AIMCAT 2009
VARC

DIRECTIONS *for questions 1 to 4*: The passage given below is accompanied by a set of four questions. Choose the best answer to each question.

It is a platitude that cultures change over time. Researchers study the nature of these changes. Modern cultural evolutionary theory portrays the human capacity for cultural change as both a product of genetic evolution and an evolutionary process. The parameters of the cultural evolutionary process are tuned by genetic evolution to lead to outcomes enhancing genetic fitness. The evolutionary-biologist Edward Wilson claimed that human culture is held on a genetic leash: imagine a dog-walker (gene) struggling to retain control of a mastiff (culture)!

The term "dual inheritance theory" signifies a more symmetrical relationship between genetic and cultural evolution as two streams of information that replicate across generations and mutually influence each other. That the cultural stream evolved by genetic evolution says little about their current relationship. The genetic stream of inheritance can someday be controlled by the cultural stream.

Where have cultural anthropologists been during the development of dual inheritance theory? For the most part, absent! This theory is like a party thrown by evolutionary theorists where cultural anthropologists weren't invited/ didn't want to come. …

Robert Paul is the first cultural anthropologist brave enough to apply [the principles of his field] to dual inheritance theory without apology. He wants to make the cultural stream of inheritance come to

life with ethnographic examples chosen from different cultures. If we invert Wilson's leash metaphor by associating genetic evolution with "dog" and cultural evolution with "man", then Paul provides many examples of "man bites dog", or cultural evolution circumscribing genetic evolution.

For example, a surprising number of cultures in the past have perpetuated themselves by importing children (i.e., through immigration) rather than through biological reproduction. … The incoming children must adopt the culture's customs…

Paul rightly understands that the great challenge (and genetic payoff) of the cultural stream of inheritance is to suppress disruptive forms of competition within groups so that the group can function as a cooperative unit. .... The implication for anthropology, Paul says, is that evolutionary theorists should consider the critical work the cultural system does in human social life, while cultural anthropologists should consider the need facing any human socio-cultural system to sustain biological reproduction, and forge an effective compromise. The prospects of this happening are rather dim; but only because the dynamics Wilson has identified are also operative in the society of anthropologists: for isn't it the genetic program and the cultural program duking it out once again and preventing us from seeing that a complete account of human social life cannot be "either/or," but must be "both/and"?

Q1. Which of the following would serve as the most appropriate title for the passage?

a) Contemporary Cultural Anthropology versus Historical Anthropology

b) Cultural Anthropology and History: A Winning Combination

c) Dual Inheritance Theory: A Cultural Anthropologist's perspective

d) Man Bites Dog: The Exegesis of Culture

Number of words and Explanatory notes for RC:

Number of words: 420

Option A: The passage does not mention anything about 'historical anthropology'. The word 'versus' in option A points to a contrast between the two fields. This is not what the passage focuses on. Hence option A is not the answer.

Option B: ___Where have cultural anthropologists been during the development of dual inheritance theory? For the most part absent_.... It is not history and cultural anthropology that make a balancing combination. In the last para, the author says: A complete account of human social life cannot be "either/or," but must be "both/and". This "both/and" pertains to a collaboration between evolutionary theorists, on one hand, and cultural anthropologists, on the other. So choice B is not the answer.

Option C: Right at the beginning, the passage talks about the "Dual Inheritance Theory" and Robert Paul is the first cultural anthropologist brave enough to apply it to dual inheritance theory without apology. He wants to make the cultural stream of inheritance come to life with ethnographic examples chosen from different cultures. This makes option C the correct answer.

Option D: The passage does talk about "Man bites dog" to refer to Robert Paul's contribution in making the cultural stream of inheritance come alive. Refer to the reference of the inversion of Edward Wilson's leash example …… cultural evolution circumscribing genetic evolution. However, the second part is incomplete and is not specific to the overall theme of the passage. It is not just 'culture' in general that the author wants to expand on, but the emphasis is on the cultural stream of inheritance and other related ideas. An exegesis is an explanation and interpretation of a piece of writing, especially a religious piece of writing, after very careful study. However, the passage does not interpret culture from any angle of any scriptures. Between options C and D, option C is the better answer. Option D would be incomplete as a title.

<div align="right">Choice (C)</div>

Q2.   In the question below, column A presents sentences or fragments taken from the passage. Column B presents certain literary devices or possible terminologies that can be associated with the fragments given in column A, when considered in the context of the passage. Match the columns and select the most appropriate pair from among those given in the options.

Column A	Column B
1. It is a platitude that ...	a. rhetorical question
2. human culture is held on a genetic leash ...	b. a self-evident truth that requires no proof
3. This theory is like a party thrown by evolutionary theorists where cultural anthropologists weren't invited...	c. metaphor
4. For isn't it the genetic program and the cultural program duking it out once again and preventing us from seeing that a complete account of human social life cannot be "either/or", but must be "both/and"?	d. popular saying that expresses some commonplace truth
	e. simile
	f. trite remark uttered as if it were fresh
	g. allegory
	h. satire
	i. convergent question

a) 1 – b, 2 – g, 3 – a, 4 – i

b) 2 – c, 3 – e, 4 – h, 1 – d

c) 3 – a, 1 – c, 2 – e, 4 – i

d) 3 – e, 4 – a, 1 – f, 2 – c

Number of words and Explanatory notes for RC:

Number of words: 420

Statement 1: "Platitude" means a remark or statement that has been used too often to be interesting or thoughtful (trite, banal, commonplace). Hence 1 – f. (Note that 'd' points to commonplace truth and not 'commonplace'). 'd' is incorrect. Platitude does not refer to any sort of truth. Hence 'b' also does not apply.

Statement 2: Human culture is held on a genetic leash: imagine a dog-walker (gene) struggling to retain control of a mastiff (culture). So, this implies the use of an indirect comparison. A metaphor is an indirect comparison or an idea that is used as a symbol (to refer to) of something else. So, 2 – c.

Statement 3: The 'dual inheritance theory' is like a party thrown by evolutionary theorists where cultural anthropologists weren't invited/ didn't want to come. There is a direct comparison here with the use of 'like' and 3 points to the use of a simile. Hence 3 – e.

Statement 4: Statement 4 is a rhetorical question i.e., a question asked without the author expecting an answer. The author poses the question for dramatic effect or to make a point rather than to get an answer. The answer to the question is obvious. So 4 – a. Convergent questions are those that typically have one correct answer (accurate). The question given in statement 4 is for dramatic effect and not seeking an answer.

Note: Allegory means symbolic representation: the expression by means of symbolic fictional figures and actions of truths or generalizations about human existence or for a political or historical situation. Allegory is not associated with any fragment on the left. Satire points to a way of using humour to show that someone or something is foolish, weak, bad etc. i.e. it is a figure of speech used for holding human vices and follies to ridicule or scorn. Satire does not match with any sentence or fragment in the left column.

The correctly matched pairs are given in option D.   Choice (D)

Q3. Which of the following can most reasonably be inferred from the passage?

a) Robert Paul would approve of a middle ground to minimise the seeming umbrage between evolutionary theorists and cultural anthropologists.

b) Edward Wilson has extricated culture from the genetic leash and now opines that the genetic stream of inheritance can come under the control of the cultural stream.

c) Bemoaning the general immaturity of contemporary cultural anthropologists would be as obtuse as declaring the field of cultural anthropology the most important field ever.

d) Though there can be congruency between the two schools of thought, namely the cultural stream and the evolutionary stream of inheritance, it is now known that cultural traits are spread in ways that differ significantly from genes.

Number of words and Explanatory notes for RC:

Number of words: 420

Option A: *Where have cultural anthropologists been during the development of dual inheritance theory? For the most part, absent!* This theory is like a party thrown by biologists where cultural anthropologists weren't invited/ didn't want to come. ....The implication for anthropology, Paul says, is that evolutionary/biological theorists should consider the critical work the cultural symbol system does in human social life, while social/ cultural anthropologists should consider the need facing any human socio-cultural system to sustain biological reproduction, and *forge an effective compromise* (a cooperative unit). So option A is true and is the answer. (umbrage means annoyance or to be miffed).

Option B: *The evolutionary-biologist Edward Wilson claimed that human culture is held on a genetic leash: imagine a dog-walker (gene) struggling to retain control of a mastiff (culture). ...   If we invert Wilson's leash metaphor by associating genetic evolution with "dog" and cultural evolution with "man", then Paul provides many examples of "man bites dog", or cultural evolution circumscribing genetic evolution.* "That the cultural stream evolved by genetic evolution says little about their current relationship. The genetic stream of inheritance can someday be controlled by the cultural stream" is the author's view and not Edward Wilson's opinion. So option B is not true and is not the answer.

Option C: Cultural anthropologists were absent (or stayed aloof) during the development of dual inheritance theory. The author does not term them as immature. He only expresses the hope that they collaborate or cooperate with the evolutionary theorists.   But "Bemoaning the general immaturity of contemporary cultural anthropologists would be as obtuse (or unintelligent)" cannot be ascertained from the passage. The entire comparison given in option C is out of scope.

Option D. From the last paragraph (Evolutionary theorists should consider the critical work the cultural symbol system ..... preventing us from seeing that a complete account of human social life cannot be "either/or," but must be "both/and"), we can understand that the first part of option D may be true. The second part of option D is out of scope. So option D is not the answer.   Choice (A)

Q4.   Which of the following best describes the approach of the author in writing the passage?

a) The author discusses two streams of inheritance, likens them and then favours one particular stream while providing a warning about the other.

 b) The author examines the current relationship between two streams of inheritance in a new light and then describes it from a cultural anthropologist's perspective.

 c) The author gives an overall view about a concept, explains the changes in its definition over the years and then refutes a certain meaning by raising pertinent questions.

 d) The author compares two different interpretations about a concept and then urges us to incorporate both of them to analyse the concept as either of them alone is insufficient.

Number of words and Explanatory notes for RC:

Number of words: 420

Option A: While the author does describe two streams of inheritance, the cultural evolution stream and the genetic evolution stream (part of the "dual inheritance theory"), he does not favour one particular stream nor does he provide a warning about the other. So option A is incorrect.

Option B: The term "dual inheritance theory" signifies a more symmetrical relationship between genetic and cultural evolution as two streams of information that replicate across generations and mutually influence each other. That the cultural stream evolved by genetic evolution says little about their relationship. Robert Paul is the first cultural anthropologist brave enough to apply it to dual inheritance theory without apology. He wants to make the cultural stream of inheritance come to life with ethnographic examples chosen from different cultures. If we invert Wilson's leash metaphor by associating genetic evolution with "dog" and cultural evolution with "man", then Paul provides many examples of "man bites dog", or cultural evolution circumscribing genetic evolution.

Paul understands that.../ Paul says ....So we can say that Paul describes the dual inheritance theory from a cultural anthropologist's perspective. Option B is the correct answer.

Option C: There is no change in the definition of a concept over the years and the author does not refute any meaning by raising pertinent questions. So option C is incorrect. The pertinent questions raised in the last para are not to refute any meaning of a concept but to better understand the implications of the cultural anthropologist's perspectives.

Option D: There are no two different interpretations of a concept. Both are part and parcel of the same theory. So option D does not hold true even as the last part of option D is a red herring and may cause you to mark this option as your answer.

<div align="right">Choice (B)</div>

DIRECTIONS *for questions 5 to 7*: The passage given below is accompanied by a set of three questions. Choose the best answer to each question.

Remembering the deaths of 4 June 1989 is no neutral task. It is a civic duty, an act of resistance in countering a state-level lie that risks spreading far beyond China's borders. On that day, the Communist party sent tanks to clear protesters from Tiananmen Square in the centre of Beijing, killing maybe more than a thousand. In the intervening years, China has systematically erased the evidence and memory of this violent suppression using its increasingly hi-tech apparatus of censorship and control.

…Journalists generally shy away from taking political or ideological positions and yet, since China has for 30 years tried to deny its crime, the simple act of writing about it unwittingly tips us into activism…

…How does one remain detached and objective when the topic is politically charged? This dilemma is becoming increasingly widespread among journalists and academics, with whole fields of study being pushed into activism by Beijing's coercive actions. A case in point are the Xinjiang scholars: with one million Uighurs held in political indoctrination camps in the north-west, these academics studying a once obscure speciality have become some of the loudest voices advocating for the Uighur community. For them, activism is not just a moral duty but a professional responsibility, since the culture to which they have devoted their scholarly lives risks being annihilated by Beijing's assault…

…China is retrofitting its history into a vision that starts in the stone age and ends with the Communist party, a single continuum that serves to legitimise the current leadership and its narrative of the past, the present and the future… Scholars working inside China have been funded by the state to prove the existence of a mythological dynasty called the Xia (presumed dates 2070 to 1600BC). The Xia-Shang-Zhou chronology project underpins the state's narrative of 5,000 years of uninterrupted civilisation. It's a project that has been widely criticised as unscientific and politically driven…

…[We] are witnessing with China an attempt to write a whole civilisation into the linear history of a single nation…In this climate, where silence is acquiescence, speaking of forbidden histories becomes a moral choice.

Q5.   The author believes that 'speaking of forbidden histories becomes a moral choice' because

 a) China has systematically erased the evidence and memory of the violent suppression at Tiananmen Square.

b) journalists generally shy away from taking political or ideological positions.

c) whole fields of study are being pushed into activism by Beijing's coercive actions.

d) it is a civic duty, an act of resistance to counter a state-level lie.

Number of words and Explanatory notes for RC:

Number of words: 350

Option A: This option while true doesn't clarify why speaking up against the Chinese suppression is a moral choice, what is right and wrong about making such a choice. Hence, Option A is not the answer.
Option B: If journalists shy away from taking a political stance, we cannot quite understand why speaking out is a moralistic choice. In other words, this option doesn't talk at all about speaking out. It talks about shying away, which is the exact opposite. Hence, Option B is not the answer.
Option C: This option while reporting the information provided in the passage, doesn't really explain why it is a moral choice to speak about forbidden histories. In fact, the option itself repeats the same information, that whole fields of study are being pushed into activism without explaining why, or the connection between morality and activism. Hence, Option C is not the answer.
Option D: Since it is the duty of the citizens to speak about what the Chinese government is trying to suppress, an act of resistance against a powerful government, the author calls it a moral choice – the choice between speaking up and not speaking up. Hence, Option D is the answer.   Choice (D)

Q6. The author mentions the example of the Xinjiang scholars to demonstrate that

a) Beijing's assault on academic liberty is turning many scholars against the government.

b) the unfair treatment of the Uighur community by Beijing is making activists out of scholars.

c) scholars are making a moral choice in advocating for the Uighur community held in political indoctrination camps.

d) the Uighur culture is at the risk of being annihilated by the coercive actions of the Chinese government.

Number of words and Explanatory notes for RC:

Number of words: 350

Consider the sentences: '*A case in point are the Xinjiang scholars: with one million Uighurs held in political indoctrination camps in the north-west, these academics studying a once obscure speciality have become **some of the loudest voices advocating for the Uighur community**. For them, activism is **not just a moral duty but a professional responsibility, since the culture to which they have devoted their scholarly lives risks being annihilated by Beijing's assault**...*' The author used this example to show how scholars are turning into activists because of a moral and professional responsibility.

Option A: Academic liberty or Beijing's assault on it has not been discussed anywhere in the passage. Hence, Option A is not the answer.

Option B: This option depicts the consequence of Beijing's coercive actions – making scholars turn to activism to fight on behalf of the Uighur community. This is not only out of morality but also out of a sense of professional obligation, because their profession itself (study of the Uighur culture) is in danger. Hence, Option B is the answer.

Option C: The author has mentioned the example of the scholars not just to **show that they are making a moral choice.** It is more to do with their making a professional choice as well to protect the culture they have been studying all through their lives. Hence, Option C is not the answer.

Option D: While this may be true, it has not been explained why the author has mentioned the scholars or what their significance is. This option talks about the event itself. The example was primarily used to depict the consequence of the event – scholars turning to activism. Hence, Option D is not the answer.

Choice (B)

Q7. The passage makes all of the following claims EXCEPT:

a) The Chinese government is altering the history of China to suit its own narrative.

b) The Chinese state uses technology to censor information that it doesn't want to be circulated.

c) China's current leadership stands to benefit from research that proves the mythical nature of the Xia dynasty.

d) The Chinese state orchestrated a mass massacre at the Tiananmen Square.

Number of words and Explanatory notes for RC:

Number of words: 350

Option A: From '...[We] are witnessing with China _an attempt to write a whole civilisation_ into the linear history of a single nation' and '_China is retrofitting its history_ into a vision that starts in the stone age and ends with the Communist party, _a single continuum that serves to legitimise the current leadership_ and its narrative of the past, the present and the future' we can understand that this claim has been made in the passage. Hence, Option A is not the answer.
Option B: From '_China has systematically erased the evidence and memory of this violent suppression using its increasingly hi-tech apparatus of censorship and control_', we can understand that this claim has indeed been made in the passage. Hence, Option B is not the answer.
Option C: China's current leadership wants to prove the existence of the Xia dynasty. This option contradicts that by stating that the state wants to prove the mythical nature of the dynasty (to prove that the dynasty is not for real). This will go against the central idea of the passage. Hence, Option C is the answer.
Option D: From 'the Communist party sent tanks to clear protesters from Tiananmen Square in the centre of Beijing, killing maybe more than a thousand', we can understand that this claim has been made in the passage (please note that the Communist Party and the Chinese state have been used interchangeably in the passage). Option D is not the answer.   Choice (C)

DIRECTIONS _for questions 8 to 13_: The passage given below is accompanied by a set of six questions. Choose the best answer to each question.

For all avid readers who have been self-medicating with great books their entire lives, it comes as no surprise that reading books can be good for your mental health and your relationships with others… [E]xactly why and how is now becoming clearer, thanks to new research on reading's effects on the brain. Since the discovery, in the mid-nineties, of "mirror neurons" – neurons that fire in our brains both when we perform an action ourselves and when we see an action performed by someone else – the neuroscience of empathy has become clearer. A 2011 study published in the Annual Review of Psychology, based on analysis of fMRI brain scans of participants, showed that, when people read about an experience, they display stimulation within the same neurological regions as when they go through that experience themselves. We draw on the same brain networks when we're reading stories and when we're trying to guess at another person's feelings.

Other studies published in 2006 and 2009 showed something similar – that people who read a lot of fiction tend to be better at empathizing with others, even after the researchers had accounted for the potential bias that people with greater empathetic tendencies may prefer to read novels. And, in 2013, an influential study published in Science found that reading literary fiction (rather than popular fiction or literary nonfiction) improved participants' results on tests that measured social perception and empathy, which are crucial to "theory of mind": the ability to guess with accuracy what another human being might be thinking or feeling, a skill humans only start to develop around the age of four.

Keith Oatley, a novelist and emeritus professor of cognitive psychology at the University of Toronto [writes that] "Fiction is a kind of simulation, one that runs not on computers but on minds: a simulation of selves in their interactions with others in the social world…based in experience, and involving being able to think of possible futures." This idea echoes a long-held belief among both writers and readers that [books] give us a chance to rehearse for interactions with others in the world, without doing any lasting damage…

But not everybody agrees [that] fiction-reading [has] the ability to make us behave better ... In her 2007 book, "Empathy and the Novel," Suzanne Keen takes issue with this "empathy-altruism hypothesis," and is sceptical about whether empathetic connections made while reading fiction really translate into altruistic, prosocial behaviour in the world. She also points out how hard it is to really prove such a hypothesis… "As any bookworm knows, readers can also seem antisocial and indolent. Novel reading is not a team sport." Instead, she urges, we should enjoy what fiction does give us, which is a release from the moral obligation to feel something for invented characters – as you would for a real, live human being in pain or suffering – which paradoxically means readers sometimes "respond with greater empathy to an unreal situation and characters because of the protective fictionality."…

…Even if you don't agree that reading fiction makes us treat others better, it is a way of treating ourselves better. Reading has been shown to put our brains into a pleasurable trance-like state, similar to meditation… "Fiction and poetry are doses of medicines," the author Jeanette Winterson has written. "What they heal is the rupture reality makes on the imagination."

Q8.   Which of the following summarises the "potential bias" that the author refers to in the second para?

a) A willingness to read novels could be found even in those who are not empathetic.

b) The scope of the studies included only those who read and are empathetic.

 c) The studies exclude the set of people whose empathy is a direct consequence of their reading habit.

d) **A willingness to read novels could be the by-product of being an empathetic person.** ✔
Your answer is correct

Number of words and Explanatory notes for RC:

Number of words: 557

Consider the sentences: 'Other studies published in 2006 and 2009 showed something similar – that people who read a lot of fiction tend to be better at empathizing with others, __even after__ the researchers had accounted for the potential bias __that people with greater empathetic tendencies may prefer to read novels__.'
So, the bias in the studies could be that we cannot quite establish that people who read a lot of fiction tend to be better at empathizing because it could be that people with empathy (A) tend to read a lot (B). So, A could be because of B, or there could be a bias and we could be missing out on the fact that B could be because of A.
Option A: We are not discussing the reading habits of those who do not have empathy. The discussion is only about establishing causation between empathy and reading and hence, we are considering only those who check both the boxes. Hence, Option A is not the answer.
Option B: While this statement is true, the studies are not really about other groups – just this one: those who read and have empathy. So, this was not pointed as a "bias" in/of the study. Option B is not the answer.
Option C: The study is indeed about people whose empathy is a direct consequence of the reading habit. This option is therefore, the easiest to eliminate. Option C is not the answer.
Option D: This is the bias that has been explained through the underlined portions given above. So, it need not be that all the people who read become empathetic. It is quite likely that those who have empathy may be attracted towards reading, in which case a reading habit cannot be credited for the presence of empathy in that person. Hence, Option D is the answer.   Choice (D)

Q9. The 2011 study of fMRI brain scans mentioned in the first para demonstrated that

a) **empathy and reading stimulate the same neurological regions in the brain.**   ✔ **Your answer is correct**

b) habitual readers show greater empathy than others.

c) reading sparks imagination which helps us guess another person's feelings better.

d) **it is possible to self-medicate by reading great books.**

Number of words and Explanatory notes for RC:

Number of words: 557

Consider the sentences: 'A 2011 study published in the Annual Review of Psychology, based on analysis of fMRI brain scans of participants, _showed that_, when people read about an experience, _they display stimulation within the same neurological regions_ as when they go through that experience themselves. We draw on _the same brain networks when we're reading stories and when we're trying to guess at another person's feelings_.' It is also important to note that the author skips an idea here (makes an assumption). Going through an experience in one sentence has been equated to trying to guess another person's feelings.

Option A: This has been directly mentioned in the underlined portions above. The scans show that the same regions of the brain are stimulated by the two activities of reading and empathizing with others (i.e., trying to guess at another person's feelings). Hence, Option A is the answer.

Option B: While this has been established probably by other studies, this is not the key finding of the fMRI scans which are only about the findings, the evidence that there is a neurological connection between empathy and the act of reading. Hence, Option B is not the answer.

Option C: Imagination here is an alien concept, largely because there is nothing in the study related to the scans that talks about the human faculty of imagination. Imagination has been spoken about elsewhere to talk about the benefits of reading but not with respect to the neurological aspects of the brain. Option C is not the answer.

Option D: While reading has been connected to the act of self-medication or healing oneself, that is not the purpose of the fMRI scans, whose findings are not related to the topic of self-medication in anyway. Hence, Option D is not the answer.

Choice (A)

Q10.   Suzanne Keen feels that it is hard to prove the empathy-altruism hypothesis because

a) **novel reading is a solitary activity.**

b) **readers are falsely perceived to be introverted and rude.**   ✗ **Your answer is incorrect**

c) book-reading and empathetic prosocial behaviour are not always connected.

d) **not all book readers are necessarily nice people.**

Number of words and Explanatory notes for RC:

Number of words: 557

Consider the sentences: '*But not everybody agrees [that] fiction-reading [has] the ability to make us behave better* ... In her 2007 book, "Empathy and the Novel," Suzanne Keen takes issue with this "empathy-altruism hypothesis," and is sceptical about whether empathetic connections made while reading fiction really translate into altruistic, prosocial behaviour in the world. She also points out how hard it is to really prove such a hypothesis... "As any bookworm knows, readers can also seem antisocial and indolent. Novel reading is not a team sport."' It is obvious, firstly, that Suzanne Keen doesn't quite agree that reading has a net positive effect on the way humans behave.
Option A: Since reading is not a team sport (and readers are perceived to be antisocial and indolent), Keen believes it is hard to prove a connection between reading and empathy-altruism, which involves one's interaction with other people. So, from a habit which is a solitary activity, we cannot prove an ability to empathize with others. Option A is the answer.
Option B: Keen mentions that oftentimes readers **seem antisocial and indolent(rude)**. Firstly, we cannot really equate introverted to antisocial. Secondly, Keen doesn't make a point about whether that perception is right or wrong. However, the option assumes that this perception is wrong. Option B is, hence, not the answer.
Option C: This is a circular fallacy. In simple terms, it mentions Keen's opinion without really offering the reason Keen gave the opinion. Hence, Option C is not the answer.
Option D: Firstly, the option extrapolates 'seem' to 'are'. *How a person seems is not necessarily a reflection* of the kind of person one is. Whether readers are nice people or not is not something Keen discusses, leave alone providing a reason for why she thinks a hypothesis about altruism and reading is hard to prove. Also, antisocial and niceness are not necessarily connected – a person who is nice need not necessarily be social, and vice-versa. Hence, Option D is not the answer.

Choice (A)

Q11. The last para of the passage

a) **explains why reading fiction makes us treat others better.**

b) **highlights the therapeutic benefits of reading.** ✔ **Your answer is correct**

c) points how reading helps close the gap between reality and imagination.

d) **shows how reading fiction is a good substitute for medication.**

Number of words and Explanatory notes for RC:

Number of words: 557

Consider the first sentence of the last para: '*Even if you don't agree that reading fiction makes us treat others better, **it is a way of treating ourselves better**.'*
Option A: The last para is not so much about the behaviour of readers towards others. It is more about how reading is about treating oneself better; think of it as self-medication alluded to in the first para. Hence, Option A is not the answer.
Option B: This is what has been alluded to in the last para, that reading heals, and it is a way of treating oneself better, that reading is helpful/calming/beneficial. Hence, Option B is the answer.
Option C: Reading, according to the last para, heals imagination (which has been harmed by reality). So, it wouldn't be apt to say it ***closes the gap*** between reality and imagination, because we haven't been made aware of a gap. The author has only mentioned that reality creates a 'rupture' in imagination. Hence, Option C is not the answer.
Option D: Reading fiction is not a '***substitute***' for medication. It is a way of treating oneself better (self-medication – in a metaphorical way, mind you). Hence, Option D is not the answer.   Choice (B)

Q12.   Keith Oatley compares fiction and simulation because

a) **fiction helps one meditate about social interactions.**

b) **fiction allows us to predict the future.**

c) fiction is always based on real-life experiences.

d) **fiction allows us to train our minds while avoiding actual social interactions.**   ✗ **Your answer is incorrect**

Number of words and Explanatory notes for RC:

Number of words: 557

*'Keith Oatley, a novelist and emeritus professor of cognitive psychology at the University of Toronto [writes that] "Fiction is a kind of simulation, one that runs not on computers but on minds: **a simulation of selves in their interactions with others** in the social world…based in experience, and involving being able to think of possible futures."'* So, it can be inferred that reading fiction is like simulating interactions with others and thinking of possibilities. This can be further understood from the author's commentary on the same: *'This idea echoes a long-held belief among both writers and readers that [books] give us a chance to rehearse for interactions with others in the world, without doing any lasting damage…'*

Option A: This is the reason Keith Oatley compares fiction and simulation. According to Oatley, reading fiction is a way of simulating social interactions in the mind and trying to predict possible scenarios. It is relevant because fiction is still based in experience. Hence, Option A is the answer.

Option B: Fiction helps you think about situations and possibilities. That is not the same as 'predicting the future' literally. It only helps to be able to look at possible situations and possible futures (read futures as possible scenarios, rather than exact future). Hence, Option B is not the answer.

Option C: While the simulation is *based in experience*, it cannot be extrapolated to say that fiction is based on *real life experiences.* It is not the same thing. Hence, Option C is not the answer.

Option D: Reading is a way of simulating social interactions with others *without doing any lasting damage* (a way of thinking about interactions without risking it in real life). However, this option is not apt because the author doesn't indicate that reading is a way of *avoiding* social interactions while still *training your mind* (which is not the same as simulation that runs on minds – the word training is stretching it too far). Hence, Option D is not the answer.   Choice (A)

Q13.   The author mentions 'protective fictionality' to possibly highlight that

 a) **readers need not take the risks that their favourite characters in fiction take while deriving a voyeuristic pleasure out of the same.**

 b) **readers can experience situations which are based in real life without undergoing any lasting damage.**

c) **readers may empathise more with an invented character because of the freedom to not subscribe to a particular expected reaction.** ✔ **Your answer is correct**

d) **readers are protected from negative feelings of loss, betrayal and pain due to the fictionality of their favourite characters.**

Number of words and Explanatory notes for RC:

Number of words: 557

Option A: The explanation is all about how there is no moral obligation to feel for the characters (since they are not real), leading readers to feel even more. However, it doesn't mention risks anywhere or any actions for that matter of one's favourite characters in the piece of fiction. Hence, Option A is not the answer.

Option B: Simulation of situations and lasting damage caused by one's actions are mentioned in the passage elsewhere. However, that context is different from the one here where we are talking about one's empathy for a fictional character and how we tend to feel a lot for it without the moral obligation to feel the same (a paradox). Hence, Option B is not the answer.

Option C: One tends to relate too much to a particular invented character, knowing that at the end of the day it is fictional. In other words, if an event or character is unreal, we do not have the moral obligation to feel for it in a particular way. So, it is quite likely that one may not feel much for the fictional character or feel more than normal for a particular character. Hence, Option C is the answer.

Option D: The passage clearly says that readers do feel for their characters (paradox because they don't have the obligation to feel). It is not true that they are protected from negative feelings. What the author says is that generally we are not worried about feeling pain in case of fictional characters and that allows us greater freedom since there is no expectation or moral obligation. Hence, Option D is not the answer.

Choice (C)

DIRECTIONS *for questions 14 to 18*: The passage given below is accompanied by a set of five questions. Choose the best answer to each question.

How did we humans manage to build a global civilization on the cusp of colonizing other planets? It seems like such an unlikely outcome. After all, we were prone to cycles of war and famine for millennia and have a meagre capacity for society-wide planning and coordination – among other problems.

Maybe it's our unique capacity for complex language and storytelling, … or [the] political and religious institutions we have created. However, perhaps the most significant answer is something else entirely: code. Humanity has survived, and thrived, by developing productive activities that evolve into regular routines and standardized platforms – which is to say we have survived, and thrived, by creating and advancing code. …

"Code" as I intend it incorporates elements of computer code, genetic code, cryptologic code, and other forms as well... Code captures the algorithmic nature of instructions as well as their evolutionary character. …

… As code advances, higher-level technologies feed on more fundamental technologies. … Platforms provide essential structures for the code economy: The infrastructure that underlies a city is a standardized platform. Written language is a standardized platform... Human civilization has thus advanced through the creation and improvement of code, which is built on layers of platforms that accumulate like the pipes and tunnels that lie below a great city.

In the past 200 years, the complexity of code has increased by orders of magnitude. Death rates began to fall rapidly in the middle of the 19th century, due to a combination of increased agricultural output, improved hygiene, and the beginning of better medical practices – all different dimensions of the advance of code. …

By the 20th century, the continued advance of code seemed to necessitate the creation of …bureaucracies and corporations… that employed vast numbers of people. … To structure work within such large, complex organizations, humans began to define occupations in terms of specific task-defined roles rather than by artisanal trades, as had been the case throughout human history. We came to call these task-defined roles "jobs." Jobs were very different from the trades, in that they were designed to optimize institutional operations rather than to perpetuate and advance inherited, mostly unwritten production practices…

Two broad categories of epochal change occurred as a result of this evolution of the economy from simplicity to complexity. One is that our capabilities grew, individually and collectively. For instance, we can now fly. … We can carry on conversations with people anywhere around the world… But that's not all.

The second epochal change related to the advance of code is that we have, to an increasing degree, ceded to other people – and to code itself – authority and autonomy, which for millennia we had kept unto ourselves and our immediate tribal groups as uncodified cultural norms. We now obey written laws and rules. ... We respect elected officials (in our actions if not always our thoughts) and the elected officials respect electoral processes (in their words if not always their actions). ... We depend for our survival on an ever-growing array of services provided by others, who in turn are ceding an increasing amount of their authority to code…

Code is at once a force, or a means, of liberation and constraint. Its advance is perhaps as integral to the unfolding of human history as every head of state has been, combined. We cannot understand the dynamics of the economy – its past or its future – without understanding code.

Q14.   Which of the following is not mentioned to be a consequence of the increase in the complexity of code?

a) **There was a rapid fall in the mortality rates.**

b) **There was a fall in the popularity of artisanal trades.**

c) **It resulted in the formation of large corporations.**

d) **It led to better health and hygiene practices.**

Number of words and Explanatory notes for RC:

Number of words: 569

In the fifth and sixth paras of the passage, the author talks about the "**different dimensions** in the advance of code" in the last 200 years and in the 20th century.

Option A: According to the author, "Death rates began to fall rapidly in the middle of the 19th century". This has been attributed to the advance of code. Hence, this is mentioned as a consequence and is not the answer.

Option B: According to the author, code advancement led to the creation of "bureaucracies and corporations". Because of this, humans changed the definition of occupations. They defined occupations "in terms of specific task-defined roles rather than by artisanal trades". From this, we cannot infer about the popularity of artisanal trades. Hence, this cannot be inferred to be a consequence of complexity of code.

Option C: The author states that "the continued advance of code seemed to necessitate the creation of …bureaucracies and corporations". Hence, code resulted in the formation of large corporations.

Option D: In the 19th century, death rates reduced because of "increased agricultural output, improved hygiene, and the beginning of better medical practices". From this we can infer that the health and hygiene practices improved as a result of the advancement of code.

Therefore, the correct answer is option B.   Choice (B)

Q15. The primary difference between jobs and trades is that

a) **jobs perpetuate procedures for optimising institutional operations, while trades perpetuate unwritten production practices.**

b) **jobs are task-defined roles in a formal business setting, while trades are defined for an informal setting.**

c) **jobs focus on bettering operations in corporations, while trades improve on production practices handed down from generation to generation.**

d) **jobs take place in complex organisations, while trades are perpetuated in simpler organizations.**

Number of words and Explanatory notes for RC:

Number of words: 569

The author describes that jobs are "task-defined roles" and were "designed to optimise institutional operations".
On the other hand, trades "perpetuate and advance inherited, mostly unwritten production practices".
Option A: The second part of this option, which states that trades perpetuate unwritten production practices, is correct. However, jobs do not actively **perpetuate** procedures for optimising institutional operations. They are only designed to optimise and not to broadcast. Hence, this option is incorrect.
Option B: The author mentions that we defined jobs in the context of large and complex organisations. However, we cannot infer anything about the formality or the informality of the business setting from this. Hence, this is also not the correct answer.
Option C: Jobs are designed to better or optimise institutional operations. Hence, the first part of the option is correct. It is mentioned in the passage that trades are inherited. Hence, we can infer that these practices are handed down from generation to generation. Trades perpetuate and improve these practices. Therefore, this option correctly captures the difference between jobs and trades.
Option D: While it is mentioned in the passage that jobs are related to complex organisations, we cannot infer whether trades take place in organisations at all. Given the contrast that they author provided between jobs and trades, it is likely that trades do not take place in organisations, simple or complex. In any case, we cannot infer about the kind of organisations that trades take place in. Hence, this option cannot be inferred.
Therefore, the correct answer is option C.   Choice (C)

Q16.   Which of the following can be inferred from the penultimate para of the passage?

a) **Ceding authority and autonomy is a prerequisite for the evolution of code.**

b) **Our survival depends on ceding authority to code.**

c) **We kept the code to a tightly knit group for millennia.**

d) **If a person obeys written rules and laws, it indicates that he/she is ceding authority and autonomy to others.**

Number of words and Explanatory notes for RC:

Number of words: 569

The author discusses the second epochal change that occurred because of advance of code. This change is that we have ceded our autonomy and authority to others.

Option A: Ceding authority and autonomy is a consequence of the advance of the code. The change (i.e., ceding authority) happened because of the advancement of code and not the other way around. Hence, this is not the correct answer.

Option B: According to the author, for our survival, we depend on "*services provided by others*". These "others" are ceding their authority to code. From this we cannot infer that our survival itself depends on ceding authority to code. Hence, this is not the correct answer.

Option C: We had kept the *authority and autonomy "unto ourselves* and our immediate tribal groups". We did not keep the code within a small group as this option mentions. Hence, this is not the correct answer.

Option D: The author mentions that "We now obey written laws and rules" to demonstrate that we have ceded authority to others. Hence, we can infer this option from this para. Therefore, the correct answer is option D.   Choice (D)

Q17.   It can be inferred that the standardized platform, introduced in para 2, is important for the code economy because it

a) **acts as a fundamental technology that feeds higher-level technologies.**

b) **acts as a higher-level technology that feeds on more fundamental technologies.**

c) **helps in charting an optimal path for the evolution of code.**

d) **is important for city infrastructure and written language.**

Number of words and Explanatory notes for RC:

Number of words: 569

In the second para, while explaining how code has been important for the survival of humanity, the author states that humanity strived by "developing productive activities that evolve into regular routines and standardized platforms". In the fourth para, the author mentions that "Platforms provide essential structures for the code economy" and provides city infrastructure and written language as examples of these standardized platforms.

Option A: According to the author, "As code advances, higher-level technologies feed on more fundamental technologies". He mentions platforms as structures on which code is improved. Also, code is "built on layers of platforms that accumulate like the pipes and tunnels that lie below a great city". We can infer from the passage that platforms are the basis on which code is built. Hence, these are the fundamental technologies that help higher-level technologies. Hence, this is the correct answer.

Option B: Platforms are the fundamental technologies that allow higher-level technologies to flourish. They are not the higher-level technologies. Hence, this option is incorrect.

Option C: We can infer from the passage that platforms are essential for "creation and improvement of code". However, we cannot infer from the passage that platforms help in charting an optimal path for evolution of code. Hence, this is not the correct answer.

Option D: City infrastructure and written language are provided as examples of standardised platforms. We cannot separate these and say that the latter is important for the former. Hence, this is not the correct answer.

Therefore, the correct answer is option A.   Choice (A)

Q18.   Which of the following is not a characteristic of code, as described in the passage?

a) **Code includes the set of instructions that defines a productive activity.**

b) **Code is responsible for humanity surviving wars and famines, which lasted for millennia.**

c) **Understanding code will help in understanding the future of the economy.**

d) **The longer humanity survives, the more complex code will become.**

Number of words and Explanatory notes for RC:

Number of words: 569

Throughout the passage, the author explains the definition of code and its various features.

Option A: We can infer this from the statement "Code captures the algorithmic nature of instructions". From this we can infer that code includes these instructions. In the second para, the author states that humanity survived "by *developing productive activities* that evolve into regular routines", i.e., "by creating code". Hence, we can infer the statement given in this option to be a feature of code.

Option B: At the beginning of the passage, the author mentions that we were "prone to cycles of war and famine for millennia". Even though it was unlikely, we still survived. The author attributes this to the evolution of code. Hence, we can infer that code has helped humanity survive wars and famines.

Option C: From the last statement of the passage, "We cannot understand the dynamics of the economy – its past or its future – without understanding code", we can infer that we need to understand code to understand the past and the future of the economy. Hence, this option is also correct.

Option D: The author mentions that "*Human civilization has thus advanced* through the creation and improvement of code, which is built on *layers of platforms that accumulate*". Since survival is not the same as advancement of civilization, it is not necessary that just by humanity surviving, our civilization will become more advanced. Further, civilization has advanced till now by advancement of code. But the same may not continue to happen in the future. Hence, this option need not be true and is the correct answer.   Choice (D)

DIRECTIONS for questions 19 to 24: The passage given below is accompanied by a set of six questions. Choose the best answer to each question.

Are chess and bridge sports? The International Olympic Committee thinks that they are, and regularly considers them for inclusion in the [Olympics]. … Neither chess nor bridge has as yet managed to win a place, but their governing bodies are indefatigable in pursuit of that goal.

In my view, however, chess and bridge shouldn't even be eligible, let alone included. They are games, not sports. The requirements are different. …

The philosopher Ludwig Wittgenstein once claimed that games were undefinable, defying anybody to produce a set of necessary and sufficient conditions for the concept. It is a pity that he did not live to read the Canadian philosopher Bernard Suits's book The Grasshopper: Games, Life and Utopia (1978), which responds to Wittgenstein's challenge with this neat definition: 'the voluntary attempt to overcome unnecessary obstacles'.

Suits' idea is that all games specify some agreed target state – such as reaching the final square in snakes and ladders, or getting your golf ball in the hole – and then place arbitrary restrictions on the means allowed – you must go down the snakes but not up; you must propel the ball with your clubs and not carry it down the fairway.

As an account of games, this seems spot-on. Suits is on less solid ground, however, when he argues that all sports are games. While sports that do have arbitrary rules, such as golf and tennis, fit his definition of a game, Suits has trouble with freeform activities such as skiing or surfing. He tries to crowbar them into his definition by focusing on the rules that structure competitive versions of these sports. Still, what about recreational skiing and surfing? In most people's eyes, these are still sports all right, even without any rules to make them games.

Suits's emphasis on rules also leads him astray when it comes to the value of sport. As he sees it, the point of sports, along with all other games, is to meet the challenge of the 'unnecessary obstacles' placed in the way of the agreed target state. This is unconvincing. I'd say that, if something isn't worth doing, it isn't worth doing even when it's made difficult. There must be more to sports than overcoming unnecessary obstacles.

The real point of sports is the exercise of physical abilities. Pride in physical performance is a deep-seated feature of human nature. Humans hone their physical talents and take delight in using them. I would say that a sport is any activity that facilitates the display of physical skills.

Even when a sport is a game, like tennis, the value of the activity lies in the physical expertise, not the structure of the game. Top-spin crosscourt backhands are good because they are admirably skillful, not because you have to overcome tennis's arbitrary rules in order to win a point.

In line with this, it is noteworthy how many sports have grown out of everyday physical activities. Adepts start to develop their talents for rowing – or archery, fencing – and soon enough these become organised sports. It is only natural that someone who takes pride in their ability to row fast should want to see if they can row faster than others.

This is why chess and bridge are not sports. You could argue that physical energy is expended in moving the pieces or playing the cards – perhaps even more energy than in static sports such as target shooting. However, that's not what the competitors are trying to be good at. … Sports are essentially physical, in a way that chess and bridge are not. …

Q19.   Which of the following is a claim made by Suits with which the author disagrees?

 a) To call an activity a game, it must have arbitrary restrictions placed on it.   Your answer is incorrect

b) All sports must have arbitrary restrictions placed on them.

c) There are some games in which there are no arbitrary restrictions.

d) Some sports, which do not have arbitrary restrictions, cannot be called games.

Number of words and Explanatory notes for RC:

Number of words: 594

Bernard Suits defines games in the following way: 'the voluntary attempt to overcome unnecessary obstacles'. The author mentions that this definition of games is "spot-on". However, he does not agree with Suits when he argues that all sports are games.

Option A: Suits provides this as a definition of games. He mentions that all games "place arbitrary restrictions on the means allowed ". However, the author agrees with Suits in his definition of games. Hence, this is not the answer.

Option B: According to Suits, all sports are games. And, games are defined as 'the voluntary attempt to overcome unnecessary obstacles'. Hence, according to Suits, all sports have arbitrary restrictions placed on them. However, the author argues against this by providing the examples of recreational skiing and surfing, which do not have any restrictions but are still considered sports. Hence, the author disagrees with this claim of Suits.

Option C: Suits mentions that, by definition, a game should have arbitrary restrictions imposed on them. Hence, there can be no games which do not have restrictions imposed on them. Therefore, this is not a claim made by Suits.

Option D: This is a statement that the author will agree with. He argues that not all sports can be called games. However, this was not a claim made by Suits. Hence, this is not the correct answer.

Therefore, the correct answer is option B.   Choice (B)

Q20. According to the author, the value of sport primarily lies in

a) **the innate human desire to showcase our physical abilities.**

b) **measuring how much better one is at a sport compared to others.**

c) **the need to demonstrate human expertise in everyday physical activities.**   ✗ **Your answer is incorrect**

d) **the physical adroitness that sport demands.**

Q21.   With which of the following statements will the author most likely agree, with respect to sports that can also be called games?

a) **The physical expertise exhibited in the confines of the rules of the sport is what adds value to all such sports.**

b) **Among the sports that are also games, tennis is one of the rare games in which physical expertise is important.**

c) **The physical expertise that such sports require is more important than the structure of the sport.**   ✔ **Your answer is correct**

d) The structure of the sport is defined keeping in mind the physical expertise that the players should exhibit.

Number of words and Explanatory notes for RC:

Number of words: 594

When a sport is a game, "the value of the activity lies in the physical expertise, not the structure of the game".

Option A: The author does not provide any importance to the structure or rules of the game. He places importance on the physical expertise. Hence, the author will not completely agree with the physical expertise exhibited *in the confines of the rules of the sport* is what adds value to all such sports.

Option B: This option mentions that the author believes that physical expertise is important in all sports that are also games. He only provides tennis as an example of a sport that is also a game. He does not provide tennis as an example for a sport that is also a game, which requires physical expertise. Hence, the author will not agree with this option.

Option C: This option accurately captures the meaning of the sentence "the value of the activity lies in the physical expertise, not the structure of the game". We can infer that the author places greater importance on the physical expertise than the structure. Hence, this is the correct answer.

Option D: The author does not comment on how the structure of the game is defined. Hence, we cannot say whether the author will agree with this or not.

Therefore, the correct answer is option C.   Choice (C)

Number of words and Explanatory notes for RC:

Number of words: 594

When a sport is a game, "the value of the activity lies in the physical expertise, not the structure of the game".

Option A: The author does not provide any importance to the structure or rules of the game. He places importance on the physical expertise. Hence, the author will not completely agree with the physical expertise exhibited *in the confines of the rules of the sport* is what adds value to all such sports.

Option B: This option mentions that the author believes that physical expertise is important in all sports that are also games. He only provides tennis as an example of a sport that is also a game. He does not provide tennis as an example for a sport that is also a game, which requires physical expertise. Hence, the author will not agree with this option.

Option C: This option accurately captures the meaning of the sentence "the value of the activity lies in the physical expertise, not the structure of the game". We can infer that the author places greater importance on the physical expertise than the structure. Hence, this is the correct answer.

Option D: The author does not comment on how the structure of the game is defined. Hence, we cannot say whether the author will agree with this or not.

Therefore, the correct answer is option C.   Choice (C)

Number of words and Explanatory notes for RC:

Number of words: 594

Wittgenstein's claimed that "games were undefinable, defying anybody to produce a set of necessary and sufficient conditions for the concept". Suits provided a definition of games, which is "'the voluntary attempt to overcome unnecessary obstacles'".

Option A: The author mentions that Suits' definition of game is "spot-on". However, the author has a problem with Suits' assumption that all sports are games. However, Wittgenstein's challenge did not involve defining sports, it only involved defining games. Hence, we can infer that the author will opine that Suits has provided an accurate explanation for Wittgenstein's challenge.

Option B: The author only feels that Suits is on "less solid ground" when he says that all sports are games. However, Wittgenstein's challenge does not talk about sports and hence, we cannot infer this to be the author's opinion.

Option C: The passage elaborates on Suits definition (fourth para). It describes what "agreed target state" means and what "arbitrary restrictions" means. Hence, we cannot say that Suits has not provided enough substantiation. Further, the author does not provide this opinion anywhere in the passage. Hence, this is not the correct answer.

Option D: Wittgenstein's challenge has not become a moot point (i.e., doubtful or impractical) because the definition that Suits provided *undermines* the challenge. The definition that Suits provided addressed the challenge and, hence, this is not the correct answer.

Therefore, the correct answer is option A.   Choice (A)

Q23.   Which of the following will allay the author's concerns on "unnecessary obstacles" in sports (in para 6)?

a) **The "unnecessary obstacles" in sports make rules of the sports easier to understand.**

b) **The "unnecessary obstacles" in sports demand that the players exhibit superior physical expertise.**

c) **If an activity is made more difficult by adding "unnecessary obstacles", it attracts fewer people to participate in it.**

d) **"Unnecessary obstacles" are inherent to the structure of any game.**

Number of words and Explanatory notes for RC:

Number of words: 594

When talking about the presence of unnecessary obstacles, the author disagrees with Suits and mentions that "if something isn't worth doing, it isn't worth doing even when it's made difficult". From this we can infer that there is no point in placing unnecessary obstacles in sports. He further explains that "There must be more to sports than overcoming unnecessary obstacles", i.e., physical expertise.

Option A: If the "unnecessary obstacles" help in making the sport easier, it does not weaken the author's claim, because he does not consider ease of understanding to be important for sports. It is possible that ease of understanding is not necessary for a sport and hence, the obstacles can still serve no purpose, according to the author. Hence, this will not weaken the author's claim.

Option B: If the purpose of the "unnecessary obstacles" is to facilitate exhibiting superior physical expertise, then it implies that these unnecessary obstacles have a purpose which is closely linked to the value of the sport, i.e., the physical expertise. The presence of these unnecessary obstacles make the sport more challenging and probably add value to the sport. Hence, this option will weaken the author's claim.

Option C: The author does not mention participation as important for a sport. Even if we consider participation adds value to the sport, this statement mentions that unnecessary obstacles reduce the participation and hence, this statement will strengthen the author's argument that it is not worth doing even with unnecessary obstacles.

Option D: The author may agree to this statement as it states that unnecessary obstacles are inherent to the structure of any game. The author's contention is regarding sports and not games. Therefore, this statement will not weaken the author's claim

Therefore, the correct answer is option B.   Choice (B)

Q24.   Which of the following, if true, invalidates the assumption made by the author in making his recommendation in the second para of the passage?

a) **Only those activities that are considered sports are included in the Olympics.**

b) **The governing bodies of chess and bridge consider the two to be sports.**

c) **The inclusion or exclusion of a game or sport in Olympics depends only on the number of countries that participate in the game or sport.** ✔ **Your answer is correct**

d) **The governing bodies of chess and bridge impose certain restrictions on the minimum levels of physical fitness of the players of these games.**

Number of words and Explanatory notes for RC:

Number of words: 594

In the second para, the author recommends that chess and bridge "shouldn't even be eligible, let alone included" in the Olympics. The reason that the author provides for this is that they are games and not sports. He then proceeds to explain the difference between the two. However, the inherent assumption in this statement is that the International Olympic Committee includes only those activities that are considered as sports to be part of the Olympics. The author does not explicitly mention this but we can infer this from the statement "chess and bridge shouldn't even be eligible, let alone included" because "they are games, not sports".

Option A: If only sports are included in the Olympics, then the author's recommendation will still be valid. Since the author himself has made this assumption, this will not invalidate his recommendation.

Option B: If the governing bodies consider chess and bridge to be sports, then the author can still argue that they are not sports. It does not invalidate the assumption that he made.

Option C: If the inclusion or exclusion of a sport or a game depends only on the number of countries, then irrespective of whether chess and bridge are games or sports, they will be included and excluded in the Olympics. The author's recommendation will not be important because the reason that the author mentioned as to why they should not be included is no longer valid. Hence, this option will invalidate the author's recommendation.

Option D: Even if the governing bodies of chess and bridge impose certain physical restrictions, it does not invalidate his claim. He argues that these are not sports because physical expertise is "what the competitors are trying to be good at". These games, by their nature, do not facilitate demonstrating physical expertise (even if the players are physically fit). Hence, this will not weaken his recommendation.

Therefore, the correct answer is option C.   Choice (C)

Q25.   DIRECTIONS *for question 25:* The paragraph given below is followed by four summaries. Choose the option that best represents the author's primary position in the paragraph.

The further philosophy distances itself from the concerns of non-philosophers, the more it detaches itself from what made it come to life in the first place, which is its continuity with the general human longing to get our bearings in the largest sense possible: to figure out the nature of this reality we find ourselves in, to figure out the nature of what we ourselves are and how we fit into this reality, to figure out how to pursue a life genuinely worthy for us to live, a life that does justice to our longing to

matter, not necessarily to matter more than others, and not necessarily to matter to the universe at large.

  a) **In order to continue the general human yearning to figure out how our lives matter, philosophy shouldn't ignore non-philosophers.**

  b) **Philosophers cannot distance themselves from non-philosophers as that would mean distancing themselves from the general human longing to matter to others and to the universe.**

  c) **Philosophy owes its origin to the human longing to find meaning in one's life.**

  d) **Drifting away from the concerns of non-philosophers, pushes philosophy farther from that which led to its inception, our longing to fathom the essence of reality and our life.**

Option A: This alters the usage of the word 'continuity' completely. The starting point of philosophy is its continuity with the general human earning. That doesn't mean philosophy has to **_continue_** the yearning. Hence, Option A is not the answer.
Option B: We are not talking about philosophers as people, but philosophy as a subject. Also, the longing in the para is only to know how we matter and not whether we matter to others or to the universe. Hence, Option B is not the answer.
Option C: This ignores the crucial opinion of the author – that philosophy loses a lot if it distances itself from the concerns of non-philosophers. Option C is not the answer.
Option D: This mentions the key argument of the author – that philosophy by drifting away (distancing itself) from non-philosophers is also getting detached from **_what led to the start of philosophy_** (inception) – which is the continuity with the human yearning to find about reality, and our reality and how we could live a life worth living. Hence, Option D is the answer.   Choice (D)

Q26.   DIRECTIONS *for question 26*: The sentences given in the following question, when properly sequenced, form a coherent paragraph. Each sentence is labelled with a number. Decide on the proper order for the four sentences and key in the sequence of four numbers as your answer, in the input box given below the question.

1. In the city, our thoughts are likely to turn on work, relationships, and personal finances; in the wilderness we look to the horizons, contemplating issues such as freedom and death.

2. At the same time, many of us are plainly drawn to the wilderness as an arena in which to experience life's more equivocal feelings – a place to plunge beneath the surface of things.

3. In fact, we are more likely to think about death while in the wild than in any other general environment; Koole and van den Berg go so far as to say that "wilderness is intrinsically associated with death."

4. It turns out that the wilderness is a pretty existential place.

Sentence 1: Sentence 1 contrasts the city with the wilderness.
Sentence 2: Sentence 2 has the clue 'at the same time' and 'life's more equivocal feelings' and this indicates that sentence 2 can only follow another sentence. It also mentions the adverb 'plainly' in the idea 'drawn to the wilderness'.
Sentence 3: Sentence 3 has the starting element "In fact". It focuses on the fact that one can contemplate 'death' while in the wilderness.
Sentence 4: Sentence 4 is an independent sentence. It has the starter "It turns out that". It also mentions that the wilderness is an existential place.
Of all the four sentences which talk about wilderness, 'wilderness is a pretty existential place' is an idea that needs to precede all the other points mentioned about wilderness in other sentences. So sentence 4 is a general sentence that can begin the paragraph. It can also be seen that sentences 1 and 3 are linked through the discussion about death and a comparison between the wilderness and the general environment, say city. So sentence 4 is followed by sentence 1. 'wilderness is a pretty existential place' in sentence 4 links with 'in the wilderness we look to the horizons, contemplating issues such as freedom and death'.
Sentences 1 and 3 form a logical block. 'in the wilderness we look to the horizons, contemplating issues such as freedom and death' in sentence 1 links with 'more likely to think about death while in the wild than in any other general environment' and 'wilderness is intrinsically associated with death' in sentence 3. So sentence 3 follows sentence 1.
Sentence 2 concludes the para. "experience life's more equivocal feelings" in sentence 2 contrasts "wilderness is intrinsically associated with death" in sentence 3. "Though we are more likely to think about death while in the wild" in sentence 3 links with "many of us are plainly drawn to the wilderness as an arena in which to experience life's more equivocal feelings" in sentence 2. So, (4132).   Ans: (4132)

Q27.   DIRECTIONS *for question 27*: The paragraph given below is followed by four summaries. Choose the option that best captures the essence of the text.

According to Plato (in the *Phaedrus),* Theut, or Hermes, the alleged inventor of writing, presented his invention to the pharaoh Thamus, praising his new technique that would allow human beings to remember what they would otherwise forget. But the pharaoh was worried that, with this invention, people would not be obliged any longer to train memory. They would remember things not because

of an internal effort, but by mere virtue of an external device. Writing was dangerous because it decreased the powers of mind by offering human beings a petrified soul, a caricature of mind, a vegetal memory. Nowadays, nobody shares these fears. We know that books are not ways of making somebody else think in our place; on the contrary, they are machines that provoke further thoughts. Only after the invention of writing was it possible to write such a masterpiece on spontaneous memory as Proust's *Recherche du temps perdu.* Also, if once upon a time people needed to train their memory in order to remember things, after the invention of writing they had also to train their memory in order to remember books.

 a) **Today, no one shares the preoccupations of the pharaoh Thamus when it comes to writing and books because the training of memory, which could not be achieved successfully in the past, has come full circle today, with masterpieces written and published.**

 b) **While the pharaoh Thamus believed that memory was a great gift that ought to be kept alive by training it continuously, Hermes was of the view that books and writing challenge and improve memory.**

 c) **While the pharaoh Thamus was instantiating an eternal fear that a new technological development would destroy the human thinking capacity, the continued use of the writing technology has, over the years, killed that fear – our memories have improved after reading great masterpieces.**

 d) **While the pharaoh Thamus believed that writing would have made torpid the mental powers that it replaced, no one shares this preoccupation today; books challenge and improve memory, and writing promotes the creation of books, the remembering of which, involves a training of one's memory.**

Option A: The first part of option A is correct as it has been given in the para that "Nowadays, nobody shares these fears (of the pharaoh)." Option A is wrong when it says "the training of memory, which could not be achieved successfully, in the past". People were obliged to train their memories even in the past. (once upon a time people needed to train their memory in order to remember things). Also the focus of the para is not so much on "masterpieces written and published" but the important factors: books provoke further thoughts and, after the invention of writing they had also to train their memory in order to remember books. Option A is not the essence of the paragraph.

Option B: The first part of option A captures the view of pharaoh Thamus. However, it is not Hermes who believed that books and writing challenge and improve memory. That view is the view of people today. We only know that Hermes was the alleged inventor of writing and he praised his new technique (that will allow human beings to remember what they would otherwise forget). So option B is distorted and is not the answer.

Option C: "destroy the human thinking capacity" is not the exact fear of the pharaoh. "the continued use of the writing technology has, over the years, killed that fear as our memories have improved after reading great books" is a complete distortion of facts mentioned in the para. Option C is out of scope, distorted and also inadequate as an answer.

Option D: The para says that "The pharaoh believed that people would remember things not because of an internal effort, but by mere virtue of an external device. Writing was dangerous because it decreased the powers of mind by offering human beings a petrified soul, a caricature of mind, a vegetal memory". So the first part of option D correctly captures the view of the pharaoh. "made torpid" means to weaken or decrease the power of …The second half of option D expands on the points given in second half of the para and explains why no one shares the fear of pharaoh today. Option D is the correct answer.   Choice (D)

Q28.   DIRECTIONS *for question 28:* Five sentences related to a topic are given in the question below. Four of them can be put together to form a meaningful and coherent short paragraph. Identify the odd one out. Choose its number as your answer and key it in.

1. When all ideas of the future collapse, as they did first in Russia and now have done in the USA, then why would facts be necessary anymore?

2. Indeed, 'facts' were perhaps only necessary in the Cold War because they were there to prove that one supposedly rational, 'scientific' ideology, communism or democratic capitalism, was doing better than the other.

3. The Cold War was waged on political, economic, and propaganda fronts and had only limited recourse to weapons.

4. The last thing that politicians, who peddle nostalgia as the ideal for the future, want is facts.

5. Facts are necessary when you have a rational version of the future that you are trying to 'prove' is being fulfilled.

Sentence 1 introduces a rhetorical question about the importance of facts.
Sentence 2 talks about a point of time when facts were still important. It also starts with a connector 'Indeed' that hints at a preceding sentence that talks about facts in a similar tone (that they are not so important)
Sentence 3 talks about the Cold War and on what grounds it was waged.
Sentence 4 talks about how politicians have no use for facts. 'Nostalgia' is a reference to the past.
Sentence 5 talks about how facts are important when the future which you are trying to prove as being fulfilled is a rational version.
2 and 5 talk about how and when facts are necessary. 1 questions if facts would be important anymore when all ideas of future collapse. Similarly, 4 reflects the same tone that facts are not important. 5 and 2 are sandwiched between 1 and 4. 3 is the odd-one out because it doesn't address the keyword of the remaining 4 sentences which is 'facts' and their important. It only talks about Cold War, and yet doesn't have a connect with 2, the other Cold War-related sentence.   Ans: (3)

Q29.   DIRECTIONS *for question 29*: The sentences given in the following question, when properly sequenced, form a coherent paragraph. Each sentence is labelled with a number. Decide on the proper order for the four sentences and key in the sequence of four numbers as your answer, in the input box given below the question.

1. Merton, furthermore, argued that in the scientific community the Matthew effect reaches beyond simple reputation to influence the wider communication system, playing a part in social selection processes and resulting in a concentration of resources and talent.

2. In the sociology of science, the sociologist Robert K. Merton called this phenomenon the Matthew effect to describe how, among other things, eminent scientists will often get more credit than a comparatively unknown researcher, even if their work is similar; it also means that credit will usually be given to researchers who are already famous.

3. The old saying does often seem to hold true: the rich get richer while the poor get poorer, creating a widening gap between those who have more and those who have less.

4. He gave as an example the disproportionate visibility given to articles from acknowledged authors, at the expense of equally valid or superior articles written by unknown authors, and

noted that the concentration of attention on eminent individuals can lead to an increase in their self-assurance, pushing them to perform research in important but risky problem areas.

5.

Sentence 1: Sentence 1 has the sequential indicator 'furthermore argued'.
Sentence 2: Sentence 2 makes a mention of 'this phenomenon' which is given a name: the Matthew effect and its application in the sociology of science has been explained.
Sentence 3: Sentence 3 mentions a saying and this sentence can begin the paragraph.
Sentence 4: Sentence 4 has the pronoun 'he' referring to Merton. It mentions an example and an observation.
Sentence 3 is the best sentence to start the para. It introduces the 'old saying'. Sentence 4 is followed by sentence 2. The old saying does often seem to hold true .... "Robert K. Merton called this phenomenon the Matthew effect to describe...." in sentence 2 links with "the rich get richer while the poor get poorer, creating a widening gap between those who have more and those who have less" in sentence 3. "eminent scientists will often get more credit than a comparatively unknown researcher, even if their work is similar; it also means that credit will usually be given to researchers who are already famous" in sentence 2 links with "creating a widening gap between those who have more and those who have less. Sentence 1 (furthermore argued that in the *scientific community* the **Matthew effect reaches beyond** ...) continues from sentence 2 (**Matthew effect to describe how, among other things**, *eminent scientists* will often get more credit ...). So, 321. Sentence 4 exemplifies the point made in sentence 1 and completes the paragraph. "resulting in a concentration of resources and talent" in sentence 1 links with "concentration of attention on eminent individuals can lead to an increase in their self-assurance" in sentence 4. "**concentration of attention on eminent individuals** can lead to an increase in their self-assurance, pushing them to perform research in important but risky problem areas" in sentence 4 explains "playing a part in social selection processes and resulting in a **concentration of resources and talent**" in sentence 1. "disproportionate visibility given to articles from acknowledged authors, at the expense of equally valid or superior articles written by unknown authors" in sentence 4 reiterates the point "eminent scientists will often get more credit than a comparatively unknown researcher" in sentence 2. So, 3214.

Ans: (3214)

Q30.   DIRECTIONS *for question 30*: Five sentences related to a topic are given in the question below. Four of them can be put together to form a meaningful and coherent short paragraph. Identify the odd one out. Choose its number as your answer and key it in.

1. I have grown fond of semicolons in recent years.
2. The period tells you that 'that' is that; even if you didn't get all the meaning you wanted or expected, anyway you got all that that writer intended to parcel out and now you have to move along.
3. But with a semicolon there you get a pleasant little feeling of expectancy; there is more to come; read on; it will get clearer.
4. The semicolon tells you that there is still some question about the preceding full sentence; something needs to be added.
5. It is almost always a greater pleasure to come across a semicolon than a period.

Sentence 1 is an independent sentence that shows the author's fondness for semicolons.
Sentence 2 talks about the period, and its utility.
Sentence 3 talks about what the semicolon does as opposed to a period, and starts with a contrast marker 'but', so we know that this idea follows that in Sentence 2.
Sentence 4 talks about the function of a semicolon, and it is an independent sentence.
Sentence 5 starts with 'it' but it is more to introduce the idea that semicolons are more pleasurable than the period.
523 are one block to start with. We understand this from the contrast initiated in 5 (greater pleasure to come across a semicolon than a period) followed by elaboration of that – where 2 talks about the period and 3 talks about the semicolon.
So, it boils down to 1 and 4. 4 gives the primary function of semicolon without rhetoric and follows 3. So, 5234. 1 goes at the top of the para, before 5, and is least useful to the remaining block of 4 sentences. The significance of 'recent years' in 1 is not connected to the remaining sentences.   Ans: (1)

Q31.   DIRECTIONS *for question 31*: Five sentences related to a topic are given in the question below. Four of them can be put together to form a meaningful and coherent short paragraph. Identify the odd one out. Choose its number as your answer and key it in.

1. Other measures were equally idiosyncratic.
2. Lengths were divided up into feet, palms, spans and smaller units derived from the human hand.
3. Now the International Bureau of Weights and Measures in Paris is set to give the metric system its biggest shake-up yet.

4. Mediterranean traders, for centuries, used the weight of grains of wheat or barley to define their units of mass: the Roman libra, forerunner of the pound, was 1,728 siliqua (carats), each the weight of a carob seed (possibly because they were thought, erroneously, to be less variable in mass than the seeds of other species).

5. Throughout much of human history, man has been the measure of many, if not all, things.

Sentence 1: Sentence 1 has the clue 'other measures'.
Sentence 2: Sentence 2 talks about how lengths were divided.
Sentence 3: Sentence 3 has a mention of the International Bureau of Weights and Measures in Paris. It points to "the metric system being given its biggest shake-up yet".
Sentence 4: Sentence 4 has a specific mention of how the weights of certain grains or seeds were used as a measure.
Sentence 5: Sentence 5 sounds introductory in tone. It has the introductory words 'throughout much of human history'. It introduces the topic of discussion in a very general way "Man has been the measure of many things'.
So, sentence 5 is a general sentence that can begin the para. It introduces the idea "man has been the measure of many, if not all, things". Sentences 5 and 2 form a logical block. "man has been the measure of many, if not all, things" in sentence 5 links with "Lengths were divided up into feet, palms,.... smaller units derived from the human hand" (sentence 2). Sentence 2 follows sentence 5.
Sentence 2 is followed by sentence 1 which brings in the focus of 'other measures'. '
Other measures' in sentence 1 would run parallel to "feet, palms, spans and smaller units..." in sentence 2. "equally idiosyncratic" in sentence 1 describes "divided up into feet, palms, spans and smaller units derived from the human hand" given earlier in sentence 2. So, 521.
Sentences 1 and 4 form a logical block. "used the weight of grains of wheat or barley" and "weight of a carob seed" in sentence 4 points to "other measures" in sentence 1. "they were thought, erroneously, to be less variable in mass than the seeds of other species)" in sentence 4 links with "equally idiosyncratic" in sentence 1. Sentence 4 concludes the para.
Sentence 3 can be a part of another para. It assumes that a discussion of 'the metric system' has already happened. Also "biggest shake-up yet" would warrant a discussion of small shake-ups before it. So sentence 3 needs a precedent and more substantiation.   Ans: (3)

Q32.   DIRECTIONS *for question 32*: The sentences given in the following question, when properly sequenced, form a coherent paragraph. Each sentence is labelled with a number. Decide on the

proper order for the four sentences and key in the sequence of four numbers as your answer, in the input box given below the question.

1. But it struck me forcibly that the seemingly reassuring surface connecting clifftop to clifftop, strung in tension over the dizzying void below, had been cut.
2. I can't explain why, in the face of all the seductive images and lyrical descriptions of the new Tintagel footbridge, I've become fixated on a small incision slashed through the surface of the walkway in the middle of the bridge.
3. Was this an actual moment of the sublime?
4. I know it's technically the meeting point between the two cantilevered segments, a 40 mm expansion joint in an impeccably engineered structure.

Q33.   DIRECTIONS *for question 33*: The paragraph given below is followed by four summaries. Choose the option that best captures the essence of the text.

Autobiographical (or as psychologists call it, episodic) memory is necessarily flawed. The colloquialisms used to describe it – "etched into my brain," "seared into my memory," "if memory serves," "never forget" – might emphasise its reliability. Psychologists who study the mysteries of memory speak with a tellingly different lexicon. *Transience, misattribution, binding failure and positive illusions* – terms that point to the messiness of recollection – present memory as it really is: a necessarily flawed reconstruction of past experience rather than a carbon copy retrieved from a static cognitive archive. "Binding failures" which happen when memory latches onto an inaccurate detail and deems it true, create confusions between events we actually experience and those we only think about or imagine. Our innate suggestibility tempts us to weave extraneous details from subsequent events into the fabric of our original recollection. The gist remains (you know you landed in a helicopter in a desert amid a frisson of danger) but, the specifics can blur into impressions that in some cases disappear altogether. It's not exactly a comforting thought, but every time we return to the incident, we take a different route to reach it and, in turn, come home with a slightly different story.

a) **Considerable research into the neurobiology of memory retrieval supports the idea that our recollections are inherently shaky even as the mental architecture involves strong crystallised knowledge segregating compartments – this changing nature of a particular memory can be attributed to "binding failure".**

b) **While certain catchphrases liken memory to an ageless photograph, psychologists think of memory as a murky, flawed reconstruction of past experience – the mind never travels the same way twice while retrieving and recounting the past events because figments of our imagination bind to and tend to colour our actual experiences.**

c) **Memories are formed in the brain as networks of neurons that fire when stimulated by an event: the more times the network is employed, the more it fires, however, many fluid things such as perceptions and finer details of events get modified when we rethink about them.**

d) **If retrieving memory is a process – and recounting it a performance – then there are numerous ways its accuracy can be derailed and "binding failure" is one of them.**

Option A: Parts of option A which seem to be correct are: our recollections are inherently shaky and changing nature of a particular memory can be attributed to "binding failure". What makes option A incorrect are 'out of scope' phrases such as "considerable research into the neurobiology of ….", "mental architecture involves strong crystallised knowledge segregating compartments". Option A does not explain the 'binding failure' mentioned in the para. It is incomplete and distorted and cannot be the answer.

Option B: Option B captures all the relevant points in the paragraph and is the correct answer. It highlights the point of difference between the right and wrong colloquialisms used to explain memory and also substantiates on the consequence of 'binding failure' mentioned in the para.

Option C: Option C is too general. It focuses on 'networks of neurons firing' which has not been mentioned in the para. Option C does not explain why events get modified when we rethink about them vis-à-vis the original recollection. So option C is not the answer.

Option D: The para doesn't really focus on 'numerous ways' of derailment of the accuracy/ process of memory retrieval. Option D is also incomplete and cannot be the answer.

Choice (B)

Q34.   DIRECTIONS *for question 34*: The sentences given in the following question, when properly sequenced, form a coherent paragraph. Each sentence is labelled with a number. Decide on the proper order for the four sentences and key in the sequence of four numbers as your answer, in the input box given below the question.

1. This is a difficult truth to learn, because we are naturally fearful of loss, and therefore attached to the possibility of eternal restoration.
2. The problem with eternity is not that it doesn't exist but that it is undesirable and incoherent; it kills meaning and collapses value.
3. An eternity based on the "absence of change" would not be a rescue from anything but an end of everything meaningful.
4. But once we seriously consider the consequences of existence without end, the prospect is not only horrifying but meaningless.

Sentence 1 points to a lesson ('this') mentioned earlier, calling it 'a difficult truth'. The second half of the sentence gives us a clue. It is a difficult truth because we fear loss (of people, maybe of those we love, etc.)
Sentence 2 is an independent sentence that discusses a negative aspect of eternity.
Sentence 3 is parallel to Sentence 2 talking about the problem with an eternity without change and how it will be meaningless.
Sentence 4 starts with a contrast marker 'but' and talks about how once we consider the consequences of existence without end (you should understand this as 'eternity'), we realise how meaningless it is.
1 and 4 make a logical block. Although we are fearful of loss, the consequences of eternity are horrifying.
2 and 1 is a block, because 1 points to something as difficult truth to learn using 'this'. Also, we know it should be 21 and not 31 because 2 is upstream to 3. This is so because 2 introduces eternity – 'the problem with eternity'. By the time we come to 3, we already know it is negative. (Observe sentence structure of 2 – The problem with eternity is **not that** it doesn't exist but that **it is undesirable and incoherent** (negativity introduced here).   Ans: (2143)

DIRECTIONS *for questions 1 to 4:* Answer the questions on the basis of the information given below.

P, Q, R, S, T, U and V worked in the same organization and went to the cafeteria during their snacks break between 3:00 pm and 3:30 pm, not all at the same time. The following is known about the order in which they visited the cafeteria:

i.   P came out of the cafeteria immediately after he entered. When he was coming out, there were two persons inside it.

ii. When Q entered the cafeteria, he found two persons inside.

iii. R did not have any companion when he entered or when he came out and did not see anyone inside.

iv. T and V were already present there, when S entered the cafeteria along with Q.

v.   When T entered the cafeteria, he did not find anyone else in it.

vi. U came out of the cafeteria with Q and V and at that time only S was inside it.

vii. V went to the cafeteria with P and found that T was already there.

Q1.   DIRECTIONS *for questions 1 to 3:* Select the correct alternative from the given choices.

Based on the information given, which of the following is the correct order in which P, Q, S and T came out of the cafeteria?

a) **P, Q, S, T**

b) **P, Q, T, S**   ✗ **Your answer is incorrect**

c) **Q, P, U, S**

d) **P, T, Q, S**

As per the information given we can have the following two cases for the order in which the seven persons entered and came out of the cafeteria.

Case I

Order in which they entered		Order in which they came out	
1.	R	1.	R
2.	T	2.	P
3, 4.	P,V	3.	T
5, 6.	Q,S	4-6.	Q,U,V
7.	U	7.	S

Case II

Order in which they entered		Order in which they came out	
1.	T	1.	P
2, 3.	P,V	2.	T
4, 5.	Q,S	3-5.	Q,U,V
6.	U	6.	S
7.	R	7.	R

The correct order in which they came out of the cafeteria was P, T, Q, S.

Choice (D)

Q3. DIRECTIONS *for questions 1 to 3:* Select the correct alternative from the given choices.

If U was the last person to enter the cafeteria, then who was the last person to come out of the cafeteria?

a) P

b) Q

c) S

d) U

As per the information given we can have the following two cases for the order in which the seven persons entered and came out of the cafeteria.

Case I

Order in which they entered		Order in which they came out	
1.	R	1.	R
2.	T	2.	P
3, 4.	P,V	3.	T
5, 6.	Q,S	4-6.	Q,U,V
7.	U	7.	S

Case II

Order in which they entered		Order in which they came out	
1.	T	1.	P
2, 3.	P,V	2.	T
4, 5.	Q,S	3-5.	Q,U,V
6.	U	6.	S
7.	R	7.	R

If U was the last person to enter the cafeteria, then S was the last person to come out of the cafeteria.   Choice (C)

Q4.   DIRECTIONS *for question 4:* Type in your answer in the input box provided below the question.

If T was the 2nd person to come out of the cafeteria, then how many persons entered the cafeteria before Q did?

As per the information given we can have the following two cases for the order in which the seven persons entered and came out of the cafeteria.

Case I

Order in which they entered		Order in which they came out	
1.	R	1.	R
2.	T	2.	P
3, 4.	P,V	3.	T
5, 6.	Q,S	4-6.	Q,U,V
7.	U	7.	S

Case II

Order in which they entered		Order in which they came out	
1.	T	1.	P
2, 3.	P,V	2.	T
4, 5.	Q,S	3-5.	Q,U,V
6.	U	6.	S
7.	R	7.	R

If T was the 2nd person to come out of the cafeteria, then as per case II, three persons entered the cafeteria before Q did.   Ans: (3)

DIRECTIONS *for questions 5 to 8:* Answer the questions on the basis of the information given below.

The following table gives the percentage change in the number of students of two tutorials – "Secure Your Future" and "Winners Everywhere" – who secured government jobs in the year 2018-19.

Chart: No. of Students by state for "Secure your Future" and "Winners Everywhere"

- Kerala: Secure your Future 750 (25%), Winners Everywhere 1000 (25%)
- West Bengal: Secure your Future 1000 (33.33%), Winners Everywhere 1000 (-20%)
- Andhra Pradesh: Secure your Future 1250 (-16.66%), Winners Everywhere 1125 (12.5%)
- Tamil Nadu: Secure your Future 1500 (20%), Winners Everywhere 1250 (-16.66%)
- Maharashtra: Secure your Future 1500 (-16.66%), Winners Everywhere 1750 (16.66%)
- Madhya Pradesh: Secure your Future 1000 (25%), Winners Everywhere 1250 (-16.66%)

■ Secure your Future   ■ Winners Everywhere

i. The percentage values shown in the brackets indicate the percentage change in the number of students who secured government jobs from that tutorial from 2017-18 to 2018-19.

ii. Secure Your Future had centres in 12 states where as Winners Everywhere had centres in 9 states.

Q5. DIRECTIONS *for questions 5 to 8:* Select the correct alternative from the given choices.

In 2018-19, the total number of students who secured government jobs from the given six states from Secure Your Future represent 80% of that from all the states where it has its centres. Further, the percentage increase in the total number of students who secured government jobs from Secure Your Future (in all the 12 states) in 2018-19 as compared to that in 2017-18 is $16\frac{2}{3}$ %. The total number of students who secured government jobs from Secure Your Future in the states other than those given in the table

a) **increased by 10 % from 2017-18 to 2018-19.**

b) **decreased by 20 % from 2017-18 to 2018-19.**

c) **increased by 118.75 % from 2017-18 to 2018-19.**

	In 2018 – 19		2017 – 18	
	Secure Your Future	Winners Every Where	Secure Your Future	Winners Every Where
Kerala	750	1000	600	800
West Bengal	1000	1000	750	1250
Andhra Pradesh	1250	1125	1500	1000
Tamil Nadu	1500	1250	1250	1500
Maharashtra	1500	1750	1800	1500
Madhya Pradesh	1000	1250	800	1500
Total	7000	7375	6700	7550

Let the total number of students who secured government jobs from Secure Your Future in all the 12 states in the year 2018-19 be T.
80% (T) = 7000 ⇒ T = 8750.
Let the total number of students of 'Secure Your Future' in the 12 states in 2017-18 be L.
$L + 16\frac{2}{3}\% \ L = 8750 \Rightarrow L = 7500$.
Therefore number of students from the remaining states in 2017-2018 = 7500 – 6700
= 800.
Number of students from the remaining states in 2018-19
= 8750 – 7000 = 1750.

Therefore the percentage increase = $\dfrac{1750 - 800}{800} \times 100 = 118.75\%$ Choice (C)

Q6. DIRECTIONS *for questions 5 to 8:* Select the correct alternative from the given choices.

Considering the six states given in the graph, if 'a' indicates the number of states in which the number of students who secured government jobs from Secure Your Future is more than that from Winners Everywhere in 2018-19 and 'b' represents the number of states in which the number of students who secured government jobs from Secure Your Future is less than that from Winners Everywhere in 2017-18, then

a) **a = b.**

b) **a = b – 2.**

c) a + 1 = b.

d) a + b = 5.

	In 2018 – 19		2017 – 18	
	Secure Your Future	Winners Every Where	Secure Your Future	Winners Every Where
Kerala	750	1000	600	800
West Bengal	1000	1000	750	1250
Andhra Pradesh	1250	1125	1500	1000
Tamil Nadu	1500	1250	1250	1500
Maharashtra	1500	1750	1800	1500
Madhya Pradesh	1000	1250	800	1500
Total	7000	7375	6700	7550

The states in which the number of students who secured govt jobs from 'Secure Your Future' is more than that from 'Winners Everywhere' in 2018-19 are Andhra Pradesh and Tamil Nadu. ∴ a = 2.
The states for which the number of students who secured govt jobs from Secure Your Future is less than that from Winners Everywhere in 2017-18 are Kerala, West Bengal, Tamil Nadu and Madhya Pradesh. ∴b = 4.
Therefore a = b – 2.   Choice (B)

Q7. DIRECTIONS *for questions 5 to 8:* Select the correct alternative from the given choices.

If the number of students of Winners Everywhere from Andhra Pradesh who secured government jobs in the year 2017-18 represents 10% of the total number of students who secured government jobs from all the tutorials in Andhra Pradesh in that year, then which of the following could be the maximum number of tutorials in Andhra Pradesh in that year, given that the number of students who secured government jobs in that year was the least for Winners Everywhere?

a) 6

b) 7

c) **8**

d) **9**

	In 2018 – 19		2017 – 18	
	Secure Your Future	Winners Every Where	Secure Your Future	Winners Every Where
Kerala	750	1000	600	800
West Bengal	1000	1000	750	1250
Andhra Pradesh	1250	1125	1500	1000
Tamil Nadu	1500	1250	1250	1500
Maharashtra	1500	1750	1800	1500
Madhya Pradesh	1000	1250	800	1500
Total	7000	7375	6700	7550

Number of students of 'Winners Everywhere' who secured Govt. Jobs from Andhra Pradesh in the year 2017-18 = 1000. For Secure Your Future, the number of students who secured Govt. jobs from Andhra Pradesh in 2017-18 = 1500. Total number of students from A.P getting Govt. jobs in 2017-18 = 10 (1000) = 10000.
Number of students from the remaining tutorials
= 10000 – (1000+ 1500) = 7500.
With each of the remaining tutorials having at least 1000 students we can have a maximum of 7 tutorials.
Thus total number of tutorials in Andhra Pradesh is at most 7 + 2 = 9

Choice (D)

Q8. DIRECTIONS *for questions 5 to 8:* Select the correct alternative from the given choices.

If the total number of students who took coaching from Winners Everywhere in 2017-18 for the states of West Bengal and Andhra Pradesh was in the ratio of 5 : 4 , then what was the ratio of the number of students from these two states who took coaching from Winners Everywhere, but were not able to secure Government jobs in the year 2017-18?

a) **5 : 4**

b) **4 : 5**

c) **1 : 2**

d) **3 : 2**

	In 2018 – 19		2017 – 18	
	Secure Your Future	Winners Every Where	Secure Your Future	Winners Every Where
Kerala	750	1000	600	800
West Bengal	1000	1000	750	1250
Andhra Pradesh	1250	1125	1500	1000
Tamil Nadu	1500	1250	1250	1500
Maharashtra	1500	1750	1800	1500
Madhya Pradesh	1000	1250	800	1500
Total	7000	7375	6700	7550

The ratio of the total number of students who secured Govt. jobs from 'Winners Everywhere' from West Bengal and Andhra Pradesh in the year 2017-18 was 5 : 4. Let us take this as $5 k_1$ and $4 k_1$.

Since the total number of students who enrolled in 'Winners Everywhere' in 2017-18 from the given states was also 5 : 4, let is consider these numbers as $5k_2$ and $4k_2$

The required ratio = $\dfrac{5k_2 - 5k_1}{4k_2 - 4k_1} = \dfrac{5(k_2 - k1)}{4(k_2 - k_1)} = \dfrac{5}{4}$ Choice (A)

DIRECTIONS *for questions 9 to 12:* Answer the questions on the basis of the information given below.

The following table gives some financial details of twelve Indian companies.

Company	Sales (Rs.crore)	Expenditure (Rs.crore)	Other Income (Rs.crore)	Liquidity Ratio	Net Profit (Rs.crore)
A	5800	2790	380	1.40	350
B	5490	4790	920	1.75	450
C	6400	2680	1240	1.62	180
D	3800	2190	1350	1.48	950
E	7820	6230	740	1.80	1020
F	2100	1980	980	1.73	800
G	4500	4230	650	1.36	720
H	3420	2140	1020	1.44	850
I	6500	5460	1460	1.33	650
J	6200	5840	1100	1.40	480
K	3680	2200	940	1.75	525
L	4500	3680	1130	1.45	550

Each of the above twelve companies belongs to exactly one of the four sectors – Pharmaceuticals, Automobiles, Mobiles and Construction. It is also known that, there are at least two of the above twelve companies in each of the four sectors.

Further, it is also known that,

i. for any two mobile companies X and Y, if sales of X are more than Y, the expenditure of X will be more than that of Y and the other income of X will be less than that of Y.

ii. for any two automobile companies X and Y, if the expenditure of X is less than that of Y, the liquidity ratio of X will be more than that of Y.

iii. for any two pharmaceutical companies X and Y, if the other income of X is more than that of Y, the net profit of X is more than that of Y.

iv. for any two construction companies X and Y, if the liquidity ratio of X is less than that of Y, the net profit of X is more than that of Y.

Further,

○ for every pharmaceutical company, the sales are more than Rs.5000 crore.

○ for every mobile company, the liquidity ratio is more than 1.6.

○ for every construction company, the other income is more than Rs.1000 crore.

○ for every automobile company, the net profit is more than Rs.700 crore

Q9. DIRECTIONS *for questions 9 to 12:* Select the correct alternative from the given choices.

Which among the following must be a construction company?

a) **I**

b) **D**

c) **J**

d) **C**

It is given that

For each Pharmaceutical company, sales is more than ₹5000 crore.

∴ The possible pharmaceutical companies are

A, B, C, E, I, J

Similarly by taking the condition given for other sectors

The possible Mobile companies are   B, C, E, F, K

The possible Automobile companies are   D, E, F, G, H

The possible constructions companies are   C, D, H, I, J, L

From the above details,

A cannot belong to any other sector ⇒ A is a pharmaceutical company

Similarly,

K → Mobile company

G → Automobile company

L → Construction company

Now by taking the condition given for the pharmaceutical sector, and comparing with A, all companies except C satisfy the condition.

(We circle the companies which are surely in the given sector)

Pharma: Ⓐ, B, E, I, J

Similarly, by observing the condition for mobiles, and comparing with K, all other companies except C satisfy the conditions.

Mobiles: B, E, F, Ⓚ

By observing the condition for Automobiles, and comparing with G, all other companies except E satisfy the conditions.

Automobiles :   D, F, Ⓖ, H

By observing the condition for construction, and comparing with company L, all other companies except D and J satisfy the conditions.

Construction :   C, H, I, Ⓛ

Now from the above results, C must be a construction Company, D must be an automobile company, J must be a pharmaceutical company.

Now by comparing D and H, H cannot be an automobile company, which means H must be a construction company. Similarly, by comparing J and E, E cannot be a pharma company.

Hence, E must be a mobile company. Also, comparing H and I, I cannot be a construction company. Therefore I is a pharma company. Hence the final distribution is:

Pharma   :   Ⓐ, B, Ⓘ, Ⓙ

Mobiles   :   B, Ⓔ, F, Ⓚ

Automobile   :   Ⓓ, F Ⓖ

Construction :   Ⓒ, Ⓗ, Ⓛ

B is either Mobiles or Pharma. F is either Mobiles or Automobile.

C must be a construction company.   Choice (D)

Q10. DIRECTIONS for questions 9 to 12: Select the correct alternative from the given choices.

Which among the following cannot be a pharmaceutical company?

a) A

b) E

c) B

d) J

It is given that
For each Pharmaceutical company, sales is more than ₹5000 crore.
∴ The possible pharmaceutical companies are

| A, B, C, E, I, J |

Similarly by taking the condition given for other sectors

The possible Mobile companies are | B, C, E, F, K |

The possible Automobile companies are | D, E, F, G, H |

The possible constructions companies are | C, D, H, I, J, L |

From the above details,

A cannot belong to any other sector ⇒ A is a pharmaceutical company
Similarly,
K → Mobile company
G → Automobile company
L → Construction company

Now by taking the condition given for the pharmaceutical sector, and comparing with A, all companies except C satisfy the condition.
(We circle the companies which are surely in the given sector)

Pharma: | Ⓐ, B, E, I, J |

Similarly, by observing the condition for mobiles, and comparing with K, all other companies except C satisfy the conditions.

Mobiles: | B, E, F, Ⓚ |

By observing the condition for Automobiles, and comparing with G, all other companies except E satisfy the conditions.

Automobiles : | D, F, Ⓖ, H |

By observing the condition for construction, and comparing with company L, all other companies except D and J satisfy the conditions.

Construction : | C, H, I, Ⓛ |

Now from the above results, C must be a construction Company, D must be an automobile company, J must be a pharmaceutical company.
Now by comparing D and H, H cannot be an automobile company, which means H must be a construction company. Similarly, by comparing J and E, E cannot be a pharma company.
Hence, E must be a mobile company. Also, comparing H and I, I cannot be a construction company. Therefore I is a pharma company. Hence the final distribution is:

Pharma : | Ⓐ, B, Ⓘ, Ⓙ |

Mobiles : | B, Ⓔ, F, Ⓚ |

Automobile : | Ⓓ, F, Ⓖ |

Construction : | Ⓒ, Ⓗ, Ⓛ |

B is either Mobiles or Pharma. F is either Mobiles or Automobile.

Q11. DIRECTIONS *for questions 9 to 12:* Select the correct alternative from the given choices.

If there are four companies in sector S, then S can be

a) **only Pharmaceuticals**

b) **only Automobiles**

c) **only Pharmaceuticals or Mobiles**

d) **only Construction or Pharmaceuticals**

It is given that
For each Pharmaceutical company, sales is more than ₹5000 crore.
∴ The possible pharmaceutical companies are

A, B, C, E, I, J

Similarly by taking the condition given for other sectors

The possible Mobile companies are   B, C, E, F, K

The possible Automobile companies are   D, E, F, G, H

The possible constructions companies are   C, D, H, I, J, L

From the above details,

A cannot belong to any other sector ⇒ A is a pharmaceutical company
Similarly,
K → Mobile company
G → Automobile company
L → Construction company

Now by taking the condition given for the pharmaceutical sector, and comparing with A, all companies except C satisfy the condition.
(We circle the companies which are surely in the given sector)

Pharma: Ⓐ, B, E, I, J

Similarly, by observing the condition for mobiles, and comparing with K, all other companies except C satisfy the conditions.

Mobiles: B, E, F, Ⓚ

By observing the condition for Automobiles, and comparing with G, all other companies except E satisfy the conditions.

Automobiles :   D, F, Ⓖ, H

By observing the condition for construction, and comparing with company L, all other companies except D and J satisfy the conditions.

Construction :   C, H, I, Ⓛ

Now from the above results, C must be a construction Company, D must be an automobile company, J must be a pharmaceutical company.
Now by comparing D and H, H cannot be an automobile company, which means H must be a construction company. Similarly, by comparing J and E, E cannot be a pharma company.
Hence, E must be a mobile company. Also, comparing H and I, I cannot be a construction company. Therefore I is a pharma company. Hence the final distribution is:

Pharma   :   Ⓐ, B, Ⓘ, Ⓙ

Mobiles   :   B, Ⓔ, F, Ⓚ

Automobile   :   Ⓓ, F Ⓖ

Construction :   Ⓒ, Ⓗ, Ⓛ

B is either Mobiles or Pharma. F is either Mobiles or Automobile.

Q12. DIRECTIONS *for questions 9 to 12:* Select the correct alternative from the given choices.

If all the four sectors have the same number of companies, then which of the following is true?

a) **B is a pharmaceutical company.**

b) **F is a mobile company.**

c) **I is a construction company.**

d) **None of the above**

DIRECTIONS *for questions 13 to 16:* Answer the questions on the basis of the following information given below.

The answer-key of a medical common entrance test held nationwide was leaked to a group of unscrupulous people. The CBI team arrested a total of twelve persons – P_1, P_2, P_3, P_4, P_5, P_6, P_7, P_8, P_9, P_{10}, P_{11}, and P_{12} – in this matter. On interrogating them, the following facts have been obtained regarding their operation. Initially, P_1 obtained the correct answer key. All the others created their answer-keys in the following manner. They obtain the answer-key from one or more persons who already possess the same. These people are called his/her "advisors". If a person has more than one advisor, then he/she compares the answer-keys obtained from each of his/her advisors. If the key to a question from each of the advisors is identical, then it is copied. Otherwise it is left blank. If a person has only one advisor, then he/she copies the advisor"s answers into his/her copy. Finally, each person compulsorily replaces one of the answers (not a blank one) with a wrong answer in his/her answer-key.

The paper contained 100 questions. The CBI team has ruled out the possibility of two or more of them deliberately introducing wrong answers to the same question. The CBI team has a copy of the correct answer-key and has tabulated the following data. These data represent the answer numbers.

Person	Wrong Answer(s)	Blank Answer(s)
P_2	48	31,57,71
P_3	71	--
P_4	33,42	--
P_5	68	33,57,71,99
P_6	99	57,71
P_7	33	--
P_8	31	57,71
P_9	31,38	57,71
P_{10}	31,38,66	57,71
P_{11}	56,57	--
P_{12}	57	--

Q13.   DIRECTIONS *for questions 13 to 16:* Select the correct alternative from the given choices.

Which of the following persons can have three advisors?

a) P_2

b) P_6

c) P_5

d) P_2, P_5 and P_6.

P_2 can have P_3, P_{12} and P_8 as advisors to get the given combinations of wrong and blank answers.
P_6 can have P_1, P_3 and P_{12} as advisors to get the given combinations of wrong and blank answers.
P_5 can have P_1, P_6 and P_7 as advisors to get the given combination of wrong and blank answers.   Choice (D)

Q14. DIRECTIONS *for questions 13 to 16:* Select the correct alternative from the given choices.

How many people (excluding P1) needed to make answer-keys before P9 could make his/her answer-key?

a) **4**

b) **3**

c) **2**

d) **1**

If P$_3$, P$_{12}$ and P$_8$ in that order have created their key, then P$_9$ will get the key from P$_8$ and creates his/her key. Choice (B)

Q15. DIRECTIONS *for questions 13 to 16:* Select the correct alternative from the given choices.

Both P3 and P12 were advisors to

a) **P6.**

b) **P9.**

c) **P10.**

d) **P11.**

P_3 and P_{12} were advisors to P_6 and P_8.   Choice (A)

Q16.   DIRECTIONS *for questions 13 to 16:* Select the correct alternative from the given choices.

Which of the following statements is/are true?

a) **P_8 introduced the wrong answer to question 31.**

b) **P_{10} introduced the wrong answer to question 38.**

c) **P_{11} introduced the wrong answer to question 57.**

d) **Both (A) and (B)**

We can conclude that P_8 introduced the wrong answer to question 31 as both P_9 and P_{10} have more than one wrong answer. For a similar reason as above, we can say that P_9 introduced wrong answer to question 38 and P_{12} introduced wrong answer to question 57.   Choice (A)

DIRECTIONS *for questions 17 to 20:* Answer the questions on the basis of the information given below.

In a shop, five articles – P, Q, R, S and T – are to be sold. The cost price and the selling price of each of the five articles are among Rs.650, Rs.700, Rs.750, Rs.850 and Rs.900. The cost price of each of the articles is different and also the selling price of each of the articles is different. For any article, the selling price is not equal to its cost price.

The following information is known about the cost prices and selling prices of the articles:

i.   The cost price of article R is equal to the selling price of article T. While selling R as well as T the shopkeeper incurred a loss.

ii. The cost price of Q is more than that of S and the shopkeeper obtained a profit by selling Q.

iii. If a profit is made on selling any article, it must be more than Rs.50. The profit made on any two articles is not the same. The loss incurred on any two articles is not the same.

iv. On only two articles did the shopkeeper make a profit. The profit/loss made on any article is not Rs.150.

Q17.   DIRECTIONS *for question 17:* Type in your answer in the input box provided below the question.

What is the difference (in Rs.) between the cost price and the selling price of article S?

Let us name articles by their C.P. for convenience as Article-650, Article-700, ... Article-900.

Article-900, Article-750 and Article-850 cannot be sold for 900 because no article is sold at its selling price or for a profit of 50 or 150. So, either S.P of Article-650 or Article-700 is 900.

Article-900 and Article-850 cannot be sold for a profit because no article is sold for a profit of 50. So, exactly one among Article-700 or Article-750 is sold for a profit.

Case (i):

Article-650 is sold for 900.
Article-700 possible profits are 50, 150 since no article is sold for a profit of 50 or 150.
Article-700 is sold for a loss and its S.P. is 650.
Article 750 is sold for a profit and S.P. is 650.
Since no article is sold for a loss of 150 the S.P. of article-850 is 750 $\Rightarrow$ S.P of article-900 is 700.

Case (i):

C.P	S.P	Profit/Loss (S.P – C.P)
650	900	+250
700	650	–50
750	850	+100
850	750	–100
900	700	–200

Of the articles which were sold for a loss only the C.P of Article-700 is equal to the S.P. of Article-900.
$\Rightarrow$ Article-700 is R and Article-900 is T.
Q is sold for a profit and Q's C.P. > S's C.P.
$\Rightarrow$ Article-750 is Q and Article-650 is S
$\Rightarrow$ Article-850 is P.

Case (i):

	C.P	S.P	Profit/Loss (S.P – C.P)
S	650	900	+250
R	700	650	–50
Q	750	850	+100
P	850	750	–100
T	900	700	–200

Case (ii):

Article-700 is sold for 900 for a profit of 200.
Article-650 is sold for 750 because of the possible profits (50, 100, 200) only 100 consistent because no two articles had same profit.
Article-850 cannot be sold for 700 since loss cannot be 150.
$\therefore$ Article-850 is sold for 650.
Article-750 is sold for 700 because it is sold for a loss. Article-900 is sold for 850. So case (ii) is inconsistent since two articles have the same loss.

|C.P. – S.P| of S = |650 – 900| = 250   Ans: (250)

DIRECTIONS *for questions 18 to 20:* Select the correct alternative from the given choices.

Which article was sold for Rs.700?

a) **Q**

b) **R**

c) **S**

d) **T** ✔ **Your answer is correct**

Let us name articles by their C.P. for convenience as Article-650, Article-700, ... Article-900.

Article-900, Article-750 and Article-850 cannot be sold for 900 because no article is sold at its selling price or for a profit of 50 or 150. So, either S.P of Article-650 or Article-700 is 900.

Article-900 and Article-850 cannot be sold for a profit because no article is sold for a profit of 50. So, exactly one among Article-700 or Article-750 is sold for a profit.

Case (i):

Article-650 is sold for 900.
Article-700 possible profits are 50, 150 since no article is sold for a profit of 50 or 150. Article-700 is sold for a loss and its S.P. is 650.
Article 750 is sold for a profit and S.P. is 650.
Since no article is sold for a loss of 150 the S.P. of article-850 is 750 ⇒ S.P of article-900 is 700.

Case (i):

C.P	S.P	Profit/Loss (S.P – C.P)
650	900	+250
700	650	−50
750	850	+100
850	750	−100
900	700	−200

Of the articles which were sold for a loss only the C.P of Article-700 is equal to the S.P. of Article-900.
⇒ Article-700 is R and Article-900 is T.
Q is sold for a profit and Q's C.P. > S's C.P.
⇒ Article-750 is Q and Article-650 is S
⇒ Article-850 is P.

Case (i):

	C.P	S.P	Profit/Loss (S.P – C.P)
S	650	900	+250
R	700	650	−50
Q	750	850	+100
P	850	750	−100
T	900	700	−200

Case (ii):

Article-700 is sold for 900 for a profit of 200.
Article-650 is sold for 750 because of the possible profits (50, 100, 200) only 100 consistent because no two articles had same profit.
Article-850 cannot be sold for 700 since loss cannot be 150.
∴ Article-850 is sold for 650.
Article-750 is sold for 700 because it is sold for a loss. Article-900 is sold for 850. So case (ii) is inconsistent since two articles have the same loss.

S.P. is 700 for article T.   Choice (D)

DIRECTIONS *for questions 17 to 20:* Answer the questions on the basis of the information given below.

In a shop, five articles – P, Q, R, S and T – are to be sold. The cost price and the selling price of each of the five articles are among Rs.650, Rs.700, Rs.750, Rs.850 and Rs.900. The cost price of each of the articles is different and also the selling price of each of the articles is different. For any article, the selling price is not equal to its cost price.

The following information is known about the cost prices and selling prices of the articles:

   i.   The cost price of article R is equal to the selling price of article T. While selling R as well as T the shopkeeper incurred a loss.

   ii.   The cost price of Q is more than that of S and the shopkeeper obtained a profit by selling Q.

   iii.   If a profit is made on selling any article, it must be more than Rs.50. The profit made on any two articles is not the same. The loss incurred on any two articles is not the same.

   iv.   On only two articles did the shopkeeper make a profit. The profit/loss made on any article is not Rs.150.

Q19.   DIRECTIONS *for questions 18 to 20:* Select the correct alternative from the given choices.

Which of the following statements is true?

a) **The selling price of S is Rs.700.**

b) **The profit made by selling P is Rs.200.**

c) **The cost price of T is not Rs.750.**   ✔ **Your answer is correct**

d) **None of the above**

Let us name articles by their C.P. for convenience as Article-650, Article-700, ... Article-900.

Article-900, Article-750 and Article-850 cannot be sold for 900 because no article is sold at its selling price or for a profit of 50 or 150. So, either S.P of Article-650 or Article-700 is 900.

Article-900 and Article-850 cannot be sold for a profit because no article is sold for a profit of 50. So, exactly one among Article-700 or Article-750 is sold for a profit.

Case (i):

Article-650 is sold for 900.
Article-700 possible profits are 50, 150 since no article is sold for a profit of 50 or 150.
Article-700 is sold for a loss and its S.P. is 650.
Article 750 is sold for a profit and S.P. is 650.
Since no article is sold for a loss of 150 the S.P. of article-850 is 750 $\Rightarrow$ S.P of article-900 is 700.

Case (i):

C.P	S.P	Profit/Loss (S.P – C.P)
650	900	+250
700	650	−50
750	850	+100
850	750	−100
900	700	−200

Of the articles which were sold for a loss only the C.P of Article-700 is equal to the S.P. of Article-900.
$\Rightarrow$ Article-700 is R and Article-900 is T.
Q is sold for a profit and Q's C.P. > S's C.P.
$\Rightarrow$ Article-750 is Q and Article-650 is S
$\Rightarrow$ Article-850 is P.

Case (i):

	C.P	S.P	Profit/Loss (S.P – C.P)
S	650	900	+250
R	700	650	−50
Q	750	850	+100
P	850	750	−100
T	900	700	−200

Case (ii):

Article-700 is sold for 900 for a profit of 200.
Article-650 is sold for 750 because of the possible profits (50, 100, 200) only 100 consistent because no two articles had same profit.
Article-850 cannot be sold for 700 since loss cannot be 150.
∴ Article-850 is sold for 650.
Article-750 is sold for 700 because it is sold for a loss. Article-900 is sold for 850. So case (ii) is inconsistent since two articles have the same loss.

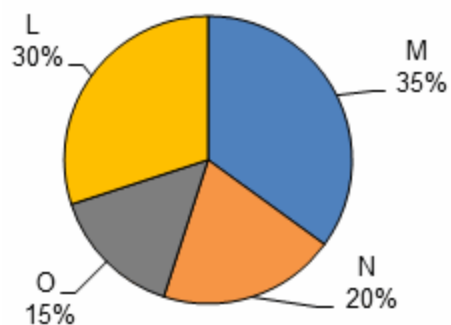C.P. of T is 900.   Choice (C)

Q20.   DIRECTIONS *for questions 18 to 20:* Select the correct alternative from the given choices.

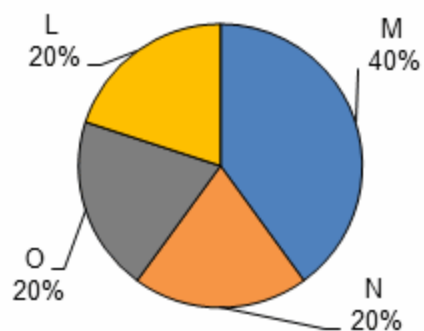Which of the following items was sold for a profit?

a) **S**

b) **Q**

c) **P**

d) **More than one of the above**

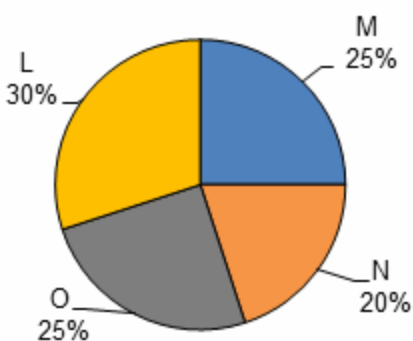DIRECTIONS *for questions 21 to 24:* Answer the questions on the basis of information given below.

A company has four sales outlets – L, M, N and O. The financial details of these sales outlets are given below.
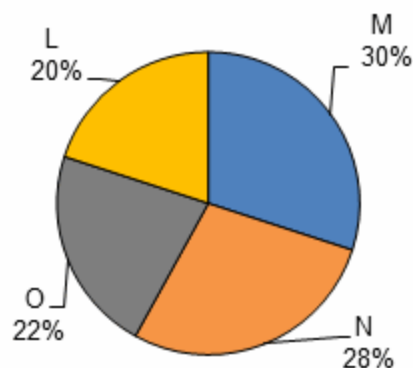
L 30%   M 35%   N 20%   O 15%

Total Sales = ₹76480

L 20%   M 40%   N 20%   O 20%

Total Marketing Costs = ₹24260

M 25%   L 30%   N 20%   O 25%

Total Salaries = ₹18460

M 30%   L 20%   N 28%   O 22%

Total Fixed Costs = ₹20480

Profit at different outlets (in ₹)

Outlet	L	M	N	O
Profit	3280	2860	3760	3380

$$\text{Profit percentage} = \frac{\text{Profit}}{\text{Sales}} \times 100$$

Q21. DIRECTIONS *for questions 21 to 24:* Select the correct alternative from the given choices.

Which outlet has the highest profit percentage?

a) **L**

b) **M**

c) **N**

d) O ✓ **Your answer is correct**

$$\text{Profit \% of L} = \frac{3280}{\frac{30}{100} \times 76480} \times 100 = \frac{3280}{22900} \times 100 = 14.3\%$$

$$\text{Profit \% of M} = \frac{2860}{\frac{35}{100} \times 76480} \times 100 = \frac{2860}{26750} \times 100 = 10.7\%$$

$$\text{Profit \% of N} = \frac{3760}{\frac{20}{100} \times 76480} \times 100 = \frac{3760}{15300} \times 100 = 24.6\%$$

$$\text{Profit \% of O} = \frac{3380}{\frac{15}{100} \times 76480} \times 100 = \frac{3380}{11500} \times 100 = 29.5\%$$

∴ O has the highest profit percentage.   Choice (D)

Q22.   DIRECTIONS *for questions 21 to 24:* Select the correct alternative from the given choices.

Which of the following is/are true?

    a.   The fixed costs of L are more than the marketing costs of O.

    b.   The marketing costs of N are more than the fixed costs of N.

    c.   The total salary of employees of L is more than the marketing costs of O.

a) **Only (a)**

b) **Only (b)**

c) **Only (c)** ✓ **Your answer is correct**

d) **(a) and (b)**

Let us name articles by their C.P. for convenience as Article-650, Article-700, ... Article-900.

Article-900, Article-750 and Article-850 cannot be sold for 900 because no article is sold at its selling price or for a profit of 50 or 150. So, either S.P of Article-650 or Article-700 is 900.

Article-900 and Article-850 cannot be sold for a profit because no article is sold for a profit of 50. So, exactly one among Article-700 or Article-750 is sold for a profit.

Case (i):

Article-650 is sold for 900.
Article-700 possible profits are 50, 150 since no article is sold for a profit of 50 or 150.
Article-700 is sold for a loss and its S.P. is 650.
Article 750 is sold for a profit and S.P. is 650.
Since no article is sold for a loss of 150 the S.P. of article-850 is 750 $\Rightarrow$ S.P of article-900 is 700.

Case (i):

C.P	S.P	Profit/Loss (S.P – C.P)
650	900	+250
700	650	−50
750	850	+100
850	750	−100
900	700	−200

Of the articles which were sold for a loss only the C.P of Article-700 is equal to the S.P. of Article-900.
$\Rightarrow$ Article-700 is R and Article-900 is T.
Q is sold for a profit and Q's C.P. > S's C.P.
$\Rightarrow$ Article-750 is Q and Article-650 is S
$\Rightarrow$ Article-850 is P.

Case (i):

	C.P	S.P	Profit/Loss (S.P – C.P)
S	650	900	+250
R	700	650	−50
Q	750	850	+100
P	850	750	−100
T	900	700	−200

Case (ii):

Article-700 is sold for 900 for a profit of 200.
Article-650 is sold for 750 because of the possible profits (50, 100, 200) only 100 consistent because no two articles had same profit.
Article-850 cannot be sold for 700 since loss cannot be 150.
∴ Article-850 is sold for 650.
Article-750 is sold for 700 because it is sold for a loss. Article-900 is sold for 850. So case (ii) is inconsistent since two articles have the same loss.

Both S and Q were sold for a profit.   Choice (D)

Fixed costs of L = $\frac{20}{100}$ × 20,480 = 4096

Marketing cost of O = $\frac{20}{100}$ × 24,260 = 4852

∴ Fixed costs of L are less than the marketing costs of O.

Marketing cost of N = $\frac{20}{100}$ × 24,260 = 4852

Fixed cost of N = $\frac{28}{100}$ × 20,480 ≅ 5700

⇒ Fixed costs of N are more than the marketing costs of N.

Salary for employees of L = $\frac{30}{100}$ × 18460 = 5538

Salary for employees of L is more than the marketing costs of O.   Choice (C)

Q23.   DIRECTIONS *for questions 21 to 24:* Select the correct alternative from the given choices.

If the number of employees in L, M, N and O are 10, 8, 7 and 7 respectively, then the average salary per employee of which outlet is the second highest?

a) **L**

b) **M**   ✔ **Your answer is correct**

c) **N**

d) **O**

The average salary at outlet L = $\dfrac{30}{100} \times \dfrac{18460}{10} \Rightarrow \cong 550$

The average salary at outlet M $\Rightarrow \dfrac{25}{100} \times \dfrac{18460}{8} = \cong 575$

The average salary at outlet N $\Rightarrow \dfrac{20}{100} \times \dfrac{18460}{7} \cong 530$

The average salary at outlet O $\Rightarrow \dfrac{25}{100} \times \dfrac{18460}{7} \cong 660$

∴ Average salary at outlet M is the second highest.

Alternative Solution:

The average salary at an outlet

= Its percentage of total salary × Total salary × $\dfrac{1}{\text{No. of employees}}$

The average salary at L $\Rightarrow \dfrac{30}{100} \times \dfrac{\text{Total Salary}}{10}$

The average salary at M $\Rightarrow \dfrac{25}{100} \times \dfrac{\text{Total Salary}}{8}$

The average salary at N $\Rightarrow \dfrac{20}{100} \times \dfrac{\text{Total Salary}}{7}$

The average salary at O $\Rightarrow \dfrac{25}{100} \times \dfrac{\text{Total Salary}}{7}$

∵ $\left(\dfrac{\text{Total salary}}{100}\right)$ is common in all equations, to find the 2nd highest it is enough to compare the rest of the expressions.

We get,

L	M	N	O
3	$3\dfrac{1}{8}$	$2\dfrac{6}{7}$	$3\dfrac{4}{7}$

The average salaries of different outlets when arranged in ascending order is O, M, L, N.

∴ Average salary at outlet M is the second highest.   Choice (B)

Q24.   DIRECTIONS *for questions 21 to 24:* Select the correct alternative from the given choices.

For which company is the difference between the Total Sales and the Total Salaries the highest?

a) **L**

b) **M**   ✔ **Your answer is correct**

c) **N**

d) **O**

Let S be the total Sales and C be the total salaries.
Required difference for L, M, N and O will be 0.3S-0.3C, 0.35S-0.25C, 0.2S-0.2C and 0.15S-0.25C.
By observation, we can see that this difference will be the maximum for M.

Choice (B)

DIRECTIONS *for questions 25 to 28:* Answer the questions on the basis of the information given below.

The following table provides details of 4,200 people, who participated in an opinion poll related to Indian politics, conducted by CNN. The opinion poll comprised four queries – i, ii, iii and iv, and each person who participated in the poll answered at least one query. The first number in each cell is the number of people from that city who participated in the poll. The minimum and maximum age of the person in each group is given in brackets. (For example, in Mumbai, there is at least one person whose age is 25 years and one person whose age is 60 years, both of whom answered Query i)

Query	Mumbai	Delhi	Kolkata	Chennai	Total
i	300(25,60)	268(18,50)	244(20,51)	278(22,62)	1090
ii	312(17,53)	289(20,61)	290(23,38)	260(15,44)	1151
iii	292(18,63)	260(20,46)	280(16,65)	350(21,58)	1182
iv	325(21,55)	302(19,49)	340(19,66)	320(26,68)	1287
	1112	998	1063	1027	4200

Note that no person belonged to more than one city and a person might have answered more than one query.

Q25. DIRECTIONS *for question 25:* Select the correct alternative from the given choices.

What is the maximum percentage of persons from Delhi, who participated in the poll and answered more than one query?

a) **11.7%**

b) **12.1%**

c) **12.9%**

d) **13.5%**

The total number of times the four queries are answered = 268 + 289 + 260 + 302
= 1119

∴ Queries in excess = 1119 - 998 = 121

998 persons one query each. From among these persons a few persons answered more than one query. For the percentage to be maximum no person answers 3 or 4 queries i.e. 121 persons have to answer exactly 2 queries.

∴ The required percentage = $\dfrac{121}{998} \times 100 = 12.1\%$.   Choice (B)

Q26.   DIRECTIONS *for questions 26 to 28:* Type in your answer in the input box provided below the question.

What is the minimum number of persons from the four cities together who answered more than one query?

For the number of persons to be the least; maximum number of persons have to answer 4 queries.

City	Queries in excess
Mumbai	1229 - 1112 = 117
Delhi	1119 - 998 = 121
Kolkata	1154 - 1063 = 91
Chennai	1208 - 1027 = 181

The required number of persons

$$= \frac{117}{3} + \frac{121}{3} + \frac{91}{3} + \frac{181}{3}$$

$$= 39 + \frac{120+1}{3} + \frac{90+1}{3} + \frac{180+1}{3}$$

= 39 + (40 + 1) + (30 + 1) + (60 + 1)
(i.e. from Delhi 40 persons have answered all 4 queries and 1 person has answered two queries) = 172   Ans: (172)

Q27.   DIRECTIONS *for questions 26 to 28:* Type in your answer in the input box provided below the question.

What is the maximum number of persons from Chennai who answered exactly three queries?

The required number of persons

$$= \frac{1}{2}[1208 - 1027] = \frac{1}{2}[181] = 90$$

(The denominator should be 2, not 3, because we have considered that all the 1027 persons have answered one query each initially).
∴ Maximum of 90 persons have answered exactly 3 questions.   Ans: (90)

Q28.   DIRECTIONS *for questions 26 to 28:* Type in your answer in the input box provided below the question.

The maximum number of persons who answered query i and whose age is greater than 20 years and less than 50 years is

The required number = 299 + 266 + 242 + 277 = 1084.   Ans: (1084)

Q29.   DIRECTIONS *for questions 29 and 30:* Select the correct alternative from the given choices.

If D is the only senior player selected, then who among the following cannot be selected?

a) **A**

b) **K**

c) **G** ✔ **Your answer is correct**

d) **F**

As D is the only senior player selected, none among B, C, E can be selected. Further, if D is selected neither I or J can be selected.
Thus, four players should be selected from A, F, G, H and K. ⇒ Only one player among these should not be selected. From the information, if G is selected, then neither H nor F can be selected. Thus, if G is selected, the team would be D, G, A and K, i.e., only a four player team ⇒ G should not be selected and the team is D, A, F, H and K.   Choice (C)

Q30. DIRECTIONS *for questions 29 and 30:* Select the correct alternative from the given choices.

If exactly four non-senior players are selected and G is one of them, then who among the following must be selected?

a) **B**

b) **I**

c) **A**

d) **K** ✔ **Your ans**

As four non-senior players are selected, only one senior player can be selected ⇒ One among B, C, D, E is selected. As G is selected, neither H nor F can be selected ⇒ Three players must be selected from among A, I, J and K. ⇒ Only one player can be left out among A, I, J and K. If K is not selected, A cannot be selected. In that case, we would need to select three players from only I and J, which is not possible. Hence, K must be selected.   Choice (D)

Q31.   DIRECTIONS *for questions 31 and 32:* Type in your answer in the input box provided below the question.

If three senior players are selected, in how many ways can a team with neither D nor G be selected?

Your Answer:11   Your answer is correct

All three players (B, C, E) are selected. This can be done in only one way. In such a case exactly two players among A, F, H, I, J, K must be selected. If A is selected, then K must be selected ⇒ The selection can be done in only one way. If A is not selected, then two players among F, H, I, J, K must be selected, which can be done in $^5C_2 = 10$ ways. Thus, the total number of ways in which the team can be selected = 10 + 1 = 11 ways.   Ans: (11)

Q32.   DIRECTIONS *for questions 31 and 32:* Type in your answer in the input box provided below the question.

If both D and A are selected, in how many ways can a team be selected?

Your Answer:23

If A is selected, K must also be selected. Further, I and J cannot be in the team.
From B, C, E, F, G and H, two players must be selected.
This can be done in 6_{C_2} ways = 15 ways.

However the teams with G, F and G, H cannot be selected. Hence, a team can be selected in 13 ways.   Ans: (13)

Q1. DIRECTIONS *for questions 1 and 2:* Select the correct alternative from the given choices.

The number 75 in the decimal system when expressed in the number system to the base 7, comprises

a) **two consecutive digits.**

b) **two non-consecutive digits.**

c) **three consecutive even digits.**

d) **three consecutive odd digits.**   ✔ **Your answer is correct**

We need to convert 75 in the decimal system to base 7

7	75	Remainder
7	10	5
7	1	3
	0	1

Therefore $(75)_{10} = (135)_7$
Thus, in base 7 it is a number comprising three consecutive odd digits.

Alternative Solution:

Since $75 > 7^2$, i.e., 49, $(75)_{10}$ when written in base 7 will
Comprise at least three digits. Also, since 75 is odd, all three digits cannot be even.
Hence, only choice (D) is possible.   Choice (D)

Q2. DIRECTIONS *for questions 1 and 2:* Select the correct alternative from the given choices.

If $0 < x < \dfrac{1}{2}$, which of the following is the greatest?

a) x^{-2} ✗ **Your answer is incorrect**

b) $x^{-\frac{3}{2}}$

c) $\dfrac{1}{\sqrt{x}}$

d) $\left(\dfrac{1}{x^{-2}}\right)^{-3}$

Since $0 < x < \dfrac{1}{2}$, let $x = \dfrac{1}{4}$.

From the options, we get

(A) $x^{-2} = \dfrac{1}{x^2} = \dfrac{1}{\left(\dfrac{1}{4}\right)^2} = 16$

(B) $x^{-\frac{3}{2}} = \dfrac{1}{x^{\frac{3}{2}}} = \dfrac{1}{\left(\dfrac{1}{4}\right)^{\frac{3}{2}}} = 4^{\frac{3}{2}} = 8$

(C) $\dfrac{1}{\sqrt{x}} = \dfrac{1}{\sqrt{\dfrac{1}{4}}} = \pm 2$ (assuming positive root as per convention)

(D) $\left(\dfrac{1}{x^{-2}}\right)^{-3}$ $(x^2)^{-3} = x^{-6} = \dfrac{1}{x^6} = \dfrac{1}{\left(\dfrac{1}{4}\right)^6} = 4096$

Therefore, choice (D) gives the greatest value.

Alternative Solution:

Let $y = \dfrac{1}{x}$, where $y > 2$

Considering the options, we are required to compare

y^2, $y^{\frac{3}{2}}$, $y^{\frac{1}{2}}$ and y^6. Since $y > 2$, clearly y^6 will be the greatest.　　　　Choice (D)

Q3.　DIRECTIONS *for question 3:* Type in your answer in the input box provided below the question.

Find the minimum possible sum of four prime numbers which are in arithmetic progression.

Your Answer:56

DIRECTIONS *for question 4:* Select the correct alternative from the given choices.

If $a = \sqrt{5} - 2$, then which of the following gives the value of $a^3 + \dfrac{1}{a^3}$?

a) $34\sqrt{5}$ ✓ **Your answer is correct**

b) **76**

c) $32\sqrt{5}$

d) $42\sqrt{3}$

$a = \sqrt{5} - 2$

$\dfrac{1}{a} = \dfrac{1}{\sqrt{5}-2} = \dfrac{\sqrt{5}+2}{(\sqrt{5}-2)(\sqrt{5}+2)} = \sqrt{5}+2$

$\therefore a + \dfrac{1}{a} = 2\sqrt{5}$

$a^3 + \dfrac{1}{a^3} = \left(a + \dfrac{1}{a}\right)^3 - 3\left(a + \dfrac{1}{a}\right) = \left(2\sqrt{5}\right)^3 - 3\left(2\sqrt{5}\right)$

$\qquad\qquad = 40\sqrt{5} - 6\sqrt{5}$

$\qquad\qquad = 34\sqrt{5}$

Alternative Solution:

This question can also be answered using the online calculator, by evaluating the given expression and each of the answer choices.   Choice (A)

Q5. DIRECTIONS *for question 5:* Type in your answer in the input box provided below the question.

In a triangle ABC, medians AD and BE are perpendicular to each other. If the length of the median AD is 8 cm and the area of the triangle is 144 sq. cm, find the length (in cm) of the median BE.

Your Answer:6
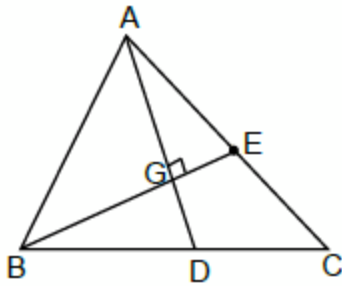
Let G be the centroid of the triangle.

As AD = 8, AG = $\frac{16}{3}$ and GD = $\frac{8}{3}$

$$\left[\because \frac{AG}{GD} = \frac{2}{1} \right]$$

Let the length of BE be k

Area of $\triangle$ABE = $\frac{1}{2}$(BE) (AG) = $\frac{1}{2}$(BE)$\left(\frac{16}{3}\right)$

We know that any median divides the area of a triangle into two equal parts.

$$\therefore \frac{1}{2}(k) \left(\frac{16}{3}\right) = \frac{144}{2}$$

Therefore k = 27   Ans: (27)

Q6. DIRECTIONS *for question 6:* Select the correct alternative from the given choices.

Which of the following points does not lie on the graph of $y = \dfrac{x+1}{x-1}$?

a)

(2, 3)

b) $\left(\dfrac{1}{2}, -3\right)$

c)

(3, 4)

✔ Your answer is correct

d) $\left(\dfrac{1}{3}, -2\right)$

It is given that $y = \dfrac{x+1}{x-1}$

We can go by the options and check which of them lie on the graph of the given relation.

From option (A), putting $x = 2$, we get, $y = \dfrac{2+1}{2-1} = 3$

So (2, 3) lies on the graph.

From option (B), putting $x = \dfrac{1}{2}$, we get, $y = \dfrac{\frac{1}{2}+1}{\frac{1}{2}-1} = -3$

So $(\dfrac{1}{2}, -3)$ lies on the graph.

From option (C), putting $x = 3$, we get, $y = \dfrac{3+1}{3-1} = 2$

∴ (3, 4) does not lie on the graph.
We need not check for option (D).   Choice (C)

Q7.   DIRECTIONS *for question 7:* Type in your answer in the input box provided below the question.

For how many natural numbers less than 10₅ is the sum of their digits equal to 10?

Consider ten balls that have been placed in a row from left to right as shown below
O O O O O O O O O O.
Now, all digits less than 10^5 (i.e., upto 99999) with sum of digits being 10 can be represented by drawing four vertical lines separating these 10 balls into five groups, where the number of balls in each group will stand for a digit (the number of balls in the left most group for the ten thousands digit and the number of balls in the right most for the units digit)

Hence these 10 balls + 4 lines can be arranged among themselves in $\dfrac{(10+4)!}{10!4!}$ ways

(i.e., distinct permutations of 14 items, of which 4 are of one type and 10 are of another type) = $^{14}C_4$ ways
But since the maximum value of a single digit = 9, there are five invalid cases where all 10 balls fall into the same group (i.e., there cannot be any single-digit numbers satisfying the given condition).
Hence required answer = $^{14}C_4 - 5$

$= \dfrac{14 \times 13 \times 12 \times 11}{1 \times 2 \times 3 \times 4} - 5 = 996$ Ans: (996)

If $x^2 + y^2 = 14xy$, then $\log\left[\dfrac{x^4 + y^4 - 2x^2 y^2}{192}\right]$ is equal to which of the following?

It is given that
$x^2 + y^2 = 14xy$ _____ (1)
Adding 2 xy to both sides of eq (1), we get
$x^2 + y^2 + 2xy = 16xy$
$\Rightarrow (x + y)^2 = 16xy$
Similarly, subtracting 2xy form both sides of eq (1), we get
$x^2 + y^2 - 2xy = 12xy$
$(x - y)^2 = 12xy$

Now $\log\dfrac{x^4 + y^4 - 2x^2 y^2}{192} = \log\dfrac{\left(x^2 - y^2\right)^2}{192}$

$= \log\dfrac{\left[(x+y)(x-y)\right]^2}{192}$

$= \log\dfrac{(16\,xy)(12\,xy)}{192}$

$= \log(xy)^2$
$= 2[\log x + \log y]$ 　　　　　　　　　　　　　　　　　　Choice (C)

Q9. DIRECTIONS *for questions 8 to 11:* Select the correct alternative from the given choices.

If a certain sum, invested under compound interest, amounts to twice as much at the end of the seventh year as it would at the end of the second year, then the amount at the end of the 64th year will be how many times that at the end of the 49th year?

a) **8**

b) **16**

c) **32**

d) **4**

Let the principal and the rate of interest per annum be denoted by p and r respectively.
It is given that $A_7 = 2A_2$

$$P\left(1+\frac{r}{100}\right)^7 = 2P\left(1+\frac{r}{100}\right)^2$$

$$\Rightarrow \left(1+\frac{r}{100}\right)^5 = 2$$

We need to find $\dfrac{A_{64}}{A_{49}} = \dfrac{p\left(1+\dfrac{r}{100}\right)^{64}}{p\left(1+\dfrac{r}{100}\right)^{49}} = \left(1+\dfrac{r}{100}\right)^{15}$

$$= \left(1+\frac{r}{100}\right)^{5\times3} = 2^3 = 8$$

Alternative Solution:

The amount at end of 2nd year doubled by the end of the 7th year. Hence, the amount doubles after every five years.
Now, from 49th to 64th year, involves 3 × 5 = 15 years.
Hence, the amount will double itself three times over, i.e., 2 × 2 × 2 = 8 times.

Choice (A)

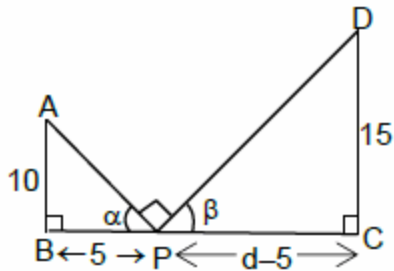Q10. DIRECTIONS *for questions 8 to 11:* Select the correct alternative from the given choices.

The angles subtended by two flagstaffs, of heights 10 m and 15 m respectively, at a certain point P, on the ground between them, are complementary. If the distance of P from the foot of the flagstaff of height 10 m is 5 m, find the distance (in m) between the two flagstaffs.

a) **30**

b) **24**

c) **35**

d) **40**

Let ∠APB = α,
∠DPC = β and the distance between B and C be *d*.
Now, we know that α + β = 90° and BP = 5.

In ΔABP, tan α = $\dfrac{10}{5}$

In ΔDCP, tan β = $\dfrac{15}{d-5}$

tan β = tan (90 − α) = cot α

(tan α) (tan β) = $\left(\dfrac{10}{5}\right)\left(\dfrac{15}{d-5}\right)$ = 1   [∵(tanα) (tanβ) = 1]

⇒ *d* = 35.   Choice (C)

Q11. DIRECTIONS *for questions 8 to 11:* Select the correct alternative from the given choices.

Find the value of n, such that $\sqrt{2^6 + 2^6 + \ldots\ldots n\ times} = 1000$.

a) **125**

b) **3125**

c) **625**

d) **15625**   ✓ **Your answer is correct**

It is given that, $\sqrt{2^6 + 2^6 + 2^6 + \ldots n \text{ times}} = 1000$.

Squaring both sides, we get,

$n(2^6) = 10^6$

$\Rightarrow n = \dfrac{10^6}{2^6} = 5^6 = 15625$

Choice (D)

Q12.   DIRECTIONS *for question 12:* Type in your answer in the input box provided below the question.

If N is the smallest four-digit odd number which leaves the same remainder when divided by 3, 4, 5 or 6, then the sum of the digits of N is

L.C.M of 3, 4, 5, 6 is 60.
The remainder can be 0 or 1 or 2 and the number must be in the form of 60 p or 60p + 1 or 60p + 2.
As the number is odd, it must be in the form of 60p + 1.
The smallest 4-digit number in this form is 60 × 17 + 1
= 1021, i.e., sum of digits = 4.

Ans: (4)

Q13.   DIRECTIONS *for questions 13 and 14:* Select the correct alternative from the given choices.

If the price of a commodity increases by 20%, by what percent should a family reduce its consumption of that commodity, such that the expenditure by the family on the commodity increases by only 8%?

a) **8%**

b) **10%**

c) **15%**

d) **25%**

Let the initial price of the commodity be 5*k*

	Price	Consumption	Expenditure
Initial	5*k*	100	500*k*
Final	6*k*	?	540*k*

Now $6k(?) = 540k$
∴ the final consumption = 90
Therefore the percentage reduction in the consumption is 10%   Choice (B)

Q14. DIRECTIONS *for questions 13 and 14:* Select the correct alternative from the given choices.

Find the sum of the first 100 terms of an arithmetic progression, if the 23rd and the 78th terms of the progression are $7\frac{11}{91}$ and $12\frac{80}{91}$ respectively.

a) **100**

b) **150**   ✗ **Your answer is incorrect**

c) **1000**

d) **Cannot be determined**

$$S_{100} = \frac{100}{2}[T_{23} + T_{78}]$$

$$= \frac{100}{2}\left[7\frac{11}{91} + 12\frac{80}{91}\right]$$

$= 50[20]$
$= 1000$ Choice (C)

Q15.   DIRECTIONS *for questions 15 and 16:* Type in your answer in the input box provided below the question.

When the sum of two natural numbers is added to their LCM, a sum of 89 is obtained. How many such pairs of numbers exist?

Let the two numbers be denoted by ha and hb whose HCF is h and LCM is hab.
(Here, a and b are coprime to each other)
Now, $ha + hb + hab = 89$
$h(a + b + ab) = 89$
There are two possibilities:
I. $h = 1$ $a + b + ab = 89$
II. $h = 89$ $a + b + ab = 1$
Since a and b each have a minimum value of 1, the second possibility can be ruled out.
Therefore $h = 1$ and $a + b + ab = 89$.
Adding 1 to both sides, we get
$1 + a + b + ab = 90$
$(a + 1)(b + 1) = 90$

$a + 1$	$b + 1$	a	b	
1	90	0	89	(Not possible)
2	45	1	44	
3	30	2	29	
5	18	4	17	
6	15	5	14	
9	10	8	9	

Thus we have 5 such pairs (1, 44); (2, 29); (4, 17); (5, 14) and (8, 9)   Ans: (5)

Q16. DIRECTIONS *for questions 15 and 16:* Type in your answer in the input box provided below the question.

Find the sum of the series: $S = 100^2 - 99^2 + 98^2 - 97^2 + 96^2 - 95^2 + \ldots + 2^2 - 1^2$

$S = (100 - 99)(100 + 99) + (98 - 97)(98 + 97) + \ldots + (2 - 1)(2 + 1)$
$= 100 + 99 + 98 + \ldots + 2 + 1$
$= \dfrac{100 \times 101}{2}$
$= 5050$ Ans: (5050)

Q17. DIRECTIONS *for questions 17 to 20:* Select the correct alternative from the given choices.

If A is 25% as efficient as B and can complete a certain work taking 15 days more than the time taken by B, in how many days will both A and B together complete the work?

a) **4 days**

b) **5 days**

c) **7 days**

d) **10 days**

	A		B
Efficiency ratio	1	:	4
Time ratio	4	:	1
Time taken	$4t$		t (Difference $3t = 15$)

Therefore A takes 20 days and B takes 5 days to complete the work. They will together complete the work in $\dfrac{1}{\dfrac{1}{20} + \dfrac{1}{5}} = 4$ days. $\hspace{2cm}$ Choice (A)

Q18. DIRECTIONS *for questions 17 to 20:* Select the correct alternative from the given choices.

A is five years older than B and five years younger than C. If the average of the ages of A, B and C is 19 years, what is the age of B?

a) **14 years**

b) **9 years**

c) **19 years**

d) **13 years**

Clearly, the ages of A, B and C are in A.P., with A being the middle term. The average of B, A and C will be equal to A itself. Hence A's age = 19 and B's age = 19 – 5 = 14.

<div align="right">Choice (A)</div>

Q19. DIRECTIONS *for questions 17 to 20:* Select the correct alternative from the given choices.

Which of the following best describes the value of $\log_2 45$?

a) **A rational number less than 5.5**

b) **An irrational number less than 5.5**

c) **A rational number more than 5.5**

d) **An irrational number more than 5.5**

32 < 45 < 64
∴ log₂32 < log₂45 < log₂64
$\log_2 2^5 < \log_2 45 < \log_2 2^6$
5 < log₂45 < 6
But, we need to find N, where $\log_2 N = 5.5$

$$\Rightarrow N = 2^{5.5} = 2^{11/2} = (2048)^{1/2}$$

Now, 2025 < 2048 < 2116

$$(2025)^{1/2} < (2048)^{1/2} < (2116)^{1/2}$$

$$45 < 2048^{1/2} < 46$$

∴ log₂45 < 5.5

Again, 45 cannot be expressed as 2 to the power of a rational number, since, if it were

rational, $\log_2 45 = \dfrac{m}{n}$, then $2^{\left(\frac{m}{n}\right)} = 45$

$\Rightarrow 2^m = 45^n$, which means that an odd number equals an even number, which is not possible.

Hence, log₂45 is an irrational number, less than 5.5.

Alternative Solution:

This question can also be solved directly using the online calculator, by evaluating the expression $\dfrac{\log 45}{\log 2}$

(i.e., log₂ 45) and observing that it is equal to ≅ 5.49……. and will be (observably) non-terminating. Choice (B)

Q20. DIRECTIONS *for questions 17 to 20:* Select the correct alternative from the given choices.

If the range of x for which the inequality $\left|\dfrac{7-x}{3}\right| < 1$ holds true is (a, b), find the sum (a + b).

a) **14**

b) **7**

c) **10**

d) **17**

It is given that, $\left|\dfrac{7-x}{3}\right| < 1$

$\Rightarrow \dfrac{|7-x|}{|3|} < 1 \Rightarrow |7-x| < 3$

$\Rightarrow 4 < x < 10$

i.e., $x \in (4, 10)$

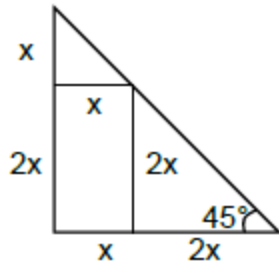$\therefore a = 4$ and $b = 10$ and $a + b = 14$.   Choice (A)

Q21.   DIRECTIONS *for question 21:* Type in your answer in the input box provided below the question.

In a right angled isosceles triangle, of area 90 sq. cm, a rectangle of maximum possible area is inscribed, such that the length of the rectangle is twice its breadth. Find the area (in sq. cm) of the rectangle.

You did not answer this question

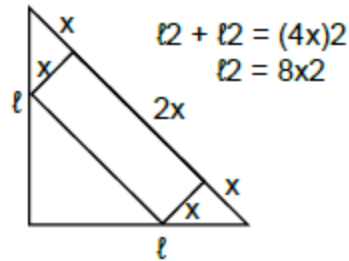The rectangle when inscribed inside the triangle would be of one of the following forms.

Case I   Case II

$$\ell^2 + \ell^2 = (4x)^2$$
$$\ell^2 = 8x^2$$

$$\frac{\text{Area of the rec} \tan\text{gle}}{\text{Area of the traingle}} \qquad \frac{\text{Area of the rec} \tan\text{gle}}{\text{Area of the traingle}}$$

$$= \frac{x(2x)}{\frac{1}{2}(3x)(3x)} \qquad\qquad = \frac{x(2x)}{\frac{1}{2}(\ell)(\ell)}$$

$$= \frac{4}{9} \qquad\qquad\qquad = \frac{2x^2}{4x^2} = \frac{1}{2}$$

From Case I, area of the rectangle $= \dfrac{4}{9}(90) = 40$

From Case II, area of the rectangle $= \dfrac{1}{2}(90) = 45$ Ans: (45)

Q22. DIRECTIONS *for questions 22 and 23:* Select the correct alternative from the given choices.

If $f(x) = x^2 + ax + b$ $(a, b \neq 0)$ is a quadratic expression, such that the positive difference between the roots of $f(x) = 0$ is three times that of $f(x) = -2$, which of the following gives the minimum value of $f(x)$?

a) $\dfrac{4}{3}$

b) $-\dfrac{7}{4}$

c) $-\dfrac{9}{4}$

d) **Cannot be determined**

The roots of the equations $x^2 + ax + b = 0$ are

$\dfrac{-a+\sqrt{a^2-4b}}{2}$ and $\dfrac{-a-\sqrt{a^2-4b}}{2}$ respectively and their positive difference is

$\sqrt{a^2-4b}$

Similarly, the positive difference between the roots of $x^2 - ax + b + 2 = 0$ is

$\sqrt{a^2-4(b+2)}$

It is given that, $\sqrt{a^2-4b} = 3\sqrt{a^2-4(b+2)}$

Squaring both sides, we get,

$a^2 - 4b = 9(a^2 - 4(b+2))$

$\Rightarrow 8a^2 - 32b - 72 = 0$

$\Rightarrow a^2 - 4b = 9$ _____(1)

$\therefore f(x) = x^2 + ax + \dfrac{a^2-9}{4}$

$= \dfrac{4x^2 + 4ax + a^2 - 9}{4}$

$= \left(\dfrac{2x+a}{2}\right)^2 - \dfrac{9}{4}$

As $\left(\dfrac{2x+a}{2}\right)^2 \geq 0$, thus the minimum value of $f(x)$ is $-\dfrac{9}{4}$

Alternative Solution:

If α and β are the roots of a quadratic equation, then $|\alpha - \beta| = \sqrt{(\alpha+\beta)^2 - 4\alpha\beta}$

Now, the two quadratic equations are $x^2 + ax + b = 0$ and $x^2 + ax + (b + 2) = 0$

$\therefore \sqrt{a^2-4b} = 3x\sqrt{a^2-4(b+2)}$

$\Rightarrow 4b - a^2 = -9$ ____ (1)

Now, using the standard formula for the minimum value of a quadratic expression, we

get the minimum value of the expression $x^2 + ax + b$ is $\left(\dfrac{4b - a^2}{4}\right)$.

Using (1), we get $\dfrac{4b-a^2}{4} = -\dfrac{9}{4}$.   Choice (C)

Q23.   DIRECTIONS *for questions 22 and 23:* Select the correct alternative from the given choices.

A total of 315 students appeared for the Board exam from a school. If the ratio of the number of students who failed to those who passed in the exam is 1 : $n3$, where n is a natural number, how many students passed in the examination?

a) **35** ✗ **Your answer is incorrect**

b) **140**

c) **280**

d) **Cannot be determined**

Let the number of students who failed be a.
Therefore, the number of students who passed = na.
Total number of students = $a + na = 315$
$a(1 + n) = 315 = 3^2 \times 5 \times 7$
{(1 + (A perfect cube)} can be 2 or 9 or 28 or 65 or 126 or 217 and so on.
Of these, the only possibility is 9.
∴ $a(1 + 2^3) = 315$
⇒ $a = 35$ and $n = 8$
∴ Number of students who passed = $na = 8(35) = 280$.　　　　　　　　Choice (C)

Q24.　　DIRECTIONS *for question 24:* Type in your answer in the input box provided below the question.

A certain quantity, *a*, varies as the sum of two quantities, of which one varies directly with another quantity *b*, whereas the other varies inversely with *b*. If when *b* = 1 or 3, *a* = 16, find the value of *a*, when *b* = 6.

It is given that,

$a = k_1 + \dfrac{k_2}{b}$, where k_1 and k_2 are constants.

Substituting the values given for a and b, we get

$16 = k_1 + k_2$ _____ (1)

$16 = 3k_1 + \dfrac{k_2}{3}$ _____ (2)

Solving equations (1) and (2) simultaneously, we get

$k_1 = 4$ and $k_2 = 12$

Again, if $b = 6$, we get $a = 4\,(6) + \dfrac{12}{6} = 26$ Ans: (26)

Q25. DIRECTIONS *for questions 25 to 27:* Select the correct alternative from the given choices.

If in a triangle ABC, $\dfrac{\tan A}{a} = \dfrac{\tan B}{b} = \dfrac{\tan C}{c}$, then the triangle ABC must be

a) **obtuse angled.**

b) **right angled.**

c) **equilateral.** ✔ **Your answer is correct**

d) **None of the above.**

It is given that,

$$\frac{\tan A}{a} = \frac{\tan B}{b} = \frac{\tan C}{c}$$

$$\therefore \frac{a}{\tan A} = \frac{b}{\tan B} = \frac{c}{\tan C}$$

From the sine rule, we have

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C} = 2R$$

Where R is the circum radius of the triangle

$\therefore a = 2R \sin A$, $b = 2R \sin B$ and $c = 2r \sin C$

It is given that,

$$\frac{a}{\sin A / \cos A} = \frac{b}{\sin B / \cos B} = \frac{c}{\sin C / \cos C}$$

$\Rightarrow 2R \cos A = 2R \cos B = 2R \cos C$

$\Rightarrow \cos A = \cos B = \cos C$

$\Rightarrow A = B = C$

It is an equilateral triangle.   Choice (C)

Q26.   DIRECTIONS *for questions 25 to 27:* Select the correct alternative from the given choices.

The graph of $y = \log 9x$ intersects the graph of $y = 3 \log x$ at

a) **exactly one point.**

b) **exactly two distinct points.**

c) **exactly three distinct points.**

d) **no point.**

The graphs of $y = \log 9x$ and $y = 3 \log x$ will intersect when
$\log 9x = 3 \log x$
$\Rightarrow \log 9x = \log x^3$
$\Rightarrow x^3 = 9x$
$\Rightarrow x^3 - 9x = 0$
$\Rightarrow x(x - 3)(x + 3) = 0$
Now, x must be positive for y to be defined.
$\therefore x = 3$ is the only value possible.
The corresponding value of y is $\log 27$.
Therefore the two curves intersect at exactly one point, whose coordinates are
$(3, \log 27)$ Choice (A)

Q27.   DIRECTIONS *for questions 25 to 27:* Select the correct alternative from the given choices.

Two sellers, A and B, sell the same product but at a profit of 15% and 12% respectively. If the cost price of A is 85% of the cost price of B, then find the ratio of the selling prices charged by A and B.

a) **25 : 28**

b) **28 : 25**

c) **391 : 448**   ✔ **Your answer is correct**

d) **447 : 526**

Let the cost price of B be x
$\Rightarrow$ The cost price of A is $0.85x$
Thus the selling prices of A and B are $1.15 \times 0.85x$ and $1.12 \times x$.
Required ratio
$= \dfrac{1.15 \times 0.85x}{1.12 \times x} = \dfrac{0.9775}{1.12} = \dfrac{9775}{11200} = \dfrac{391}{448}$ Choice (C)

Q28.   DIRECTIONS *for question 28:* Type in your answer in the input box provided below the question.

If the cost of painting the walls of a cuboidal room of length 15 ft and breadth 12 ft, at Rs.25 per sq.ft, is Rs.10,800, find the height (in ft) of the room (Ignoring any doors and windows in the room).

Let the height of the room be h ft.

Lateral surface area of the room = $2h (l + b)$
$$= 2h (15 + 12)$$
$$= 54h$$

The cost of painting the four walls = $(54h) (25)$
It is given that $(54h) (25) = 10800$
$$\Rightarrow h = 8 \text{ ft.}$$ Ans: (8)

Q29. DIRECTIONS *for question 29:* Select the correct alternative from the given choices.

If a, b and c are non-zero real numbers, such that $8^a = 12^b = 18^c$, which of the following is true regarding a, b and c?

a) **b is the arithmetic mean of a and c.**

b) **b is the geometric mean of a and c.**

c) **b is the harmonic mean of a and c.**

d) **None of the above**

Let $8^a = 12^b = 18^c = K$

$\therefore 8 = K^{1/a}$, $12 = K^{1/b}$ and $18 = K^{1/c}$

Now $(8)(18) = 12^2$

$K^{1/a} K^{1/c} = K^{2/b}$

$\therefore \dfrac{1}{a} + \dfrac{1}{c} = \dfrac{2}{b}$

$\Rightarrow b = \dfrac{2}{\left(\dfrac{1}{a} + \dfrac{1}{c}\right)}$, i.e, b is the harmonic mean of a and c.　　　　　　Choice (C)

Q30.　DIRECTIONS *for question 30:* Type in your answer in the input box provided below the question.

If x and y are two real numbers satisfying the inequalities $3x + 2y \le 6$, $2x - y + 2 \ge 0$, $x \ge 2$ and $y \ge 0$, then the number of ordered pairs (x, y) satisfying the given condition is

Given inequalities are $3x + 2y \le 6$, $2x - y + 2 \ge 0$; $x \ge 2$ and $y \ge 0$.
As $x \ge 2$, $3x \ge 6$ or $-3x \le -6$ ———— (1)
Also given $3x + 2y \le 6$ ——— (2)
Adding (1) and (2), we have $2y \le 0$, hence $y \le 0$
Since it is given that $y \ge 0$, therefore $y = 0$.
Substituting this in (2), we have $x \le 2$, since it is given that $x \ge 2$, the value of $x = 2$.
So, (2, 0) is the only solution satisfying $3x + 2y \le 6$, $x \ge 2$ and $y \ge 0$. As (2, 0) also
satisfies $2x - y + 2 \ge 0$, $x = 2$; $y = 0$ is the only possible solution.

Alternative Solution:

Plotting the given constraints (as straight lines) in the x-y plane, we get the figure as
below. Clearly $p = (2, 0)$ satisfies all the criteria.
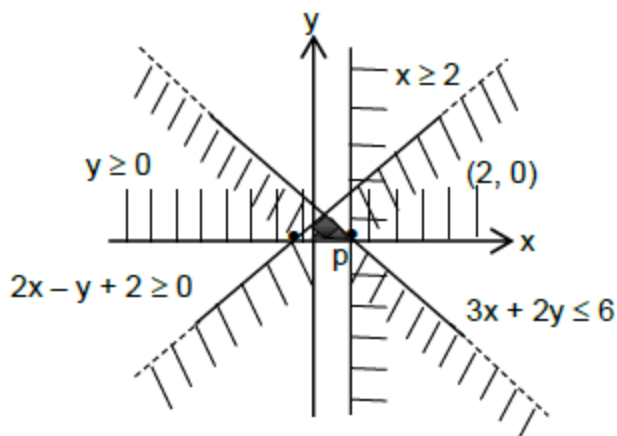
Ans: (1)

Q31.   DIRECTIONS *for question 31:* Select the correct alternative from the given choices.

The cost of 11 pencils and 11 erasers is Rs.99. Mukesh has Rs.33 with him, which is exactly sufficient to purchase three pencils and five erasers. However, he wants to purchase five pencils and three erasers for his daughter. How much extra money would Mukesh require?

a) **Rs.6**   ✔ **Your answer is correct**

b) **Rs.12**

c) **Rs.24**

d) **Rs.39**

Let the cost of a pencil and an eraser be ₹P and ₹E respectively.
11P + 11E = 99
∴ P + E = 9 _____ (1)
3P + 5E = 33 _____ (2)
Solving (1) and (2), we get P = 6 and E = 3
Now, he needed extra amount of (5P + 3E) – (3P + 5E)
= 2(P – E) = 2(6 – 3) = ₹6.   Choice (A)

Q32.   DIRECTIONS *for question 32:* Type in your answer in the input box provided below the question.

If A and B are two sets, with $n(A) = 5$ and $n(B) = 3$, the number of functions possible from A to B, which are not surjections is

In a surjective function every element of the range must be the image of at least one element in the domain.
Let $n(A) = m$ and $n(B) = n$. Then the number of functions that are not surjections from set A to set B is the sum of all the cases when exactly one element in B is left out, when exactly two elements in B are left out, and so on.

$$= {}^nC_1(n-1)^m - {}^nC_2(n-2)^m + {}^nC_3(n-3)^m - \ldots\ldots$$

(Here $m = 5$ and $n = 3$)
$${}^3C_1(2)^5 - {}^3C_2(1)^5 + {}^3C_3(0)^5$$
= 3(32) – 3 = 96 – 3 = 93
The required number of functions = 93   Ans: (93)

Q33.   DIRECTIONS *for questions 33 and 34:* Select the correct alternative from the given choices.

Starting simultaneously from the same point on a circular track, two runners, A and B, will meet for the first time after 24 seconds, if they are travelling in the same direction, and after 8 seconds, if they are travelling in opposite directions. The speed of the faster runner is how many times the speed of the slower runner?

a) **2**

b) **3**

c) **4**

d) $\dfrac{3}{2}$

Let the speed of A and B be v_a and v_b respectively and let the length of the track be ℓ

Let $v_a > v_b$.

Time taken by them to meet for the first time (in the same direction

$$= \frac{\ell}{v_a - v_b} = 24 \Rightarrow \ell = 24(v_a - v_b)$$

Similarly, time taken to meet for the first time when travelling in opposite directions

$$= \frac{\ell}{v_a - v_b} = 8$$

$$\Rightarrow \ell = 8(v_a + v_b)$$

$$\therefore 24(v_a - v_b) = 8(v_a + v_b)$$

$$16\,v_a = 32\,v_b$$

$$v_a = 2v_b$$

Therefore the speed of the faster person is twice the speed of the slower person.

Choice (A)

Q34.   DIRECTIONS *for questions 33 and 34:* Select the correct alternative from the given choices.

Find the area (in sq. units) of the triangle bounded by the lines $x = y$, $x = -y$ and $x = 5$.
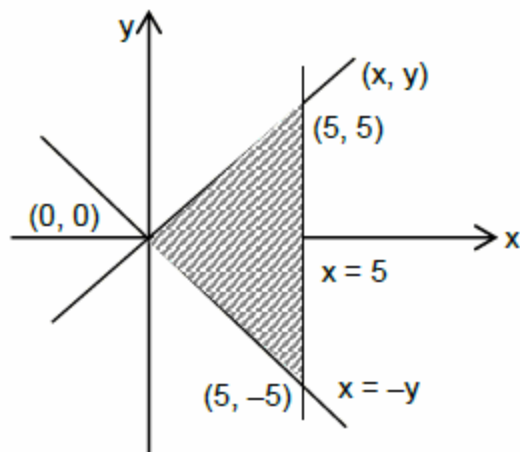
a) **25**   ✔ **Your answer is correct**

b) **40**

c) **50**

d) **12.5**

The figure below describes the given line.

Therefore the area of the triangle so formed = $\frac{1}{2}(10)(5)$

= 25 square units.   Choice (A)