

PGDBA 2023

Question Paper

Question: 1

[Single Correct Option, +3, -1]

Read the passage and answer the following questions

In the animal kingdom, mimics are a dime a dozen. Stick insects pretend to be twigs. Hawk-moth caterpillars resemble venomous snakes. Edible heliconid butterflies disguise themselves with the wing patterns of noxious ones, and noxious ones copy each other to make it easier for predators to learn what not to eat. All these examples, though, are visual. Auditory mimicry is rarer. But, as he describes in Current Biology, Danilo Russo of the University of Naples Federico II thinks he has found a novel case of it. Some bats, he believes, mimic angry bees, wasps and hornets in order to scare away owls that might otherwise eat them. Dr Russo first noticed the propensity of greater mouse-eared bats to buzz a few years ago, when he was collecting them...to study their ecology. The noise struck him as similar to the sound of hornets that inhabited the area of southern Italy he was working in. That led him to wonder whether bat buzzing was a form of mimicry which helped its practitioners to scare off would-be predators. To test this idea, he... and a colleague...first recorded the buzzing that captured bats made when handled. Then, having donned suitable protective clothing, they embarked on the more dangerous task of recording the buzzing made, en masse, by four different species of Hymenoptera: European paper wasps; buff-tailed bumblebees; European hornets; and domestic honeybees.... For the next part of their experiment Dr Russo and Dr Ancillotto recruited the services of 16 captive owls—eight barn and eight tawny. Both of these species are known to hunt bats. The researchers put the owls, one at a time, in an enclosure equipped with branches for them to perch on, and also two boxes with holes in them. The boxes resembled the sorts of cavities in trees that owls would explore in the wild for food. They placed a loudspeaker alongside one of the boxes and, after the birds had settled in, broadcast through it five seconds of uninterrupted bat buzzing and a similar amount of insect buzzing three times in a row for each noise. As a control, they broadcast in like manner several non-buzzing sounds made by bats. During the broadcasts (which occurred in random order) and for five minutes thereafter, they videoed the owls. The videos were then analysed, by an independent observer, without benefit of their soundtracks. The results were unequivocal. When they heard both the bat buzzings and the hornet buzzings the owls moved as far from the speakers as they could manage. In contrast, when the non-buzzing bat sounds were played, they crept closer. Dr Russo and Dr Ancillotto believe this is the first reported case of a mammal using acoustic mimicry to scare away a predator. They strongly suspect, however, that it is not unique. Anecdotes suggest several birds and also small mammals, such as dormice—particularly species that dwell in trees and, like dormice, in rock cavities—make buzzing noises when their hidey-holes are disturbed. This has not yet been documented formally as acoustic mimicry. But, given the propensity for venomous buzzing insects to dwell in those sorts of places too, and also the fear that these insects generate in other species, human beings included, Dr Russo thinks this may well be what is going on. He therefore predicts that when these other buzzes are recorded and analysed the results will show that acoustic mimicry by vertebrates of stinging insects is far more widespread than currently realised.

Qs. In the examples of defensive mechanism exhibited by animals given below, which is the odd one out?

- A Stick insects pretending to be twigs
- B Bats mimicking angry bees, wasps and hornets
- C Hawk-moth caterpillars resembling venomous snakes
- D Edible heliconid butterflies disguising themselves with the wing patterns

Question: 2

[Single Correct Option, +3, -1]

Read the passage and answer the following questions

In the animal kingdom, mimics are a dime a dozen. Stick insects pretend to be twigs. Hawk-moth caterpillars resemble venomous snakes. Edible heliconid butterflies disguise themselves with the wing patterns of noxious ones, and noxious ones copy each other

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Qs. From the passage it can be inferred that the species Hymenoptera use the following mechanism for defence:

- | | | | |
|-------------------------|---------|-------------------------|----------|
| <input type="radio"/> A | Mimicry | <input type="radio"/> B | Aural |
| <input type="radio"/> C | Visual | <input type="radio"/> D | Disguise |

Question: 3

[Single Correct Option, +3, -1]

Read the passage and answer the following questions

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scare away a predator. They strongly suspect, however, that it is not unique. Anecdotes suggest several birds and also small mammals, such as dormice—particularly species that dwell in trees and, like dormice, in rock cavities—make buzzing noises when their hidey-holes are disturbed. This has not yet been documented formally as acoustic mimicry. But, given the propensity for venomous buzzing insects to dwell in those sorts of places too, and also the fear that these insects generate in other species, human beings included, Dr Russo thinks this may well be what is going on. He therefore predicts that when these other buzzes are recorded and analysed the results will show that acoustic mimicry by vertebrates of stinging insects is far more widespread than currently realised.

Qs. Which of the following outcomes of his experiments would have disproved Mr. Danilo Russo's hypothesis that mimicry was a defensive mechanism?

- A If the owls had moved further away from speakers on hearing buzzing sounds
- B If the owls moved further away from speakers on hearing non-buzzing sounds
- C If the owls had moved closer to the speakers on hearing buzzing sounds
- D If the owls had remained stationary on hearing non-buzzing sounds

Question: 4

[Single Correct Option, +3, -1]

Read the passage and answer the following questions

In the animal kingdom, mimics are a dime a dozen. Stick insects pretend to be twigs. Hawk-moth caterpillars resemble venomous snakes. Edible heliconid butterflies disguise themselves with the wing patterns of noxious ones, and noxious ones copy each other to make it easier for predators to learn what not to eat. All these examples, though, are visual. Auditory mimicry is rarer. But, as he describes in *Current Biology*, Danilo Russo of the University of Naples Federico II thinks he has found a novel case of it. Some bats, he believes, mimic angry bees, wasps and hornets in order to scare away owls that might otherwise eat them. Dr Russo first noticed the propensity of greater mouse-eared bats to buzz a few years ago, when he was collecting them...to study their ecology. The noise struck him as similar to the sound of hornets that inhabited the area of southern Italy he was working in. That led him to wonder whether bat buzzing was a form of mimicry which helped its practitioners to scare off would-be predators. To test this idea, he... and a colleague...first recorded the buzzing that captured bats made when handled. Then, having donned suitable protective clothing, they embarked on the more dangerous task of recording the buzzing made, en masse, by four different species of Hymenoptera: European paper wasps; buff-tailed bumblebees; European hornets; and domestic honeybees.... For the next part of their experiment Dr Russo and Dr Ancillotto recruited the services of 16 captive owls—eight barn and eight tawny. Both of these species are known to hunt bats. The researchers put the owls, one at a time, in an enclosure equipped with branches for them to perch on, and also two boxes with holes in them. The boxes resembled the sorts of cavities in trees that owls would explore in the wild for food. They placed a loudspeaker alongside one of the boxes and, after the birds had settled in, broadcast through it five seconds of uninterrupted bat buzzing and a similar amount of insect buzzing three times in a row for each noise. As a control, they broadcast in like manner several non-buzzing sounds made by bats. During the broadcasts (which occurred in random order) and for five minutes thereafter, they videoed the owls. The videos were then analysed, by an independent observer, without benefit of their soundtracks. The results were unequivocal. When they heard both the bat buzzings and the hornet buzzings the owls moved as far from the speakers as they could manage. In contrast, when the non-buzzing bat sounds were played, they crept closer. Dr Russo and Dr Ancillotto believe this is the first reported case of a mammal using acoustic mimicry to scare away a predator. They strongly suspect, however, that it is not unique. Anecdotes suggest several birds and also small mammals, such as dormice—particularly species that dwell in trees and, like dormice, in rock cavities—make buzzing noises when their hidey-holes are disturbed. This has not yet been documented formally as acoustic mimicry. But, given the propensity for venomous buzzing insects to dwell in those sorts of places too, and also the fear that these insects generate in other species, human beings included, Dr Russo thinks this may well be what is going on. He therefore predicts that when these other buzzes are recorded and analysed the results will show that acoustic mimicry by vertebrates of stinging insects is far more widespread than currently realised.

Qs. From the passage it can be inferred that the following animal/bird would not be able to use acoustic mimicry as a defensive mechanism.

- A Horses
- B Dormice
- C Rabbits
- D Tawny Owls

Question: 5**[Single Correct Option, +3, -1]****Read the passage and answer the following questions**

In the animal kingdom, mimics are a dime a dozen. Stick insects pretend to be twigs. Hawk-moth caterpillars resemble venomous snakes. Edible heliconid butterflies disguise themselves with the wing patterns of noxious ones, and noxious ones copy each other to make it easier for predators to learn what not to eat. All these examples, though, are visual. Auditory mimicry is rarer. But, as he describes in *Current Biology*, Danilo Russo of the University of Naples Federico II thinks he has found a novel case of it. Some bats, he believes, mimic angry bees, wasps and hornets in order to scare away owls that might otherwise eat them. Dr Russo first noticed the propensity of greater mouse-eared bats to buzz a few years ago, when he was collecting them...to study their ecology. The noise struck him as similar to the sound of hornets that inhabited the area of southern Italy he was working in. That led him to wonder whether bat buzzing was a form of mimicry which helped its practitioners to scare off would-be predators. To test this idea, he... and a colleague...first recorded the buzzing that captured bats made when handled. Then, having donned suitable protective clothing, they embarked on the more dangerous task of recording the buzzing made, en masse, by four different species of Hymenoptera: European paper wasps; buff-tailed bumblebees; European hornets; and domestic honeybees.... For the next part of their experiment Dr Russo and Dr Ancillotto recruited the services of 16 captive owls—eight barn and eight tawny. Both of these species are known to hunt bats. The researchers put the owls, one at a time, in an enclosure equipped with branches for them to perch on, and also two boxes with holes in them. The boxes resembled the sorts of cavities in trees that owls would explore in the wild for food. They placed a loudspeaker alongside one of the boxes and, after the birds had settled in, broadcast through it five seconds of uninterrupted bat buzzing and a similar amount of insect buzzing three times in a row for each noise. As a control, they broadcast in like manner several non-buzzing sounds made by bats. During the broadcasts (which occurred in random order) and for five minutes thereafter, they videoed the owls. The videos were then analysed, by an independent observer, without benefit of their soundtracks. The results were unequivocal. When they heard both the bat buzzings and the hornet buzzings the owls moved as far from the speakers as they could manage. In contrast, when the non-buzzing bat sounds were played, they crept closer. Dr Russo and Dr Ancillotto believe this is the first reported case of a mammal using acoustic mimicry to scare away a predator. They strongly suspect, however, that it is not unique. Anecdotes suggest several birds and also small mammals, such as dormice—particularly species that dwell in trees and, like dormice, in rock cavities—make buzzing noises when their hidey-holes are disturbed. This has not yet been documented formally as acoustic mimicry. But, given the propensity for venomous buzzing insects to dwell in those sorts of places too, and also the fear that these insects generate in other species, human beings included, Dr Russo thinks this may well be what is going on. He therefore predicts that when these other buzzes are recorded and analysed the results will show that acoustic mimicry by vertebrates of stinging insects is far more widespread than currently realised.

Qs. Which of the following mechanisms to prevent robbery would be the best example of human beings using mimicry as a defence mechanism?

- A People leaving lights around the fences on at night when the house is unoccupied
- B Installation of a sound alarm system in the house to alert neighbours in case of a break-in
- C Installation of CCTV surveillance systems
- D Using an audio system to play recording of conversations when the house is unoccupied

Question: 6**[Single Correct Option, +3, -1]****Read the passage and answer the following questions**

Familiar though his name may be to us, the storyteller in his living immediacy is by no means a present force. He has already become something remote from us and something that is getting even more distant. To present someone like Leskov as a storyteller does not mean bringing him closer to us but, rather, increasing our distance from him. Viewed from a certain distance, the great, simple outlines which define the storyteller stand out in him, or rather, they become visible in him, just as in a rock a human head or an animal's body may appear to an observer at the proper distance and angle of vision. This distance and this angle of vision are prescribed for us by an experience which we may have almost every day. It teaches us that the art of storytelling is coming to an end. Less and less frequently do we encounter people with the ability to tell a tale properly. More and more often there is embarrassment all around when the wish to hear a story is expressed. It is as if something that seemed inalienable to us, the securest among our possessions, were taken from us: the ability to exchange experiences. The earliest symptom of a process whose end is the decline of storytelling is the rise of the novel at the beginning of modern times. What distinguishes the novel from the story (and from the epic in the narrower sense) is its essential dependence on the book. The dissemination of the novel

became possible only with the invention of printing. What can be handed on orally, the wealth of the epic, is of a different kind from what constitutes the stock in trade of the novel. What differentiates the novel from all other forms of prose literature –the fairy tale, the legend, even the novella–is that it neither comes from oral tradition nor goes into it. This distinguishes it from storytelling in particular. The storyteller takes what he tells from experience–his own or that reported by others. And he in turn makes it the experience of those who are listening to his tale. The novelist has isolated himself. The birthplace of the novel is the solitary individual, who is no longer able to express himself by giving examples of his most important concerns, is himself uncounseled, and cannot counsel others. To write a novel means to carry the incommensurable to extremes in the representation of human life. In the midst of life's fullness, and through the representation of this fullness, the novel gives evidence of the profound perplexity of the living. Even the first great book of the genre, Don Quixote, teaches how the spiritual greatness, the boldness, the helpfulness of one of the noblest of men, Don Quixote, are completely devoid of counsel and do not contain the slightest scintilla of wisdom. If now and then, in the course of the centuries, efforts have been made–most effectively, perhaps, in Wilhelm Meisters Wanderjahre–to implant instruction in the novel, these attempts have always amounted to a modification of the novel form. The Bildungsroman, on the other hand, does not deviate in any way from the basic structure of the novel. By integrating the social process with the development of a person, it bestows the most frangible justification on the order determining it. The legitimacy it provides stands in direct opposition to reality. Particularly in the Bildungsroman, it is this inadequacy that is actualized.

Qs. Why is the 'art of storytelling' coming to an end?

- A We are unable to exchange experiences
- B We now observe everything from a distance
- C There is no immediacy in storytelling anymore
- D The distance and angle of vision for experiential reality has changed

Question: 7

[Single Correct Option, +3, -1]

Read the passage and answer the following questions

Familiar though his name may be to us, the storyteller in his living immediacy is by no means a present force. He has already become something remote from us and something that is getting even more distant. To present someone like Leskov as a storyteller does not mean bringing him closer to us but, rather, increasing our distance from him. Viewed from a certain distance, the great, simple outlines which define the storyteller stand out in him, or rather, they become visible in him, just as in a rock a human head or an animal's body may appear to an observer at the proper distance and angle of vision. This distance and this angle of vision are prescribed for us by an experience which we may have almost every day. It teaches us that the art of storytelling is coming to an end. Less and less frequently do we encounter people with the ability to tell a tale properly. More and more often there is embarrassment all around when the wish to hear a story is expressed. It is as if something that seemed inalienable to us, the securest among our possessions, were taken from us: the ability to exchange experiences. The earliest symptom of a process whose end is the decline of storytelling is the rise of the novel at the beginning of modern times. What distinguishes the novel from the story (and from the epic in the narrower sense) is its essential dependence on the book. The dissemination of the novel became possible only with the invention of printing. What can be handed on orally, the wealth of the epic, is of a different kind from what constitutes the stock in trade of the novel. What differentiates the novel from all other forms of prose literature –the fairy tale, the legend, even the novella–is that it neither comes from oral tradition nor goes into it. This distinguishes it from storytelling in particular. The storyteller takes what he tells from experience–his own or that reported by others. And he in turn makes it the experience of those who are listening to his tale. The novelist has isolated himself. The birthplace of the novel is the solitary individual, who is no longer able to express himself by giving examples of his most important concerns, is himself uncounseled, and cannot counsel others. To write a novel means to carry the incommensurable to extremes in the representation of human life. In the midst of life's fullness, and through the representation of this fullness, the novel gives evidence of the profound perplexity of the living. Even the first great book of the genre, Don Quixote, teaches how the spiritual greatness, the boldness, the helpfulness of one of the noblest of men, Don Quixote, are completely devoid of counsel and do not contain the slightest scintilla of wisdom. If now and then, in the course of the centuries, efforts have been made–most effectively, perhaps, in Wilhelm Meisters Wanderjahre–to implant instruction in the novel, these attempts have always amounted to a modification of the novel form. The Bildungsroman, on the other hand, does not deviate in any way from the basic structure of the novel. By integrating the social process with the development of a person, it bestows the most frangible justification on the order determining it. The legitimacy it provides stands in direct opposition to reality. Particularly in the Bildungsroman, it is this inadequacy that is actualized.

Qs. What is the difference between the novel and the story?

A The printing press.

B The novelist and the storyteller.

C Perplexity of meaning.

D The trade of the novel.

Question: 8

[Single Correct Option, +3, -1]

Read the passage and answer the following questions

Familiar though his name may be to us, the storyteller in his living immediacy is by no means a present force. He has already become something remote from us and something that is getting even more distant. To present someone like Leskov as a storyteller does not mean bringing him closer to us but, rather, increasing our distance from him. Viewed from a certain distance, the great, simple outlines which define the storyteller stand out in him, or rather, they become visible in him, just as in a rock a human head or an animal's body may appear to an observer at the proper distance and angle of vision. This distance and this angle of vision are prescribed for us by an experience which we may have almost every day. It teaches us that the art of storytelling is coming to an end. Less and less frequently do we encounter people with the ability to tell a tale properly. More and more often there is embarrassment all around when the wish to hear a story is expressed. It is as if something that seemed inalienable to us, the securest among our possessions, were taken from us: the ability to exchange experiences. The earliest symptom of a process whose end is the decline of storytelling is the rise of the novel at the beginning of modern times. What distinguishes the novel from the story (and from the epic in the narrower sense) is its essential dependence on the book. The dissemination of the novel became possible only with the invention of printing. What can be handed on orally, the wealth of the epic, is of a different kind from what constitutes the stock in trade of the novel. What differentiates the novel from all other forms of prose literature -the fairy tale, the legend, even the novella-is that it neither comes from oral tradition nor goes into it. This distinguishes it from storytelling in particular. The storyteller takes what he tells from experience-his own or that reported by others. And he in turn makes it the experience of those who are listening to his tale. The novelist has isolated himself. The birthplace of the novel is the solitary individual, who is no longer able to express himself by giving examples of his most important concerns, is himself uncounseled, and cannot counsel others. To write a novel means to carry the incommensurable to extremes in the representation of human life. In the midst of life's fullness, and through the representation of this fullness, the novel gives evidence of the profound perplexity of the living. Even the first great book of the genre, Don Quixote, teaches how the spiritual greatness, the boldness, the helpfulness of one of the noblest of men, Don Quixote, are completely devoid of counsel and do not contain the slightest scintilla of wisdom. If now and then, in the course of the centuries, efforts have been made-most effectively, perhaps, in Wilhelm Meisters Wanderjahre-to implant instruction in the novel, these attempts have always amounted to a modification of the novel form. The Bildungsroman, on the other hand, does not deviate in any way from the basic structure of the novel. By integrating the social process with the development of a person, it bestows the most frangible justification on the order determining it. The legitimacy it provides stands in direct opposition to reality. Particularly in the Bildungsroman, it is this inadequacy that is actualized.

Qs. It can be inferred from the passage that:

A The Bildungsroman is an inadequate novel.

B The Bildungsroman is a type of a novel.

C Wilhelm Meisters Wanderjahre is a Bildungsroman.

D The Bildungsroman is an unstructured novel.

Question: 9

[Single Correct Option, +3, -1]

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Qs. What does the author mean by 'frangible justification' in the passage?

- A Social processes do not play a role in the development of individuals
- B In reality, the integration of social process and personal development in a coherent order does not provide counsel.
- C The order of social process and personal development needs to be reversed for a novel to offer counsel.
- D Opposition to reality is an aspect of the *Bildungsroman*.

Question: 10

[Single Correct Option, +3, -1]

Read the passage and answer the following questions

Familiar though his name may be to us, the storyteller in his living immediacy is by no means a present force. He has already become something remote from us and something that is getting even more distant. To present someone like Leskov as a storyteller does not mean bringing him closer to us but, rather, increasing our distance from him. Viewed from a certain distance, the great, simple outlines which define the storyteller stand out in him, or rather, they become visible in him, just as in a rock a human head or an animal's body may appear to an observer at the proper distance and angle of vision. This distance and this angle of vision are prescribed for us by an experience which we may have almost every day. It teaches us that the art of storytelling is coming to an end. Less and less frequently do we encounter people with the ability to tell a tale properly. More and more often there is embarrassment all around when the wish to hear a story is expressed. It is as if something that seemed inalienable to us, the securest among our possessions, were taken from us: the ability to exchange experiences. The earliest symptom of a process whose end is the decline of storytelling is the rise of the novel at the beginning of modern times. What distinguishes the novel from the story (and from the epic in the narrower sense) is its essential dependence on the book. The dissemination of the novel became possible only with the invention of printing. What can be handed on orally, the wealth of the epic, is of a different kind from what constitutes the stock in trade of the novel. What differentiates the novel from all other forms of prose literature—the fairy tale, the legend, even the novella—is that it neither comes from oral tradition nor goes into it. This distinguishes it from storytelling in particular. The storyteller takes what he tells from experience—his own or that reported by others. And he in turn makes it the experience of those who are listening to his tale. The novelist has isolated himself. The birthplace of the novel is the solitary individual, who is no longer able to express himself by giving examples of his most important concerns, is himself uncounseled, and cannot counsel others. To write a novel means to carry the incommensurable to extremes in the representation of human life. In the midst of life's fullness, and through the representation of this fullness, the novel gives evidence of the profound perplexity of the living. Even the first great book of the genre, *Don Quixote*, teaches how the spiritual greatness, the boldness, the helpfulness of one of the noblest of men, Don Quixote, are completely devoid of counsel and do not contain the slightest scintilla of wisdom. If now and then, in the course of the centuries, efforts have been made—most effectively, perhaps, in Wilhelm Meisters *Wanderjahre*—to implant instruction in the novel, these attempts have always amounted to a modification of the novel form. The *Bildungsroman*, on the other hand, does not deviate in any way from the basic structure of the novel. By integrating the social process with the development of a person, it bestows the most frangible justification on the order determining it. The legitimacy it provides stands in direct opposition to reality. Particularly in the *Bildungsroman*, it is this inadequacy that is actualized.

Qs. What does the author mean by, "Even the first great book of the genre, *Don Quixote*, teaches how the spiritual greatness, the boldness, the helpfulness of one of the noblest of men, *Don Quixote*, are completely devoid of counsel and do not contain

the slightest scintilla of wisdom."

A The novel is an individualistic genre.

B The novelist is isolated.

C The tales of the storyteller are more relatable.

D The novel gives evidence of the profound perplexity of living.

Question: 11

[Single Correct Option, +3, -1]

Para Jumbles

1. Then, when he spoke, he did not explicitly reject the result, though he did not concede, either.
2. For months, he had insinuated that Luiz Inacio Lula da Silva, his rival, could only win if it was rigged.
3. When Lula won by a mere 1.8 per cent points, many people expected Mr. Bolsonaro to contest the result.
4. When Jair Bolsonaro lost his bid for re-election on October 30 he said nothing for 44 hours.

A 4321

B 4123

C 4132

D 4312

Question: 12

[Single Correct Option, +3, -1]

Para Jumbles

1. The technocracy of professional sport has managed to impose a soccer of lightning speed and brute strength, a soccer that negates joy, kills fantasy, and outlaws daring.
2. Luckily, on the field you can still see, even if only once in a long while, some insolent rascal who sets aside the script and commits the blunder of dribbling past the entire opposing side, the referee, and the crowd in the stands, all for the carnal delight of embracing the forbidden adventure of freedom.
3. Play has become spectacle, with few protagonists and many spectators, soccer for watching.
4. And that spectacle has become one of the most profitable businesses in the world, organized not to facilitate play but to impede it.

A 4321

B 3421

C 3412

D 4123

Question: 13

[Single Correct Option, +3, -1]

Para Jumbles

1. For example, the 2008 – 2009 U.S. recession triggered by the bursting of the subprime mortgage bubble was extremely severe.
2. However, while the economic downturn that technically began in December 2007 and ended in June **2009** was the longest in the U.S. since World War II, it only lasted about 18 months.
3. The major difference between a recession and a depression is that a depression is much more severe and long-lasting.
4. The U.S. unemployment rate nearly doubled from about 5% to 9.5% and the S&P **500** dropped by more than 50% from peak to trough.

A 3421

B 3142

C 3412

D 3214

Question: 14

[Single Correct Option, +3, -1]

Fill in the blanks

Arriving late for the interview _____ my chances of getting the job.

A Scuppered

B Scrutinised

C Elevated

D Eschewed

Question: 15

[Single Correct Option, +3, -1]

Fill in the blanks

In case of any discrepancy, please _____ to us by email.

A Reply

B Revert

C Reverb

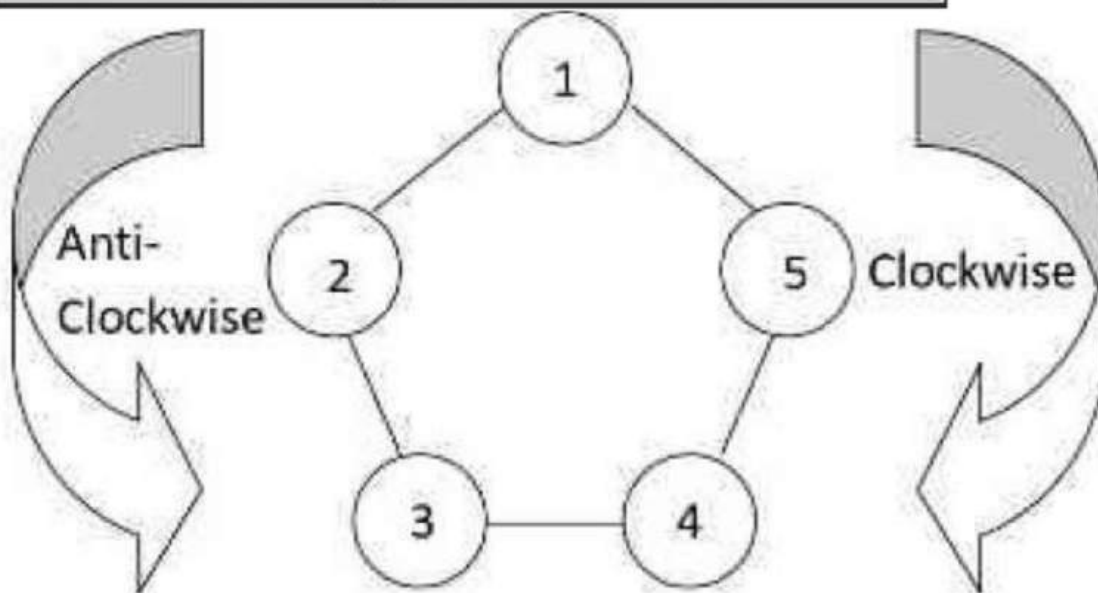
D Relent

Question: 16

[Single Correct Option, +3, -1]

The specific question appears at the end of the passage. Passage: A museum has five halls. Each hall has a separate entry ticket which must be purchased right before entering that hall. The ticket price for each hall is non-zero and unique. Moreover, the ticket price for each hall is a multiple of 30. Hall-3 and Hall-1 have the maximum and minimum ticket prices, respectively. Ticket price of Hall-5 is twice that of Hall-4. A visitor must visit Hall-1 first before deciding the sequence (clockwise, i.e. 1->5->4->3->2 OR anti-clockwise, i.e. 1->2->3->4->5) of visiting the remaining halls. Three photographers - Amardeep, Barnali, and Chanchal, visited all the halls by purchasing tickets worth Rs 450 each. Moving from one hall to another took five minutes for each of them. Table 1 below provides the time spent by the three photographers in each hall. Visiting a hall is considered complete only after a photographer spends the specified time (as given in Table 1) in that hall. Consider the time taken to purchase the ticket as negligible. The floor plan of the museum is given in Fig. 1 (each circle represents a hall, e.g. circle numbered 1 represents Hall-1).

Person	Time spent in each hall
Amardeep	15 minutes
Barnali	10 minutes
Chanchal	20 minutes



The following additional information is given:

1. Barnali's sequence of visiting the halls was different from Amardeep's and Chanchal's.
2. Chanchal entered Hall-1 at 10:08 Hrs. She spent Rs 120 by 10:40 Hrs.
3. Amardeep left Hall-2 two minutes after Chanchal entered that hall. Amardeep entered Hall-5 five minutes after Barnali entered that hall.

Qs. How much (in Rupees) did Barnali spend on entry tickets by 11:35 Hrs?

A 30

B 90

C 150

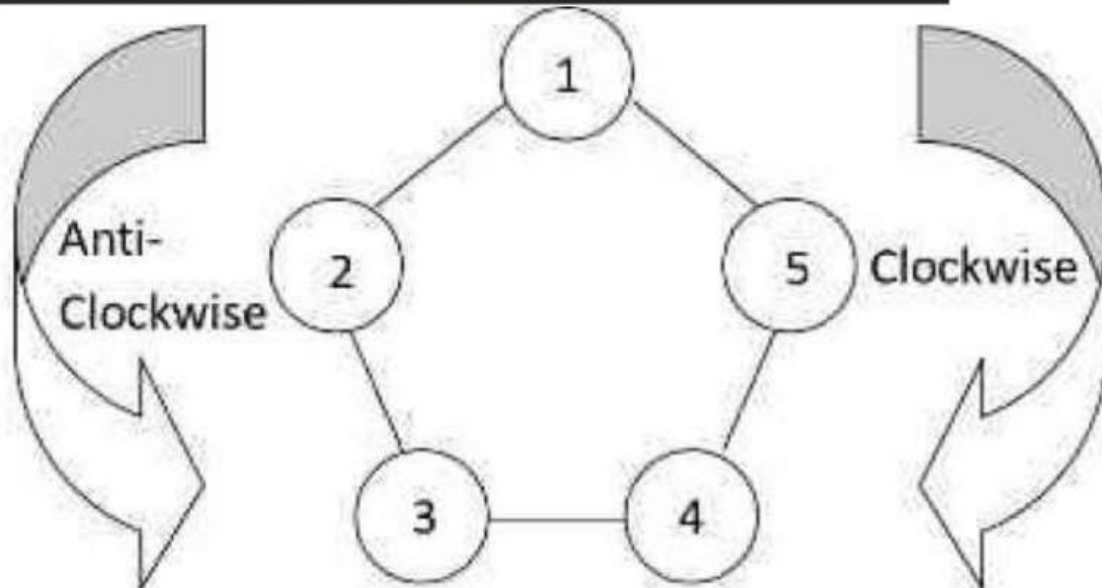
D 210

Question: 17

[Single Correct Option, +3, -1]

The specific question appears at the end of the passage. Passage: A museum has five halls. Each hall has a separate entry ticket which must be purchased right before entering that hall. The ticket price for each hall is non-zero and unique. Moreover, the ticket price for each hall is a multiple of 30. Hall-3 and Hall-1 have the maximum and minimum ticket prices, respectively. Ticket price of Hall-5 is twice that of Hall-4. A visitor must visit Hall-1 first before deciding the sequence (clockwise, i.e. 1->5->4->3->2 OR anti-clockwise, i.e. 1->2->3->4->5) of visiting the remaining halls. Three photographers - Amardeep, Barnali, and Chanchal, visited all the halls by purchasing tickets worth Rs 450 each. Moving from one hall to another took five minutes for each of them. Table 1 below provides the time spent by the three photographers in each hall. Visiting a hall is considered complete only after a photographer spends the specified time (as given in Table 1) in that hall. Consider the time taken to purchase the ticket as negligible. The floor plan of the museum is given in Fig. 1 (each circle represents a hall, e.g. circle numbered 1 represents Hall-1).

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- Amardeep left Hall-2 two minutes after Chanchal entered that hall. Amardeep entered Hall-5 five minutes after Barnali entered that hall.

Qs. At what time did Chanchal complete visiting all five halls?

- | | | | |
|-------------------------|-----------|-------------------------|-----------|
| <input type="radio"/> A | 11:48 Hrs | <input type="radio"/> B | 12:08 Hrs |
| <input type="radio"/> C | 11:53 Hrs | <input type="radio"/> D | 12:13 Hrs |

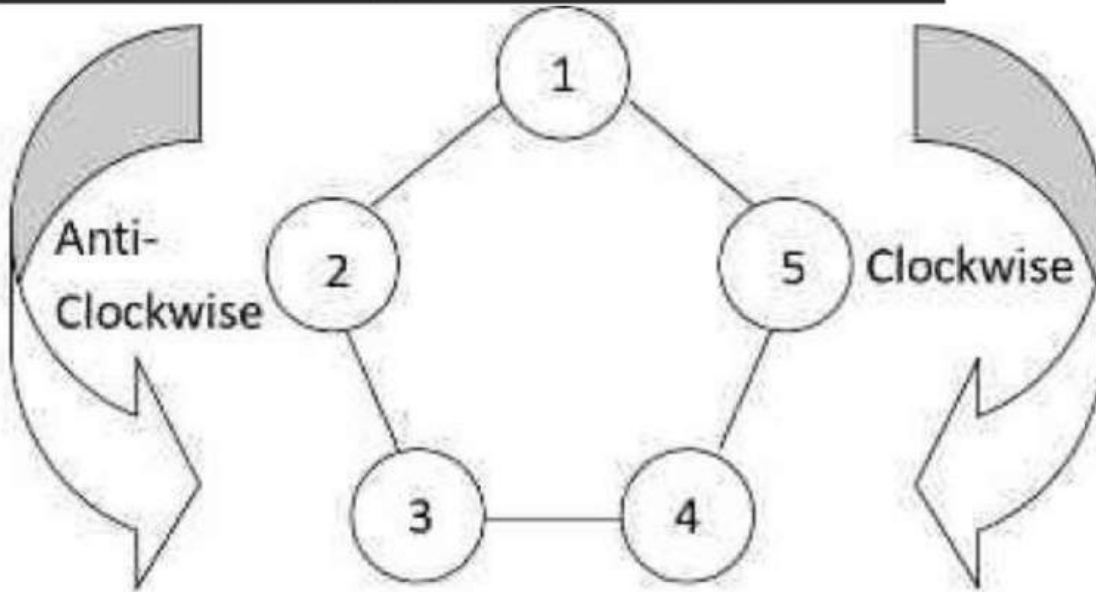
Question: 18

[Single Correct Option, +3, -1]

The specific question appears at the end of the passage. Passage: A museum has five halls. Each hall has a separate entry ticket which must be purchased right before entering that hall. The ticket price for each hall is non-zero and unique. Moreover, the ticket price for each hall is a multiple of 30. Hall-3 and Hall-1 have the maximum and minimum ticket prices, respectively. Ticket price of Hall-5 is twice that of Hall-4. A visitor must visit Hall-1 first before deciding the sequence (clockwise, i.e. 1->5->4->3->2 OR anti-clockwise, i.e. 1->2->3->4->5) of visiting the remaining halls. Three photographers - Amardeep, Barnali, and Chanchal, visited all the halls by purchasing tickets worth Rs 450 each. Moving from one hall to another took five minutes for each of

them. Table 1 below provides the time spent by the three photographers in each hall. Visiting a hall is considered $\langle b \rangle$ complete $\langle /b \rangle$ only after a photographer spends the specified time (as given in Table 1) in that hall. Consider the time taken to purchase the ticket as negligible. The floor plan of the museum is given in Fig. 1 (each circle represents a hall, e.g. circle numbered 1 represents Hall-1).

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- Chanchal entered Hall-1 at 10:08 Hrs. She spent Rs 120 by 10:40 Hrs.
- Amardeep left Hall-2 two minutes after Chanchal entered that hall. Amardeep entered Hall-5 five minutes after Barnali entered that hall.

Qs. In which of the following halls were Barnali and Chanchal present at the same time?

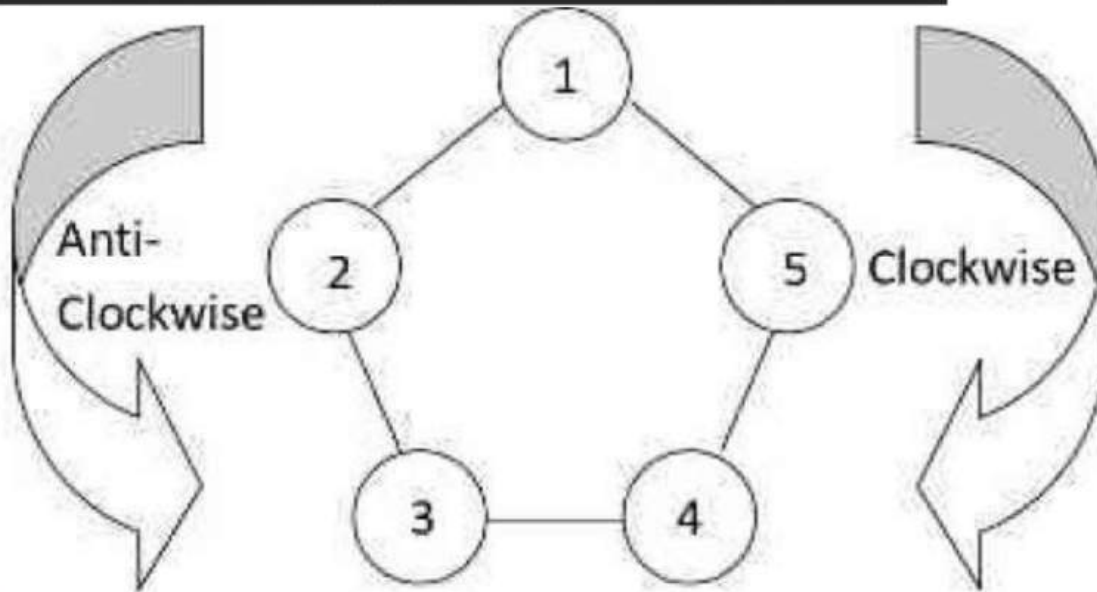
- A Hall-1
- B Hall-2
- C Hall-3
- D Hall-4

Question: 19

[Single Correct Option, +3, -1]

The specific question appears at the end of the passage. Passage: A museum has five halls. Each hall has a separate entry ticket which must be purchased right before entering that hall. The ticket price for each hall is non-zero and unique. Moreover, the ticket price for each hall is a multiple of 30. Hall-3 and Hall-1 have the maximum and minimum ticket prices, respectively. Ticket price of Hall-5 is twice that of Hall-4. A visitor must visit Hall-1 first before deciding the sequence (clockwise, i.e. 1->5->4->3->2 OR anti-clockwise, i.e. 1->2->3->4->5) of visiting the remaining halls. Three photographers - Amardeep, Barnali, and Chanchal, visited all the halls by purchasing tickets worth Rs 450 each. Moving from one hall to another took five minutes for each of them. Table 1 below provides the time spent by the three photographers in each hall. Visiting a hall is considered $\langle b \rangle$ complete $\langle /b \rangle$ only after a photographer spends the specified time (as given in Table 1) in that hall. Consider the time taken to purchase the ticket as negligible. The floor plan of the museum is given in Fig. 1 (each circle represents a hall, e.g. circle numbered 1 represents Hall-1).

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Amardeep	15 minutes
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The following additional information is given:

1. Barnali's sequence of visiting the halls was different from Amardeep's and Chanchal's.
2. Chanchal entered Hall-1 at 10:08 Hrs. She spent Rs 120 by 10:40 Hrs.
3. Amardeep left Hall-2 two minutes after Chanchal entered that hall. Amardeep entered Hall-5 five minutes after Barnali entered that hall.

Qs. Choose the correct statement.

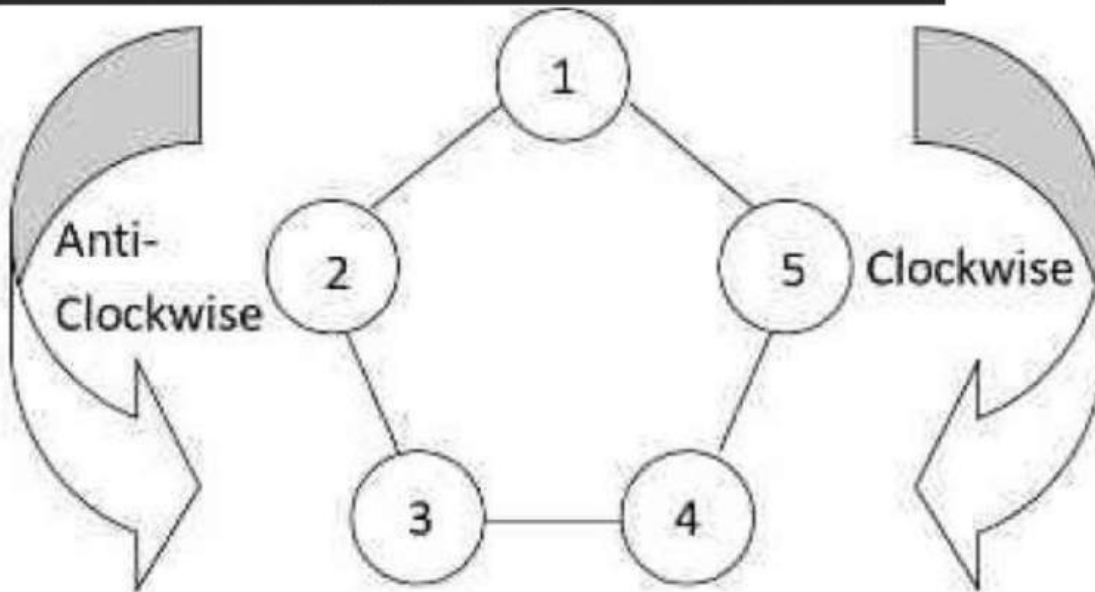
- A By 12:00 Hrs, all photographers had completed visiting all the halls.
- B By 12:00 Hrs, only two photographers had completed visiting all the halls.
- C By 12:00 Hrs, only one photographer had completed visiting all the halls.
- D By 12:00 Hrs, none of the three photographers had completed visiting all the halls.

Question: 20

[Single Correct Option, +3, -1]

The specific question appears at the end of the passage. Passage: A museum has five halls. Each hall has a separate entry ticket which must be purchased right before entering that hall. The ticket price for each hall is non-zero and unique. Moreover, the ticket price for each hall is a multiple of 30. Hall-3 and Hall-1 have the maximum and minimum ticket prices, respectively. Ticket price of Hall-5 is twice that of Hall-4. A visitor must visit Hall-1 first before deciding the sequence (clockwise, i.e. 1->5->4->3->2 OR anti-clockwise, i.e. 1->2->3->4->5) of visiting the remaining halls. Three photographers - Amardeep, Barnali, and Chanchal, visited all the halls by purchasing tickets worth Rs 450 each. Moving from one hall to another took five minutes for each of them. Table 1 below provides the time spent by the three photographers in each hall. Visiting a hall is considered complete only after a photographer spends the specified time (as given in Table 1) in that hall. Consider the time taken to purchase the ticket as negligible. The floor plan of the museum is given in Fig. 1 (each circle represents a hall, e.g. circle numbered 1 represents Hall-1).

Person	Time spent in each hall
Amardeep	15 minutes
Barnali	10 minutes
Chanchal	20 minutes



The following additional information is given:

1. Barnali's sequence of visiting the halls was different from Amardeep's and Chanchal's.
2. Chanchal entered Hall-1 at 10:08 Hrs. She spent Rs 120 by 10:40 Hrs.
3. Amardeep left Hall-2 two minutes after Chanchal entered that hall. Amardeep entered Hall-5 five minutes after Barnali entered that hall.

Qs. Who was the last photographer to complete visiting Hall-3, and at what time did the last photographer complete visiting Hall-3?

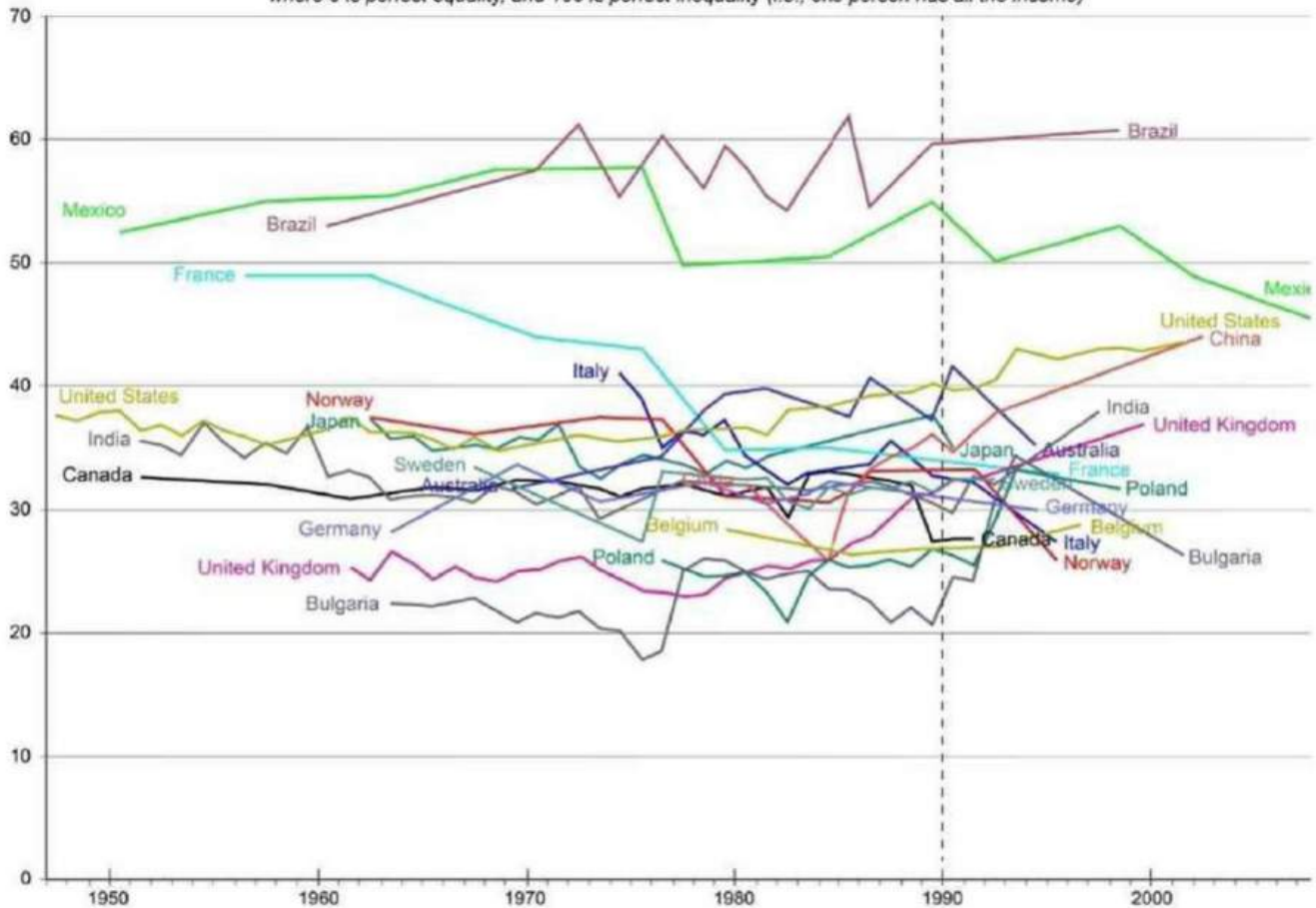
- | | | | |
|-------------------------|---------------------|-------------------------|---------------------|
| <input type="radio"/> A | Barnali, 11:40 Hrs | <input type="radio"/> B | Barnali, 11:55 Hrs |
| <input type="radio"/> C | Amardeep, 11:40 Hrs | <input type="radio"/> D | Amardeep, 10:55 Hrs |

Question: 21

[Single Correct Option, +3, -1]

Gini Index - Income Disparity since World War II

where 0 is perfect equality, and 100 is perfect inequality (i.e., one person has all the income)



Qs. According to the information given in the graphs, the country that has had the fastest decrease in the Gini Index since 1990 is

- | | |
|--|--|
| <p>A Mexico</p> <p>C Australia</p> | <p>B Norway</p> <p>D Italy</p> |
|--|--|

Question: 22

[Single Correct Option, +3, -1]

The table below shows the aggregate quantities of iron ore lumps sold from the mines of eight Indian states during 2017-20, along with the aggregate sale values.

State	Aggregate quantity sold (in million tonnes)	Aggregate value of sales (in ₹ million)
Odisha	313104.8	281373.5
Chhattisgarh	104738.5	131796.0
Karnataka	80152.7	93870.3
Jharkhand	25542.6	65771.0
Madhya Pradesh	1148.5	970.7
Rajasthan	139.7	218.3
Andhra Pradesh	982.9	1022.5
Goa	2150.0	1640.7

Qs. The maximum average unit value of transaction (in ₹ per tonne) of iron ore lumps across the eight states was approximately

A 1.963

B 2.458

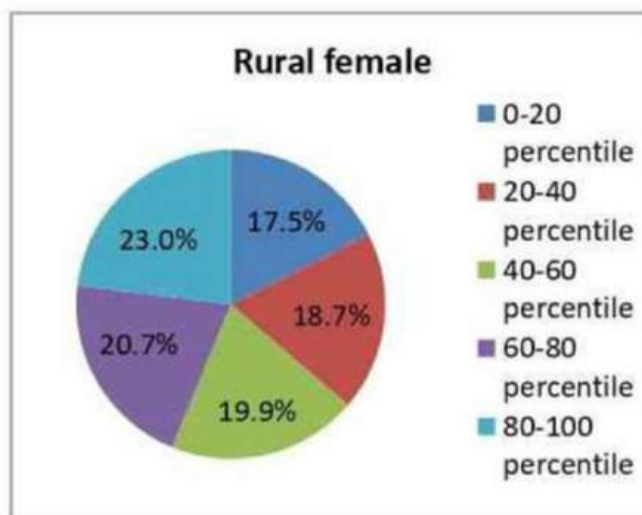
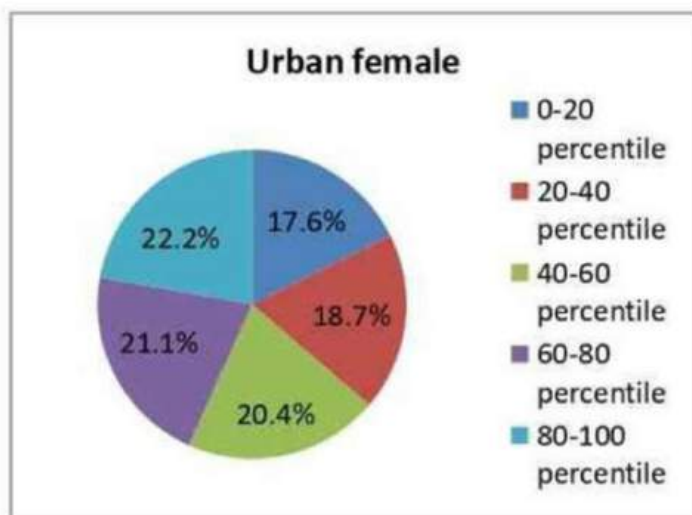
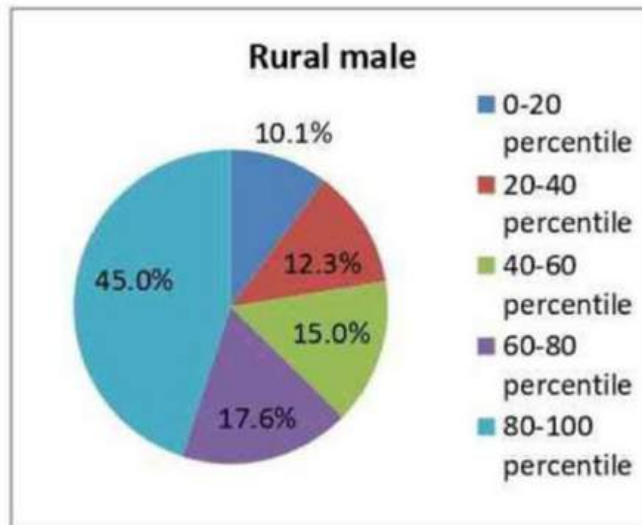
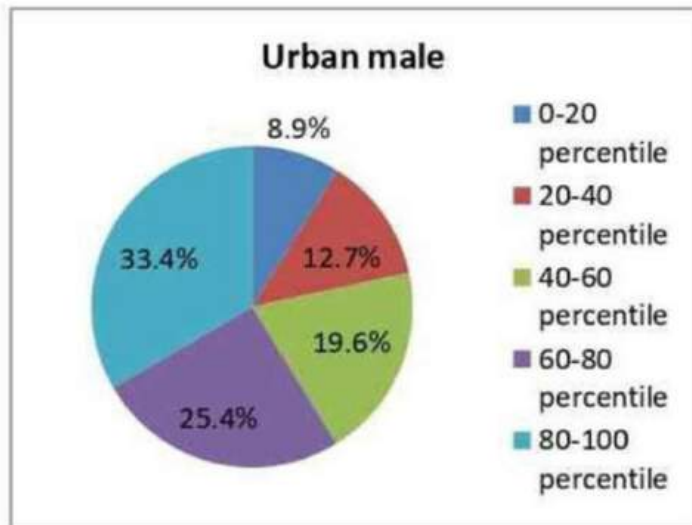
C 1.563

D 2.575

Question: 23

[Single Correct Option, +3, -1]

In a 2007-08 survey conducted by the National Sample Survey Organization (NSSO) with the aim of studying lifetime migrants, the respondents were divided into five equal groups in terms of their monthly per capita expenditure (MPCE). The four charts given below show the decomposition of the lifetime migrants of four categories, into the five percentile classes of MPCE.



Qs. If urban males, rural males, urban females and rural females comprise 16.1%, 35.3%, 15.0% and 33.5% of the total population, then the percentage of rural residents among all lifetime migrants belonging to the 20-40 percentile class of MPCE is approximately

A 15.4

B 49.7

C 68.6

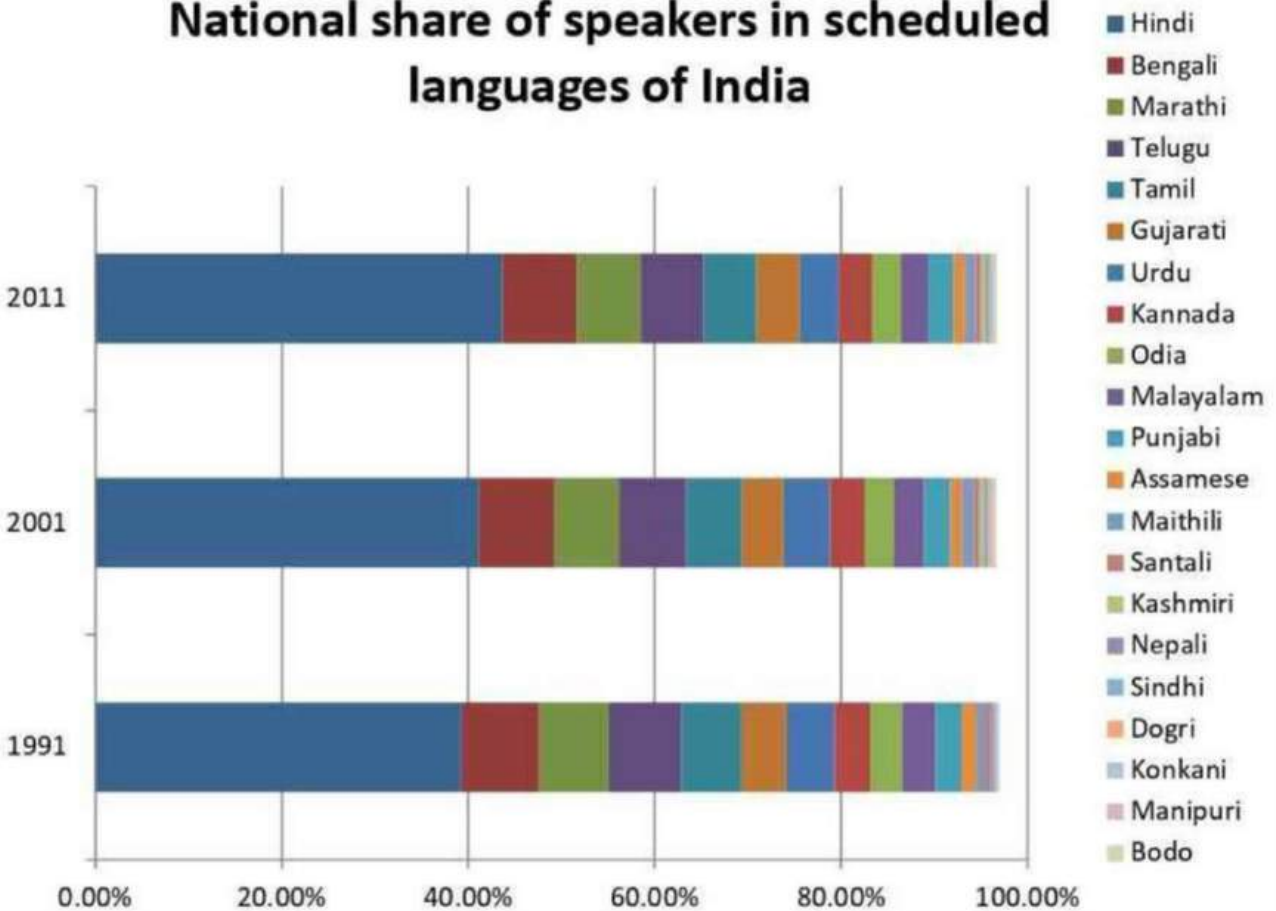
D 68.9

Question: 24

[Single Correct Option, +3, -1]

The chart below shows the share of speakers of the 21 scheduled languages of India (apart from Sanskrit) at times of three successive Censuses, arranged in decreasing order of the number of speakers.

National share of speakers in scheduled languages of India



Qs. The number of scheduled languages (among the twelve that have the largest shares of speakers), which had a faster growth over the two decades in their national share of speakers than Hindi, is

- | | | | |
|---|---|---|---|
| A | 0 | B | 1 |
| C | 2 | D | 3 |

Question: 25

[Single Correct Option, +3, -1]

The apex decision making body of an institution holds periodic meetings, where a number of proposals are placed on its agenda for consideration. The proposals are either resolved (accepted or rejected) or referred to a committee for preparatory work. The pending proposals are placed again on the agenda of the next meeting, after the end of the preparatory work by the committee. The table below shows the number of proposals (new or pending from the previous meeting) on agenda and the summary of resolutions, as compiled from the records of a few successive meetings of the decision making body.

Meeting serial number	Number of proposals on agenda	Number of proposals resolved	Number of proposals referred to a committee
1	15	10	5
2	15	8	5
3	14	8	4
4	15	10	5
5	10	5	4
6	15	9	5
7	19	12	6
8	14	7	4
9	14	9	5
10	13	8	5

Qs. The proportion of new proposals among all proposals considered in a meeting, computed from the aggregate of the last nine meetings, was approximately

- A 0.5 B 0.667
 C 0.75 D 0.681

Question: 26 [Single Correct Option, +3, -1]

Let $M = \begin{bmatrix} 0 & 1 & -\alpha \\ -1 & 0 & 5 \\ \alpha & -5 & 0 \end{bmatrix}$ and $\mathbf{y} = \begin{pmatrix} y_1 \\ y_2 \\ y_3 \end{pmatrix}$, where α is non-zero and y_1, y_2, y_3 are real numbers. Let $M\mathbf{x} = \mathbf{y}$ for some vector \mathbf{x} . Then the value of $\mathbf{x}^T \mathbf{y}$ is

- A α B $-\alpha$
 C 0 D αy_2

Question: 27 [Single Correct Option, +3, -1]

Suppose $\sin \theta = \frac{3}{5}$, where θ is an acute angle. Then the value of $(500 \sin^4 \frac{\theta}{2} + 400 \sin^2 \frac{\theta}{2})$ is

- A 65 B 5
 C 45 D 40

Question: 28 [Single Correct Option, +3, -1]

The value of the integral $\int_0^{\pi/2} \frac{\sin x}{\sin x + \cos x} dx$ is Options:-

- A $\frac{\pi}{4}$ B $\frac{\pi}{2}$
 C π D $\pi + 2$

Question: 29 [Single Correct Option, +3, -1]

The value of $\frac{2}{0!+1!+2!} + \frac{3}{1!+2!+3!} + \dots + \frac{n}{(n-2)!+(n-1)!+n!}$ is

A $1 + \frac{1}{n}$

B $1 - \frac{1}{n}$

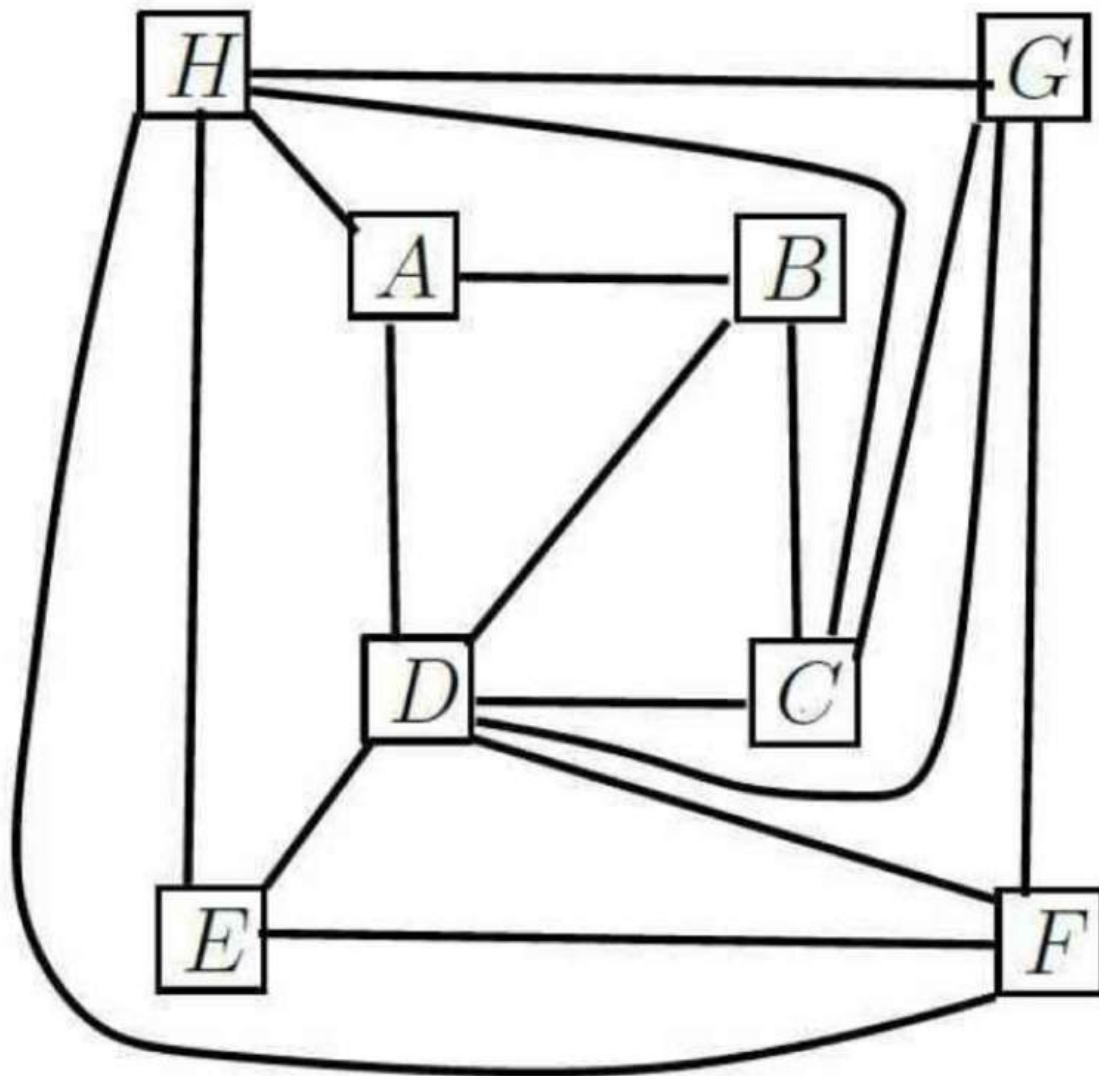
C $1 - \frac{1}{n!}$

D $1 + \frac{1}{n!}$

Question: 30

[Single Correct Option, +3, -1]

Consider the following figure, where each square is a house. Some pairs of houses are connected by a narrow lane, as indicated in the diagram by connecting lines.



Qs. Now, the owners decide to paint these houses (each with a single color) keeping in mind that two connected houses can't be painted with the same color. What will be the minimum number of different colors needed to paint all these houses?

A 2

B 3

C 4

D at least 5

Question: 31

[Single Correct Option, +3, -1]

The coefficient of $x^2y^6z^4$ in the expansion of $(yz + xy)^6 \left(1 - \frac{z}{x}\right)^6$ is

A 27720

B 15

C 33

D 276

Question: 32

[Single Correct Option, +3, -1]

A man standing on the bank of a river observes that the angle subtended by a tree on the opposite bank is 60° . When he goes 48 meters away from the bank along the line joining the person and the tree, he finds the angle to the tree to be 30° . Then the height of the tree is

- A $24\sqrt{3}$ meters B $\sqrt{3}$ meters
 C $4\sqrt{3}$ meters D 26 meters

Question: 33

[Single Correct Option, +3, -1]

A government office assigns a distinct license plate for each vehicle registered under it. Each licence plate contains two letters of the English alphabet followed by four digits. In order to avoid confusion no licence plate is allowed to contain both the letter *O* and the number 0. What is the maximum number of vehicles that can be registered by this office?

- A 10685236 B 6584611
 C 6760000 D 4435236

Question: 34

[Single Correct Option, +3, -1]

The area enclosed by the curves $y = \cos^{-1} x$ and $y = \sin^{-1} x$ over the range $0 \leq x \leq \frac{1}{\sqrt{2}}$ is

- A $\sqrt{2} - 1$ B $1 - \frac{1}{\sqrt{2}}$
 C $\frac{\pi}{4}$ D $\frac{\pi}{4\sqrt{2}}$

Question: 35

[Single Correct Option, +3, -1]

The value of $\lim_{x \rightarrow 0} (1 + 2x)^{(x+3)/x}$ is

- A e B e^6
 C e^4 D 1

Question: 36

[Single Correct Option, +3, -1]

The equation of the locus of point *P* which maintains the distance from two fixed points $R = (0, 2)$ and $S = (0, -2)$ satisfying the equality $|RP + SP| = 6$ is

- A $\frac{x^2}{5^2} + \frac{y^2}{9^2} = 1$ B $\frac{x^2}{5} + \frac{y^2}{9} = 1$
 C $\frac{x^2}{5^2} - \frac{y^2}{9^2} = 1$ D $\frac{x^2}{5} - \frac{y^2}{9} = 1$

Question: 37

[Single Correct Option, +3, -1]

Let PQR be a right-angled triangle with the right angle at P and the angles θ_1 and θ_2 at Q and R, respectively. Let the length of PQ be $\sqrt{2}$ and the length of RP be 3. Then the value of $\cot(\theta_1) + \cot(\theta_2)$ is

- A $\frac{\sqrt{11}}{3}$ B $\frac{11}{3\sqrt{2}}$
 C $\frac{3\sqrt{2}}{11}$ D $33\sqrt{2}$

Question: 38

[Single Correct Option, +3, -1]

The number of functions $f : \{1, 2, 3, 4, 5\} \rightarrow \{1, 2, 3, 4, 5\}$ such that $f(6 - i) = f(i)$ for $i = 1, 2, 3, 4, 5$ is

- A 100 B 125
 C 25 D 115

Question: 39

[Single Correct Option, +3, -1]

If the line $3x + 4y - 7 = 0$ divides the line segment joining the points $(2, 1)$ and $(-2, 1)$ in the ratio $\lambda : 1$, then the value of λ is

- A $\frac{1}{3}$ B 3

C 1

Question: 40

Let

$$f(x) = \begin{cases} x^\alpha \sin \frac{1}{x} & \text{if } x > 0 \\ 2x^3 + x^2 - 2x + \beta & \text{if } x \leq 0 \end{cases}$$

be a continuous function. Then,

A $\alpha < 1$ and $\beta > 0$

C $-1 < \alpha < 1$ and $\beta = 0$

D $\frac{1}{2}$

[Single Correct Option, +3, -1]

B $\alpha \geq 1$ and $\beta = 0$

D $\alpha > 1$ and $\beta < 0$

Question: 41

The domain of the function $f(x) = \sqrt{\log_{10}\left(\frac{3x-x^2}{2}\right)}$ is

A (1, 2)

C (0, 3)

B [1, 2]

D (0, 1] \cup [2, ∞)

[Single Correct Option, +3, -1]

Question: 42

The sums of the first n terms of two arithmetic progressions are in the ratio of $(7n + 1) : (4n + 27)$. The ratio of their 11th terms is

A 4 : 3

C 78 : 71

B 5 : 4

D 148 : 111

[Single Correct Option, +3, -1]

Question: 43

Consider the function

$$f(x) = \begin{cases} \frac{1-\cos(x)}{x^2} & \text{for } x \neq 0 \\ 1 & \text{if } x = 0 \end{cases}$$

A f has a discontinuity and it is not removable

C f is continuous everywhere and is differentiable

B f has a discontinuity and it is removable

D f is continuous everywhere but is not differentiable

[Single Correct Option, +3, -1]

Question: 44

If w, x, y, z are positive real numbers then the least value of

$$(w + 2x + 3y + 4z) \left(\frac{1}{w} + \frac{1}{2x} + \frac{1}{3y} + \frac{1}{4z} \right)$$

is

A 16

C 20

B 125/6

D 9

[Single Correct Option, +3, -1]

Question: 45

Let f be a function defined by

$$f(x) = \begin{cases} x^2 \sin \frac{1}{x} & \text{for } x \neq 0 \\ 0 & \text{if } x = 0 \end{cases}$$

Then, which of the following statements is correct?

A f is differentiable at 0, but $f'(x)$ is not continuous at 0

C f is differentiable at 0, and $f'(x)$ is continuous at 0

B f is not differentiable at 0

[Single Correct Option, +3, -1]

D f is differentiable at 0, and $f'(x)$ is not continuous at 0 but $\lim_{x \rightarrow 0} f'(x)$ exists.

Question: 46

[Single Correct Option, +3, -1]

In a (8×8) chessboard, numbers are placed on each of the 64 squares such that the number on each square is the average of its neighboring squares (that is, the squares with which it shares a side). Also it is known that the sum of all the numbers is 640. Which of the following is true:

A

There exists a way of placing the numbers in the chessboard such that the average of the numbers on the four corner squares is strictly greater than 10

B

There exists a way of placing the numbers in the chessboard such that the product of all the numbers must be strictly less than 10^{64}

C

There exists a way of placing the numbers in the chessboard such that the average of the numbers on the four corner squares is strictly less than 10

D

The number of ways the chessboard can be filled subject to the given conditions is less than 10

Question: 47

[Single Correct Option, +3, -1]

The equation of the straight line of slope $\frac{5}{2}$, which touches the parabola $y^2 = 5x$, is

A $5x + 2y + 1 = 0$

B $5x - 2y + 1 = 0$

C $5x + 2y - 1 = 0$

D $5x - 2y - 1 = 0$

Question: 48

[Single Correct Option, +3, -1]

Let $P(x)$, and $Q(x)$ be two distinct polynomials with degree at most 2. Let a_0, \dots, a_{n-1} be distinct elements of \mathbb{R} . Consider the following set

$$X = \{i \in \{0, 1, \dots, (n-1)\} : P(a_i) \neq Q(a_i)\}$$

Which of the following is always correct?

A The number of distinct elements in the set X is at least $(n-2)$

B The number of distinct elements in the set X is less than $(n-2)$

C The number of distinct elements in the set X is greater than $(n-2)$

D The number of distinct elements in the set X is equal to $(n-2)$

Question: 49

[Single Correct Option, +3, -1]

If there are 10 red balls and 12 blue balls, and these are arranged by drawing one ball at a time at random, then what is the probability that the last ball in the order is of color red?

A $\frac{10}{22}$

B $\frac{10!}{22!}$

C $\frac{1}{2}$

D $\frac{12}{22}$

Question: 50

[Single Correct Option, +3, -1]

If p, q, r are strictly positive real numbers, and $px + qy + rz = 0$, $qx + ry + pz = 0$ and $rx + py + qz = 0$, then there is a real number $\lambda \neq 1$ such that $x : y : z$ is the same as

A $1 : \lambda : -\lambda^2$

B $1 : \lambda^2 : \lambda$

C $1 : \lambda : \lambda^2$

D $1 : -\lambda : \lambda^2$