

As the old poor move up the economic ladder, new poor, in the form of young workers and immigrants, enter the labor force. This continual process is not adequately reflected in static snapshots of the economy.

Median household incomes are also frequently cited as evidence of troublesome inequality, but households are unstable. Increases in divorce rates, growth in two income households, and changes in education and marriage patterns (the educated wealthy are more likely to prefer marrying within class than in previous generations) add considerable noise to household income data and further evidence that the appearance of growing inequality is really a statistical artifact.

Even the type of income measured can distort the inequality debate. Looking narrowly at cash wages might lead one to conclude that middle class earning has stagnated. But when total compensation is considered, earnings for poorer workers are actually growing faster than those at the top. Health care costs are simply taking up an ever greater share of earnings – a problem in its own right, but not one to be confused with income inequality.

Even accepting for the sake of argument that income inequality is a problem, redistribution through a progressive tax code is not a solution. For one, the U.S. already has one of the most progressive tax codes among OECD countries, including the much more redistributive European welfare states. Thus if progressive taxes were going to work, we should expect they would have done so already. There are also considerable negative economic consequences to a highly progressive tax code. Excessive marginal tax rates – the rate levied on the next dollar earned – discourage work. While wage earners typically have no choice in when and how they work, upper income Americans have tremendous ability to decide the type and timing of their income. At a certain level of taxation, production is reduced in favor of other activities, such as more vacation time or retirement. The result of tax progressivity is thus reduced economic growth.

Q.5

According to the author, which of the following is the main problem with static snapshots of the economy?

- 1 They fail to consider the upward mobility of workers.**
 - 2 They don't aptly portray the downward mobility of workers.**
 - 3 They fail to accommodate every class of workers and their potential in the labour force.**
 - 4 They don't capture the continual economic mobility of workers in the labour force.**
-

Solution:**Correct Answer : 4****Genre: Economics****Word Count#633** **Bookmark** **Answer key/Solution**

This is an easy question. Refer to the line: "This continual process is not adequately reflected in static snapshots of the economy". It implies that the mobility of the workers (not specifically upward or downward) in the labour force is not correctly reflected by the snapshot. So, option 4 is the correct answer.

 **FeedBack**

Direction for questions (5 - 9): Read the given passages and answer the questions that follow.

Passage 2

As the issue of inequality becomes increasingly salient, we run a risk of missing the economic forest for the trees if not careful. When data is properly interpreted, we see that claims of growing inequality in the U.S. are vastly overstated. Moreover, proposed solutions such as a heavily progressive tax code are counter-productive.

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Q.6

As per the passage, what kind of income inequality is not necessarily undesirable?

- 1 Inequality caused by institutional barriers
 - 2 Inequality caused by lack of equal opportunity
 - 3 Inequality caused by differences in skill and ability
 - 4 Inequality caused by a system that unduly benefits some and hurts others
-

Solution:**Correct Answer : 3****Genre: Economics****Word Count#633** **Bookmark** **Answer key/Solution**

The second and the third paragraphs talk about the type of inequality.

Refer to the sentence “Inequality that results from genuine differences in ability, skill and work ethic shouldn't be of much concern from a policy perspective – in a free society...” So, the author doesn't consider this type of inequality to be a bad thing. So, option 3 is the clear answer.

FeedBack

Direction for questions (5 - 9): Read the given passages and answer the questions that follow.

Passage 2

As the issue of inequality becomes increasingly salient, we run a risk of missing the economic forest for the trees if not careful. When data is properly interpreted, we see that claims of growing inequality in the U.S. are vastly overstated. Moreover, proposed solutions such as a heavily progressive tax code are counter-productive.

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Q.7

Which of the following best reflects the main message of the author?

-
- 1 Income inequality is condemnable in all its form and a progressive and stringent taxation system is the need of the day.
 - 2 A progressive taxation code can prove to be more detrimental than beneficial as the concept of income inequality is fluid.
 - 3 Income inequality arising out of a difference in skills and qualifications should not result in a taxation code that hurts the more able bodied people.
 - 4 The definition of income inequality in the US is twisted and the current tax code reflects this ambiguity by discriminating against the rich.
-

Solution:**Correct Answer : 2****Genre: Economics****Word Count#633** **Bookmark** **Answer key/Solution**

The author in this passage talks about the issue of inequality and how it is not presented correctly by the economic data. The author terms this concern over income inequality to be misplaced. Then the author talks about progressive taxation as a way of bridging this inequality. However, the author doesn't approve of it. So, the overall tone of the author is critical.

Option 1 – The author doesn't support a progressive tax code. So, this option is wrong.

Option 3 – This is a narrow option. It also distorts the author's message by focusing on one minor point of the passage.

Option 4 – This only talks about the last paragraph. It also juxtaposes the author's opinions in an illogical manner. The author never says that the rich in the US are discriminated against. So, option 2 is the only possible answer.

FeedBack

Direction for questions (5 - 9): Read the given passages and answer the questions that follow.

Passage 2

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Q.8

What can be inferred about the author's use of the phrase 'statistical artifact'?

- 1 Data collected to reflect inequality in the society is often wrong.
- 2 The median household incomes are just statistical ornaments without any practical utility.
- 3 There is a difference between the statistics of a widening income inequality and the reality.
- 4 Statistically inaccurate data such as unstable household incomes prove that data based researches are merely works of art.

Solution:**Correct Answer : 3****Genre: Economics****Word Count#633** **Bookmark** **Answer key/Solution**

This can be answered by eliminating the wrong options.

Option 1 – The author doesn't call the data wrong. It is also not related to the given phrase.

Option 2 – 'Without any practical utility' can't be defined by this passage.

Option 4 – The author doesn't call every data based research to be fictional or useless. This is an extreme option.

Option 3 is the correct answer as the author says that such data don't reflect the complete picture.

FeedBack

Direction for questions (5 - 9): Read the given passages and answer the questions that follow.

Passage 2

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Q.9

If there were a paragraph after the last, which of the following would most likely be its theme?

-
- 1 An evidence backed analysis of the benefits of a regressive tax system
 - 2 A description of the various solutions to the issue of rising income inequality
 - 3 A narration of further evidence to back the adoption of a progressive tax code
 - 4 A factual representation of the ill effects of a progressive taxation code
-

Solution:**Correct Answer : 4****Genre: Economics****Word Count#633** **Bookmark** **Answer key/Solution**

It's a slightly difficult question. Refer to the last line of the passage. It shows the author's opinion. The last paragraph talks about the issue of taxes. The following paragraph (if any) would still talk about the same theme. It needs to match the author's tone and theme.

Option 1 – The author doesn't support regressive tax systems. Opposing a progressive tax code doesn't mean supporting a regressive one. This is a twisted logic.

Option 2 – The author is talking about taxes. So, this option looks too broad.

Option 3 – This option opposes the author's stance.

Option 4 is the correct option as it continues the discussion forward.

[FeedBack](#)

Direction for questions (10 - 14): Read the given passages and answer the questions that follow.

Passage 3

"The Crucible" took me about a year to write. With its five sets and a cast of twenty-one, it never occurred to me that it would take a brave man to produce it on Broadway, especially given the prevailing climate, but Kermit Bloomgarden never faltered. Well before the play opened, a strange tension had begun to build. Only two years earlier, the "Death of a Salesman" touring company had played to a thin crowd in Peoria, Illinois, having been boycotted nearly to death by the American Legion and the Jaycees. Before that, the Catholic War Veterans had prevailed upon the Army not to allow its theatrical groups to perform, first, "All My Sons," and then any play of mine, in occupied Europe. The Dramatists Guild refused to protest attacks on a new play by Sean O'Casey, a self-declared Communist, which forced its producer to cancel his option. I knew of two suicides by actors depressed by upcoming investigation, and every day seemed to bring news of people exiling themselves to Europe: Charlie Chaplin, the director Joseph Losey, Jules Dassin, the harmonica virtuoso Larry Adler, Donald Ogden Stewart, one of the most sought-after screenwriters in Hollywood, and Sam Wanamaker, who would lead the successful campaign to rebuild the Old Globe Theatre on the Thames.

On opening night, January 22, 1953, I knew that the atmosphere would be pretty hostile. The coldness of the crowd was not a surprise; Broadway audiences were not famous for loving history lessons, which is what they made of the play. It seems to me entirely appropriate that on the day the play opened, a newspaper headline read "all thirteen reds guilty"—a story about American Communists who faced prison for "conspiring to teach and advocate the duty and necessity of forcible overthrow of government." Meanwhile, the remoteness of the production was guaranteed by the director, Jed Harris, who insisted that this was a classic requiring the actors to face front, never each other. The critics were not swept away. "Arthur Miller is a problem playwright in both senses of the word," wrote Walter Kerr of the Herald Tribune, who called the play "a step backward into mechanical parable." The Times was not much kinder, saying, "There is too much excitement and not enough emotion in 'The Crucible.' " But the play's future would turn out quite differently.

About a year later, a new production, one with younger, less accomplished actors, working in the Martinique Hotel ballroom, played with the fervor that the script and the times required, and "The Crucible" became a hit. The play stumbled into history, and today, I am told, it is one of the most heavily demanded trade-fiction paperbacks in this country; the Bantam and Penguin editions have sold more than six million copies. I don't think there has been a week in the past forty-odd years when it hasn't been on a stage somewhere in the world. Nor is the new screen version the first. Jean-Paul Sartre, in his Marxist phase, wrote a French film adaptation that blamed the tragedy on the rich landowners conspiring to persecute the poor.

Q.10

The phrase "all thirteen reds" in the second paragraph refers to:

-
- 1 the American communists who were found guilty of secretly planning to overthrow the American government.
- 2 the rebels incarcerated abroad for indoctrination of the common people against the American government.
-
- 3 the Americans who were stooges of the Soviet Communist party.
-
- 4 the Red Army personnel who were arrested in America.
-

Solution:

Correct Answer : 1

Genre: Literary Criticism / Autobiography

Word Count# 518



[Answer key/Solution](#)

Options 3 and 4 are not mentioned in the passage.

Option 2 talks about imprisonment of the rebels abroad for indoctrination of the common people against the American government. However, the question is about the “all three reds” mentioned in the passage and contextually the phrase refers to a story about American Communists who faced prison for “conspiring to teach and advocate the duty and necessity of forcible overthrow of government.”

So, option 1 is the answer.

[FeedBack](#)

Direction for questions (10 - 14): Read the given passages and answer the questions that follow.

Passage 3

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Q.11

What can be inferred about the time during which "The Crucible" was first produced?

- 1 The insurgency problem in America was at its unprecedented height.

2 **The time was not conducive for production of the play "The Crucible".**

3 **Literary creativity was not encouraged by the government in power.**

4 **The writers' fraternity was suspected of colluding with the enemy force.**

Solution:

Correct Answer : 2

Genre: Literary Criticism / Autobiography

Word Count# 518

Options 1, 3, and 4 are not supported by any facts provided in the passage. Only option 2 is mentioned in the passage. Read the first paragraph of the passage.

FeedBack

 **Bookmark**

 **Answer key/Solution**

Direction for questions (10 - 14): Read the given passages and answer the questions that follow.

Passage 3

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Q.12

Why were great artists exiling themselves to Europe, according to the given passage?

- 1 Because they needed to find an ideal place to express themselves.

2 Because the American government failed to protect its citizens from communist's influence.

3 Because they were terrified of being investigated for associating themselves with communism.

4 Because they believed that living in Europe would enable them to be more productive.

Solution:

Correct Answer : 3

Genre: Literary Criticism / Autobiography

Word Count# 518

 **Bookmark**

 **Answer key/Solution**

Options 1 and 4 may be partly true; however, they are not the

primary reason why people were exiling themselves from America in those days.

Option 3 is the correct answer. Refer to "I knew of two suicides by actors depressed by upcoming investigation, and every day seemed to bring news of people exiling themselves to Europe..."

Option 2 is irrelevant.

 **FeedBack**

Direction for questions (10 - 14): Read the given passages and answer the questions that follow.

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Q.13

Which of the following statements best expresses the changes that were witnessed in people's views of "The Crucible"?

-
- 1 **People began to see “The Crucible” as a historical play and not just a play with contemporary issues.**
 - 2 **“The Crucible” eventually found favours with the audience.**
 - 3 **The critics ceased to pass caustic remarks against the play.**
 - 4 **Even as a movie, “The Crucible” was loved the world over.**
-

Solution:

Correct Answer : 2

Genre: Literary Criticism / Autobiography

Word Count# 518

 **Bookmark**

 **Answer key/Solution**

Option 1 is vague because it is not known whether the play was eventually considered as play based on contemporary issue.

The critics were seen to provide harsh remarks about the play initially but it is not mentioned in the passage whether they changed their stances eventually. So, option 3 is inconclusive. It is also not clear whether as a movie “The Crucible” was liked all over the world. So, option 4 cannot be the answer.

Only option 2 can be the correct answer because it is mentioned in the passage that “The Crucible” became a hit. Refer to “...and “The Crucible” became a hit.”

FeedBack

Direction for questions (10 - 14): Read the given passages and answer the questions that follow.

Passage 3

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Q.14

The passage makes all the following claims EXCEPT:

- 1 It took the playwright almost 12 months to write "The Crucible".

- 2 American Legion and the Jaycees boycotted Arthur Miller's play "Death of a Salesman".
- 3 "The Crucible" became a hit because of the seasoned thespians.
- 4 "The Crucible" was produced in three different mediums – a play on stage, a book, and a movie.

Solution:

Correct Answer : 3

Genre: Literary Criticism / Autobiography

Word Count# 518

The play "The Crucible" became a hit with younger, less accomplished actors, working in the Martinique Hotel ballroom because they acted with the fervor that the script and the times required. Refer to the first sentence of the last paragraph, "About a year later, a new production, one with younger, less accomplished actors, working in the Martinique Hotel ballroom, played with the fervor that the script and the times required, and "The Crucible" became a hit." So, option 3 is wrong.

The other options are given in the passage.

 **Bookmark**

 **Answer key/Solution**

FeedBack

Direction for questions (15 - 19): Read the given passages and answer the questions that follow.

Passage 4

Every art and every scientific inquire, and similarly every action and purpose, may be said to aim at some good. Hence the good has been well defined as that at which all things aim. But it is clear that there is a difference in the ends; for the ends are sometimes activities, and sometimes results beyond the mere activities. Also, where there are certain ends beyond the actions, the results are naturally superior to the activities.

As there are various actions, arts, and sciences, it follows that the ends are also various. Thus health is the end of medicine, a vessel of ship building, victory of strategy, and wealth of domestic economy. It often happens that there are a number of such arts or sciences which fall under a single faculty, as the art of making bridles, and all such other arts as make the instruments of horsemanship, under horsemanship, and this again as well as every military action under strategy, and in the same way other arts or sciences under other faculties. But in all these cases the ends of the ruling arts or sciences, whatever they may be, are more desirable than those of the subordinate arts or sciences, as it is for the sake of the former that the latter are themselves sought after. It makes no difference to the argument whether the activities themselves are the ends of the actions, or something else beyond the activities as in the above mentioned sciences.

Suppose it is true that in the sphere of action there is an end which we wish for its own sake, and for the sake of which we wish everything else, and that we do not desire all things for the sake of something else. For, if that is so, the process will go on without end, and our desire will be idle and futile. It is then clear that this will be the good or the supreme good. Does it not follow that the knowledge of this supreme good is of great importance for the conduct of life, and that, if we know it, we shall be like good archers who have a mark at which to aim, we shall have a better chance of attaining what we want? But, if this is the case, we must try to understand, at least in outline, its nature, and the science or faculty to which it belongs.

It would seem that this is the most authoritative or ruling science or faculty, and such is evidently the political; for it is the political science or faculty which determines what sciences are necessary states, and what kind of sciences should be learnt, and how far they should be learnt by particular people. We perceive too that the faculties which are held in the highest esteem (e.g., strategy, domestic economy, and rhetoric) are subordinate to it. But as it makes use of the other practical sciences, and also legislates upon the things to be done and the things to be left undone, it follows that its end will comprehend the ends of all the other sciences, and will therefore be the true good of humankind.

Q.15

With which of the following is the author of the passage most likely to agree?

- 1 The end can never justify the validity of the action.
- 2 Each action has an opposite reaction.

3 Political Science is meaningless as it can't dominate the field of rational inquiry.

4 Some activities have ends which are good for human kind.

Solution:

Correct Answer : 4

Genre: Ethics / Education

Word Count# 527

 **Bookmark**

 **Answer key/Solution**

Only option 4 matches the tone and main idea of the passage.

Option 1 is factually incorrect as the author gives a lot of value to the ends of activities.

Option 2 is vague and irrelevant.

Option 3 is incorrect as the author, in the last paragraph, calls Political Science the most authoritative science.

FeedBack

Direction for questions (15 - 19): Read the given passages and answer the questions that follow.

Passage 4

Every art and every scientific inquire, and similarly every action and purpose, may be said to aim at some good. Hence the good has been well defined as that at which all things aim. But it is clear that there is a difference in the ends; for the ends are sometimes activities, and sometimes results beyond the mere activities. Also, where there are certain ends beyond the actions, the results are naturally superior to the activities.

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Q.16

According to the passage, what is true with respect to the political science or faculty?

- 1 It determines what other sciences are necessarily aiming at.
- 2 It dominates only rational human behaviour.

3 It must be learnt by anyone who wishes to develop logical skills.

4 It is subordinate to domestic economy.

Solution:

Correct Answer : 1

Genre: Ethics / Education

Word Count# 527

Refer to the first five lines of the last paragraph. Option 1 is the only logical answer.

Option 2 is wrong because of “rational human behaviour” and “only”.

Option 3 is outside the scope of this passage.

Option 4 twists the relationship. Domestic Economy is subordinate to Political Science.

 **Bookmark**

 **Answer key/Solution**

FeedBack

Direction for questions (15 - 19): Read the given passages and answer the questions that follow.

Passage 4

Every art and every scientific inquire, and similarly every action and purpose, may be said to aim at some good. Hence the good has been well defined as that at which all things aim. But it is clear that there is a difference in the ends; for the ends are sometimes activities, and sometimes results beyond the mere activities. Also, where there are certain ends beyond the actions, the results are naturally superior to the activities.

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Q.17

As per the passage which of the following combination accurately portrays a relationship similar to that of "victory with strategy" and "wealth with domestic economy"?

- 1 Classroom with students

2 **Grades with examinations**

3 **Car with engine**

4 **Wallet with money**

Solution:

Correct Answer : 2

Genre: Ethics / Education

Word Count# 527

As per the passage (2nd paragraph), victory is the end result of strategy. Grades can be the end result of examinations. The other options are not in the correct order. Money may be the end result of wallet but not vice-versa.

FeedBack

 **Bookmark**

 **Answer key/Solution**

Direction for questions (15 - 19): Read the given passages and answer the questions that follow.

Passage 4

Every art and every scientific inquire, and similarly every action and purpose, may be said to aim at some good. Hence the good has been well defined as that at which all things aim. But it is clear that there is a difference in the ends; for the ends are sometimes activities, and sometimes results beyond the mere activities. Also, where there are certain ends beyond the actions, the results are naturally superior to the activities.

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Q.18

The author of this passage is most likely to be a/an:

1 politician.

2 public speaker.

3 teacher of philosophy.

4 artist.

Solution:

Correct Answer : 3

Genre: Ethics / Education

Word Count# 527

The tone of the passage is explanatory and analytical. The author gives a definition and then goes on to explain it with examples. As the subject of this passage is Philosophy, 3 is the best answer.

 **Bookmark**

 **Answer key/Solution**

FeedBack

Direction for questions (15 - 19): Read the given passages and answer the questions that follow.

Passage 4

Every art and every scientific inquire, and similarly every action and purpose, may be said to aim at some good. Hence the good has been well defined as that at which all things aim. But it is clear that there is a difference in the ends; for the ends are sometimes activities, and sometimes results beyond the mere activities. Also, where there are certain ends beyond the actions, the results are naturally superior to the activities.

As there are various actions, arts, and sciences, it follows that the ends are also various. Thus health is the end of medicine, a vessel of ship building, victory of strategy, and wealth of domestic economy. It often happens that there are a number of such arts or sciences which fall under a single faculty, as the art of making bridles, and all such other arts as make the instruments of horsemanship, under horsemanship, and this again as well as every military action under strategy, and in the same way other arts or sciences under other faculties. But in all these cases the ends of the ruling arts or sciences, whatever they may be, are more desirable than those of the subordinate arts or sciences, as it is for the sake of the former that the latter are themselves sought after. It makes no difference to the argument whether the activities themselves are the ends of the actions, or something else beyond the activities as in the above mentioned sciences.

Suppose it is true that in the sphere of action there is an end which we wish for its own sake, and for the sake of which we wish everything else, and that we do not desire all things for the sake of something else. For, if that is so, the process will go on without end, and our desire will be idle and futile. It is then clear that this will be the good or the supreme good. Does it not follow that the knowledge of this supreme good is of great importance for the conduct of life, and that, if we know it, we shall be like good archers who have a mark at which to aim, we shall have a better chance of attaining what we want? But, if this is the case, we must try to understand, at least in outline, its nature, and the science or faculty to which it belongs.

It would seem that this is the most authoritative or ruling science or faculty, and such is evidently the political; for it is the political science or faculty which determines what sciences are necessary states, and what kind of sciences should be learnt, and how far they should be learnt by particular people. We perceive too that the faculties which are held in the highest esteem (e.g., strategy, domestic economy, and rhetoric) are subordinate to it. But as it makes use of the other practical sciences, and also legislates upon the things to be done and the things to be left undone, it follows that its end will comprehend the ends of all the other sciences, and will therefore be the true good of humankind.

Q.19

According to the passage, what happens when there are certain ends beyond the actions?

- 1 The results obtained are of a higher value than the activities.
- 2 We do not desire all things for the sake of something else.

3 The good becomes well defined and in sync with the activities.

4 Knowledge becomes the supreme good.

Solution:

Correct Answer : 1

Genre: Ethics / Education

Word Count# 527

Refer to the last sentence of the first paragraph. Option 1 is the clear answer.

FeedBack

 **Bookmark**

 **Answer key/Solution**

Direction for questions (20 - 24): Read the given passages and answer the questions that follow.

Passage 5

Labour is restive today. It is apprehensive about what the future bodes for itself. But it's not as if labour militancy has gone up in recent years. On the contrary, man-days lost due to industrial disputes (lockouts and strikes) came down from 23.7 million in 2001 to 13 million in 2012 before rising to 19 million in 2013. These figures are considerably lower than those in the 1970s and 1980s.

However, there is little doubt that organised labour in India, as in the rest of the world, sees itself as a loser in the changes unleashed by liberalisation and globalisation. It fears that if the government goes ahead with some of its proposed "reforms", its losses will begin to mount.

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This argument may have well been overtaken by events in the global economy. Many other low-cost economies have already positioned themselves in these sectors. Automation in the West means that the window of opportunity in these sectors is fast closing. The idea that reforming labour laws will trigger a huge expansion in low-skilled manufacturing is thus highly suspect in today's changed situation.

Moreover, the academic literature on the subject is not unambiguously in favour of easing labour laws as a means for hiring more labour. Dismissal laws in France are more stringent than in India, but that did not come in the way of France's prospering for over a century. China itself has made its labour laws more stringent so that they are comparable to those in India (except in special economic zones).

Indeed, some of the literature suggests that giving workers greater protection helps increase productivity by giving workers more incentives to invest in firm-specific skills. Along with collective bargaining, worker protection leads to more egalitarian outcomes in society. There is also evidence that the bias against workers in Indian industry may have more to do with tax incentives for capital than with restrictive labour laws.

A second issue that agitates unions is the growing trend towards casualisation of labour. This was one of the reasons for labour unrest at Maruti's plant at Manesar in Haryana last year.

Companies find it expedient to employ labour on contract. They can then leave the job of managing regulations and inspectors to the contract labour firms. They can also stay small and escape various labour regulations. Most importantly, contract labour tends to be cheaper in general; at Maruti's Manesar plant, contract workers earned less than half the wages of permanent workers.

Contract labour is a serious assault on workers' rights. The Supreme Court has made strong observations on companies' resort to contract labour in order to avoid statutory obligations. *The Economic Survey (2015-16)* believes that contract labour is merely a corporate response to "regulatory cholesterol". However, reducing worker protection in the organised sector may not be the answer — many firms would still prefer the contract option simply because it's cheaper. Rather, we must extend worker protection and benefits to contract labour as well.

Q.20

Which of the following best encapsulates the central theme of the passage?

-
- 1 Labour protection - A myth busted
 - 2 Labour protection in India – The do's and don'ts
 - 3 Working conditions in India – An analysis
 - 4 A bleak painting – The future of labour laws in India
-

Solution:**Correct Answer : 2****Genre: Social Economics / Labour Welfare****Word Count# 638**

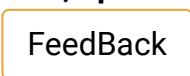
The author in the passage discusses the pros and cons of providing better labour protection to workers.

Option 3 is too generic as it talks about working conditions of all workers in the country. So, option 3 can be eliminated.

Option 4 talks only about labour laws. This is not the main focus of the passage.

Option 1 is partially correct. The option doesn't talk about India in specific which happens to be the central focus of the passage.

Hence, option 2 is the correct answer.

 **Bookmark**
 **Answer key/Solution**
 **FeedBack**

Direction for questions (20 - 24): Read the given passages and answer the questions that follow.

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Q.21

Which of the following can be inferred from the passage?

-
- 1 The author in the passage is against any kind of tax incentive given to the manufacturing companies.
 - 2 The author in the passage strongly favours the current trend of reforms related to labour laws.
 - 3 The author espouses the cause of providing better protection to contractual labourers.
 - 4 The author endorses the cause of the workers' unions with regards to labour militancy.
-

Solution:**Correct Answer : 3****Genre: Social Economics / Labour Welfare****Word Count# 638****This can be inferred from the last paragraph.****Option 1 is too generic.****Option 2 is wrong because the author is mildly critical of the new law.****Option 4 is wrong because the author mentions this point as a fact only and doesn't give his opinion.****Option 3 can be inferred as the author indirectly raises the issue. So, s/he supports the labour welfare reforms.****FeedBack****Bookmark****Answer key/Solution****Direction for questions (20 - 24): Read the given passages and answer the questions that follow.****Passage 5**

Labour is restive today. It is apprehensive about what the future bodes for itself. But it's not as if labour militancy has gone up in recent years. On the contrary, man-days lost due to industrial disputes (lockouts and strikes) came down from 23.7 million in 2001 to 13 million in 2012 before rising to 19 million in 2013. These figures are considerably lower than those in the 1970s and 1980s.

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Q.22

The author, in the passage, doesn't state that:

- 1 reforming labour laws in India will surely trigger a huge-expansion in low-skilled manufacturing industry.
- 2 the government should extend worker protection and benefits to contract labourers.
- 3 greater protection for workers can help in creating a more equal society.
- 4 the workers' unions and opposition parties in India may clash with the government on the issue of labour protectionism.

Solution:**Correct Answer : 1****Genre: Social Economics / Labour Welfare****Word Count# 638**

Refer to the last sentence of the fifth paragraph. The author states that such an idea is “highly suspect”. So, option 1 is the correct answer as it states the exact opposite in the passage.

Option 2 is mentioned in the last paragraph.

Similarly options 3 (“egalitarian society”) and 4 (The Industrial Relations Code Bill, 2016) have also been clearly mentioned in the passage. The words “can” and “may” make options 3 and 4 true.

FeedBack**Bookmark****Answer key/Solution**

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Passage 5

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Q.23

According to the author, giving workers more protection may not result in:

- 1 an increase in their productivity.
- 2 a more equal society.
- 3 a more incentivized workforce committed to increasing its collective skill.
- 4 a more reasonable tax system in the country.

Solution:**Correct Answer : 4****Genre: Social Economics / Labour Welfare****Word Count# 638**

Refer to the seventh paragraph. Options 1, 2, and 3 have been clearly mentioned.

Option 4 is a distorted inference drawn from the paragraph. Hence, it is the answer.

[FeedBack](#)
 **Bookmark**
 **Answer key/Solution**

Direction for questions (20 - 24): Read the given passages and answer the questions that follow.

Passage 5

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Q.24

According to the economists, why has India not been able to replicate China's success in the labour-intensive manufacturing industry?

- 1 Only 10 percent of jobs are in the organised sector and the remaining 90 per cent in the unorganised sector in India.**
- 2 China itself has made its labour laws more stringent so that they are comparable to those in India.**
- 3 Many other low-cost economies have already positioned themselves in these sectors.**
- 4 Due to rigid labour laws, large firms have refrained from entering the labour-intensive, low-skilled sectors.**

Solution:**Correct Answer : 4****Genre: Social Economics / Labour Welfare****Word Count# 638****Bookmark****Answer key/Solution**

The answer to this question can be found in the fourth paragraph.

So, options 2 and 3 can be eliminated as they are mentioned in the passage in some other context.

Option 1 doesn't answer the question. It merely states a fact.

Hence, option 4 is the answer as it clearly captures the main idea of the fourth paragraph.

FeedBack

Directions for question (25): Five sentences related to a topic are given below. Four of them can be put together to form a meaningful and coherent short paragraph. Identify the odd one out.

Q.25

1. The most impacted are children and the elderly.
2. How many lives would it take for our government to wake up?
3. Recent studies have also reported that air pollution is reducing India's life expectancy by 3.2 years.
4. Why is it that London issues air quality alerts on reaching 66 µg/cum when Delhi does not have any warning on crossing 500 µg/cum?
5. However, not many people in India research on air pollution to find out the severity of these levels.

Solution:**Correct Answer : 5**

The correct order is 4132. This is a slightly tricky question. All the sentences deal with the same theme. So, we can't identify the odd sentence just based on the main idea. So, we need to eliminate mandatory pairs.

Bookmark**Answer key/Solution**

Step 1 – 41 is a pair. 'The most impacted' in 1 refers to the people who are impacted by air pollution in Delhi. So, both the sentences will belong to the paragraph.

Step 2 – Between 2, 3, and 5, 2 will surely belong to the paragraph. It's a question that summarises the impact of air pollution. So, it acts as a concluding sentence for the entire paragraph.

Step 3 – The clue for the answer is the word 'however' in 5. It suggests that the sentence is providing a thematic contrast to some other sentence in the paragraph. However, there is no such sentence found in the paragraph. Hence, 5 is the odd one out.

FeedBack

Directions for question (26): Five sentences related to a topic are given below. Four of them can be put together to form a meaningful and coherent short paragraph. Identify the odd one out.

Q.26

1. Burning forests, high human populations and unflagging demand for tiger blood, tiger skin and crushed tiger bone means the big cats have to tread a daily gauntlet of snares, guns and desperate poachers.
2. But even the leopard's supposed plasticity has not been enough to save them across most of Southeast Asia.
3. And in some cases, it is nearly impossible to survive as a tiger in Southeast Asia.
4. Now, conservationists are discovering, belatedly, that the same is largely true for leopards.
5. Conservationists have long known that it's hard.

Solution:

Correct Answer : 2

The correct order is 5314. This is an easy question.

Step 1 – One mandatory pair is 53 (hard – impossible).

Step 2 – sentences 1 and 4 talk about 'tiger'. Sentence 2 talks about leopard. There is also no justification for the linking word 'but' at the beginning of the sentence. Hence, sentence 2 is the odd one out.

 **Bookmark**

 **Answer key/Solution**

FeedBack

Directions for question (27): Five sentences related to a topic are given below. Four of them can be put together to form a meaningful and coherent short paragraph. Identify the odd one out.

Q.27

1. DNA in nature is made up of four nucleotides.
2. But that the engineered microbes grew slowly and expunged the foreign nucleotides after several generations.
3. Bacteria with a genetic code of six nucleotides, the building blocks of DNA, were engineered successfully.
4. DNA polymerases generally adopt a right-hand fold, in which the thumb and fingers bind DNA and nucleotide.
5. Previous research had shown that synthetic nucleotides designated as X and Y could be incorporated into Escherichia coli bacteria.

Solution:**Correct Answer : 4**

The correct order is 3152. This is a slightly tricky question. But it can be answered quite easily if we look at the main idea of the passage. We don't have to arrange the sentences or find mandatory pairs.

Sentences 1, 2, 3, and 5 talk about nucleotides and DNA. All the sentences talk about the basic ingredients or building blocks of nucleotides.

Sentence 4 talks about DNA polymerase and how they bind DNA and nucleotide. This is not the main idea of the paragraph. So, this is the odd one out.

[FeedBack](#)
 **Bookmark**
 **Answer key/Solution**

Directions for question (28): The passage given below is followed by four summaries. Choose the option that best captures the author's position.

Q.28

While it may seem like the fat that pads our bodies sits there, stubbornly refusing to budge, fat is a very active tissue that is constantly turning over its inventory. After a meal, fat is put into storage. Between meals, stored fat is slowly released, keeping our cells supplied with fuel. While the brain needs glucose, our liver, muscle, and fat cells prefer to burn fat. When calorie consumption is in balance, we maintain a healthy supply of fat that's available when we need it. This extra energy reserve helps us survive longer periods of fasting—like when food is scarce or when we don't have a chance to eat.

- 1 The extra energy humans enjoy is derived from the fat that is stored in our body when we eat.
- 2 Fat is stored away in our bodies after meal.
- 3 The reserve of fat in our body is not just an idle tissue but it acts an energy reserve in times of fasting.
- 4 The fat in our body is burnt when the food is scarce.

Solution:**Correct Answer : 3**

This is an easy summary question (the language is simple and topic is quite familiar) if we can follow the method of elimination.

The main points of the paragraph are: Fat is put into storage; what is the impact of fasting on fat storage.

Option 1 – It covers only the first point. So, it is an incomplete option.

Option 2 – It is the first line of the paragraph, not a summary.

Option 3 – It covers both the points. So, it is the correct answer.

Option 4 – This covers only the last sentence or second point of the paragraph.

 **Bookmark**
 **Answer key/Solution**
[FeedBack](#)

Directions for question (29): The passage given below is followed by four summaries. Choose the option that best captures the author's position.

Q.29

Political campaigns have really picked up all the latest techniques of online marketing and advertising. People have said that Trump has stolen an election by working with Cambridge Analytica, which was taking Facebook data. We've had the same debate here in the United Kingdom about Brexit. And I think the problem runs far deeper than that. It's not just about one election or one campaign. It's not about left or right. It's about the way that modern online advertising is targeting people based on a very detailed profile of that person's thoughts, hopes, fears, concerns, personality type, and, increasingly, emotional drivers, and really narrowing in on that individual. And then you craft messages—more and more often, I think, using automated technologies—to appeal to that specific individual.

- 1 Political campaigns are now just another form of advertising and marketing gimmicks.
- 2 Modern online advertisement is targeting people based on their psychological profiles, and this is a matter of worry.
- 3 The way elections have been hacked by political campaigns, as proven by the cases of Trump and Brexit, is a worrisome trend which has the potential to damage our societies.
- 4 Psychological profiling and targeting of individuals is morally and ethically wrong.

Solution:

Correct Answer : 2

This question is difficult because of the nature of the options. The main message the author gives is that psychological profile based advertisements and marketing techniques are dangerous. So, the summary of the paragraph has to contain this idea. The examples of political campaigns are secondary points.

Option 1 – This option can be easily eliminated as it doesn't contain the main idea of the paragraph.

Option 2 – This is the option. It covers the main idea of the paragraph comprehensively.

Option 3 – This one unnecessarily focuses on election campaigns. It completely misses the point about psychological profiling.

Option 4 – This is a conclusion. It may appear to be the main message but it is, in reality, a distorted option. The author doesn't talk about all types of psychological profiling. S/he also doesn't discuss the moral or ethical aspects of this. The option is silent on advertisements. So, it is not a summary but rather a conclusion.

 **Bookmark**

 **Answer key/Solution**

FeedBack

Directions for question (30): The passage given below is followed by four summaries. Choose the option that best captures the author's position.

Q.30

"Female desire has a mind of its own," Ms. Gilbert said. "Female desire is more about a woman going on the hunt for what she wants." She said she wanted to write a book that rendered it accurately, as something "muscular, messy, proactive, and complex. And I wanted to write a book about a woman who was willing to take risks with her safety in order to be sexual. I didn't want to pretend that there is no consequence to promiscuity — Vivian certainly faces consequences. But she's not destroyed by her desire, nor is she ruined by its consequences."

- 1 The desire of a woman is a complex and messy subject and Ms. Gilbert cautions us to be safe while judging a woman based on her sexuality.
- 2 The complex and challenging concept of female sexuality finds a new voice in the form of Ms. Gilbert's character Vivian.
- 3 A woman who wants to explore her desire must be ready to face the consequences.
- 4 Ms. Gilbert views the feminine desire as a layered subject which she wanted to explore via the character of Vivian.

Solution:

Correct Answer : 4

This is a moderate level question. The paragraph may look complicated but it is quite straightforward. There are a lot of factual data. The main idea of the paragraph is that Elizabeth Gilbert has created a fictional character who explores her desires. In a way, this character is the author's attempt to talk about this complex topic.

Option 1 – This is a completely distorted option. The desire of a woman is not complex. Rather, the topic is layered. Ms. Gilbert nowhere wants anyone to be safe in this matter.
Option 2 – This is a very close option. The only reason why it is wrong is the word 'new'. The paragraph makes it clear that this is not a new idea. So, option 4 becomes the correct answer.
Option 3 – This is an illogically generic conclusion, not the summary of the given paragraph.

FeedBack

 **Bookmark**

 **Answer key/Solution**

Directions for question (31): The four sentences (labelled 1, 2, 3, and 4) given in this question, when properly sequenced, form a coherent paragraph. Decide on the proper order for the sentences and key in this sequence of four numbers as your answer.

Q.31

1. This verse demonstrates the prescience of the imaginative arts, how poetic dreams can foreshadow empirical reality.
2. It can also be viewed as an integral way of thinking about nature.
3. Evolutionary thinking goes back to antiquity but this was a novel way to anticipate natural selection.
4. Poetry has unrealised potential - not just in celebrating and describing nature.

Solution:

Correct Answer : 1342

This is a difficult question. One should be careful not to waste a lot of time on such paragraphs.



[Answer key/Solution](#)

The clue words are 'it' and 'also' in sentence 2. So, 42 (also in 2 adds to 4, the potential of poetry) is a mandatory pair.

The correct order is 1342. 1 opens the paragraph. 'This verse' may appear to be an abrupt beginning but it is the best possible opening sentence. The paragraph is surely taken from the middle of a larger paragraph. By scope, sentence 1 introduces the topic of the paragraph – what is the relationship of poetry with evolution. 'Empirical' in 1 is explained by 'evolutionary theory' in 3. So, 1342 is the correct order.

[FeedBack](#)

Directions for question (31): The four sentences (labelled 1, 2, 3, and 4) given in this question, when properly sequenced, form a coherent paragraph. Decide on the proper order for the sentences and key in this sequence of four numbers as your answer.

Q.32

1. Tiny bits of the mineral zircon were extracted from the lunar material and their age was estimated using uranium-lead radioisotope dating.
2. Lunar rocks and soil collected in 1971 during the Apollo 14 mission have been analyzed to show that the Moon is older than expected, 4.51 billion years old.
3. This result indicates that the Moon-forming impact occurred much sooner after Earth's formation, and also that Earth could have cooled down enough to allow life earlier than previously thought as well.
4. Earlier estimates had postulated that the Moon formed within 100 million to 200 million years after the Solar System formed, but the study put it at about 60 million years after that event.

Solution:**Correct Answer : 2413**

The sentences are lengthy. But this is actually a para jumble question that can be answered.

2 is the opening sentence (both thematically and chronologically). It introduces the topic of the paragraph – Lunar rocks and Moon's age.

24 is a pair. ('Earlier estimates' in **4** provides a contrast to the estimates in **2**)

41 is a pair as **1** describes the methods of arriving at the estimates mentioned in **4**.

3 is the last sentence. 'This result' actually gives a conclusion on the entire discussion. So, **2413** is the correct sequence.

 **Bookmark**
 **Answer key/Solution**
[FeedBack](#)

Directions for question (31): The four sentences (labelled 1, 2, 3, and 4) given in this question, when properly sequenced, form a coherent paragraph. Decide on the proper order for the sentences and key in this sequence of four numbers as your answer.

Q.33

1. When she was little, doctors said she had an IQ of 34.

2. Mild autism, borderline personality disorder – the verdict seems to have changed almost as often as her medications.

3. And though they were far wrong, the right diagnosis has never been clear.

4. Until recently, Gina had insisted that a cellphone was too complicated for her, a plausible statement given how many things she finds hard.

Solution:**Correct Answer : 4132**

This is a very easy question. Thematically, it is very similar to the 'Kathy Perkin' question that came in CAT 2019 slot 1 paper.

Notice the narrative sequence. **4** is the opening sentence as it introduces Gina, the protagonist of this narration.

41 is a pair. Chronologically, it follows **4** by giving an example of how Gina has always found things hard. 'She' refers to Gina.

3 has the word 'and'. So, it adds to **1**. Thus, **13** is a pair.

2 is the last sentence as it summarises the problems with Gina's diagnosis and treatment. Thus, **4132** is the correct sequence.

 **Bookmark**
 **Answer key/Solution**
[FeedBack](#)

Directions for question (31): The four sentences (labelled 1, 2, 3, and 4) given in this question, when properly sequenced, form a coherent paragraph. Decide on the proper order for the sentences and key in this sequence of four numbers as your answer.

Q.34

1. If that is the focus of juries, attorneys and prosecutors are bound to follow suit in an attempt to attain convictions.
2. An Australian study in 2004 found that consistency was the most frequently cited criterion by which juries assessed the credibility of a victim.
3. They looked for consistency in the statements by the accuser, and also expected consistency in the victim's post-assault behaviour.
4. Judges sometimes give instructions to juries about 'explainable' discrepancies, but such directives are unlikely to pre-empt entrenched, pre-existing cultural narratives.

Solution:

Correct Answer : 2314

This is a moderate level question.

'An Australian study' in 2 makes it the opening sentence. The use of the indefinite articles is a good indicator of an opening sentence.

23 is a pair. 'They' in 3 refers to the 'juries' in 2.

1 has the phrase 'if that is the focus...' It refers to the idea mentioned in 3.

4 gives an example of how sometimes judges try to make the situation better for the victims. However, it turns out to be ineffective. So, 4 explains the issue raised in 1.

So, 2314 is the correct sequence.

 **Bookmark**

 **Answer key/Solution**

FeedBack

Sec 2

Directions for questions 35 to 38: Answer the questions on the basis of the information given below.

One Plus is a smart phone company which introduced its first phone “One Plus 1” in India in 2011. The company has a strategy of introducing exactly one model every year and sell that model only for 2 more years after the year of launch, after which they discontinue that specific model. The models introduced in year 2012 to 2016 are “One Plus 2”, “One Plus 3”, “One Plus 4”, “One Plus 5” and “One Plus 6” respectively. The total number of handsets (in thousands) sold by One Plus in each year from 2011 to 2016 are 250, 360, 400, 450, 600 and 720 respectively.

Some additional information is also known, which is as follows:

1. The number of “One Plus 4” handsets sold in 2015 was twice the number of “One Plus 1” handsets sold in 2012 and was 4 times the number of “One Plus 2” handsets sold in 2014.
2. The number of “One Plus 1” handsets sold in 2013 is 50 thousand more than the number of “One Plus 5” handsets sold in 2016 but 50 thousand less than the number of “One Plus 4” handsets sold in 2014.
3. The number of “One Plus 3” handsets sold in 2015 was equal to the number of “One Plus 2” handsets sold in 2013.
4. The number of “One Plus 4” and “One Plus 6” handsets sold in 2016 were equal to each other and each of that was twice the number of “One Plus 2” handsets sold in 2013.
5. The absolute difference between the number of handsets sold of “One Plus 5” and that of “One Plus 6” in 2016 was 180 thousand.
6. A total of 430 thousand handsets of model “One Plus 2” were sold.

Q.35

How many “One Plus 4” handsets (in thousands) were sold by the company?

Solution:**Correct Answer : 840**
 **Bookmark**
 **Answer key/Solution**

	2011 (250)	2012 (360)	2013 (400)	2014 (450)	2015 (600)	2016 (720)
One Plus 1	250	2a	b	0	0	0
One Plus 2	0	360 - 2a	c	a	0	0
One Plus 3	0	0	400 - b - c	400 - a - b	c	0
One Plus 4	0	0	0	b + 50	4a	2c
One Plus 5	0	0	0	0	600 - c - 4a	b - 50
One Plus 6	0	0	0	0	0	2c

Now $4c + b - 50 = 720$ Thousand so $4c + b = 770$ Thousand ... (1).

Also the difference of $2c$ and $b - 50$ is 180 Thousand.

Case 1: $b - 50 - 2c = 180$ thousand. Solving this equation with equation (1), we get $c = 90$ and $b = 410$. In this case, in 2014 One Plus 4 handsets sold will be 460 which is impossible.

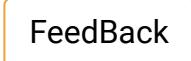
Case 2: $2c - b - 50 = 180$ thousand. Solving this with equation (1), we get $b = 170$ and $c = 150$.

Also, $360 - 2a + c + a = 430$ i.e. $a = 80$.

Now the final table looks like:

	2011 (250)	2012 (360)	2013 (400)	2014 (450)	2015 (600)	2016 (720)
One Plus 1	250	160	170	0	0	0
One Plus 2	0	200	150	80	0	0
One Plus 3	0	0	80	150	150	0
One Plus 4	0	0	0	220	320	300
One Plus 5	0	0	0	0	130	120
One Plus 6	0	0	0	0	0	300

"One Plus 4" handsets sold by the company were 840 (in Thousands).

 **FeedBack**

Directions for questions 35 to 38: Answer the questions on the basis of the information given below.

One Plus is a smart phone company which introduced its first phone "One plus 1" in India in 2011. The company has a strategy of introducing exactly one model every year and sell that model only for 2 more years after the year of launch, after which they discontinue that specific model. The models introduced in year 2012 to 2016 are "One Plus 2", "One Plus 3", "One Plus 4", "One Plus 5" and "One Plus 6" respectively. The total number of handsets (in thousands) sold by One plus in each year from 2011 to 2016 are 250, 360, 400, 450, 600 and 720 respectively.

Some additional information is also known, which is as follows:

1. The number of "One plus 4" handsets sold in 2015 was twice the number of "One Plus 1" handsets sold in 2012 and was 4 times the number of "One Plus 2" handsets sold in 2014.
2. The number of "One Plus 1" handsets sold in 2013 is 50 thousand more than the number of "One plus 5" handsets sold in 2016 but 50 thousand less than the number of "One Plus 4" handsets sold in 2014.
3. The number of "One Plus 3" handsets sold in 2015 was equal to the number of "One Plus 2" handsets sold in 2013.
4. The number of "One Plus 4" and "One Plus 6" handsets sold in 2016 were equal to each other and each of that was twice the number of "One Plus 2" handsets sold in 2013.
5. The absolute difference between the number of handsets sold of "One Plus 5" and that of "One Plus 6" in 2016 was 180 thousand.
6. A total of 430 thousand handsets of model "One Plus 2" were sold.

Q.36

What is the absolute difference (in thousands) between the number of handsets of "One plus 6" sold in 2016 and the number of handsets of "One plus 5" sold in 2015?

- 1 90
- 2 150
- 3 160
- 4 170

Solution:**Correct Answer : 4** **Bookmark** **Answer key/Solution**

	2011 (250)	2012 (360)	2013 (400)	2014 (450)	2015 (600)	2016 (720)
One Plus 1	250	2a	b	0	0	0
One Plus 2	0	360 - 2a	c	a	0	0
One Plus 3	0	0	400 - b - c	400 - a - b	c	0
One Plus 4	0	0	0	b + 50	4a	2c
One Plus 5	0	0	0	0	600 - c - 4a	b - 50
One Plus 6	0	0	0	0	0	2c

Now $4c + b - 50 = 720$ Thousand so $4c + b = 770$ Thousand ... (1).

Also the difference of $2c$ and $b - 50$ is 180 Thousand.

Case 1: $b - 50 - 2c = 180$ thousand. Solving this equation with equation (1), we get $c = 90$ and $b = 410$. In this case, in 2014 One Plus 4 handsets sold will be 460 which is impossible.

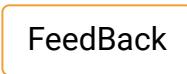
Case 2: $2c - b - 50 = 180$ thousand. Solving this with equation (1), we get $b = 170$ and $c = 150$.

Also, $360 - 2a + c + a = 430$ i.e. $a = 80$.

Now the final table looks like:

	2011 (250)	2012 (360)	2013 (400)	2014 (450)	2015 (600)	2016 (720)
One Plus 1	250	160	170	0	0	0
One Plus 2	0	200	150	80	0	0
One Plus 3	0	0	80	150	150	0
One Plus 4	0	0	0	220	320	300
One Plus 5	0	0	0	0	130	120
One Plus 6	0	0	0	0	0	300

The absolute difference between the number of handsets of "One plus 6" sold in 2016 and the number of handsets of "One plus 5" sold in 2015 is 170 (in thousands).


FeedBack

Directions for questions 35 to 38: Answer the questions on the basis of the information given below.

One Plus is a smart phone company which introduced its first phone "One plus 1" in India in 2011. The company has a strategy of introducing exactly one model every year and sell that model only for 2 more years after the year of launch, after which they discontinue that specific model. The models introduced in year 2012 to 2016 are "One Plus 2", "One Plus 3", "One Plus 4", "One Plus 5" and "One Plus 6" respectively. The total number of handsets (in thousands) sold by One plus in each year from 2011 to 2016 are 250, 360, 400, 450, 600 and 720 respectively.

Some additional information is also known, which is as follows:

1. The number of "One plus 4" handsets sold in 2015 was twice the number of "One Plus 1" handsets sold in 2012 and was 4 times the number of "One Plus 2" handsets sold in 2014.
2. The number of "One Plus 1" handsets sold in 2013 is 50 thousand more than the number of "One plus 5" handsets sold in 2016 but 50 thousand less than the number of "One Plus 4" handsets sold in 2014.
3. The number of "One Plus 3" handsets sold in 2015 was equal to the number of "One Plus 2" handsets sold in 2013.
4. The number of "One Plus 4" and "One Plus 6" handsets sold in 2016 were equal to each other and each of that was twice the number of "One Plus 2" handsets sold in 2013.
5. The absolute difference between the number of handsets sold of "One Plus 5" and that of "One Plus 6" in 2016 was 180 thousand.
6. A total of 430 thousand handsets of model "One Plus 2" were sold.

Q.37

The difference between the total number of handsets sold of "One Plus 3" and that of "One Plus 2" is

- 1 50 thousand
- 2 60 thousand
- 3 70 thousand
- 4 80 thousand

Solution:**Correct Answer : 1** **Bookmark** **Answer key/Solution**

	2011 (250)	2012 (360)	2013 (400)	2014 (450)	2015 (600)	2016 (720)
One Plus 1	250	2a	b	0	0	0
One Plus 2	0	360 - 2a	c	a	0	0
One Plus 3	0	0	400 - b - c	400 - a - b	c	0
One Plus 4	0	0	0	b + 50	4a	2c
One Plus 5	0	0	0	0	600 - c - 4a	b - 50
One Plus 6	0	0	0	0	0	2c

Now $4c + b - 50 = 720$ Thousand so $4c + b = 770$ Thousand ... (1).

Also the difference of $2c$ and $b - 50$ is 180 Thousand.

Case 1: $b - 50 - 2c = 180$ thousand. Solving this equation with equation (1), we get $c = 90$ and $b = 410$. In this case, in 2014 One Plus 4 handsets sold will be 460 which is impossible.

Case 2: $2c - b - 50 = 180$ thousand. Solving this with equation (1), we get $b = 170$ and $c = 150$.

Also, $360 - 2a + c + a = 430$ i.e. $a = 80$.

Now the final table looks like:

	2011 (250)	2012 (360)	2013 (400)	2014 (450)	2015 (600)	2016 (720)
One Plus 1	250	160	170	0	0	0
One Plus 2	0	200	150	80	0	0
One Plus 3	0	0	80	150	150	0
One Plus 4	0	0	0	220	320	300
One Plus 5	0	0	0	0	130	120
One Plus 6	0	0	0	0	0	300

The difference between the total number of handsets sold of "One Plus 3" and that of "One Plus 2" is 50 thousand

FeedBack

Directions for questions 35 to 38: Answer the questions on the basis of the information given below.

One Plus is a smart phone company which introduced its first phone "One plus 1" in India in 2011. The company has a strategy of introducing exactly one model every year and sell that model only for 2 more years after the year of launch, after which they discontinue that specific model. The models introduced in year 2012 to 2016 are "One Plus 2", "One Plus 3", "One Plus 4", "One Plus 5" and "One Plus 6" respectively. The total number of handsets (in thousands) sold by One plus in each year from 2011 to 2016 are 250, 360, 400, 450, 600 and 720 respectively.

Some additional information is also known, which is as follows:

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4. The number of "One Plus 4" and "One Plus 6" handsets sold in 2016 were equal to each other and each of that was twice the number of "One Plus 2" handsets sold in 2013.
5. The absolute difference between the number of handsets sold of "One Plus 5" and that of "One Plus 6" in 2016 was 180 thousand.
6. A total of 430 thousand handsets of model "One Plus 2" were sold.

Q.38

In which year did the maximum number of handsets of any model of One plus sold?

- 1 2012
- 2 2014
- 3 2015
- 4 2016

Solution:**Correct Answer : 3** **Bookmark** **Answer key/Solution**

	2011 (250)	2012 (360)	2013 (400)	2014 (450)	2015 (600)	2016 (720)
One Plus 1	250	2a	b	0	0	0
One Plus 2	0	360 - 2a	c	a	0	0
One Plus 3	0	0	400 - b - c	400 - a - b	c	0
One Plus 4	0	0	0	b + 50	4a	2c
One Plus 5	0	0	0	0	600 - c - 4a	b - 50
One Plus 6	0	0	0	0	0	2c

Now $4c + b - 50 = 720$ Thousand so $4c + b = 770$ Thousand ... (1).

Also the difference of $2c$ and $b - 50$ is 180 Thousand.

Case 1: $b - 50 - 2c = 180$ thousand. Solving this equation with equation (1), we get $c = 90$ and $b = 410$. In this case, in 2014 One Plus 4 handsets sold will be 460 which is impossible.

Case 2: $2c - b - 50 = 180$ thousand. Solving this with equation (1), we get $b = 170$ and $c = 150$.

Also, $360 - 2a + c + a = 430$ i.e. $a = 80$.

Now the final table looks like:

	2011 (250)	2012 (360)	2013 (400)	2014 (450)	2015 (600)	2016 (720)
One Plus 1	250	160	170	0	0	0
One Plus 2	0	200	150	80	0	0
One Plus 3	0	0	80	150	150	0
One Plus 4	0	0	0	220	320	300
One Plus 5	0	0	0	0	130	120
One Plus 6	0	0	0	0	0	300

The year in which maximum number of handsets of any model of One plus sold is 2015.


FeedBack

Directions for questions 39 to 42: Answer the questions on the basis of the information given below.

During an air show in Bangalore, a tournament was held in which five jets – J₁, J₂, J₃, J₄, and J₅ participated. In this tournament, a jet has to fly very high in the sky and then fly down doing the swirls. The pilot who can maneuver the plane to the highest number of swirls in a given time is ranked 1 and so on, and the pilot with rank 1 wins the tournament. The maximum number of swirls that can be achieved depends on the pilot's experience as shown in the table below.

Category	Pilot's experience (in years)	Number of Swirls (per 100 feet)
A	0 to 5	1
B	5 to 10	2
C	10 to 15	4
D	15 to 20	6
E	20 to 25	8

Additional information known to us is:

1. Each of the 5 pilots – P, Q, R, S, and T- flew a different jet and was able to maneuver a distinct number of swirls (per 100 feet) by the end of his/her allotted time.
2. A pilot having the ability to maneuver a given number of swirls would be disqualified if he does not complete the exact number of swirls depending on his category. However, none of them were disqualified.
3. R and the other pilot, who flew jet J₂, achieved the same height of 10000 feet and this was the lowest height achieved among all the competitors.
4. S, category A pilot, flew his jet to a height of 70000 feet but fell short by 500 swirls as compared to the winner.
5. The winner flew neither the jet J₂ nor J₃ and he was neither P nor Q. Further, the winner flew at a height which was thrice the height achieved by J₄, which was the jet that made the lowest total number of swirls.
6. Q flew the jet J₁ to a height of 50000 feet, which was his personal best.

Q.39

Which jet was flown by category C pilot?

1 J₁

2 J₅

3 J₃

4 J₄

Solution:**Correct Answer : 2**
 **Bookmark**
 **Answer key/Solution**

- From (3), R didn't fly jet J₂.
- From (4), rank 1 pilot did 1200 swirls.
- From (5), winner is neither P nor Q. Also, S is not the winner, so the winner is T, since R cannot achieve the status of 1200 swirls in any category. And, T must have flew J₅ and achieved 1200 swirls which is only possible if T flew jet J₅ to the height of 30000 feet and is a category 'C' pilot.
- P flew jet J₂ at height of 10000 feet.
- R flew jet J₄ at height of 10,000 feet and was the one with lowest number of swirls according to statement (5).
- Therefore, S flew jet J₃.
- Q can manage neither 4 nor 8 swirls per 100 feet as he is not ranked 1, so number of swirls can't be more than 1200.
∴ Q is category B pilot.

Pilot	Jet	Height	Swirls	Rank
P	J ₂	10000	800	3
Q	J ₁	50000	1000	2
R	J ₄	10000	600	5
S	J ₃	70000	700	4
T	J ₅	30000	1200	1

J₅ jet was flown by category C pilot.

 **FeedBack**

Directions for questions 39 to 42: Answer the questions on the basis of the information given below.

During an air show in Bangalore, a tournament was held in which five jets – J₁, J₂, J₃, J₄, and J₅ participated. In this tournament, a jet has to fly very high in the sky and then fly down doing the swirls. The pilot who can maneuver the plane to the highest number of swirls in a given time is ranked 1 and so on, and the pilot with rank 1 wins the tournament. The maximum number of swirls that can be achieved depends on the pilot's experience as shown in the table below.

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C	10 to 15	4
D	15 to 20	6
E	20 to 25	8

Additional information known to us is:

1. Each of the 5 pilots – P, Q, R, S, and T- flew a different jet and was able to maneuver a distinct number of swirls (per 100 feet) by the end of his/her allotted time.
2. A pilot having the ability to maneuver a given number of swirls would be disqualified if he does not complete the exact number of swirls depending on his category. However, none of them were disqualified.
3. R and the other pilot, who flew jet J₂, achieved the same height of 10000 feet and this was the lowest height achieved among all the competitors.
4. S, category A pilot, flew his jet to a height of 70000 feet but fell short by 500 swirls as compared to the winner.
5. The winner flew neither the jet J₂ nor J₃ and he was neither P nor Q. Further, the winner flew at a height which was thrice the height achieved by J₄, which was the jet that made the lowest total number of swirls.
6. Q flew the jet J₁ to a height of 50000 feet, which was his personal best.

Q.40

Jet J₃ was flown to what height (in feet)?

1 30000

2 10000

3 70000

4 Either (1) or (2)

Solution:**Correct Answer : 3** **Bookmark** **Answer key/Solution**

- From (3), R didn't fly jet J₂.
- From (4), rank 1 pilot did 1200 swirls.
- From (5), winner is neither P nor Q. Also, S is not the winner, so the winner is T, since R cannot achieve the status of 1200 swirls in any category. And, T must have flew J₅ and achieved 1200 swirls which is only possible if T flew jet J₅ to the height of 30000 feet and is a category 'C' pilot.
- P flew jet J₂ at height of 10000 feet.
- R flew jet J₄ at height of 10,000 feet and was the one with lowest number of swirls according to statement (5).
- Therefore, S flew jet J₃.
- Q can manage neither 4 nor 8 swirls per 100 feet as he is not ranked 1, so number of swirls can't be more than 1200.
∴ Q is category B pilot.

Pilot	Jet	Height	Swirls	Rank
P	J ₂	10000	800	3
Q	J ₁	50000	1000	2
R	J ₄	10000	600	5
S	J ₃	70000	700	4
T	J ₅	30000	1200	1

Jet J₃ was flown to the height of 70000 feet.

FeedBack

Directions for questions 39 to 42: Answer the questions on the basis of the information given below.

During an air show in Bangalore, a tournament was held in which five jets – J₁, J₂, J₃, J₄, and J₅ participated. In this tournament, a jet has to fly very high in the sky and then fly down doing the swirls. The pilot who can maneuver the plane to the highest number of swirls in a given time is ranked 1 and so on, and the pilot with rank 1 wins the tournament. The maximum number of swirls that can be achieved depends on the pilot's experience as shown in the table below.

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Additional information known to us is:

1. Each of the 5 pilots – P, Q, R, S, and T- flew a different jet and was able to maneuver a distinct number of swirls (per 100 feet) by the end of his/her allotted time.
2. A pilot having the ability to maneuver a given number of swirls would be disqualified if he does not complete the exact number of swirls depending on his category. However, none of them were disqualified.
3. R and the other pilot, who flew jet J₂, achieved the same height of 10000 feet and this was the lowest height achieved among all the competitors.
4. S, category A pilot, flew his jet to a height of 70000 feet but fell short by 500 swirls as compared to the winner.
5. The winner flew neither the jet J₂ nor J₃ and he was neither P nor Q. Further, the winner flew at a height which was thrice the height achieved by J₄, which was the jet that made the lowest total number of swirls.
6. Q flew the jet J₁ to a height of 50000 feet, which was his personal best.

Q.41

Six swirls per 100 feet was achieved by _____.

1 P

2 Q

3 R

4 Cannot be determined

Solution:**Correct Answer : 3** **Bookmark** **Answer key/Solution**

- From (3), R didn't fly jet J₂.
- From (4), rank 1 pilot did 1200 swirls.
- From (5), winner is neither P nor Q. Also, S is not the winner, so the winner is T, since R cannot achieve the status of 1200 swirls in any category. And, T must have flew J₅ and achieved 1200 swirls which is only possible if T flew jet J₅ to the height of 30000 feet and is a category 'C' pilot.
- P flew jet J₂ at height of 10000 feet.
- R flew jet J₄ at height of 10,000 feet and was the one with lowest number of swirls according to statement (5).
- Therefore, S flew jet J₃.
- Q can manage neither 4 nor 8 swirls per 100 feet as he is not ranked 1, so number of swirls can't be more than 1200.
∴ Q is category B pilot.

Pilot	Jet	Height	Swirls	Rank
P	J ₂	10000	800	3
Q	J ₁	50000	1000	2
R	J ₄	10000	600	5
S	J ₃	70000	700	4
T	J ₅	30000	1200	1

6 swirls per 100 feet was achieved by R.

FeedBack

Directions for questions 39 to 42: Answer the questions on the basis of the information given below.

During an air show in Bangalore, a tournament was held in which five jets – J₁, J₂, J₃, J₄, and J₅ participated. In this tournament, a jet has to fly very high in the sky and then fly down doing the swirls. The pilot who can maneuver the plane to the highest number of swirls in a given time is ranked 1 and so on, and the pilot with rank 1 wins the tournament. The maximum number of swirls that can be achieved depends on the pilot's experience as shown in the table below.

Category	Pilot's experience (in years)	Number of Swirls (per 100 feet)
A	0 to 5	1
B	5 to 10	2
C	10 to 15	4
D	15 to 20	6
E	20 to 25	8

Additional information known to us is:

1. Each of the 5 pilots – P, Q, R, S, and T- flew a different jet and was able to maneuver a distinct number of swirls (per 100 feet) by the end of his/her allotted time.
2. A pilot having the ability to maneuver a given number of swirls would be disqualified if he does not complete the exact number of swirls depending on his category. However, none of them were disqualified.
3. R and the other pilot, who flew jet J₂, achieved the same height of 10000 feet and this was the lowest height achieved among all the competitors.
4. S, category A pilot, flew his jet to a height of 70000 feet but fell short by 500 swirls as compared to the winner.
5. The winner flew neither the jet J₂ nor J₃ and he was neither P nor Q. Further, the winner flew at a height which was thrice the height achieved by J₄, which was the jet that made the lowest total number of swirls.
6. Q flew the jet J₁ to a height of 50000 feet, which was his personal best.

Q.42

What is the rank of pilot 'R' and which jet he was flying?

1 J₄, rank 3

2 J₄, rank 5

3 J₂, rank 4

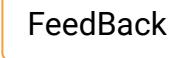
4 Either (1) or (2)

Solution:**Correct Answer : 2**
 **Bookmark**
 **Answer key/Solution**

- From (3), R didn't fly jet J₂.
- From (4), rank 1 pilot did 1200 swirls.
- From (5), winner is neither P nor Q. Also, S is not the winner, so the winner is T, since R cannot achieve the status of 1200 swirls in any category. And, T must have flew J₅ and achieved 1200 swirls which is only possible if T flew jet J₅ to the height of 30000 feet and is a category 'C' pilot.
- P flew jet J₂ at height of 10000 feet.
- R flew jet J₄ at height of 10,000 feet and was the one with lowest number of swirls according to statement (5).
- Therefore, S flew jet J₃.
- Q can manage neither 4 nor 8 swirls per 100 feet as he is not ranked 1, so number of swirls can't be more than 1200.
∴ Q is category B pilot.

Pilot	Jet	Height	Swirls	Rank
P	J ₂	10000	800	3
Q	J ₁	50000	1000	2
R	J ₄	10000	600	5
S	J ₃	70000	700	4
T	J ₅	30000	1200	1

The rank of pilot 'R' was 5 and he was flying jet J₄.

 **FeedBack**

Directions for questions 43 to 46: Answer the questions on the basis of the information given below.

"Kukoo's Nest" is a popular beauty salon in New Delhi. It offers beauty services to women. The different services provided by it are given below with their prices and the time required in doing them.

S.No.	Service		Price (in Rs.)	Time required (in minutes)
1	Hair Spa	a-With shampoo	1400	30
		b-Without shampoo	1100	20
2	Hair smoothening		35000	45
3	Facial		1800	25
4	Pedicure		800	15
5	Manicure		450	8

- A customer can avail maximum 4 services and minimum 2 services in a single visit.
- No customer can get more than one service simultaneously.
- Salon strictly follows the principle of "first come first service".

There are 3 styling experts – Rahul, Riya and Rajat – in the salon to provide these services. Salon opens at 12 noon everyday and as per the experience of these three experts it is fixed that the first customer of the day is attended by Riya, 2nd by Rahul and 3rd by Rajat and after that it depends on their availability. Some details about the first four customers who visited the salon yesterday are as follows:

- 1st customer visited at 12:05 p.m. and wanted to avail maximum possible services spending least amount.
- 2nd customer visited at 12:10 p.m. and wanted to avail minimum possible services but with maximum amount.
- 3rd customer visited at 12:12 p.m. and wanted to avail maximum possible services spending maximum time.
- 4th customer visited at 1:05 p.m. and wanted to avail minimum possible services spending minimum amount.

Q.43

Jyoti, a frequent visitor to this salon, visited the salon yesterday 5 minutes after the 4th customer and wanted to avail maximum services in minimum possible time. By what time did she get her job done?

- 1 2:26 p.m.
- 2 2:21 p.m.
- 3 2:28 p.m.
- 4 2:10 p.m.

 Bookmark Answer key/Solution**Solution:****Correct Answer : 3**

Total cost and time spent by the 1st customer: For the least amount and maximum services, the customer must have chosen hair spa without shampoo and all other services except hair smoothening.

So, total cost = $1100 + 1800 + 800 + 450 = \text{Rs. } 4,150$, and time spent = $20 + 25 + 15 + 8 = 68$ minutes.

As this customer was attended by Riya at 12:05 p.m., so Riya got free at 1:13 p.m..

Total cost and time spent by the 2nd customer: For the maximum amount and minimum possible services, the customer must have chosen hair smoothening and facial services only.

So, total cost = $35000 + 1800 = \text{Rs. } 36,800$, and time spent = $45 + 25 = 70$ minutes.

As this customer was attended by Rahul at 12:10 p.m., so Rahul got free at 1:20 p.m..

Total cost and time spent by the 3rd customer: For availing maximum possible services in maximum time, the customer must have chosen hair spa with shampoo, hair smoothening, facial, and pedicure.

So, total cost = $1400 + 35000 + 1800 + 800 = \text{Rs. } 39,000$, and time spent = $30 + 45 + 25 + 15 = 115$ minutes.

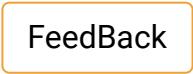
As this customer was attended by Rajat at 12:12 p.m., so Rajat got free at 2:07 p.m..

Total cost and time spent by the 4th customer: For the least amount and minimum possible services, the customer must have chosen pedicure and manicure only.

So, total cost = $800 + 450 = \text{Rs. } 1,250$, and time spent = $15 + 8 = 23$ minutes. Now, this customer arrived at 1:05 p.m., at which point no styling expert was free. So, this customer was attended by Riya at 1:13 p.m., the time at which she finished the services of the 1st customer.

So, Riya got free, again, at 1:36 p.m..

Jyoti visited the saloon at 1:10 p.m., at which point was no styling expert available. But, at 1:20 p.m. Rahul got free and Jyoti was attended by him. Now, Jyoti availed maximum services in minimum possible time. So, she must have chosen hair spa without shampoo and all other services except hair smoothening. So, total time spent = $20 + 25 + 15 + 8 = 68$ minutes. So, Jyoti got her job done at 2:28 p.m..

 FeedBack

Directions for questions 43 to 46: Answer the questions on the basis of the information given below.

"Kukoo's Nest" is a popular beauty salon in New Delhi. It offers beauty services to women. The different services provided by it are given below with their prices and the time required in doing them.

S.No.	Service		Price (in Rs.)	Time required (in minutes)
1	Hair Spa	a-With shampoo	1400	30
		b-Without shampoo	1100	20
2	Hair smoothening		35000	45
3	Facial		1800	25
4	Pedicure		800	15
5	Manicure		450	8

- A customer can avail maximum 4 services and minimum 2 services in a single visit.
- No customer can get more than one service simultaneously.
- Salon strictly follows the principle of "first come first service".

There are 3 styling experts – Rahul, Riya and Rajat – in the salon to provide these services. Salon opens at 12 noon everyday and as per the experience of these three experts it is fixed that the first customer of the day is attended by Riya, 2nd by Rahul and 3rd by Rajat and after that it depends on their availability. Some details about the first four customers who visited the salon yesterday are as follows:

- 1st customer visited at 12:05 p.m. and wanted to avail maximum possible services spending least amount.
- 2nd customer visited at 12:10 p.m. and wanted to avail minimum possible services but with maximum amount.
- 3rd customer visited at 12:12 p.m. and wanted to avail maximum possible services spending maximum time.
- 4th customer visited at 1:05 p.m. and wanted to avail minimum possible services spending minimum amount.

Q.44

Jyoti, a frequent visitor to this salon, visited the salon 5 minutes after the 4th customer and wanted to avail maximum services in minimum possible time. If Jyoti wanted all her services to be done by Rajat, then by what time did she get her job done?

- 1 3:07 p.m.
- 2 2:44 p.m.
- 3 2:21 p.m.
- 4 3:15 p.m.

 Bookmark Answer key/Solution**Solution:****Correct Answer : 4**

Total cost and time spent by the 1st customer: For the least amount and maximum services, the customer must have chosen hair spa without shampoo and all other services except hair smoothening.

So, total cost = $1100 + 1800 + 800 + 450 = \text{Rs. } 4,150$, and time spent = $20 + 25 + 15 + 8 = 68$ minutes.

As this customer was attended by Riya at 12:05 p.m., so Riya got free at 1:13 p.m..

Total cost and time spent by the 2nd customer: For the maximum amount and minimum possible services, the customer must have chosen hair smoothening and facial services only.

So, total cost = $35000 + 1800 = \text{Rs. } 36,800$, and time spent = $45 + 25 = 70$ minutes.

As this customer was attended by Rahul at 12:10 p.m., so Rahul got free at 1:20 p.m..

Total cost and time spent by the 3rd customer: For availing maximum possible services in maximum time, the customer must have chosen hair spa with shampoo, hair smoothening, facial, and pedicure.

So, total cost = $1400 + 35000 + 1800 + 800 = \text{Rs. } 39,000$, and time spent = $30 + 45 + 25 + 15 = 115$ minutes.

As this customer was attended by Rajat at 12:12 p.m., so Rajat got free at 2:07 p.m..

Total cost and time spent by the 4th customer: For the least amount and minimum possible services, the customer must have chosen pedicure and manicure only.

So, total cost = $800 + 450 = \text{Rs. } 1,250$, and time spent = $15 + 8 = 23$ minutes. Now, this customer arrived at 1:05 p.m., at which point no styling expert was free. So, this customer was attended by Riya at 1:13 p.m., the time at which she finished the services of the 1st customer.

So, Riya got free, again, at 1:36 p.m..

Jyoti visited the saloon at 1:10 p.m., and she wanted all her services to be done by Rajat. So, she was attended by Rajat at 2:07 p.m..

Now, Jyoti availed maximum services in minimum possible time.

So, she must have chosen hair spa without shampoo and all other services except hair smoothening.

So, total time spent = $20 + 25 + 15 + 8 = 68$ minutes. So, Jyoti got her job done at 3:15 p.m..

 FeedBack

Directions for questions 43 to 46: Answer the questions on the basis of the information given below.

"Kukoo's Nest" is a popular beauty salon in New Delhi. It offers beauty services to women. The different services provided by it are given below with their prices and the time required in doing them.

S.No.	Service		Price (in Rs.)	Time required (in minutes)
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3	Facial		1800	25
4	Pedicure		800	15
5	Manicure		450	8

- A customer can avail maximum 4 services and minimum 2 services in a single visit.
- No customer can get more than one service simultaneously.
- Salon strictly follows the principle of "first come first service".

There are 3 styling experts – Rahul, Riya and Rajat – in the salon to provide these services. Salon opens at 12 noon everyday and as per the experience of these three experts it is fixed that the first customer of the day is attended by Riya, 2nd by Rahul and 3rd by Rajat and after that it depends on their availability. Some details about the first four customers who visited the salon yesterday are as follows:

- 1st customer visited at 12:05 p.m. and wanted to avail maximum possible services spending least amount.
- 2nd customer visited at 12:10 p.m. and wanted to avail minimum possible services but with maximum amount.
- 3rd customer visited at 12:12 p.m. and wanted to avail maximum possible services spending maximum time.
- 4th customer visited at 1:05 p.m. and wanted to avail minimum possible services spending minimum amount.

Q.45

What is the idle time (in minutes) spent by Riya between her first two customers?

 Bookmark Answer key/Solution**Solution:****Correct Answer : 0**

Total cost and time spent by the 1st customer: For the least amount and maximum services, the customer must have chosen hair spa without shampoo and all other services except hair smoothening.

So, total cost = $1100 + 1800 + 800 + 450 = \text{Rs. } 4,150$, and time spent = $20 + 25 + 15 + 8 = 68$ minutes.

As this customer was attended by Riya at 12:05 p.m., so Riya got free at 1:13 p.m..

Total cost and time spent by the 2nd customer: For the maximum amount and minimum possible services, the customer must have chosen hair smoothening and facial services only.

So, total cost = $35000 + 1800 = \text{Rs. } 36,800$, and time spent = $45 + 25 = 70$ minutes.

As this customer was attended by Rahul at 12:10 p.m., so Rahul got free at 1:20 p.m..

Total cost and time spent by the 3rd customer: For availing maximum possible services in maximum time, the customer must have chosen hair spa with shampoo, hair smoothening, facial, and pedicure.

So, total cost = $1400 + 35000 + 1800 + 800 = \text{Rs. } 39,000$, and time spent = $30 + 45 + 25 + 15 = 115$ minutes.

As this customer was attended by Rajat at 12:12 p.m., so Rajat got free at 2:07 p.m..

Total cost and time spent by the 4th customer: For the least amount and minimum possible services, the customer must have chosen pedicure and manicure only.

So, total cost = $800 + 450 = \text{Rs. } 1,250$, and time spent = $15 + 8 = 23$ minutes. Now, this customer arrived at 1:05 p.m., at which point no styling expert was free. So, this customer was attended by Riya at 1:13 p.m., the time at which she finished the services of the 1st customer.

So, Riya got free, again, at 1:36 p.m..

Riya attended her 1st customer at 12:05 p.m. and finished at 1:13 p.m., at which point her 2nd customer was available.

So, Riya was idle for 0 minutes.

 FeedBack

Directions for questions 43 to 46: Answer the questions on the basis of the information given below.

"Kukoo's Nest" is a popular beauty salon in New Delhi. It offers beauty services to women. The different services provided by it are given below with their prices and the time required in doing them.

S.No.	Service		Price (in Rs.)	Time required (in minutes)
1	Hair Spa	a-With shampoo	1400	30
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2	Hair smoothening		35000	45
3	Facial		1800	25
4	Pedicure		800	15
5	Manicure		450	8

- A customer can avail maximum 4 services and minimum 2 services in a single visit.
- No customer can get more than one service simultaneously.
- Salon strictly follows the principle of "first come first service".

There are 3 styling experts – Rahul, Riya and Rajat – in the salon to provide these services. Salon opens at 12 noon everyday and as per the experience of these three experts it is fixed that the first customer of the day is attended by Riya, 2nd by Rahul and 3rd by Rajat and after that it depends on their availability. Some details about the first four customers who visited the salon yesterday are as follows:

- 1st customer visited at 12:05 p.m. and wanted to avail maximum possible services spending least amount.
- 2nd customer visited at 12:10 p.m. and wanted to avail minimum possible services but with maximum amount.
- 3rd customer visited at 12:12 p.m. and wanted to avail maximum possible services spending maximum time.
- 4th customer visited at 1:05 p.m. and wanted to avail minimum possible services spending minimum amount.

Q.46

If a customer visited the salon 20 minutes after the 4th customer and wanted to avail three services spending minimum possible amount, then by what time and by spending how much amount did she get all her job done?

1 2:15 p.m., Rs. 2,350

2 2:25 p.m., Rs. 2,350

3 2:25 p.m., Rs. 2,650

4 None of these

 Bookmark Answer key/Solution**Solution:****Correct Answer : 4**

Total cost and time spent by the 1st customer: For the least amount and maximum services, the customer must have chosen hair spa without shampoo and all other services except hair smoothening.

So, total cost = $1100 + 1800 + 800 + 450 = \text{Rs. } 4,150$, and time spent = $20 + 25 + 15 + 8 = 68$ minutes.

As this customer was attended by Riya at 12:05 p.m., so Riya got free at 1:13 p.m..

Total cost and time spent by the 2nd customer: For the maximum amount and minimum possible services, the customer must have chosen hair smoothening and facial services only.

So, total cost = $35000 + 1800 = \text{Rs. } 36,800$, and time spent = $45 + 25 = 70$ minutes.

As this customer was attended by Rahul at 12:10 p.m., so Rahul got free at 1:20 p.m..

Total cost and time spent by the 3rd customer: For availing maximum possible services in maximum time, the customer must have chosen hair spa with shampoo, hair smoothening, facial, and pedicure.

So, total cost = $1400 + 35000 + 1800 + 800 = \text{Rs. } 39,000$, and time spent = $30 + 45 + 25 + 15 = 115$ minutes.

As this customer was attended by Rajat at 12:12 p.m., so Rajat got free at 2:07 p.m..

Total cost and time spent by the 4th customer: For the least amount and minimum possible services, the customer must have chosen pedicure and manicure only.

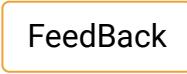
So, total cost = $800 + 450 = \text{Rs. } 1,250$, and time spent = $15 + 8 = 23$ minutes. Now, this customer arrived at 1:05 p.m., at which point no styling expert was free. So, this customer was attended by Riya at 1:13 p.m., the time at which she finished the services of the 1st customer.

So, Riya got free, again, at 1:36 p.m..

Customer visited the salon at 1:25 p.m.. This customer was attended by Rahul as he got free at 1:20 p.m.. Now, to avail three services with minimum amount, he/she must have chosen hair spa without shampoo, pedicure and manicure.

So, total cost spent = $1100 + 800 + 450 = \text{Rs. } 2,350$, and time spent = $20 + 15 + 8 = 43$ minutes.

So, at 2:08 p.m. the customer got his/her job done.


 FeedBack

Directions for questions 47 to 50: Answer the questions on the basis of the information given below.

Anurag, the chairperson of big C company, has created a group called "BCB" and has four members namely Maxi, Ricky, Shane and Chris in this group. Each member of this group has a particular kind of food preference based on which he/she is one among the vegetarian, non-vegetarian and eggetarian. A person who is vegetarian always speaks the truth, the one who is non-vegetarian always lies and the one who is eggetarian can either lie or speak the truth. Also, two of these four members are from Australia and the remaining two are from West Indies. When Anurag asked them about their nationalities and their food preference, each of them gave two statements. It is also known that if a person lies, he lies in both the statements. And the same is true if he is speaking the truth.

The statements given by them are as follows:

Maxi: I am a non-vegetarian. Ricky is from Australia.

Ricky: I am a vegetarian. Chris is not from Australia.

Shane: I am neither vegetarian nor non-vegetarian. Maxi is from West Indies.

Chris: I am not non-vegetarian. Shane is not from West Indies.

Q.47

What is the maximum number of people who might be non-vegetarian?

Solution:**Correct Answer : 3** **Bookmark** **Answer key/Solution**

Maxi is definitely not non-vegetarian otherwise he would have lied and had not said that he is non-vegetarian. Also he must not be vegetarian otherwise he should have spoken truth. Hence, he is neither non-vegetarian nor vegetarian and he is lying. Hence, Ricky is not from Australia and is from West Indies.

The other guy who is from West Indies can be Maxi, Shane or Chris.

Case 1: Maxi is from West Indies.

This means Shane and Chris are from Australia. Hence, Ricky is lying, Shane is speaking the truth and Chris is speaking the truth. Hence, Shane is eggetarian. Ricky is lying this means Ricky is either non-vegetarian or lying with being eggetarian. Also as Chris is speaking the truth he might be vegetarian or eggetarian speaking the truth.

Case 2: Shane is from West Indies.

This means Maxi and Chris are from Australia. Hence, Ricky is lying, Shane and Chris are also lying. Shane is lying means Shane is non-vegetarian. If Chris is lying, he must be non-vegetarian.

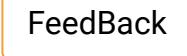
Case 3: Chris is from West Indies.

This means Maxi and Shane are from Australia. Hence, Shane is lying, Chris is speaking the truth and Ricky is speaking the truth. Shane is lying means Shane is non-vegetarian. Chris is speaking the truth so he might be vegetarian or eggetarian speaking the truth. Ricky is speaking the truth means he is surely vegetarian.

The three cases are:

Case 1	Nationality	V/N/E	Case 2	Nationality	V/N/E	Case 3	Nationality	V/N/E
Maxi	WI	E	Maxi	Aus	E	Maxi	Aus	E
Ricky	WI	N/E	Ricky	WI	N/E	Ricky	WI	V
Shane	Aus	E	Shane	WI	N	Shane	Aus	N
Chris	Aus	V/E	Chris	Aus	N	Chris	WI	V/E

Clearly, from case 2 in the table, the maximum number of people who might be non-vegetarian is 3.

 **FeedBack**

Directions for questions 47 to 50: Answer the questions on the basis of the information given below.

Anurag, the chairperson of big C company, has created a group called "BCB" and has four members namely Maxi, Ricky, Shane and Chris in this group. Each member of this group has a particular kind of food preference based on which he/she is one among the vegetarian, non-vegetarian and eggetarian. A person who is vegetarian always speaks the truth, the one who is non-vegetarian always lies and the one who is eggetarian can either lie or speak the truth. Also, two of these four members are from Australia and the remaining two are from West Indies. When Anurag asked them about their nationalities and their food preference, each of them gave two statements. It is also known that if a person lies, he lies in both the statements. And the same is true if he is speaking the truth.

The statements given by them are as follows:

Maxi: I am a non-vegetarian. Ricky is from Australia.

Ricky: I am a vegetarian. Chris is not from Australia.

Shane: I am neither vegetarian nor non-vegetarian. Maxi is from West Indies.

Chris: I am not non-vegetarian. Shane is not from West Indies.

Q.48

If Ricky is Eggetarian, then Shane must be

1 Non-vegetarian

2 Vegetarian

3 Eggetarian

4 Cannot be determined

Solution:**Correct Answer : 4** **Bookmark** **Answer key/Solution**

Maxi is definitely not non-vegetarian otherwise he would have lied and had not said that he is non-vegetarian. Also he must not be vegetarian otherwise he should have spoken truth. Hence, he is neither non-vegetarian nor vegetarian and he is lying. Hence, Ricky is not from Australia and is from West Indies.

The other guy who is from West Indies can be Maxi, Shane or Chris.

Case 1: Maxi is from West Indies.

This means Shane and Chris are from Australia. Hence, Ricky is lying, Shane is speaking the truth and Chris is speaking the truth. Hence, Shane is eggetarian. Ricky is lying this means Ricky is either non-vegetarian or lying with being eggetarian. Also as Chris is speaking the truth he might be vegetarian or eggetarian speaking the truth.

Case 2: Shane is from West Indies.

This means Maxi and Chris are from Australia. Hence, Ricky is lying, Shane and Chris are also lying. Shane is lying means Shane is non-vegetarian. If Chris is lying, he must be non-vegetarian.

Case 3: Chris is from West Indies.

This means Maxi and Shane are from Australia. Hence, Shane is lying, Chris is speaking the truth and Ricky is speaking the truth. Shane is lying means Shane is non-vegetarian. Chris is speaking the truth so he might be vegetarian or eggetarian speaking the truth. Ricky is speaking the truth means he is surely vegetarian.

The three cases are:

Case 1	Nationality	V/N/E	Case 2	Nationality	V/N/E	Case 3	Nationality	V/N/E
Maxi	WI	E	Maxi	Aus	E	Maxi	Aus	E
Ricky	WI	N/E	Ricky	WI	N/E	Ricky	WI	V
Shane	Aus	E	Shane	WI	N	Shane	Aus	N
Chris	Aus	V/E	Chris	Aus	N	Chris	WI	V/E

If Ricky is eggetarian, i.e. consider case 1 and case 2, then Shane must be either eggetarian or non-vegetarian. Hence, cannot be determined.

FeedBack

Directions for questions 47 to 50: Answer the questions on the basis of the information given below.

Anurag, the chairperson of big C company, has created a group called "BCB" and has four members namely Maxi, Ricky, Shane and Chris in this group. Each member of this group has a particular kind of food preference based on which he/she is one among the vegetarian, non-vegetarian and eggetarian. A person who is vegetarian always speaks the truth, the one who is non-vegetarian always lies and the one who is eggetarian can either lie or speak the truth. Also, two of these four members are from Australia and the remaining two are from West Indies. When Anurag asked them about their nationalities and their food preference, each of them gave two statements. It is also known that if a person lies, he lies in both the statements. And the same is true if he is speaking the truth.

The statements given by them are as follows:

Maxi: I am a non-vegetarian. Ricky is from Australia.

Ricky: I am a vegetarian. Chris is not from Australia.

Shane: I am neither vegetarian nor non-vegetarian. Maxi is from West Indies.

Chris: I am not non-vegetarian. Shane is not from West Indies.

Q.49

If Shane is non-vegetarian and Chris is not, then Ricky must be

1 Vegetarian

2 Non-vegetarian

3 Eggetarian

4 Cannot be determined

Solution:**Correct Answer : 1** **Bookmark** **Answer key/Solution**

Maxi is definitely not non-vegetarian otherwise he would have lied and had not said that he is non-vegetarian. Also he must not be vegetarian otherwise he should have spoken truth. Hence, he is neither non-vegetarian nor vegetarian and he is lying. Hence, Ricky is not from Australia and is from West Indies.

The other guy who is from West Indies can be Maxi, Shane or Chris.

Case 1: Maxi is from West Indies.

This means Shane and Chris are from Australia. Hence, Ricky is lying, Shane is speaking the truth and Chris is speaking the truth. Hence, Shane is eggetarian. Ricky is lying this means Ricky is either non-vegetarian or lying with being eggetarian. Also as Chris is speaking the truth he might be vegetarian or eggetarian speaking the truth.

Case 2: Shane is from West Indies.

This means Maxi and Chris are from Australia. Hence, Ricky is lying, Shane and Chris are also lying. Shane is lying means Shane is non-vegetarian. If Chris is lying, he must be non-vegetarian.

Case 3: Chris is from West Indies.

This means Maxi and Shane are from Australia. Hence, Shane is lying, Chris is speaking the truth and Ricky is speaking the truth. Shane is lying means Shane is non-vegetarian. Chris is speaking the truth so he might be vegetarian or eggetarian speaking the truth. Ricky is speaking the truth means he is surely vegetarian.

The three cases are:

Case 1	Nationality	V/N/E	Case 2	Nationality	V/N/E	Case 3	Nationality	V/N/E
Maxi	WI	E	Maxi	Aus	E	Maxi	Aus	E
Ricky	WI	N/E	Ricky	WI	N/E	Ricky	WI	V
Shane	Aus	E	Shane	WI	N	Shane	Aus	N
Chris	Aus	V/E	Chris	Aus	N	Chris	WI	V/E

If Shane is non-vegetarian and Chris is not i.e. consider case 3, then Ricky must be vegetarian.

FeedBack

Directions for questions 47 to 50: Answer the questions on the basis of the information given below.

Anurag, the chairperson of big C company, has created a group called "BCB" and has four members namely Maxi, Ricky, Shane and Chris in this group. Each member of this group has a particular kind of food preference based on which he/she is one among the vegetarian, non-vegetarian and eggetarian. A person who is vegetarian always speaks the truth, the one who is non-vegetarian always lies and the one who is eggetarian can either lie or speak the truth. Also, two of these four members are from Australia and the remaining two are from West Indies. When Anurag asked them about their nationalities and their food preference, each of them gave two statements. It is also known that if a person lies, he lies in both the statements. And the same is true if he is speaking the truth.

The statements given by them are as follows:

Maxi: I am a non-vegetarian. Ricky is from Australia.

Ricky: I am a vegetarian. Chris is not from Australia.

Shane: I am neither vegetarian nor non-vegetarian. Maxi is from West Indies.

Chris: I am not non-vegetarian. Shane is not from West Indies.

Q.50

For how many members their food preference can be determined uniquely?

Solution:**Correct Answer : 1****Bookmark****Answer key/Solution**

Maxi is definitely not non-vegetarian otherwise he would have lied and had not said that he is non-vegetarian. Also he must not be vegetarian otherwise he should have spoken truth. Hence, he is neither non-vegetarian nor vegetarian and he is lying. Hence, Ricky is not from Australia and is from West Indies.

The other guy who is from West Indies can be Maxi, Shane or Chris.

Case 1: Maxi is from West Indies.

This means Shane and Chris are from Australia. Hence, Ricky is lying, Shane is speaking the truth and Chris is speaking the truth. Hence, Shane is eggetarian. Ricky is lying this means Ricky is either non-vegetarian or lying with being eggetarian. Also as Chris is speaking the truth he might be vegetarian or eggetarian speaking the truth.

Case 2: Shane is from West Indies.

This means Maxi and Chris are from Australia. Hence, Ricky is lying, Shane and Chris are also lying. Shane is lying means Shane is non-vegetarian. If Chris is lying, he must be non-vegetarian.

Case 3: Chris is from West Indies.

This means Maxi and Shane are from Australia. Hence, Shane is lying, Chris is speaking the truth and Ricky is speaking the truth. Shane is lying means Shane is non-vegetarian. Chris is speaking the truth so he might be vegetarian or eggetarian speaking the truth. Ricky is speaking the truth means he is surely vegetarian.

The three cases are:

Case 1	Nationality	V/N/E	Case 2	Nationality	V/N/E	Case 3	Nationality	V/N/E
Maxi	WI	E	Maxi	Aus	E	Maxi	Aus	E
Ricky	WI	N/E	Ricky	WI	N/E	Ricky	WI	V
Shane	Aus	E	Shane	WI	N	Shane	Aus	N
Chris	Aus	V/E	Chris	Aus	N	Chris	WI	V/E

If we compare all the three cases, we can say that for only one person i.e. Maxi, we can determine his food preference uniquely.

FeedBack

Directions for questions 51 to 54: Answer the questions on the basis of the information given below.

There is a 4×4 grid with all its 16 cells filled with some digits as shown in the figure given below, where R_1, R_2, R_3, R_4 denote the rows and C_1, C_2, C_3, C_4 denote the columns. Any cell can be denoted with its row and column number as ' R_iC_j '.

	C_1	C_2	C_3	C_4
R_1	1	7	2	8
R_2	5	3	6	4
R_3	5	3	6	4
R_4	1	7	2	8

Amit, a curious kid, is currently standing at the top left cell i.e., R_1C_1 having 1 in it. Now he has to move exactly 3 steps - 1 step row-wise, 1 step column-wise and 1 diagonally, in any order. In one step he can move by only 1 cell.

For example, if he is at ' R_2C_2 ', he can move to either ' R_2C_1 ' or ' R_2C_3 ' in one step row-wise, to either ' R_1C_2 ' or ' R_3C_2 ' in one step column-wise, and similarly to any one among ' R_1C_1 ', ' R_1C_3 ', ' R_3C_1 ', ' R_3C_3 ' in one step diagonally. Every time he moves to a cell, he adds the number, written in that cell, with his previous sum. He initially started with a sum of '0' and hence have a sum of '1' when he reached cell ' R_1C_1 '.

Q.51

Which of the following sums cannot be achieved by Amit after his 3 steps?

1 11

2 13

3 17

4 19

Solution:

Correct Answer : 4

 **Bookmark**

 **Answer key/Solution**

As the order of the steps taken by Amit is not known, he can take the next 3 steps in $3! = 6$ ways i.e. RCD, RDC, CDR, CRD, DCR or DRC, where R, C and D denotes row-wise, column-wise and diagonally. Hence, the final sum of Amit can be achieved in one of the following ways:

	Step 1	Step 2	Step 3	Final
RCD	7	3	6	17
			5	16
			2	13
			1	12
RDC	7	6	2	16
			6	20
		5	5	18
			1	14
CDR	5	3	5	14
			6	15
		7	1	14
			2	15
CRD	5	3	6	15
			5	14
			2	11
			1	10
DCR	3	3	5	12
			6	13
		7	1	12
			2	13
DRC	3	5	1	10
			5	14
		6	2	12
			6	16

As can be seen from the above table, out of the given options sum of 19 cannot be achieved by Amit.

FeedBack

Directions for questions 51 to 54: Answer the questions on the basis of the information given below.

There is a 4×4 grid with all its 16 cells filled with some digits as shown in the figure given below, where R_1, R_2, R_3, R_4 denote the rows and C_1, C_2, C_3, C_4 denote the columns. Any cell can be denoted with its row and column number as ' R_iC_j '.

	C_1	C_2	C_3	C_4
R_1	1	7	2	8
R_2	5	3	6	4
R_3	5	3	6	4
R_4	1	7	2	8

Amit, a curious kid, is currently standing at the top left cell i.e., R_1C_1 , having 1 in it. Now he has to move exactly 3 steps - 1 step row-wise, 1 step column-wise and 1 diagonally, in any order. In one step he can move by only 1 cell.

For example, if he is at ' R_2C_2 ', he can move to either ' R_2C_1 ' or ' R_2C_3 ' in one step row-wise, to either ' R_1C_2 ' or ' R_3C_2 ' in one step column-wise, and similarly to any one among ' R_1C_1 ', ' R_1C_3 ', ' R_3C_1 ', ' R_3C_3 ' in one step diagonally. Every time he moves to a cell, he adds the number, written in that cell, with his previous sum. He initially started with a sum of '0' and hence have a sum of '1' when he reached cell ' R_1C_1 '.

Q.52

Which of the following sums can be achieved in atleast 4 different ways?

1 14

2 16

3 12

4 Both (1) and (3)

Solution:

Correct Answer : 4

 **Bookmark**

 **Answer key/Solution**

As the order of the steps taken by Amit is not known, he can take the next 3 steps in $3! = 6$ ways i.e. RCD, RDC, CDR, CRD, DCR or DRC, where R, C and D denotes row-wise, column-wise and diagonally. Hence, the final sum of Amit can be achieved in one of the following ways:

	Step 1	Step 2	Step 3	Final
RCD	7	3	6	17
			5	16
			2	13
			1	12
RDC	7	6	2	16
			6	20
		5	5	18
			1	14
CDR	5	3	5	14
			6	15
		7	1	14
			2	15
CRD	5	3	6	15
			5	14
			2	11
			1	10
DCR	3	3	5	12
			6	13
		7	1	12
			2	13
DRC	3	5	1	10
			5	14
		6	2	12
			6	16

From the above table, we can see that sum of 12 can be achieved in 4 different ways and sum of 14 can be achieved in 5 different ways. So, both 12 and 14 can be achieved in atleast 4 different ways.

FeedBack

Directions for questions 51 to 54: Answer the questions on the basis of the information given below.

There is a 4×4 grid with all its 16 cells filled with some digits as shown in the figure given below, where R_1, R_2, R_3, R_4 denote the rows and C_1, C_2, C_3, C_4 denote the columns. Any cell can be denoted with its row and column number as ' R_iC_j '.

	C_1	C_2	C_3	C_4
R_1	1	7	2	8
R_2	5	3	6	4
R_3	5	3	6	4
R_4	1	7	2	8

Amit, a curious kid, is currently standing at the top left cell i.e., R_1C_1 , having 1 in it. Now he has to move exactly 3 steps - 1 step row-wise, 1 step column-wise and 1 diagonally, in any order. In one step he can move by only 1 cell.

For example, if he is at ' R_2C_2 ', he can move to either ' R_2C_1 ' or ' R_2C_3 ' in one step row-wise, to either ' R_1C_2 ' or ' R_3C_2 ' in one step column-wise, and similarly to any one among ' R_1C_1 ', ' R_1C_3 ', ' R_3C_1 ', ' R_3C_3 ' in one step diagonally. Every time he moves to a cell, he adds the number, written in that cell, with his previous sum. He initially started with a sum of '0' and hence have a sum of '1' when he reached cell ' R_1C_1 '.

Q.53

Amit's friend Sanjeev is also there standing in the grid at the cell ' R_4C_1 ' and he has to move following the same rules. In how many ways can they reach at the same cell after each of them has moved 2 steps?

Solution:

Correct Answer : 8

 **Bookmark**

 **Answer key/Solution**

As the order of the steps taken by Amit is not known, he can take the next 3 steps in $3! = 6$ ways i.e. RCD, RDC, CDR, CRD, DCR or DRC, where R, C and D denotes row-wise, column-wise and diagonally. Hence, the final sum of Amit can be achieved in one of the following ways:

	Step 1	Step 2	Step 3	Final
RCD	7	3	6	17
			5	16
			2	13
			1	12
RDC	7	6	2	16
			6	20
		5	5	18
			1	14
CDR	5	3	5	14
			6	15
		7	1	14
			2	15
CRD	5	3	6	15
			5	14
			2	11
			1	10
DCR	3	3	5	12
			6	13
		7	1	12
			2	13
DRC	3	5	1	10
			5	14
		6	2	12
			6	16

They can only meet at 3 either in row 2 or row 3. Now, at 3 written in row 2, Amit can reach in 2 ways and Sanjeev can reach in 2 ways i.e. 4 ways. Similarly, for 3 written in row 3. So, total 8 ways are possible.

FeedBack

Directions for questions 51 to 54: Answer the questions on the basis of the information given below.

There is a 4×4 grid with all its 16 cells filled with some digits as shown in the figure given below, where R_1, R_2, R_3, R_4 denote the rows and C_1, C_2, C_3, C_4 denote the columns. Any cell can be denoted with its row and column number as ' R_iC_j '.

	C_1	C_2	C_3	C_4
R_1	1	7	2	8
R_2	5	3	6	4
R_3	5	3	6	4
R_4	1	7	2	8

Amit, a curious kid, is currently standing at the top left cell i.e., R_1C_1 , having 1 in it. Now he has to move exactly 3 steps - 1 step row-wise, 1 step column-wise and 1 diagonally, in any order. In one step he can move by only 1 cell.

For example, if he is at ' R_2C_2 ', he can move to either ' R_2C_1 ' or ' R_2C_3 ' in one step row-wise, to either ' R_1C_2 ' or ' R_3C_2 ' in one step column-wise, and similarly to any one among ' R_1C_1 ', ' R_1C_3 ', ' R_3C_1 ', ' R_3C_3 ' in one step diagonally. Every time he moves to a cell, he adds the number, written in that cell, with his previous sum. He initially started with a sum of '0' and hence have a sum of '1' when he reached cell ' R_1C_1 '.

Q.54

Amit's friend Sanjeev is also there standing in the grid at the cell ' R_4C_1 ' and he has to move following the same rule. What is the maximum possible difference between their final scores after 3 steps of each of them?

1 12

2 9

3 10

4 8

Solution:

Correct Answer : 3

 **Bookmark**

 **Answer key/Solution**

As the order of the steps taken by Amit is not known, he can take the next 3 steps in $3! = 6$ ways i.e. RCD, RDC, CDR, CRD, DCR or DRC, where R, C and D denotes row-wise, column-wise and diagonally. Hence, the final sum of Amit can be achieved in one of the following ways:

	Step 1	Step 2	Step 3	Final
RCD	7	3	6	17
			5	16
			2	13
			1	12
RDC	7	6	2	16
			6	20
		5	5	18
			1	14
CDR	5	3	5	14
			6	15
		7	1	14
			2	15
CRD	5	3	6	15
			5	14
			2	11
			1	10
DCR	3	3	5	12
			6	13
		7	1	12
			2	13
DRC	3	5	1	10
			5	14
		6	2	12
			6	16

If we look at the given grid, we can observe that row 1 and row 2 are same as row 4 and row 3 respectively. So Amit moving from row-1 and Sanjeev moving from row-4 can achieve the same possible sums in one or another way. So, the maximum possible difference between their final scores = 20 - 10 = 10.

FeedBack

Directions for questions 55 to 58: Answer the questions on the basis of the information given below.

A digital clock shows time in MM : DD : HH : mm : SS format, where DD stands for the date of the month, MM stands for the month, HH stands for hours, mm is for minutes and SS is for seconds. The HH in the clock is in 24 hours format, so it can be maximum 23.

For example, if it is 2nd October and the time of the day is 5:45:08 p.m., then that clock will show 10 : 02 : 17 : 45 : 08.

One day, while looking at the clock, Sanjeev noticed that all the digits in the time shown by the clock are distinct.

Q.55

If the time, when Sanjeev noticed, is the earliest possible of the year using all distinct digits, then what must be the digits at the place of HH?

Solution:**Correct Answer : 17**
 **Bookmark**
 **Answer key/Solution**

First let us check which digits can be possible on every place in the time i.e., MM:DD:HH:mm:SS.

In MM: first M can be filled with 0 and 1 only, while second M can take any value from 0 to 9.

In DD : first D can be filled with 0, 1, 2 and 3, while the second one can take any value from 0 to 9.

In HH : first H can have 0, 1 or 2, and second can take any value.

In mm : first m can be filled with any number from 0 to 5, while second one can take any value.

In SS : Same values for both SS as in the case of mm.

For the earliest possible time, largest possible digits must be in place of SS, 2nd largest must be in place of mm, followed by HH, DD. So, 9 must be put in seconds, 8 in minutes, 7 in hours and 6 in day, but 5 can't be put in month as there are options less than 5 for the time to be earliest possible.

i.e. _ _ : _ 6 : _ 7 : _ 8 : _ 9.

So, 5 can be put in seconds again, 4 in minutes but 3 can be put in neither hours nor days. So 3 must be in month.

i.e. _ 3 : _ 6 : _ 7 : 48 : 59.

Now, first M must be 0, and first H must be 1.

Final, earliest possible time looks like 03 : 26 : 17 : 48 : 59.

FeedBack

Directions for questions 55 to 58: Answer the questions on the basis of the information given below.

A digital clock shows time in MM : DD : HH : mm : SS format, where DD stands for the date of the month, MM stands for the month, HH stands for hours, mm is for minutes and SS is for seconds. The HH in the clock is in 24 hours format, so it can be maximum 23.

For example, if it is 2nd October and the time of the day is 5:45:08 p.m., then that clock will show 10 : 02 : 17 : 45 : 08.

One day, while looking at the clock, Sanjeev noticed that all the digits in the time shown by the clock are distinct.

Q.56

If the time, when Sanjeev noticed, is maximum possible of the year using all distinct digits, then what must be the value of SS?

Solution:**Correct Answer : 43** **Bookmark** **Answer key/Solution**

First let us check which digits can be possible on every place in the time i.e, MM:DD:HH:mm:SS.

In MM: first M can be filled with 0 and 1 only, while second M can take any value from 0 to 9.

In DD : first D can be filled with 0, 1, 2 and 3, while the second one can take any value from 0 to 9.

In HH : first H can have 0, 1 or 2, and second can take any value.

In mm : first m can be filled with any number from 0 to 5, while second one can take any value.

In SS : Same values for both SS as in the case of mm.

For the largest possible time, largest possible digits must be in place of MM, 2nd largest must be in place of DD, followed by HH, and then mm.

Now, the next thing comes in mind is to put 5 in SS, but if we put this 5 at first m of mm, it will show a larger time than the former case.

So, the time will be something like _ 9 : _ 8 : _ 7 : 56 : _ _.

Now, first M has to be 0, first H has to be 1, and hence D can have only 2.

So, the final time becomes: 09 : 28 : 17 : 56 : 43.

FeedBack

Directions for questions 55 to 58: Answer the questions on the basis of the information given below.

A digital clock shows time in MM : DD : HH : mm : SS format, where DD stands for the date of the month, MM stands for the month, HH stands for hours, mm is for minutes and SS is for seconds. The HH in the clock is in 24 hours format, so it can be maximum 23.

For example, if it is 2nd October and the time of the day is 5:45:08 p.m., then that clock will show 10 : 02 : 17 : 45 : 08.

One day, while looking at the clock, Sanjeev noticed that all the digits in the time shown by the clock are distinct.

Q.57**How many distinct times are possible with all distinct digits?**

Solution:**Correct Answer : 768** **Bookmark** **Answer key/Solution**

First let us check which digits can be possible on every place in the time i.e., MM:DD:HH:mm:SS.

In MM: first M can be filled with 0 and 1 only, while second M can take any value from 0 to 9.

In DD : first D can be filled with 0, 1, 2 and 3, while the second one can take any value from 0 to 9.

In HH : first H can have 0, 1 or 2, and second can take any value.

In mm : first m can be filled with any number from 0 to 5, while second one can take any value.

In SS : Same values for both SS as in the case of mm.

The first digit of the month can be 0, as the minimum and maximum possible times have 0 at this place. Now 1 and 2 can be the first digit of day and hour only.

Case 1: If the first digit of hour is 2 i.e., 0 _ : 1 _ : 2 _ : _ _ : _ _.

Now, 2nd digit of hour has to be 3, as possibility for hour starting with 2 are only, 20, 21, 23 and 0 and 1 are already placed. As we have seen above mm and SS can take 0 to 5 only as their first digit, so the first digit of minutes and seconds can be 4 or 5 in 2 ways. The remaining 4 places can be filled with 6, 7, 8 and 9 at any 4 places in $4!$ i.e. 24 ways. So, a total of 48 ways.

Case 2: If the first digit of the day is 2 i.e., 0 _ : 2 _ : 1 _ : _ _ : _ _.

Any digit can come after 2 and 1. But the first digit of minutes and seconds is to be chosen from 3, 4 and 5 in $3! = 6$ ways. Now the remaining 5 places can be filled with the remaining 5 digits in $5!$ ways.

So a total of $6 \times 120 = 720$ ways.

So total possible time with all distinct digits = $720 + 48 = 768$ ways.

FeedBack

Directions for questions 55 to 58: Answer the questions on the basis of the information given below.

A digital clock shows time in MM : DD : HH : mm : SS format, where DD stands for the date of the month, MM stands for the month, HH stands for hours, mm is for minutes and SS is for seconds. The HH in the clock is in 24 hours format, so it can be maximum 23.

For example, if it is 2nd October and the time of the day is 5:45:08 p.m., then that clock will show 10 : 02 : 17 : 45 : 08.

One day, while looking at the clock, Sanjeev noticed that all the digits in the time shown by the clock are distinct.

Q.58

What can be the maximum number of 4's in this clock at any time, if all the digits in the clock are not necessarily distinct?

1 6

2 7

3 1

4 5

Solution:**Correct Answer : 2** **Bookmark** **Answer key/Solution**

First let us check which digits can be possible on every place in the time i.e., MM:DD:HH:mm:SS.

In MM: first M can be filled with 0 and 1 only, while second M can take any value from 0 to 9.

In DD : first D can be filled with 0, 1, 2 and 3, while the second one can take any value from 0 to 9.

In HH : first H can have 0, 1 or 2, and second can take any value.

In mm : first m can be filled with any number from 0 to 5, while second one can take any value.

In SS : Same values for both SS as in the case of mm.

If the digits need not to be distinct, then 4 can come at any place except first M, D and H. So, the time is 14 : 04 : 14 : 44 : 44. Hence, a maximum of 7 number of 4's can be used.

FeedBack

Directions for questions 59 to 62: Answer the questions on the basis of the information given below.

Ravi, a civil services aspirant, was reading about the men who were appointed as the honourable President of India for the period of 15 years i.e. from the year 1962 to 1977, and he came across the five names - F A Ahmed, M Hidayatullah, S R Krishnan, V V Giri and Z Husain - not necessarily in the order of their appointment as the President. Total number of presidential terms, duration for which a person was the President, during the given period was six. Each one of them had worked on at least one of the post(s) among the acting President, Food and Agriculture Minister, Chief Justice, and Vice President before they were appointed as the President of India. Further, the following information is also known about them:

- (a) Exactly one of them was appointed as the President of India for two non-consecutive terms and held different posts before his each appointment as the President.
- (b) Only two different people among them held the Presidential post for the longest duration, which was of 5 years. One among these two served at the last Presidential term of the given period.
- (c) S R Krishnan was appointed as the President before V V Giri was appointed for the same.
- (d) M Hidayatullah was appointed as the President of India only once and he worked on the post of Chief Justice before he was appointed as the President.
- (e) In 1969 alone, two of the given five were appointed as the President of India and that too for three terms.
- (f) There were exactly three terms where the post of the men, before becoming the President of India, was the Vice President and these three terms were consecutive. While every other Presidential terms were governed by the men having different previous posts.
- (g) F A Ahmed was appointed as the President of India for a duration of three years.
- (h) The only man who was appointed as the President of India for two times, worked as the Vice President before his first appointment as the President and as the acting President before his second appointment as the President.
- (i) In 1967, Z Husain was appointed as the President of India.

Q.59

If S R Krishnan held the post of Vice President before his appointment as the President, then who worked on the post of Food and Agriculture Minister before being appointed as the President?

1 F A Ahmed

2 Z Husain

3 V V Giri

4 S R Krishnan

Solution:

Correct Answer : 3

 **Bookmark**

 **Answer key/Solution**

1962-67	5	SR Krishnan	Vice President
1967-69	2	Z Husain	Vice President
1969-69	0	F A Ahmed	Vice President
1969-69	0	M Hidayatullah	Chief Justice
1969-72	3	F A Ahmed	Acting President
1972-77	5	V V Giri	Food and Agriculture Minister

This means FA Ahmed served the first presidential term too in the year 1969.

- From statement (h), we could say that FA Ahmed worked as the Vice President before his first appointment as the President and as the acting President before his second appointment as the President.

So, the table till now becomes

Period	Number of years served	President	Previous post held
1962-67	5		
1967-69	2	Z Husain	
1969-69	0	F A Ahmed	Vice President
1969-69	0		
1969-72	3	F A Ahmed	Acting President
1972-77	5		

According to the statement (f), two cases would be possible.

Case I: When the three consecutive terms served as Vice President were 1967-69, 1969-69 and 1969-69.

Case II: When the three consecutive terms served as Vice President were 1962-67, 1967-69 and 1969-69.

Consider case (I):

- From statements (c) and (d), SR Krishnan was appointed as the president before VV Giri and M Hidayatullah held the post of Chief Justice before becoming the President.
So, further two subcases arise-

Case I (a):

Period	Number of years served	President	Previous post held
1962-67	5	SR Krishnan	Food and Agriculture Minister
1967-69	2	Z Husain	Vice President
1969-69	0	F A Ahmed	Vice President
1969-69	0	V V Giri	Vice President
1969-72	3	F A Ahmed	Acting President
1972-77	5	M Hidayatullah	Chief Justice

Case I (b):

Case I (a):

Period	Number of years served	President	Previous post held
1962-67	5	M Hidayatullah	Chief Justice
1967-69	2	Z Husain	Vice President
1969-69	0	FA Ahmed	Vice President
1969-69	0	SR Krishnan	Vice President
1969-72	3	FA Ahmed	Acting President
1972-77	5	VV Giri	Food and Agriculture Minister

Now consider case (II):

Here also, two subcases would be made.

Case II (a):

Period	Number of years served	President	Previous post held
1962-67	5	SR Krishnan	Vice President
1967-69	2	Z Husain	Vice President
1969-69	0	FA Ahmed	Vice President
1969-69	0	M Hidayatullah	Chief Justice
1969-72	3	FA Ahmed	Acting President
1972-77	5	VV Giri	Food and Agriculture Minister

Case II (b):

Period	Number of years served	President	Previous post held
1962-67	5	SR Krishnan	Vice President
1967-69	2	Z Husain	Vice President
1969-69	0	FA Ahmed	Vice President
1969-69	0	VV Giri	Food and Agriculture Minister
1969-72	3	FA Ahmed	Acting President
1972-77	5	M Hidayatullah	Chief Justice

Hence, total four cases are possible.

Clearly, if SR Krishnan held the post of Vice President before his appointment as the President, then VV Giri worked on the post of Food and Agriculture Minister before being appointed as the President.

FeedBack

Directions for questions 59 to 62: Answer the questions on the basis of the information given below.

Ravi, a civil services aspirant, was reading about the men who were appointed as the honourable President of India for the period of 15 years i.e. from the year 1962 to 1977, and he came across the five names - F A Ahmed, M Hidayatullah, S R Krishnan, V V Giri and Z Husain - not necessarily in the order of their appointment as the President. Total number of presidential terms, duration for which a person was the President, during the given period was six. Each one of them had worked on at least one of the post(s) among the acting President, Food and Agriculture Minister, Chief Justice, and Vice President before they were appointed as the President of India. Further, the following information is also known about them:

- (a) Exactly one of them was appointed as the President of India for two non-consecutive terms and held different posts before his each appointment as the President.
- (b) Only two different people among them held the Presidential post for the longest duration, which was of 5 years. One among these two served at the last Presidential term of the given period.
- (c) S R Krishnan was appointed as the President before V V Giri was appointed for the same.
- (d) M Hidayatullah was appointed as the President of India only once and he worked on the post of Chief Justice before he was appointed as the President.
- (e) In 1969 alone, two of the given five were appointed as the President of India and that too for three terms.
- (f) There were exactly three terms where the post of the men, before becoming the President of India, was the Vice President and these three terms were consecutive. While every other Presidential terms were governed by the men having different previous posts.
- (g) F A Ahmed was appointed as the President of India for a duration of three years.
- (h) The only man who was appointed as the President of India for two times, worked as the Vice President before his first appointment as the President and as the acting President before his second appointment as the President.
- (i) In 1967, Z Husain was appointed as the President of India.

Q.60

In which year was the one working on the post of the acting President appointed as the President?

1 1967

2 1969

3 1972

4 1977

Solution:

Correct Answer : 2

 **Bookmark**

 **Answer key/Solution**

1962-67	5	SR Krishnan	Vice President
1967-69	2	Z Husain	Vice President
1969-69	0	FA Ahmed	Vice President
1969-69	0	M Hidayatullah	Chief Justice
1969-72	3	FA Ahmed	Acting President
1972-77	5	VV Giri	Food and Agriculture Minister

This means FA Ahmed served the first presidential term too in the year 1969.

- From statement (h), we could say that FA Ahmed worked as the Vice President before his first appointment as the President and as the acting President before his second appointment as the President.

So, the table till now becomes

Period	Number of years served	President	Previous post held
1962-67	5		
1967-69	2	Z Husain	
1969-69	0	FA Ahmed	Vice President
1969-69	0		
1969-72	3	FA Ahmed	Acting President
1972-77	5		

According to the statement (f), two cases would be possible.

Case I: When the three consecutive terms served as Vice President were 1967-69, 1969-69 and 1969-69.

Case II: When the three consecutive terms served as Vice President were 1962-67, 1967-69 and 1969-69.

Consider case (I):

- From statements (c) and (d), SR Krishnan was appointed as the president before VV Giri and M Hidayatullah held the post of Chief Justice before becoming the President.
So, further two subcases arise-

Case I (a):

Period	Number of years served	President	Previous post held
1962-67	5	SR Krishnan	Food and Agriculture Minister
1967-69	2	Z Husain	Vice President
1969-69	0	FA Ahmed	Vice President
1969-69	0	VV Giri	Vice President
1969-72	3	FA Ahmed	Acting President
1972-77	5	M Hidayatullah	Chief Justice

Case I (b):

Period	Number of years served	President	Previous post held
1962-67	5	M Hidayatullah	Chief Justice
1967-69	2	Z Husain	Vice President
1969-69	0	FA Ahmed	Vice President
1969-69	0	SR Krishnan	Vice President
1969-72	3	FA Ahmed	Acting President
1972-77	5	VV Giri	Food and Agriculture Minister

Now consider case (II):

Here also, two subcases would be made.

Case II (a):

Period	Number of years served	President	Previous post held
1962-67	5	SR Krishnan	Vice President
1967-69	2	Z Husain	Vice President
1969-69	0	FA Ahmed	Vice President
1969-69	0	M Hidayatullah	Chief Justice
1969-72	3	FA Ahmed	Acting President
1972-77	5		

Case II (b):

Period	Number of years served	President	Previous post held
1962-67	5	SR Krishnan	Vice President
1967-69	2	Z Husain	Vice President
1969-69	0	FA Ahmed	Vice President
1969-69	0	VV Giri	Food and Agriculture Minister
1969-72	3	FA Ahmed	Acting President
1972-77	5	M Hidayatullah	Chief Justice

Hence, total four cases are possible.

FA Ahmed working on the post of the Acting President was appointed as the President in 1969.

[FeedBack](#)

Directions for questions 59 to 62: Answer the questions on the basis of the information given below.

Ravi, a civil services aspirant, was reading about the men who were appointed as the honourable President of India for the period of 15 years i.e. from the year 1962 to 1977, and he came across the five names - F A Ahmed, M Hidayatullah, S R Krishnan, V V Giri and Z Husain - not necessarily in the order of their appointment as the President. Total number of presidential terms, duration for which a person was the President, during the given period was six. Each one of them had worked on at least one of the post(s) among the acting President, Food and Agriculture Minister, Chief Justice, and Vice President before they were appointed as the President of India. Further, the following information is also known about them:

- (a) Exactly one of them was appointed as the President of India for two non-consecutive terms and held different posts before his each appointment as the President.
- (b) Only two different people among them held the Presidential post for the longest duration, which was of 5 years. One among these two served at the last Presidential term of the given period.
- (c) S R Krishnan was appointed as the President before V V Giri was appointed for the same.
- (d) M Hidayatullah was appointed as the President of India only once and he worked on the post of Chief Justice before he was appointed as the President.
- (e) In 1969 alone, two of the given five were appointed as the President of India and that too for three terms.
- (f) There were exactly three terms where the post of the men, before becoming the President of India, was the Vice President and these three terms were consecutive. While every other Presidential terms were governed by the men having different previous posts.
- (g) F A Ahmed was appointed as the President of India for a duration of three years.
- (h) The only man who was appointed as the President of India for two times, worked as the Vice President before his first appointment as the President and as the acting President before his second appointment as the President.
- (i) In 1967, Z Husain was appointed as the President of India.

Q.61**Who was appointed as the President for the Presidential term of 2 years?**1 **F A Ahmed**2 **S R Krishnan**3 **V V Giri**4 **Z Husain****Solution:****Correct Answer : 4****FeedBack** **Bookmark** **Answer key/Solution**

Directions for questions 59 to 62: Answer the questions on the basis of the information given below.

Ravi, a civil services aspirant, was reading about the men who were appointed as the honourable President of India for the period of 15 years i.e. from the year 1962 to 1977, and he came across the five names - F A Ahmed, M Hidayatullah, S R Krishnan, V V Giri and Z Husain - not necessarily in the order of their appointment as the President. Total number of presidential terms, duration for which a person was the President, during the given period was six. Each one of them had worked on at least one of the post(s) among the acting President, Food and Agriculture Minister, Chief Justice, and Vice President before they were appointed as the President of India. Further, the following information is also known about them:

- (a) Exactly one of them was appointed as the President of India for two non-consecutive terms and held different posts before his each appointment as the President.
- (b) Only two different people among them held the Presidential post for the longest duration, which was of 5 years. One among these two served at the last Presidential term of the given period.
- (c) S R Krishnan was appointed as the President before V V Giri was appointed for the same.
- (d) M Hidayatullah was appointed as the President of India only once and he worked on the post of Chief Justice before he was appointed as the President.
- (e) In 1969 alone, two of the given five were appointed as the President of India and that too for three terms.
- (f) There were exactly three terms where the post of the men, before becoming the President of India, was the Vice President and these three terms were consecutive. While every other Presidential terms were governed by the men having different previous posts.
- (g) F A Ahmed was appointed as the President of India for a duration of three years.
- (h) The only man who was appointed as the President of India for two times, worked as the Vice President before his first appointment as the President and as the acting President before his second appointment as the President.
- (i) In 1967, Z Husain was appointed as the President of India.

Q.62

The President, who completed the first term of longest duration of 5 years, was holding which post before being appointed as the President?

1 Vice President

2 Food and Agriculture Minister

3 Chief Justice

4 Cannot be determined

Solution:

Correct Answer : 4

 **Bookmark**

 **Answer key/Solution**

1962-67	5	SR Krishnan	Vice President
1967-69	2	Z Husain	Vice President
1969-69	0	FA Ahmed	Vice President
1969-69	0	M Hidayatullah	Chief Justice
1969-72	3	FA Ahmed	Acting President
1972-77	5	VV Giri	Food and Agriculture Minister

This means FA Ahmed served the first presidential term too in the year 1969.

- From statement (h), we could say that FA Ahmed worked as the Vice President before his first appointment as the President and as the acting President before his second appointment as the President.

So, the table till now becomes

Period	Number of years served	President	Previous post held
1962-67	5		
1967-69	2	Z Husain	
1969-69	0	FA Ahmed	Vice President
1969-69	0		
1969-72	3	FA Ahmed	Acting President
1972-77	5		

According to the statement (f), two cases would be possible.

Case I: When the three consecutive terms served as Vice President were 1967-69, 1969-69 and 1969-69.

Case II: When the three consecutive terms served as Vice President were 1962-67, 1967-69 and 1969-69.

Consider case (I):

- From statements (c) and (d), SR Krishnan was appointed as the president before VV Giri and M Hidayatullah held the post of Chief Justice before becoming the President.
So, further two subcases arise-

Case I (a):

Period	Number of years served	President	Previous post held
1962-67	5	SR Krishnan	Food and Agriculture Minister
1967-69	2	Z Husain	Vice President
1969-69	0	FA Ahmed	Vice President
1969-69	0	VV Giri	Vice President
1969-72	3	FA Ahmed	Acting President
1972-77	5	M Hidayatullah	Chief Justice

Case I (b):

Period	Number of years served	President	Previous post held
1962-67	5	M Hidayatullah	Chief Justice
1967-69	2	Z Husain	Vice President
1969-69	0	FA Ahmed	Vice President
1969-69	0	SR Krishnan	Vice President
1969-72	3	FA Ahmed	Acting President
1972-77	5	VV Giri	Food and Agriculture Minister

Now consider case (II):

Here also, two subcases would be made.

Case II (a):

Period	Number of years served	President	Previous post held
1962-67	5	SR Krishnan	Vice President
1967-69	2	Z Husain	Vice President
1969-69	0	FA Ahmed	Vice President
1969-69	0	M Hidayatullah	Chief Justice
1969-72	3	FA Ahmed	Acting President
1972-77	5		

Case II (b):

Period	Number of years served	President	Previous post held
1962-67	5	SR Krishnan	Vice President
1967-69	2	Z Husain	Vice President
1969-69	0	FA Ahmed	Vice President
1969-69	0	VV Giri	Food and Agriculture Minister
1969-72	3	FA Ahmed	Acting President
1972-77	5	M Hidayatullah	Chief Justice

Hence, total four cases are possible.

According to all the cases, all the first three options given in the question can be possible, hence answer is cannot be determined.

[FeedBack](#)

Directions for questions 63 to 66: Answer the questions on the basis of the information given below.

In an exhibition, there were four rare variety of flowers - Fire Lily, Juliet Rose, Gerbera and Tree Flower - displayed for 2 days from where the visitors can decide which flower sapling to buy. There were 50 visitors, who visited the exhibition, on each day. It is known that on each of the two days, 8% of the people who visited did not buy any variety of flower sapling.

Further, some additional information is known to us.

1. The number of people who bought all four varieties of flower saplings on day-1 and day-2 was four and eight respectively.
2. It is known that the saplings of Fire Lily, Juliet Rose, Gerbera, and Tree Flower were bought by 25, 30, 28, and 24 people respectively on each day.
3. On each day, one person bought Fire Lily sapling only, 15 people bought sapling of Juliet Rose but Tree Flower and 9 people bought sapling of Juliet Rose and Gerbera both but Tree Flower.
4. No visitor bought saplings of (Gerbera and Tree Flower only) and (Fire Lily and Juliet Rose only) but other combinations of saplings were bought by at least one person.
5. Exactly 4 people bought saplings of only Gerbera and Juliet Rose together, on each day.
6. Three people bought the saplings of Fire Lily, Gerbera and Tree Flower only on each day.
7. On day-1, exactly one person bought sapling of Gerbera only whereas on day-2, five people bought sapling of Gerbera only. Similarly, on day-1, exactly one person bought the sapling of Tree Flower only and on day-2, three people bought the sapling of Tree Flower only.
8. On each day, 15 people bought the saplings of Gerbera but not Tree Flower and 11 people bought the saplings of Tree Flower but not Gerbera.
9. The number of visitors who bought the saplings of both Juliet Rose and Tree Flower only on day-1 and on day-2 were 3 and 1 respectively.

Q.63

How many people bought the saplings in the combination of any three flowers, on both the days taken together?

1 **35**

2 **16**

3 **14**

4 **30**

Solution:

Correct Answer : 4

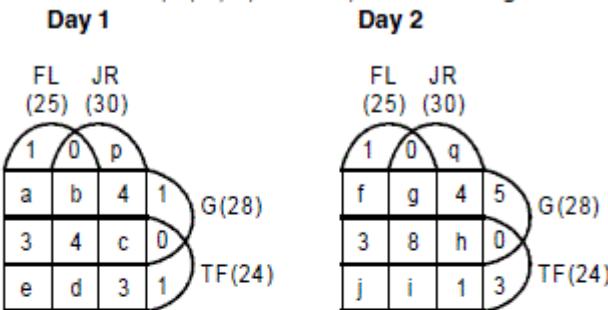
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 **Answer key/Solution**

Fifty visitors visited the exhibition on each day with 8% of the people not buying anything.

So, 46 people were involved in buying any variety of flower saplings.

From the statements 1, 4, 5, 6, 7 and 9, the Venn diagrams for day 1 and day 2 will be:



Now, according to statement 3, $b + 4 + p = 15$, and $g + 4 + q = 15$.

Also, $b + 4 = 9 \Rightarrow b = 5$. Similarly, $g = 5$.

So, $p = q = 6$.

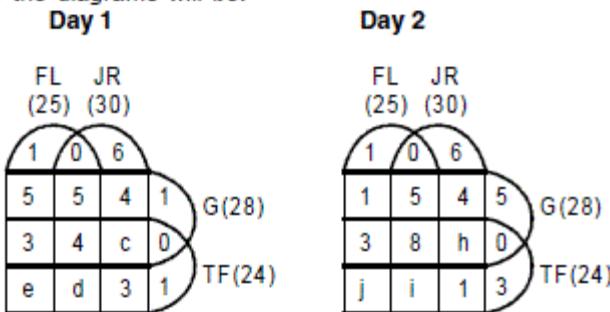
Now, according to statement 8, $a + b + 4 + 1 = 15 \Rightarrow a = 5$.

Similarly, $f = 1$.

Again from statement 8, $e + d = 7$, and $j + i = 7$.

... (ii)

So, now the diagrams will be:



On day 1, $1 + 1 + 1 + 5 + 3 + e + 0 + 5 + 4 + d + 6 + 4 + c + 3 = 46$
 $\Rightarrow e + d + c = 13$.

From (ii), $c = 6$.

Similarly, on day 2, $1 + 1 + 1 + 5 + 3 + j + 0 + 5 + 8 + i + 6 + 4 + h + 3 = 46$
 $\Rightarrow j + i + h = 9$.

From (ii), $h = 2$.

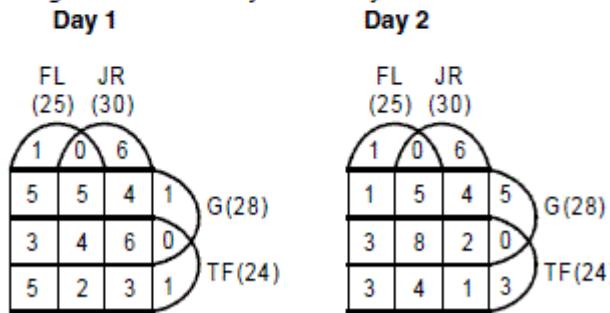
Also, from statement 2, 30 people bought Juliet Rose on each day.

So, on day 1, $6 + 4 + 6 + 3 + 5 + 4 + d = 30 \Rightarrow d = 2$

From (ii), $e = 5$.

Similarly, on day 2, $i = 4, j = 3$.

So, final diagrams for both day 1 and day 2 will be:



Total number of people who bought the saplings in the combination of any three flowers, on both the days taken together = $5 + 3 + 2 + 6 + 5 + 3 + 4 + 2 = 30$.

FeedBack

Directions for questions 63 to 66: Answer the questions on the basis of the information given below.

In an exhibition, there were four rare variety of flowers - Fire Lily, Juliet Rose, Gerbera and Tree Flower - displayed for 2 days from where the visitors can decide which flower sapling to buy. There were 50 visitors, who visited the exhibition, on each day. It is known that on each of the two days, 8% of the people who visited did not buy any variety of flower sapling.

Further, some additional information is known to us.

1. The number of people who bought all four varieties of flower saplings on day-1 and day-2 was four and eight respectively.
2. It is known that the saplings of Fire Lily, Juliet Rose, Gerbera, and Tree Flower were bought by 25, 30, 28, and 24 people respectively on each day.
3. On each day, one person bought Fire Lily sapling only, 15 people bought sapling of Juliet Rose but Tree Flower and 9 people bought sapling of Juliet Rose and Gerbera both but Tree Flower.
4. No visitor bought saplings of (Gerbera and Tree Flower only) and (Fire Lily and Juliet Rose only) but other combinations of saplings were bought by at least one person.
5. Exactly 4 people bought saplings of only Gerbera and Juliet Rose together, on each day.
6. Three people bought the saplings of Fire Lily, Gerbera and Tree Flower only on each day.
7. On day-1, exactly one person bought sapling of Gerbera only whereas on day-2, five people bought sapling of Gerbera only. Similarly, on day-1, exactly one person bought the sapling of Tree Flower only and on day-2, three people bought the sapling of Tree Flower only.
8. On each day, 15 people bought the saplings of Gerbera but not Tree Flower and 11 people bought the saplings of Tree Flower but not Gerbera.
9. The number of visitors who bought the saplings of both Juliet Rose and Tree Flower only on day-1 and on day-2 were 3 and 1 respectively.

Q.64

How many people bought the saplings of Gerbera and exactly one more flower on both the days taken together?

1 9

2 14

3 15

4 24

Solution:

Correct Answer : 2

 **Bookmark**

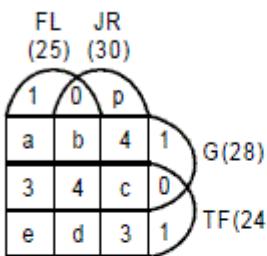
 **Answer key/Solution**

Fifty visitors visited the exhibition on each day with 8% of the people not buying anything.

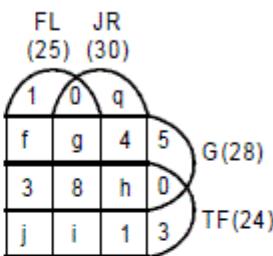
So, 46 people were involved in buying any variety of flower saplings.

From the statements 1, 4, 5, 6, 7 and 9, the Venn diagrams for day 1 and day 2 will be:

Day 1



Day 2



Now, according to statement 3, $b + 4 + p = 15$, and $g + 4 + q = 15$.

Also, $b + 4 = 9 \Rightarrow b = 5$. Similarly, $g = 5$.

So, $p = q = 6$.

Now, according to statement 8, $a + b + 4 + 1 = 15 \Rightarrow a = 5$.

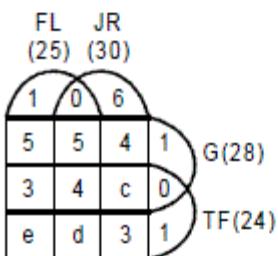
Similarly, $f = 1$.

Again from statement 8, $e + d = 7$, and $j + i = 7$.

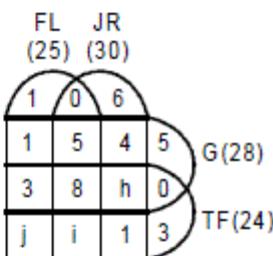
... (ii)

So, now the diagrams will be:

Day 1



Day 2



On day 1, $1 + 1 + 5 + 3 + e + 0 + 5 + 4 + d + 6 + 4 + c + 3 = 46$
 $\Rightarrow e + d + c = 13$.

From (ii), $c = 6$.

Similarly, on day 2, $1 + 1 + 1 + 5 + 3 + j + 0 + 5 + 8 + i + 6 + 4 + h + 3 = 46$
 $\Rightarrow j + i + h = 9$.

From (ii), $h = 2$.

Also, from statement 2, 30 people bought Juliet Rose on each day.

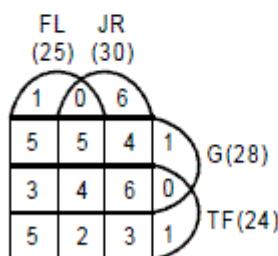
So, on day 1, $6 + 4 + 6 + 3 + 5 + 4 + d = 30 \Rightarrow d = 2$

From (ii), $e = 5$.

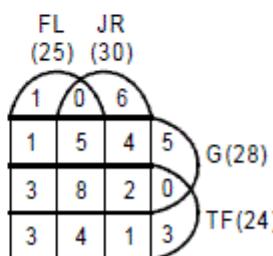
Similarly, on day 2, $i = 4, j = 3$.

So, final diagrams for both day 1 and day 2 will be:

Day 1



Day 2



Combinations will be: Fire lily and Gerbera only, Juliet Rose and Gerbera only, and Gerbera and Tree flower only.
So, the total number of people will be $= 5 + 4 + 1 + 4 = 14$.

FeedBack

Directions for questions 63 to 66: Answer the questions on the basis of the information given below.

In an exhibition, there were four rare variety of flowers - Fire Lily, Juliet Rose, Gerbera and Tree Flower - displayed for 2 days from where the visitors can decide which flower sapling to buy. There were 50 visitors, who visited the exhibition, on each day. It is known that on each of the two days, 8% of the people who visited did not buy any variety of flower sapling.

Further, some additional information is known to us.

1. The number of people who bought all four varieties of flower saplings on day-1 and day-2 was four and eight respectively.
2. It is known that the saplings of Fire Lily, Juliet Rose, Gerbera, and Tree Flower were bought by 25, 30, 28, and 24 people respectively on each day.
3. On each day, one person bought Fire Lily sapling only, 15 people bought sapling of Juliet Rose but Tree Flower and 9 people bought sapling of Juliet Rose and Gerbera both but Tree Flower.
4. No visitor bought saplings of (Gerbera and Tree Flower only) and (Fire Lily and Juliet Rose only) but other combinations of saplings were bought by at least one person.
5. Exactly 4 people bought saplings of only Gerbera and Juliet Rose together, on each day.
6. Three people bought the saplings of Fire Lily, Gerbera and Tree Flower only on each day.
7. On day-1, exactly one person bought sapling of Gerbera only whereas on day-2, five people bought sapling of Gerbera only. Similarly, on day-1, exactly one person bought the sapling of Tree Flower only and on day-2, three people bought the sapling of Tree Flower only.
8. On each day, 15 people bought the saplings of Gerbera but not Tree Flower and 11 people bought the saplings of Tree Flower but not Gerbera.
9. The number of visitors who bought the saplings of both Juliet Rose and Tree Flower only on day-1 and on day-2 were 3 and 1 respectively.

Q.65

How many people, on day-1, did not buy the saplings of Fire Lily but bought Juliet rose?

1 13

2 7

3 11

4 19

Solution:

Correct Answer : 4

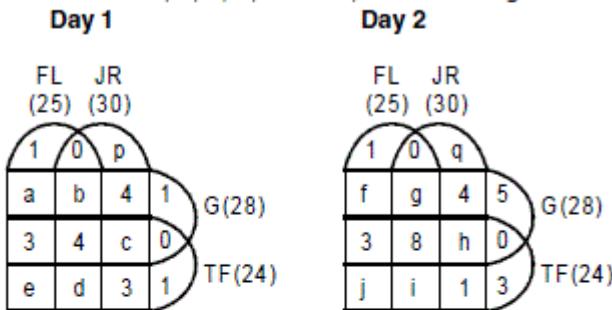
 **Bookmark**

 **Answer key/Solution**

Fifty visitors visited the exhibition on each day with 8% of the people not buying anything.

So, 46 people were involved in buying any variety of flower saplings.

From the statements 1, 4, 5, 6, 7 and 9, the Venn diagrams for day 1 and day 2 will be:



Now, according to statement 3, $b + 4 + p = 15$, and $g + 4 + q = 15$.

Also, $b + 4 = 9 \Rightarrow b = 5$. Similarly, $g = 5$.

So, $p = q = 6$.

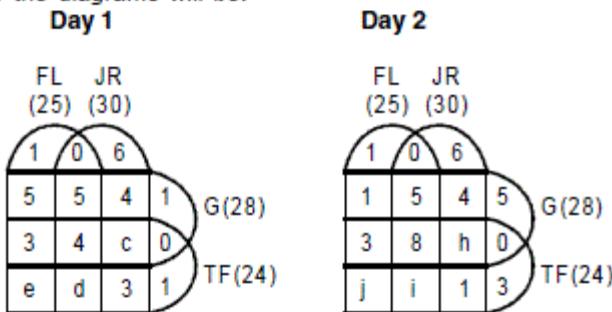
Now, according to statement 8, $a + b + 4 + 1 = 15 \Rightarrow a = 5$.

Similarly, $f = 1$.

Again from statement 8, $e + d = 7$, and $j + i = 7$.

... (ii)

So, now the diagrams will be:



On day 1, $1 + 1 + 5 + 3 + e + 0 + 5 + 4 + d + 6 + 4 + c + 3 = 46$
 $\Rightarrow e + d + c = 13$.

From (ii), $c = 6$.

Similarly, on day 2, $1 + 1 + 5 + 3 + j + 0 + 5 + 8 + i + 6 + 4 + h + 3 = 46$
 $\Rightarrow j + i + h = 9$.

From (ii), $h = 2$.

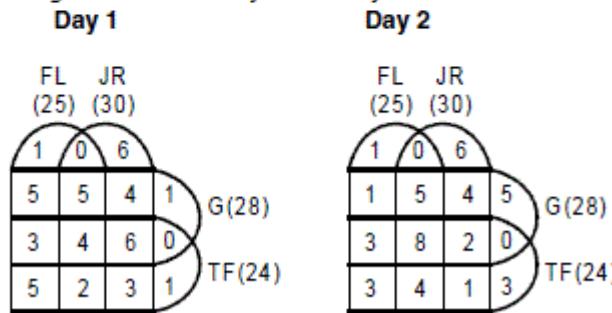
Also, from statement 2, 30 people bought Juliet Rose on each day.

So, on day 1, $6 + 4 + 6 + 3 + 5 + 4 + d = 30 \Rightarrow d = 2$

From (ii), $e = 5$.

Similarly, on day 2, $i = 4, j = 3$.

So, final diagrams for both day 1 and day 2 will be:



The total number of people who bought Juliet Rose but not Fire Lily on day 1 = $6 + 4 + 6 + 3 = 19$.

FeedBack

Directions for questions 63 to 66: Answer the questions on the basis of the information given below.

In an exhibition, there were four rare variety of flowers - Fire Lily, Juliet Rose, Gerbera and Tree Flower - displayed for 2 days from where the visitors can decide which flower sapling to buy. There were 50 visitors, who visited the exhibition, on each day. It is known that on each of the two days, 8% of the people who visited did not buy any variety of flower sapling.

Further, some additional information is known to us.

1. The number of people who bought all four varieties of flower saplings on day-1 and day-2 was four and eight respectively.
2. It is known that the saplings of Fire Lily, Juliet Rose, Gerbera, and Tree Flower were bought by 25, 30, 28, and 24 people respectively on each day.
3. On each day, one person bought Fire Lily sapling only, 15 people bought sapling of Juliet Rose but Tree Flower and 9 people bought sapling of Juliet Rose and Gerbera both but Tree Flower.
4. No visitor bought saplings of (Gerbera and Tree Flower only) and (Fire Lily and Juliet Rose only) but other combinations of saplings were bought by at least one person.
5. Exactly 4 people bought saplings of only Gerbera and Juliet Rose together, on each day.
6. Three people bought the saplings of Fire Lily, Gerbera and Tree Flower only on each day.
7. On day-1, exactly one person bought sapling of Gerbera only whereas on day-2, five people bought sapling of Gerbera only. Similarly, on day-1, exactly one person bought the sapling of Tree Flower only and on day-2, three people bought the sapling of Tree Flower only.
8. On each day, 15 people bought the saplings of Gerbera but not Tree Flower and 11 people bought the saplings of Tree Flower but not Gerbera.
9. The number of visitors who bought the saplings of both Juliet Rose and Tree Flower only on day-1 and on day-2 were 3 and 1 respectively.

Q.66

Find the total number of flower saplings sold in the exhibition during the two days exhibition.

1 92

2 144

3 214

4 Cannot be determined

Solution:

Correct Answer : 3

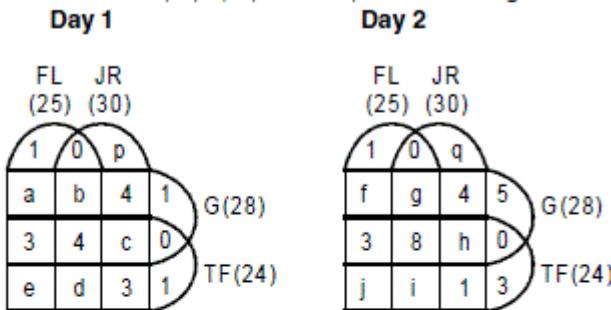
 **Bookmark**

 **Answer key/Solution**

Fifty visitors visited the exhibition on each day with 8% of the people not buying anything.

So, 46 people were involved in buying any variety of flower saplings.

From the statements 1, 4, 5, 6, 7 and 9, the Venn diagrams for day 1 and day 2 will be:



Now, according to statement 3, $b + 4 + p = 15$, and $g + 4 + q = 15$.

Also, $b + 4 = 9 \Rightarrow b = 5$. Similarly, $g = 5$.

So, $p = q = 6$.

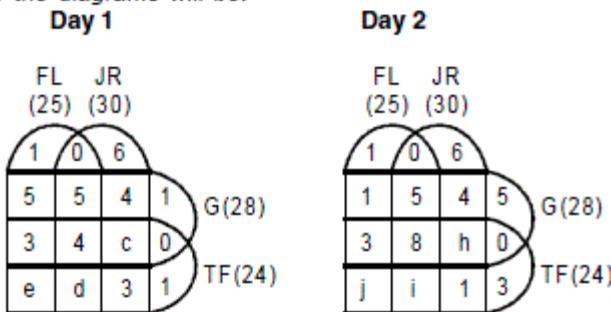
Now, according to statement 8, $a + b + 4 + 1 = 15 \Rightarrow a = 5$.

Similarly, $f = 1$.

Again from statement 8, $e + d = 7$, and $j + i = 7$.

... (ii)

So, now the diagrams will be:



On day 1, $1 + 1 + 5 + 3 + e + 0 + 5 + 4 + d + 6 + 4 + c + 3 = 46$
 $\Rightarrow e + d + c = 13$.

From (ii), $c = 6$.

Similarly, on day 2, $1 + 1 + 5 + 3 + j + 0 + 5 + 8 + i + 6 + 4 + h + 3 = 46$
 $\Rightarrow j + i + h = 9$.

From (ii), $h = 2$.

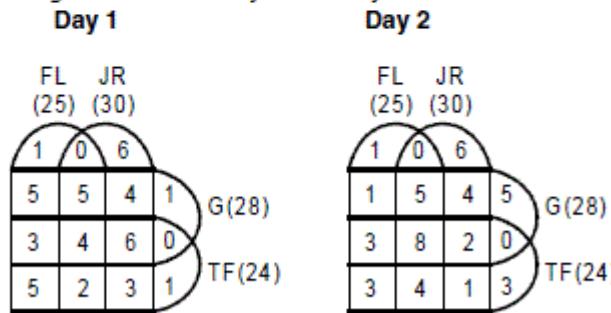
Also, from statement 2, 30 people bought Juliet Rose on each day.

So, on day 1, $6 + 4 + 6 + 3 + 5 + 4 + d = 30 \Rightarrow d = 2$

From (ii), $e = 5$.

Similarly, on day 2, $i = 4, j = 3$.

So, final diagrams for both day 1 and day 2 will be:



From statement 2, $107(25 + 30 + 28 + 24)$ flower saplings were sold on day 1. So, 214 flower saplings were sold during the two days exhibition.

FeedBack

Sec 3

Q.67

The absolute sum of a and b is written as $\sqrt{\frac{x}{y}}$, where x and y are co-primes and a and b satisfy the equations: $a - b = 4$ and $a^3 - b^3 = 20$. Find the number of factors of $(x + y)$.

1 2 2 3 3 4 4 12 **Solution:****Correct Answer : 1**

$$\begin{aligned} a^3 - b^3 &= (a - b)(a^2 + ab + b^2) \\ \text{As } a^3 - b^3 &= 20 \text{ and } a - b = 4, \text{ so } a^2 + ab + b^2 = 5 \\ \Rightarrow a^2 - 2ab + b^2 + 3ab &= 5 \\ \Rightarrow (a - b)^2 + 3ab &= 5 \\ \Rightarrow 3ab &= -11 \text{ i.e., } ab = -11/3 \end{aligned}$$

$$\text{Now, } (a + b)^2 = (a - b)^2 + 4ab = 16 + \left(-\frac{44}{3}\right) = \frac{4}{3}$$

$$\Rightarrow a + b = \pm \sqrt{\frac{4}{3}}$$

$$\text{So, } x + y = 4 + 3 = 7$$

As 7 is a prime number, it has only 2 factors (1 and 7).

 **Bookmark**
 **Answer key/Solution**
 **FeedBack**
Q.68

Parul, Shikha and Yashi paid the electricity bill of their flat for the months of January, February and March respectively. After that, Shikha and Parul give Rs. 200 and Rs. 350 to Yashi respectively, so that the final amount spent by all of them are in the ratio of 2 : 3 : 5 respectively. Find the absolute difference between the electricity bills (in Rs.) of January and February combined and March alone.

Solution:**Correct Answer : 1100** **Bookmark** **Answer key/Solution**

Let the electricity bills of January, February and March be J, F and M respectively.

Total amount spent by Parul = J + 350, where Rs. 350 is the amount she paid to Yashi.

Total amount spent by Shikha = F + 200

Also, as Parul and Shikha gave Rs. 350 and Rs. 200 to Yashi, she spent = M - 350 - 200 = M - 550

As the amount spent by them is in ratio 2 : 3 : 5, let their respective amounts be 2x, 3x and 5x.

So, $J + 350 = 2x \Rightarrow J = 2x - 350$

$F + 200 = 3x \Rightarrow F = 3x - 200$

and $M - 550 = 5x \Rightarrow M = 5x + 550$

So, the required difference = $|J + F - M| = |2x - 350 + 3x - 200 - 5x - 550| = \text{Rs. } 1,100$.

FeedBack**Q.69**

Two cans, A and B, contain milk worth Rs. 7 per litre and Rs. 9 per litre respectively. If the contents of can A and can B are transferred to another can C in the ratio of 3 : 7, then the cost (in Rs. per litre) of the mixture in the can C is

1 **8.4**2 **9.4**3 **10.10**4 **7.5****Solution:****Correct Answer : 1** **Bookmark** **Answer key/Solution**

As the contents of can A and can B are mixed in the ratio 3 : 7, let $3x$ and $7x$ litres are taken from can A and can B respectively.

Then cost of content in can C = $3x(7) + 7x(9) = \text{Rs. } 84x$

Cost per litre = $84x / (3x + 7x) = 84x / 10x = \text{Rs. } 8.4$.

FeedBack**Q.70**

Anand, Bakshi and Chowdhury are three friends. Anand takes twice the time taken by all three together to do a work, while Bakshi takes thrice the time taken by all three together for the same work. If Chowdhury alone can complete the work in 18 hours, then how long (in hours) will all three of them together take to complete that work?

1 22 33 94 24**Solution:****Correct Answer : 2** **Bookmark** **Answer key/Solution**

Let total work to be done = 18 units.

And Anand and Bakshi can do a unit and b unit per hour.

As Chowdhury alone can complete the work in 18 hours, this implies he can do 1 unit per hour.

$$\begin{aligned} \text{Time taken by Anand to complete the work} &= \frac{18}{a} = 2 \left(\frac{18}{a+b+1} \right) \\ &\Rightarrow a+b+1 = 2a \\ &\Rightarrow a-b = 1 \end{aligned}$$

$$\begin{aligned} \text{Similarly, time taken by Bakshi to complete the work} &= \frac{18}{b} = 3 \left(\frac{18}{a+b+1} \right) \\ &\Rightarrow a+b+1 = 3b \\ &\Rightarrow 2b-a = 1 \end{aligned}$$

Solving the two equations, we get $a = 3$, $b = 2$.

One day work of all three of them together = 6

Time taken by them to complete the work = $18 / 6 = 3$ hours.

 FeedBack**Q.71**

Let 'a' be a root of the equation: $x^2 + 4x + 6 = 0$. Find the value of $(a - 2)(a + 1)(a + 3)(a + 6)$.

Solution:**Correct Answer : 54** **Bookmark** **Answer key/Solution**

If 'a' is a root of $x^2 + 4x + 6 = 0$, then $a^2 + 4a + 6 = 0$ or $a^2 + 4a = -6$.

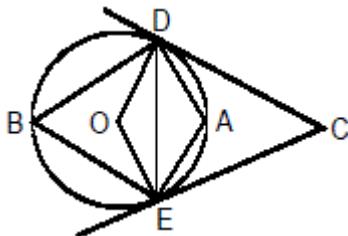
So, $(a - 2)(a + 1)(a + 3)(a + 6) = (a - 2)(a + 6)(a + 1)(a + 3) = (a^2 + 4a - 12)(a^2 + 4a + 3)$

Putting value of $a^2 + 4a = -6$, we get $(-6 - 12)(-6 + 3) = 54$.

 FeedBack

Q.72

In the figure given below, CD and CE are tangents to a circle, having centre O, from point C. B is the point on the major arc DE. If $\angle DCE$ and $\angle DBE$ are x° and $2x^\circ$ respectively, then what is the measure of $\angle DAE$?



- 1 150°
- 2 130°
- 3 108°
- 4 90°

Solution:

Correct Answer : 3

Since CD and CE are tangents of the circle from C,
 $\angle CDO = \angle CEO = 90^\circ$
So, $\angle DOE + \angle DCE = \angle DOE + x = 180$
i.e., $\angle DOE = 180 - x = 2(2x)$ (Because $\angle DBE = 2x$)
So, $5x = 180$ i.e., $x = 36$
Now, ADBE is a cyclic quadrilateral,
hence $\angle DAE + \angle DBE = 180^\circ$
This implies, $\angle DAE = 180^\circ - 2x^\circ = 180^\circ - 72^\circ = 108^\circ$.

Bookmark

Answer key/Solution

FeedBack

Q.73

Anuj and Rishi start running simultaneously, from a same point on a circular track of length 10 km, in opposite directions. Their speeds get doubled every time they cross each other. Find the number of times they will meet within the first hour, given that they started the race at their respective speeds of 8 kmph and 12 kmph.

- 1 6
- 2 8
- 3 7
- 4 None of these

Solution:**Correct Answer : 4** **Bookmark** **Answer key/Solution**

The first time they will meet after $\frac{10 \text{ km}}{(8+12) \text{ kmph}} = \frac{1}{2} \text{ hr} = 30 \text{ min}$

The next time they will meet in half this time, as the speed get doubled for both, and the time will continue to decrease by half each time.

Therefore, the time will follow the pattern $30 + 15 + 7.5 + \dots$ so on

The sum to infinity of this series is $\frac{30}{(1-0.5)} = 60 \text{ min}$

Therefore, within one hour they will meet infinite number of times.

FeedBack**Q.74**

A borrowed some money to be repaid in three equal installments at a rate of 10% compound interest compounded annually. Find the value of each installment (in Rs.), if the principal borrowed was Rs. 3310.

Solution:**Correct Answer : 1331** **Bookmark** **Answer key/Solution**

Let the value of each installment be Rs. x.

As the rate 10% per annum compounded annually for a sum of Rs. 3,310,

$$3310 = \frac{x}{1.1} + \frac{x}{(1.1)^2} + \frac{x}{(1.1)^3} \Rightarrow 3310 = x \left(\frac{1}{1.1} + \frac{1}{(1.1)^2} + \frac{1}{(1.1)^3} \right) = x \times \frac{3310}{1331}$$

Hence, x = Rs. 1,331.

FeedBack**Q.75**

In a class of 10 students, the average weight of the girls is 1 kg less than that of the boys while the weight of the students in the class are consecutive integers from 51 to 60 kg. If the average weight of the boys and that of the girls are integral values, then find the number of boys in the class.

Solution:**Correct Answer : 5**Let the boys = b Then, girls = $10 - b$ Let the average weight of boys = w Then, the average weight of Girls = $(w - 1)$ So $bw + (10 - b)(w - 1) = (51 + 52 + 53 + \dots + 60)$

On solving, we get

$$10w - b = 555$$

$$\Rightarrow 10w = 555 + b$$

$$\Rightarrow w = \frac{555 + b}{10}$$

Since the average weight of the boys is an integral value so, $b = 5$.**Bookmark****Answer key/Solution****FeedBack****Q.76**

A certain computer program generates a sequence of numbers: a_1, a_2, \dots, a_n such that $a_1 = a_2 = 1$ and $a_k = a_{(k-1)} + 2a_{(k-2)}$ for all integers k , where $3 \leq k \leq n$. If $n > 6$, then a_7 is equal to

1 322 433 644 100**Solution:****Correct Answer : 2**We have: $a_1 = a_2 = 1$ We also know that: $a_k = a_{(k-1)} + 2a_{(k-2)}$ Substituting different values of k in the above equation, we getAt $k = 3$: $a_3 = a_{(3-1)} + 2a_{(3-2)}$

$$\Rightarrow a_3 = a_2 + 2a_1$$

$$\Rightarrow a_3 = 1 + 2 = 3$$

At $k = 4$: $a_4 = a_{(4-1)} + 2a_{(4-2)}$

$$\Rightarrow a_4 = a_3 + 2a_2$$

$$\Rightarrow a_4 = 3 + 2 = 5$$

At $k = 5$: $a_5 = a_{(5-1)} + 2a_{(5-2)}$

$$\Rightarrow a_5 = a_4 + 2a_3$$

$$\Rightarrow a_5 = 5 + 2 \times 3 = 11$$

At $k = 6$: $a_6 = a_{(6-1)} + 2a_{(6-2)}$

$$\Rightarrow a_6 = a_5 + 2a_4$$

$$\Rightarrow a_6 = 11 + 2 \times 5 = 21$$

Finally, at $k = 7$: $a_7 = a_{(7-1)} + 2a_{(7-2)}$

$$\Rightarrow a_7 = a_6 + 2a_5$$

$$\Rightarrow a_7 = 21 + 2 \times 11 = 43.$$

Bookmark**Answer key/Solution****FeedBack**

Q.77

How many four-digit numbers in base 7 are three-digit numbers in base 8?

1 **448**

2 **545**

3 **170**

4 **169**

Solution:

Correct Answer : 4

Let the number X that satisfies the given properties.

X has 4 digits in base 7

$(1000)_7 \leq X < (6666)_7$,

i.e., $7^3 \leq X < 7^4$

$\Rightarrow 343 \leq X < 2401$

X has 3 digits in base 8

$(100)_8 \leq X < (777)_8$

i.e. $8^2 \leq X < 8^3$

$\Rightarrow 64 \leq X < 512$

So, from above

$343 \leq X < 512$

Therefore, the number of values of $X = 512 - 343 = 169$.

 **Bookmark**

 **Answer key/Solution**

FeedBack

Q.78

Two distinct numbers are selected randomly from 1, 2, ..., 100 and then multiplied. What is the probability (correct up to two decimal places) that the product so obtained is divisible by 5?

1 **0.33**

2 **0.30**

3 **0.35**

4 **0.36**

Solution:**Correct Answer : 4** **Bookmark** **Answer key/Solution**

Total number of cases obtained by taking multiplication of only 2 numbers out of 100 = ${}^{100}C_2$.
 Out of 100, there are 20 numbers 5, 10, 15,...,100, such that when any one of these is multiplied with any one of remaining 80 numbers or any two of these 20 numbers are multiplied with each other, then the resulting product is divisible by 5.

So, the probability that the product obtained is divisible by 5 = $\frac{{}^{20}C_1 \times {}^{80}C_1 + {}^{20}C_2}{{}^{100}C_2} = \frac{1790}{4950} = 0.36$.

FeedBack**Q.79**

Fresh dates contain 80% water by weight, whereas dry dates contain 10% water by weight. A trader purchases fresh dates at the rate of Rs. 100 per kg and makes a profit of 10% by selling them once they are dried. Find the selling price per kg (in Rs.) at which the trader sells the dry dates.

Solution:**Correct Answer : 495** **Bookmark** **Answer key/Solution**

$$1 \text{ kg. of fresh dates without water part} = (100 - 80)\% = 20\% = \frac{20}{100} \times 1000 = 200 \text{ gms.}$$

$$1 \text{ kg. of dry dates without water part} = (100 - 10)\% = 90\% = \frac{90}{100} \times 1000 = 900 \text{ gms.}$$

Thus, to have 1 kg dry dates, $\frac{900}{200} = 4.5$ kgs. of fresh dates are required.

Cost price of 4.5 kg of fresh dates $4.5 \times 100 = \text{Rs.}450$

Selling price of dry dates = cost price + profit = $450 + 10\% \text{ of } 450 = \text{Rs.}495$.

FeedBack**Q.80**

Two sides of an acute angled triangle are 3 cm and 6 cm long. If the third side of the triangle is also an integer, then how many values can the length (in cm) of the third side take?

1 32 23 1

4 0

Solution:**Correct Answer : 3** **Bookmark** **Answer key/Solution**

Let the third side be x cm.

Condition I:

If x is the largest side, then

$$3 + 6 > x > 6 \Rightarrow 6 < x < 9 \text{ and } 3^2 + 6^2 > x^2 \Rightarrow x^2 < 45$$

(\because If a, b, c are the sides of an acute angled triangle then $c^2 < a^2 + b^2$; where c is the largest side)

Since $6 < x < 9$ and $x^2 < 45$

There is no possible value of x .

Condition II:

If x is $3 < x < 6$; then

$$3^2 + x^2 > 6^2 \Rightarrow x^2 > 27$$

There is no possible value of x .

Condition III:

If $x = 6$

The three sides are 3, 6 and 6 cm.

Both conditions are satisfied for the above pair.

Hence, the length of third side must be 6 cm.

FeedBack**Q.81**

Find the least integral value of 'a' for which the quadratic equation: $x^2(3a + 1) - 6x + 2 = 0$ has no real roots.

Solution:**Correct Answer : 2** **Bookmark** **Answer key/Solution**

The quadratic equation $ax^2 + bx + c = 0$ has no real roots if $b^2 - 4ac < 0$. Thus, the equation $x^2(3a + 1) - 6x + 2 = 0$ has no real roots if $(-6)^2 - 4(3a + 1)(2) < 0$. This simplifies to $28 - 24a < 0$. The least integral value of 'a' that satisfies this inequality is 2.

FeedBack**Q.82**

Three milk solutions of concentration level - 80%, 70% and 50% - are available in sealed packets of one litre each at the rate of Rs. 40, 30 and 20 per litre respectively. A milkman decides to prepare a 10 litre milk solution, having concentration level of 60%, using these three milk solutions such that exactly 2 litres of milk solution with 80% concentration are used. What will be the amount (in Rs.) that he needs to spend to prepare that solution?

1 0 260

2 2503 2404 300**Solution:****Correct Answer : 1** **Bookmark** **Answer key/Solution**

Let x litres of milk solution with 70% concentration and y litres of milk solution with 50% concentration be used. Since out of 10 litres of the final milk solution, milk solution with 80% concentration has a quantity of 2 litres, so quantity of milk till now = 1.6 litres.

Remaining quantity of milk = 4.4 litres.

$$\text{So } 0.7x + 0.5y = 4.4 \quad \dots (1)$$

$$\text{And, } x + y = 8 \quad \dots (2)$$

On solving (1) and (2), we get $x = 2$, $y = 6$.

Total amount to be spent by the milkman to prepare the solution = $2 \times 40 + 2 \times 30 + 6 \times 20 = \text{Rs. 260}$.

FeedBack**Q.83**

Bike A beats bike B by 200 m in a 1000 m bike race, while bike B beats bike C by 50 m in a 500 m race. If bike A beats bike C by 56 seconds in a 3600 m race, then how long (in seconds) will bike B take to travel a distance of 3000 m?

Solution:**Correct Answer : 150**

From the first statement,

$$A = 1000 \text{ m}$$

$$B = 800 \text{ m}$$

Similarly, from the second statement,

$$B = 500 \text{ m}$$

$$C = 450 \text{ m}$$

Combining both the statements,

Ratio of distances between A, B and C

$$A : B : C = 25 : 20 : 18 \quad \dots (\text{i})$$

i.e. Ratio of speeds = 25 : 20 : 18

Speed of A = $25k$, Speed of C = $18k$

$$\Rightarrow 3600/18k - 3600/25k = 56 \Rightarrow 200/k - 144/k = 56 \Rightarrow k = 1$$

Therefore, time taken by B = $3000/20 = 150$ seconds.

 **Bookmark** **Answer key/Solution****FeedBack****Q.84**

The set of all real numbers of x for which the inequality: $x^2 - |x + 2| + x > 0$ holds true is

1 $[-2, -\sqrt{2}) \cup (\sqrt{2}, \infty)$

2 $(-\infty, -\sqrt{2}) \cup (\sqrt{2}, \infty)$

3 $(-\infty, -1) \cup (1, \infty)$

4 $(\sqrt{2}, \infty)$

Solution:

Correct Answer : 2

 **Bookmark**

 **Answer key/Solution**

When $x + 2 \geq 0$ i.e. $x \geq -2$

Then the given inequality becomes

$$x^2 - (x + 2) + x > 0 \Rightarrow x^2 - 2 > 0 \Rightarrow |x| > \sqrt{2} \Rightarrow x < -\sqrt{2} \text{ or } x > \sqrt{2}$$

As $x \geq -2$, therefore in this case the part of the solution set is $(-2, -\sqrt{2}) \cup (\sqrt{2}, \infty)$

Case 2: When $x + 2 \leq 0$ i.e. $x \leq -2$

Then the given inequality becomes

$$x^2 - (x + 2) + x > 0$$

$$\Rightarrow x^2 + 2x + 2 > 0 \Rightarrow (x + 1)^2 + 1 > 0, \text{ which is true for all real } x.$$

Hence, the part of the solution set in this case is $(-\infty, -2]$. Combining the two cases, the solution set is

$$= (-\infty, -2] \cup (-2, -\sqrt{2}) \cup (\sqrt{2}, \infty) = (-\infty, -\sqrt{2}) \cup (\sqrt{2}, \infty).$$

FeedBack

Q.85

The wheel of a motor car makes 1000 revolutions in moving 550 m. Find the diameter of the wheel (in cm).

1 17.5

2 18.5

3 20

4 18

Solution:

Correct Answer : 1

Distance covered in 1 revolution = $2\pi r$

$$\therefore 1000 \times 2\pi r = 550$$

$$\Rightarrow 2r = \frac{550 \times 100 \times 7}{22 \times 1000}$$

$$\therefore \text{Diameter of the wheel} = 17.5 \text{ cm.}$$

 **Bookmark**

 **Answer key/Solution**

FeedBack

Q.86

Find the number of digits in $(288)^{40}$. (Take $\log 2 = 0.3010$ and $\log 3 = 0.4771$)

Solution:

Correct Answer : 99

$$\begin{aligned}\log(288)^{40} &= 40 \log 288 \\&= 40(\log 2^5 + \log 3^2) \\&= 40(5\log 2 + 2 \log 3) \\&= 40(5(0.3010) + 2(0.4771)) \\&= 40(1.505 + 0.9542) \\&= 40(2.4592) = 98.368 \\ \text{So, the number of digits in } (288)^{40} &= 99.\end{aligned}$$

Bookmark

Answer key/Solution

FeedBack

Q.87

Find the range of values of k , for which the lines $4x + y = 7$ and $kx - 3y = 2$ intersect in the first quadrant.

1 $k > 6/7$

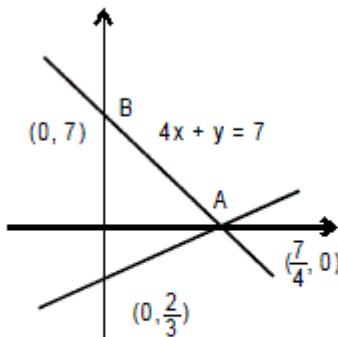
2 $k > 8/7$

3 $k > 9/7$

4 $k > 7/9$

Solution:

Correct Answer : 2



Bookmark

Answer key/Solution

The x intercept of $kx - 3y = 2$ is $2/k$ (on substituting $y = 0$)

$$4x + y = 7 \Rightarrow y = 7 - 4x$$

These two lines will intersect in the first quadrant if $y > 0$ i.e. $7 - 4x > 0 \Rightarrow x > 7/4$

$$\Rightarrow 2/k < 7/4 \Rightarrow k > 8/7.$$

FeedBack

Q.88

The number of boys in a class is 40% more than the number of girls. In an exam, the number of boys who passed is same as the number of girls who failed. The total number of boys and girls who did not appear for the exam was 60% less than the total number of students who passed the exam. What can be the number of girls who did not appear for the exam?

1 42 53 64 7**Solution:****Correct Answer :** 2

Bookmark

Answer key/Solution

Let the number of girls be X

\therefore Therefore, number of boys = $1.4X$

Gender	Total	Passed	Failed
Girls	X	B	A
Boys	$1.4X$	A	

Number of students who didn't appear = $0.4(A + B)$

Number of girls who did not appear = $X - B - A = X - (A + B)$.

Because $1.4X$ is an integer, X must be a multiple of 5.

Also $0.4(A + B)$ is an integer so $A + B$ should also be a multiple of 5. So $X - (A + B)$ must be a multiple of 5.

FeedBack

Q.89

If $t_n = \frac{1}{5}(n+2)(n+3)$ for $n = 1, 2, 3, \dots$, then $\frac{1}{t_1} + \frac{1}{t_2} + \dots + \frac{1}{t_{2005}}$ is equal to

1 $\frac{10025}{6023}$ 2 $\frac{10022}{6019}$ 3 $\frac{10025}{6024}$ 4 $\frac{10023}{6029}$

Solution:**Correct Answer : 3** **Bookmark** **Answer key/Solution**

$$t_n = \frac{1}{5}(n+2)(n+3)$$

$$\text{Then, } \frac{1}{t_1} + \frac{1}{t_2} + \dots + \frac{1}{t_{2005}} = 5 \left[\frac{1}{3.4} + \frac{1}{4.5} + \frac{1}{5.6} + \dots + \frac{1}{(2007)(2008)} \right] = 5 \left[\frac{1}{3} - \frac{1}{2008} \right] = 5 \cdot \frac{2005}{3 \cdot (2008)} = \frac{10025}{6024}.$$

FeedBack**Q.90**

Manufacturing of a product requires 3 raw materials – A, B and C – in the ratio of 1 : 2 : 4, by quantity. The cost per ton of A, B and C is in the ratio of 3 : 4 : 6. The product is sold at a profit of 20%. If the costs of A, B and C increase by 30%, 40% and 10% respectively, then what should be the approximate percentage increase in the selling price of the product so that the profit percent remains same?

1 **17**2 **19**3 **20**4 **23**

Solution:**Correct Answer : 2** **Bookmark** **Answer key/Solution**

Since the problem asks us to find a percent value, we can assume any suitable initial value of the quantities of A, B and C used as well as their price (since the final answer is independent of the initial values assumed).

We know that the quantities of A, B and C used are in the ratio of 1 : 2 : 4

Let the quantities of A, B and C used be 1 ton, 2 tons and 4 tons, respectively.

We know that the cost per ton of A, B and C are in the ratio of 3 : 4 : 6

Let the cost per ton of A, B and C be \$30, \$40 and \$60, respectively.

Thus, total cost of the product = $(1 \times 30 + 2 \times 40 + 4 \times 60) = \350

Since the product is sold at 20% profit, the selling price of the product = $((100 + 20)\% \text{ of } 350) = \420

New cost per ton of A = $((100 + 30)\% \text{ of } 30) = \39

New cost per ton of B = $((100 + 40)\% \text{ of } 40) = \56

New cost per ton of C = $((100 + 10)\% \text{ of } 60) = \66

Since the quantities of A, B and C used are the same, new total cost of the product = $(1 \times 39 + 2 \times 56 + 4 \times 66) = \415

Since the product is still sold at 20% profit, the selling price of the product = $((100 + 20)\% \text{ of } 415) = \498

Thus, the percent increase in the selling price = $\frac{(\text{New selling price}) - (\text{Old selling price})}{(\text{Old selling price})} \times 100\%$

$$= \frac{498 - 420}{420} \times 100\% = \frac{78}{420} \times 100\% = \frac{13}{70} \times 100\% = 18.57\% \approx 19\%.$$

FeedBack**Q.91**

Let n be a 4-digit number such that when divided by 100 its quotient and remainder are q and r respectively. For how many values of n, is (q + r) divisible by 11?

Solution:**Correct Answer : 819** **Bookmark** **Answer key/Solution**

The four digit number is $100q + r$ i.e. $99q + q + r$.

As $99q$ is already divisible by 11, if $q + r$ too is divisible by 11, the whole number will be divisible by 11. So we need to calculate the total number of multiples of 11 in 4-digit numbers.

First multiple of 11 is 1001 and the last multiple is 9999.

So, the total number of multiples is $\frac{9999 - 1001}{11} + 1 = 819$.

FeedBack**Q.92**

How many arrangements of the word “SIMULTANEOUS” are possible such that all the vowels appear in the same order as in the English alphabet and same is true for all the consonants?

1 7

2 1203 9244 5040**Solution:****Correct Answer : 3** **Bookmark** **Answer key/Solution**

The right order of vowels in SIMULTANEOUS is AEIOUU and these can be placed in one way only.

There is only one order in which the consonants in SIMULTANEOUS can be placed and that is LMNSST.

Now we first place the vowels as _A_E_I_O_U_U_

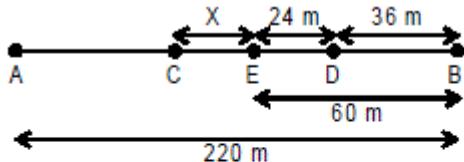
The 7 places indicated by _ can have one or more of the consonants. Thus the word can be LMNSSTAEIOUU or LMNAEISSTOUU or LAMENIOUUSST and so on.

We have to find the number of ways in which LMNSST can be placed in seven places such that each place can contain any number of letters from 0 to 6. The required number of ways = $^{(6+7-1)}C_{(7-1)} = {}^{12}C_6 = 924$.

FeedBack**Q.93**

Three runners - Aman, Baman and Chaman - had to run from point A to point B and come back again to point A. The time interval between the starting times of the three runners was 10 seconds each i.e. Baman started 10 seconds after Aman, and Chaman started 10 seconds after Baman. The three runners met at a certain point C, which is somewhere between points A and B, before any of them had reached point B. Then Chaman reached point B and reversed his direction, and met Baman 36 m short of point B and Aman 60 m short of point B. Find the speed of Aman, if the distance between points A and B is 220 m.

1 4 m/s2 3 m/s3 2 m/s4 1 m/s

Solution:**Correct Answer : 4****Bookmark****Answer key/Solution**

Let Chaman met Aman and Baman at E and D respectively. Let the distance between C and E be X. So, the distance AC will be $220 - 60 - X = 160 - X$.

After meeting at point C, Chaman and Aman took the same time to reach point E whereas Chaman and Baman took the same time to reach point D. So, the ratio of their speeds will be equal to the ratio of their distances travelled.

Speed of Aman : Speed of Chaman = $X : X + 120$

Speed of Baman : Speed of Chaman = $X + 24 : X + 96$

Also the time taken by Aman, Baman and Chaman to cover AC i.e. $160 - X$ is t(say), $t - 10$ and $t - 20$ seconds respectively.

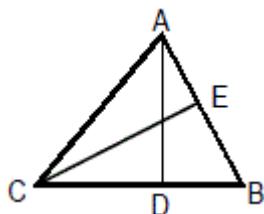
$$\text{So } \frac{160 - X}{t} : \frac{160 - X}{t - 20} = X : X + 120 \quad \dots \text{(i)}$$

$$\text{Also, } \frac{160 - X}{t - 10} : \frac{160 - X}{t - 20} = X + 24 : X + 96 \quad \dots \text{(ii)}$$

Solving (i) and (ii), we get the speed of Aman as 1 m/s.

FeedBack
Q.94

In the figure shown below, AD is perpendicular to BC, and CE is perpendicular to AB. If $CD = AD = 2BD$, then find the value of $CE : AE$.



1 3 : 1

2 4 : 1

3 2 : 1

4 6 : 1

Solution:**Correct Answer : 1**

In the given figure, let $BD = 1$, $AD = 2$

So, $AB = \sqrt{5}$, and $AC = 2\sqrt{2}$

Let $AE = x$, then $CE = \sqrt{8 - x^2}$

$\triangle ADB$ and $\triangle CEB$ are similar, so

$$\frac{AD}{CE} = \frac{AB}{BC}$$

Therefore, $\sqrt{5}\sqrt{8 - x^2} = 2(3) = 6$

$$\Rightarrow \sqrt{8 - x^2} = \sqrt{\frac{36}{5}} \Rightarrow 8 - x^2 = 7.2 \Rightarrow x = \sqrt{0.8}$$

$$\therefore CE = \sqrt{8 - x^2} = \sqrt{7.2}$$

$$\text{Hence, } CE : AE = \frac{\sqrt{7.2}}{\sqrt{0.8}} = 3 : 1.$$

 **Bookmark**
 **Answer key/Solution**
 **FeedBack**
Q.95

Find the area (in sq. units) of the graph formed by the following functions for $x > 0, y > 0$.

$$|2x + 3| - 1 \quad , \quad x < 2$$

$$\frac{1}{2}(13 - |2x - 3|) \quad , \quad 2 \leq x < 4$$

$$6 - 2|x - 3| \quad , \quad x \geq 4$$

Solution:**Correct Answer : 22**

$$|2x + 3| - 1 ; x < 2$$

Since $x > 0$, $2x + 3 - 1$, $0 < x < 2$... (i)

$$\Rightarrow 2x + 2, \quad 0 < x < 2$$

$$\frac{1}{2}(13 - |2x - 3|), \quad 2 \leq x < 4$$

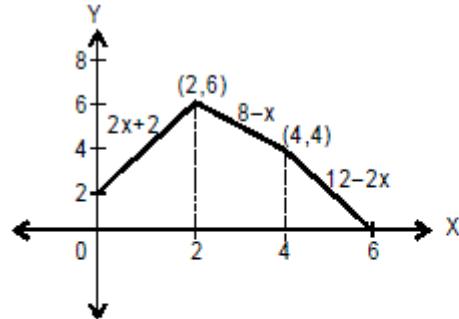
In this range $2x - 3 > 0$, so

$$\frac{1}{2}(13 - 2x + 3) = 8 - x, \quad 2 \leq x < 4 \quad \dots \text{(ii)}$$

$$6 - 2|x - 3|, \quad x \geq 4$$

$$\Rightarrow 6 - 2x + 6 = 12 - 2x, \quad x \geq 4 \quad \dots \text{(iii)}$$

On plotting the graph represented by (i), (ii) and (iii),



$$\text{Area} = \frac{1}{2} \times (2+6) \times 2 + \frac{1}{2} (6+4) \times 2 + \frac{1}{2} \times 4 \times 2 \\ = 22 \text{ sq. units.}$$

Q.96

There are three solutions of HCl, H_2SO_4 and HNO_3 acids with respective concentrations of 40%, 50% and p% respectively. If 250 ml of HCl is mixed with 'c' ml of HNO_3 , it produces an acid having concentration of 60%, and when 200ml of H_2SO_4 is mixed with 'c' ml of HNO_3 , it produces an acid solution having concentration of 62%. Find the approximate value of p.

1 602 623 644 65

Solution:**Correct Answer : 3** **Bookmark** **Answer key/Solution**

The amount of acid after mixing 250 ml of HCl and 'c' ml of HNO₃ = $\frac{60}{100} (250 + c) = 150 + 0.6c$

$$\text{So, } 150 + 0.6c = \frac{40}{100} (250) + \frac{p}{100} (c) \Rightarrow \frac{pc}{100} = 50 + 0.6c$$

Similarly for the solution 200ml of H₂SO₄ and 'c' ml of HNO₃,

$$\frac{pc}{100} = 24 + 0.62c$$

$$\text{Hence, } 50 + 0.6c = 24 + 0.62c \\ \Rightarrow 0.62c - 0.6c = 50 - 24 \Rightarrow c = 1300 \text{ ml}$$

Substituting c = 1300 in $\frac{pc}{100} = 50 + 0.6c$, we get p = 64% (approximately)

FeedBack**Q.97**

Find the value of the expression: $\frac{16 - 5a}{a(5a + 3)}$, where $a = 16^{\left(\frac{1}{2} + \log_{1/4} 25 + \log_{64} 125\right)}$.

Solution:**Correct Answer : 25** **Bookmark** **Answer key/Solution**

$$a = 16^{\left[\frac{1}{2} + \log_{1/4} 25 + \log_{64} 125\right]}$$

$$\Rightarrow a = 16^{\left[\frac{1}{2} + \frac{2}{-2} \log_2 5 + \frac{3}{6} \log_2 5\right]} \Rightarrow a = 16^{\left[\frac{1}{2} - \frac{1}{2} \log_2 5\right]} \Rightarrow a = 4 \times 16^{-\frac{1}{2} \log_2 5}$$

$$\Rightarrow a = 4 \times \left(\frac{1}{4}\right)^{\log_2 5} = 4 \times (2^{-2})^{\log_2 5} = 4 \times (5)^{-2} = \frac{4}{25}$$

$$\therefore \frac{16 - 5a}{a(5a + 3)} = \frac{16 - \frac{4}{25}}{\frac{4}{25} \left(\frac{4}{5} + 3\right)} = \frac{\frac{76}{25}}{\frac{4}{25} \times \frac{19}{5}} = \frac{76 \times 25}{4 \times 19} = 25.$$

FeedBack**Q.98**

If f(f(x)) = f²(x), f(f(f(x))) = f³(x) and so on for f(x) = $\frac{x}{\sqrt{(1+x^2)}}$, then find the value of f¹⁰(6).

1 4/52 1/33 7/204 6/19**Solution:****Correct Answer : 4**

$$f(x) = \frac{x}{\sqrt{1+x^2}} \quad \dots \text{(i)}$$

$$f(f(x)) = f\left(\frac{x}{\sqrt{1+x^2}}\right) = \left[\frac{\frac{x}{\sqrt{1+x^2}}}{\sqrt{1+\frac{x^2}{(1+x^2)}}} \right] = \frac{x}{\sqrt{1+2x^2}} \quad \dots \text{(ii)}$$

Similarly,

$$f(f(x)) = f\left(\frac{x}{\sqrt{1+2x^2}}\right) \text{ and } f(f(f(x))) = \frac{x}{\sqrt{1+3x^2}}$$

$$\text{Therefore, } f^{10}(6) = \frac{x}{\sqrt{1+10x^2}} = \frac{6}{\sqrt{1+360}} = \frac{6}{19}.$$

Bookmark**Answer key/Solution****FeedBack****Q.99**

Two pipes A and B can fill a tank of volume 288 m^3 in 4 hours and 6 hours respectively. Both the pipes were opened together to fill the tank, but later it was found that the tank got full in 36 minutes more than the actual time needed due to some leakage in the tank. Find the time taken (in minutes) to empty the whole tank by the leakage alone.

1 6002 7203 8404 900

Solution:**Correct Answer : 2**

Pipe A fills the tank in 4 hours and pipe B fills the tank in 6 hours.
Let both the pipes take t minutes to fill the tank together.

$$\text{So, } \frac{1}{240} + \frac{1}{360} = \frac{288}{t} \Rightarrow \frac{600}{240 \times 360} = \frac{288}{t} \Rightarrow t = 288 \times 144$$

So, the new time = $288 \times (144 + 36) = 288 \times 180$ minutes

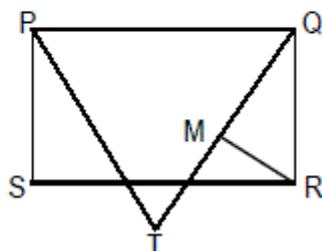
Let the time taken to empty the whole tank by the leakage alone = x minutes

$$\frac{288}{288 \times 180} = \frac{1}{240} + \frac{1}{360} - \frac{1}{x} \Rightarrow \frac{1}{x} = \frac{1}{144} - \frac{1}{180} = \frac{5-4}{720} = \frac{1}{720}$$

$$\Rightarrow x = 720 \text{ minutes.}$$

 **Bookmark**
 **Answer key/Solution**
 **FeedBack**
Q.100

PQRS is a rectangle, in which PQ is twice as long as QR. T is a point, as shown in the figure, such that the shortest distance of T from PQ is $\sqrt{3}$ times the length of QR. If PT = QT and M is the midpoint of QT, then what is the measure (in degrees) of angle RMQ?

**Solution:****Correct Answer : 75**

Let QR = x
 $\Rightarrow PQ = 2x$

 **Bookmark**
 **Answer key/Solution**

The perpendicular distance of T from PQ is $x\sqrt{3} = \frac{\sqrt{3}}{2}(2x)$

We know that, in an equilateral triangle, the height is given by $\frac{\sqrt{3}}{2} \times \text{Side}$

Thus, $\triangle PQT$ is equilateral (since $PT = QT$)

$$\Rightarrow \angle PQT = 60^\circ \text{ and } PQ = QT = TP = 2x$$

Since PQRS is a rectangle, $\angle PQR = 90^\circ$

$$\Rightarrow \angle MQR = 90^\circ - 60^\circ = 30^\circ$$

Also, we have M as the midpoint of QT

$$\Rightarrow TM = MQ = x$$

Thus, in $\triangle MQR$, $QM = QR = x$

$\Rightarrow \triangle MQR$ is an isosceles triangle

$$\Rightarrow \angle RMQ = \frac{180^\circ - \angle MQR}{2} = \frac{180^\circ - 30^\circ}{2} = 75^\circ.$$

 **FeedBack**