AIMCAT 2008
VARC

DIRECTIONS for questions 1 to 5: The passage given below is accompanied by a set of five questions. Choose the best answer to each question.

What would we be doing now if we took climate change seriously? Last week the government released a report on the likely temperature changes in the UK. It shows that life at the end of this century will bear no relationship to life at the beginning. It should have dominated the news for days. But it was too far away, too remote from current problems, too big to see.

Lord Giddens has been touting the hypothesis that people are reluctant to act on climate change until it becomes visible to them, by which time it will be too late. This thought, which has been common currency within the environment movement for at least 20 years, has been christened by this shrinking violet the "Giddens' Paradox". It ranks among his other major discoveries, like the Giddens' Postulate (people wear fewer clothes when temperatures rise) and the Giddens' Effect (the Earth goes round the Sun). But despite his outrageous expropriation, the point is valid: we resist taking radical action until we have no choice, whereupon it will have no effect.

Our resistance to change is not peculiar to environmental issues. When confronted by crisis, we try to stick to the script. [C]onfronting change means making use of parts of the brain which require more energy to engage. We perceive high levels of energy use much as we perceive pain. For good biological reasons we seek to avoid them. We engage with change only when we have to. …That"s a horribly simplified account of some very complex processes, but you get the general idea. Change is pain, a change for the worse is double pain. We pretend it"s not there, up to the point at which it starts hammering on the door.

So environmentalists seek to persuade us that we"ll love the green transition. This 'downshifting', 'voluntary simplicity' or 'alternative hedonism' is presented as a change for the better. A new green deal will save the planet, the workforce and the economy. Energy efficiency

will protect the bottom line and the biosphere. A less frantic life will allow us to enjoy the small wonders that surround us.

There is both exaggeration and truth in all this, but effective action also involves a change for the worse: regulation, rationing, austerity, state spending. …

Everything we need to do has been made harder by debt. Net state debt now exceeds £700bn. This introduces two environmental problems. The first is that there is no money left with which to fund a green new deal. The second is that we"ll be able to pay off these debts only by resuming economic growth. Greenhouse gases grow because the economy grows. The UK"s liabilities make the transition to a steady state economy, let alone a managed contraction, much harder to achieve. The debt crisis is an environmental disaster.

We could cut defence spending by 90% and suffer no loss to our national security. Instead, the MoD has just dropped its spending on climate change research. … The last time we faced a crisis on the scale of the global climate crash, we thought of building tanks as the rational solution. Now the rational solution is to stop building tanks, and use the money to address a real threat.

Q1. Which of the following best summarises the author’s position in the passage?

a) The author examines various problems faced by his country.

b) The author is vituperative of the lackadaisical attitude of the government towards the problems faced by the people.

c) The author focuses on a problem that has been totally ignored by the government and the people.

d) The author analyses a problem and examines various related factors. Your answer is correct

Number of words and Explanatory notes for RC:

Number of words: 539

Option A: The passage does not delve on various problems faced by the United Kingdom. So option A is incorrect.
Option B: Option B can be ruled out by the word 'vituperative'. This option is very general when it makes a mention of 'problems'. The passage only talks about an environmental issues and not problems in general. Hence option B is not the answer.
Option C: The word 'totally' in option C makes it extreme. Also "ignored by the people" cannot be inferred. Hence option C is incorrect.
Option D: The author begins the passage by examining the problem of climate change. At the end of the passage, he recommends using funds allocated to the ministry of defence for climate change research. Thus option D describes the passage appropriately. Choice (D)

Q2. According to the passage, the problematic issues related to the environment have been compounded by the debt crisis because

a) the latter attracts all the attention and the former is relegated to the background.

b) it is not possible to channelize surplus funds from other sectors of the economy.

c) the economic growth needed to pay back the debts will result in an overall increase in environmental emissions. Your answer is correct

d) the funds needed for a green new deal are substantial.

Number of words and Explanatory notes for RC:

Number of words: 539

Refer to para 6. Everything we need to do has been made harder by debt. .... The debt crisis is an environmental disaster.
Option A: The passage does not say that the debt crisis is put on the backburner and the problem of environment is under the scanner i.e. given all the attention. So option A is not the answer.
Option B: The word 'not possible' is extreme. Option B cannot be inferred from the passage.
Option C: The second environmental problem introduced by debt is that we'll be able to pay off these debts only by resuming economic growth. Greenhouse gases grow because the economy grows. Hence option C is correct and is the answer.
Option D: The first environmental problem introduced by debt is that there is no money left with which to fund a green new deal. So option D is incorrect. Choice (C)

Q3. Which of the following best captures the author's impression of "Giddens' paradox"?

a) The author's tone is one of sarcasm as he criticizes its hypothesis.

b) Though a repetition of a hackneyed concept, the author believes it is still relevant. Your answer is correct

c) Giddens has done well to bring to light what can no longer be ignored.

d) By lending it his name, Giddens has appropriated to himself an idea long prevalent.

Number of words and Explanatory notes for RC:

Number of words: 539

Lord Giddens has been touting the hypothesis that people are reluctant to act on climate change until it becomes visible to them, by which time it will be too late. This thought, which has been common currency within the environment movement for at least 20 years, has been christened the "Giddens' Paradox".
Option A: The author doesn't criticize the Giddens' Paradox because he calls his "point" (i.e., the hypothesis) valid. So option A is incorrect.
Option B: This thought, which has been common currency within the environment movement for at least 20 years, has been christened the "Giddens' Paradox". But despite his outrageous expropriation, the point is valid: we resist taking radical action until we have no choice, whereupon it will have no effect. Option B is the answer. Although the Giddens' Paradox is something well known (For a long time), it is still relevant.
Option C: Option C is ruled out because the author's tone is not too positive. So "Giddens has done well to bring to light" cannot be inferred to be the author's view.
Option D: Lord Giddens has been touting the hypothesis that people are reluctant to act on climate change until it becomes visible to them, by which time it will be too late. This thought, which has been common currency within the environment movement for at least 20 years, has been christened by this shrinking violet the "Giddens' Paradox". Giddens has not lent the Paradox its name. It is the environment movement which have done so. So option D is not correct. Choice (B)

Q4. According to the passage, why do environmentalists paint the "green transition" as one for the better?

a) There is little incentive to act if the change is for the worse.

b) They genuinely believe that 'downshifting' or 'voluntary simplicity' or 'alternative hedonism' is the order of the day.

c) A slowdown in our hectic race will benefit us physically, mentally and emotionally.

d) As we have a natural resistance to change that is for the worse, they try to motivate us.
Correct Answer

Number of words and Explanatory notes for RC:

Number of words: 539

Option A: Refer to paras 3 and 4. The general idea is that change is pain, **a change for the worse is double pain**. We pretend it's not there, up to the point at which it starts hammering on the door. But option A is incomplete as it only refers to the people's response. It does not answer the question as to why environmentalists paint "environmental change" as one for the better. It ignores the stance of the environmentalists.
Option B: So environmentalists seek to persuade us that we'll love the green transition. This 'downshifting', 'voluntary simplicity' or 'alternative hedonism' is presented as a change for the better. But option B is not the complete reason. Their belief, per say, is insufficient as a reason. It has to include the fact that we (people) are not ready for change.
Option C: Option C may be true but is not the answer. A less frantic life will allow us to enjoy the small wonders that surround us.
Option D: Refer to paras 3 and 4. The general idea is that change is pain, a change for the worse is double pain. We pretend it's not there, up to – often beyond – the point at which it starts hammering on the door. This means that people are not ready for change, all the more if the change is for the worse. So environmentalists seek to persuade us that we'll love the green transition. This 'downshifting', 'voluntary simplicity' or 'alternative hedonism' is presented as a change for the better. Hence option D is a better answer than option A. Choice (D)

Q5. The "general idea" that the author expects us to understand (para 3) is that

a) most people are apathetic to issues that do not affect them immediately.

b) people will adopt change only when it can no longer be put off. Your answer is correct

c) we agree to change only when it is too late to change.

d) people will not readily give up on the privileges that they have obtained with great difficulty.

Number of words and Explanatory notes for RC:

Number of words: 539

Option A: Option A is a slight distortion of what has been discussed in the third para. Our resistance to change is not peculiar to environmental issues. When confronted by crisis, we try to stick to the script. "We pretend change is not there, upto the point at which it starts hammering on the door" is not the same as "most people are apathetic to issues …." as given in option A. Also, "that do not affect them immediately" cannot be gathered from the passage. We engage with change only when we have to. When confronted by crisis, we try to stick to the script. So option A is not the answer.
Option B: We engage with change only when we have to. …That's a horribly simplified account of some very complex processes, but you get the **general idea**. Change is pain, a change for the worse is double pain. We pretend it's not there, up to the point at which it starts hammering on the door. Hence we can say that people will adopt change only when there is no other alternative i.e. when change can no longer be put off. This makes option B the correct answer.
Option C: We engage with change only when we have to. …That's a horribly simplified account of some very complex processes, but you get the **general idea**. We pretend that change is not there, up to the point at which it starts hammering on the door. "We engage with change" is not the same as "We agree to change (ourselves). So option C goes on a tangent and is not the answer.
Option D: Option D is not the 'general idea' that the author wants us to get. Option D is out of scope. The passage only tells us that "A less frantic life will allow us to enjoy the small wonders that surround us. There is both exaggeration and truth in all this, but effective action also involves a change for the worse: regulation, rationing, austerity, state spending. …"Whether people readily give up the privileges or not" cannot be inferred to be the 'general idea' that the author is referring to.
So, only option B can be ascertained to be true. Choice (B)

DIRECTIONS for questions 6 to 9: The passage given below is accompanied by a set of four questions. Choose the best answer to each question.

… Proponents of the bossless company […] argue that the 20th-century factory or office with its army of worker-drones is being replaced by flatter organisations, peer-to-peer networks, platforms, extreme decentralisation, worker empowerment, independent contracting, entrepreneurship, and other forms of worker-led democracy…

Just as the top-down, rigid and stuffy Encyclopaedia Britannica was displaced by the bottom-up, flat and flexible Wikipedia, traditionally organised companies are being displaced by the 'wikified' firms of the knowledge-based, networked economy with flat structures, peer assessment, self-organising teams, employee ownership, and worker democracy…

This narrative is not entirely novel. In the 1970s, Bill Gore, the CEO of the US company behind Gore-Tex fabrics, pushed the notion of the 'lattice organisation', featuring 'direct transactions,

self-commitment, natural leadership, and [no] assigned or assumed authority'…These experiments […] were generally seen as outliers and oddities. Not anymore. The bossless-company narrative shows up with a very high and increasing frequency in the business press, popular management writing, pop-sociology and so on.

Consultants push practices such as Holacracy that concentrate decision-making in self-managing teams as replacements for top-down design, hierarchy and managerial authority. The Holacracy model has mainly been adopted by small and medium-sized companies... Meanwhile, Agile, an approach that emphasises cooperation among self-organising, cross-functional teams, has been implemented by Barclays, Ericsson, Microsoft, Google and Spotify, while the US internet retailer Overstock uses internal voting systems to decide company priorities.

The new narrative on firm organisation is not irrelevant academic discussion or fluffy consultant talk with no serious implications for business. These are ideas that truly matter – and they are already reshaping business.

This movement is […] very much part of the 21st-century Zeitgeist in its emphasis on personal development, resilience and fulfilment through empowering employees, and decentralised and democratic decision processes. There is also a strong moralistic and political undertone to the narrative. [It is argued that] firms are effectively totalitarian states, enjoying rights and privileges that would be unconstitutional for ordinary states to impose on their citizens…[Also] the factory system, hierarchy and managerial authority are partly derived from the slave system. What can be more morally defensible than getting rid of the remnants of slavery?

[However], there are three specific problems with the bossless-company critique. First, it doesn't offer systematic evidence for delayering and radical decentralisation across firms in general, but rather a few cherry-picked examples…Second, academic research on delayering paints a more complex picture than the cartoon version in the bossless-company literature. One important study observed 300 'Fortune 500' companies for 14 years and found that firms were getting flatter, but they were doing so to concentrate authority in the hands of senior managers, not to empower workers. As we've seen with Tesla, flatter hierarchies can feature more micromanagement than traditional managerial structures…

Third, while technological miracles […] have induced sweeping changes in manufacturing, retail, transportation and communication, the laws of economics […] and human nature [haven't] changed. The basic problem of management and business – how to assemble, organise and motivate groups of people and resources to produce goods and services that consumers want – is still the same…And some individuals or groups need to bear the final responsibility, and be held accountable for the firm's actions – the buck has to stop somewhere.

[Clearly], […] the bossless-company narrative has been badly oversold by its proponents. Yes, there are conditions under which nearly bossless companies can exist and thrive. However, they are and will remain exceptions…

Q6. Which of the following is not true as per the passage?

a) In Holacracy, managerial hierarchy is replaced with self-governing teams.

b) The Agile approach relies on various functional teams working together.

c) The lattice organisation model relies on individuals taking up responsibility rather than being assigned one.

d) Internal voting systems help replace managerial hierarchy with a more democratic decision-making process.

Number of words and Explanatory notes for RC:

Number of words: 564

Option A: Consider the sentence: '*Consultants push practices such as Holacracy that **concentrate decision-making in self-managing teams as replacements for top-down design**, hierarchy and managerial authority.*' So, Option A is true as per the underlined part. Option A is not the answer.
Option B: The author refers to Agile as '*…an approach that **emphasises cooperation among self-organising, cross-functional teams***'. Hence, it is true that Agile relies on cooperation across various teams working on various functions. Option B is not the answer.
Option C: The author mentions that the 'lattice organisation' features *'direct transactions, **self-commitment, natural leadership, and [no] assigned or assumed authority***'. So, it is true that individuals have to take up responsibilities rather than being assigned one. Option C is not the answer.
Option D: The author mentions the following example: '*the US internet retailer Overstock uses internal voting systems to decide company priorities*'. From this, it is not clear whether the voting systems are actually helping to replace managers. They are only used to decide priorities. Hence, Option D is not true, and is, therefore, the answer. Choice (D)

Q7. The author mentions the example of Tesla

a) to build a case against empowering workers.

b) to argue that flatter hierarchies need not enable employee empowerment.

c) to make a case for micromanagement in a flatter hierarchy.

d) to argue that flatter hierarchies are more efficient than traditional managerial structures.

Number of words and Explanatory notes for RC:

Number of words: 564

Consider the sentences: '*One important study observed 300 'Fortune 500' companies for 14 years and found that firms were getting flatter, but they were doing so to concentrate authority in the hands of senior managers, not to empower workers.* ***As we've seen with Tesla****, flatter hierarchies can feature more micromanagement than traditional managerial structures…*' The tone here is clearly against flatter hierarchies. The author opines that firms are getting flatter 'to concentrate authority in the hands of senior managers' and Tesla's example comes in handy here as there is more micromanagement.
Option A: The case is built not against empowering workers but rather against firms that empower senior managers instead of empowering workers. Hence, Option A is easy to eliminate.
Option B: The tone of the author suggests that the author is highlighting how flatter hierarchies do not actually provide employee empowerment. Rather, they enable concentration of power in the hands of senior managers, and micromanagement has been spoken about in a negative fashion. Hence, Option B is the answer.
Option C: The example is making a case against flatter hierarchies by pointing out that such hierarchies lead to more micromanagement as seen in Tesla compared to traditional managerial structures. Hence, Option C is not the answer.
Option D: This example, and by extension, the discussion, argues about the level of employee empowerment in flatter hierarchies rather than about traditional hierarchies. Hence, Option D is not the answer. Choice (B)

Q8. An example of a political undertone associated with the bossless-company narrative mentioned in the passage is that

a) the conventional factory hierarchy is not popular anymore in a democratic society.

b) there is a strong moral case for making organisations flatter as that would be a shift from primitive practices.

c) companies with managerial hierarchies run like autocracies enjoying rights and privileges usually not available to ordinary states.

d) corporations with strong top-down hierarchies need to be chastised for treating their employees like slaves.

Number of words and Explanatory notes for RC:

Number of words: 564

Consider the sentences: '*There is also a strong moralistic and political undertone to the narrative. [It is argued that] firms are effectively totalitarian states, enjoying rights and privileges that would be unconstitutional for ordinary states to impose on their citizens…[Also] the factory system, hierarchy and managerial authority are partly derived from the slave system. What can be more morally defensible than getting rid of the remnants of slavery?*' The political undertone here is that the traditional managerial hierarchy is akin to slavery and hence, shifting to a flatter hierarchy is like obliterating slavery, a transition that will find favour.

Option A: Democracy has not been discussed here, and neither is the erosion of popularity of the traditional managerial hierarchy. The political undertones are on a completely different theme. Hence, Option A is not the answer.

Option B: While there is a strong moralistic case against treating workers like slaves, it is an extreme extrapolation to refer to the systems of traditional hierarchies as 'primitive practices'. Hence, Option B is not the answer.

Option C: The way companies run is similar to the way totalitarian states (autocracies) function – where the state has all the power and the citizens (employees in case of a company) have not many rights. This is something that companies get away with, and it shouldn't be the case. Flatter hierarchies ensure that such firms and the powers they hold are diluted. That is the political undertone in favour of flatter bossless companies. Hence, Option C is the answer.

Option D: It is not about chastising (criticising strongly or punishing) the traditional managerial models; rather it is about getting rid of them. Hence, Option D is not the answer.

Choice (C)

Q9. All the following are arguments presented against the bossless-company narrative EXCEPT

a) companies cannot replace accountability with democratic decision-making.

b) flatter organisations cannot be micromanaged as effectively as companies with traditional hierarchies can be.

c) there is only anecdotal evidence to support flattening of managerial structures in firms.

d) the dynamics of management and the laws of economics haven't been altered despite the technological progress.

Number of words and Explanatory notes for RC:

Number of words: 564

Option A: Consider this: '*And some individuals or groups need to bear the final responsibility and be held accountable for the firm's actions – **the buck has to stop somewhere**.*' It can be understood that the author believes in accountability more than collective decision-making. Option A is not the answer.
Option B: Flatter organisations have more micromanagement according to the passage than traditional hierarchies, leading to more centralisation of power, and its concentration in the hands of a few managers. Hence, Option B is not an accurate depiction of the argument presented in the passage. Option B is the answer.
Option C: Consider this: '*First, it doesn't offer **systematic evidence for delayering and radical decentralisation** across firms in general, but rather a few cherry-picked examples.*' So, there isn't strong evidence to show that traditional managerial structures in a firm should be torn down to create flatter organisations. All we have are a few cherry-picked examples where this is happening. So, the anecdotal evidence (not complete evidence or systematic evidence) is what the author is highlighting here. Hence, Option C is not the answer.
Option D: Consider this: '*Third, **while technological miracles [...] have induced sweeping changes** in manufacturing, retail, transportation and communication, **the laws of economics [...] and human nature [haven't] changed**. The **basic problem of management** and business – how to assemble, organise and motivate groups of people and resources to produce goods and services that consumers want – **is still the same**...And some individuals or groups need to bear the final responsibility, and be held accountable for the firm's actions – the buck has to stop somewhere.*' This reiterates what is mentioned in this choice that things have remained much the same as far as economics and management are concerned. Option D is not the answer. Choice (B)

DIRECTIONS for questions 10 to 14: The passage given below is accompanied by a set of five questions. Choose the best answer to each question.

One of the enduring enigmas of contemporary economics is the fact that [it ignores] the nature of modern consumption. It has significant literature to determine the fraction of income and wealth consumed... But most of the issues that are addressed in both the disciplinary and interdisciplinary literatures on consumption are absent in economics.

[These include] questions such as what motivates people to consume, the cultural meanings of consumption, how structures of inequality intersect with consumption, how people decide what products to consume, the role of advertising and marketing, impulse purchasing, compulsive purchasing, and so forth. [While] in the early part of the 20th century, economists did spend considerable effort trying to understand household needs and consumption expenditure trends by income class, the economic theories that dominated after the second world war did not accommodate either the applied needs-based work, or the questions about motivation and meaning which currently dominate the literature.

Why this happened is a fascinating question. There were a number of factors. Firstly, economists became convinced that focusing on income was a parsimonious way to study well-being, neglecting the specific uses to which income was put. This agreed with the classical liberal bias against questioning people's choices. Liberal theory, in both political science and economics, became almost adamant about ignoring the content of consumer choices, defining its project as the expansion of income and the range of choice. This provided an appealing democratic veneer to the theory, but left these perspectives unable to critically analyse consumption, even when choice was obviously not welfare-enhancing.

Secondly, there was the vexing problem of interpersonal influences on consumer preferences. In the standard model, agents' preferences are independent of the likes and dislikes of others, i.e., preferences are formed and remain asocial. This assumption obviates unwelcome welfare conclusions such as the case where only relative consumption matters and, therefore, increases in consumption have no positive impact on welfare if they are general across the population. Economists remain deeply wedded to the idea that higher consumption yields higher well-being, and formulations which produce different welfare conclusions have had great difficulty gaining influence within the field.

Finally, economics has retained the 19th century bias in which narrowly understood notions of usefulness are the standard of value …Economists tend to focus on [how] goods and services meet practical needs, in contrast to the cultural qualities of goods – their social, symbolic and cultural meanings. For example, a car provides the practical value of transport but is a heavily laden symbolic consumption item...

Economists tend to the functional partly because symbolism necessarily entails that preferences are social, but also because the symbolic aspects of consumption are coded as belonging to a world where economists have not been too comfortable…The men who dominated economics in the post WWII era were far more comfortable with a no-nonsense attitude which emphasized the practical functions of products, a controlled and calculated approach to spending and saving, and a critical attitude toward what were considered frivolous consumption motives such as fashion, status seeking, and pure aesthetics.

Q10. Which of the following best highlights the predilection of economists in terms of spending?

a) They valued economical spending over culture.

b) They attributed the cultural value of a commodity to the asocial nature of making a choice.

c) They had a critical attitude towards exorbitant spending of income.

d) They valued calculated spending more than impulse purchasing.

Number of words and Explanatory notes for RC:

Number of words: 503

Option A: Economists valued practicality. However, economical spending is being frugal, which is not mentioned as a parameter, leave alone comparing it with 'culture'. Hence, Option A is not the answer.
Option B: From the passage we can understand that it is the standard model (the practical value as considered by economists in the past) which is asocial – '*In the standard model, agents' preferences are independent of the likes and dislikes of others, i.e., preferences are formed and remain asocial.*' The cultural value of a commodity involves social preferences. Hence, a choice that takes the cultural value into consideration has a social nature. Calling such a choice asocial is incorrect. Hence, Option B is not the answer.
Option C: Economists had a critical value towards ***frivolous consumption motives*** such as fashion and aesthetics. So, they had an issue with the cause behind the consumption. Whether this can be equated to exorbitant/unnecessarily large is not clear from the passage. Hence, Option C is not the answer.
Option D: The author mentions that '*The men who dominated economics in the post WWII era were far more comfortable with* ***a no-nonsense attitude which emphasized the practical functions of products, a controlled and calculated approach to spending and saving****, and a critical attitude toward what were considered frivolous consumption motives*'. These economists preferred calculated and controlled spending, and hence, practical value made more sense to them than impulse buying based on cultural preferences as that was neither practical nor controlled. Hence, Option D is the answer. Choice (D)

Q11. The author doesn't rue the absence of the discussion on which of the following issues about consumption in economics?

a) What drives people towards purchases?

b) What affects people's consumption habits?

c) How does inequality adversely influence consumption behaviours?

d) What is the cultural significance of various products of consumption?

Number of words and Explanatory notes for RC:

Number of words: 503

This can be understood from the following sentences: '*But most of the issues that are addressed in both the disciplinary and interdisciplinary literatures on consumption are absent in economics. [These include] questions such as* ***what motivates people to consume***, ***the cultural meanings of consumption***, ***how structures of inequality intersect with consumption***, ***how people decide what products to consume***, *the role of advertising and marketing, impulse purchasing, compulsive purchasing, and so forth*.' Rues or bemoans is feeling bad/regret/complaining about something.

Option A: The author lists one of the questions that ought to have been addressed in economics as 'what motivates people to consume', or in other words, what drives people towards making purchases (can be equated to consumption). Hence, Option A is not the answer.

Option B: One of the questions the author rues is how people decide what products to consume, which can be equated to what affects people's consumption habits. Hence, Option B is not the answer.

Option C: The question the author thinks should have been addressed by economics is how consumption and inequality intersect. This is not the same as addressing 'how inequality ***adversely influences consumption behaviours.*** Hence, Option C is the answer.

Option D: The cultural meaning (significance) of consumption is indeed one of the important questions that the author feels should have been discussed in economics. Hence, Option D is not the answer. Choice (C)

Q12. The '19th century bias' of economists mentioned in the penultimate para of the passage is that

a) economists overvalued the practicality of various goods and services.

b) economists underestimated the influence of social and cultural preferences on the valuation of a product.

c) economists focused more on symbolism than on pragmatic value.

d) economists were too myopic about which goods have value and which goods don't.

Number of words and Explanatory notes for RC:

Number of words: 503

Consider the sentences: '*…economics has retained* ***the 19th century bias in which narrowly understood notions of usefulness are the standard of value*** *…Economists tend to focus on [how] goods and services meet practical needs, in contrast to the cultural qualities of goods - their social, symbolic and cultural meanings.'* The bias is towards practical needs rather than cultural qualities.

Option A: Economists undervalued cultural significance of various goods. This is not the same as saying they overvalued the practicality of goods. Yes, they placed a higher premium on practicality compared to cultural meanings. But, on an absolute scale we do not know if they overvalued practicality. We only know they didn't include cultural aspects into the valuation. Hence, Option A is not the answer.

Option B: This is the bias being spoken about in the para. They underestimated the significance of ***social, symbolic and cultural meanings*** while associating a value to a particular commodity. Hence, Option B is the answer.

Option C: It is quite the opposite. Economists tended to focus more on the pragmatic aspect of it than on the symbolism (the cultural aspect). Hence, Option C is not the answer.

Option D: They were myopic about the cultural value compared to the practical value of goods and services. In other words, for all goods they underestimated the cultural value and only focused on the practical value. This option talks about goods being separated out on the basis of being practical or cultural. Hence, Option D is not the answer.

Choice (B)

Q13. The 'vexing problem of interpersonal influences on consumer preferences' undermines the conclusion that

a) consumer preferences are formed and remain social.

b) relative consumption is more crucial than absolute consumption across the population.

c) higher consumption yields higher well-being.

d) increase in consumption doesn't always have a positive impact on welfare.

Number of words and Explanatory notes for RC:

Number of words: 503

Consider the sentences: '*…there was* ***the vexing problem of interpersonal influences on consumer preferences****. In the standard model, agents' preferences are independent of the likes and dislikes of others, i.e., preferences are formed and remain asocial.* ***This assumption obviates unwelcome welfare conclusions such as the case where only relative consumption matters*** *and, therefore, increases in consumption have no positive impact on welfare if they are general across the population.* ***Economists remain deeply wedded to the idea that higher consumption yields higher well-being,*** *and formulations which produce different welfare conclusions have had great difficulty gaining influence within the field.*' It can be understood that 'the vexing (annoying) problem' of interpersonal influences on consumer preferences wasn't considered because it went against (weakens) the conclusions of the standard model. Those can be summarised as: ***Higher consumption yields higher well-being*** (the answer to the question). Such a conclusion obviates (removes) unwelcome conclusions (led to by the vexing problem) that increase in consumption may not have a positive impact on welfare if they are general across the population.

Option A: This is an argument that will be strengthened by the 'vexing problem' (the interpersonal influences). It will weaken an argument that states that preferences are formed and remain ***asocial*** (not social). Hence, Option A is not the answer.

Option B: This argument goes against the economists' argument that absolute consumption indicates well-being. 'The vexing problem' or the case of interpersonal influences strengthens the argument that relative consumption is more crucial. Hence, Option B is not the answer.

Option C: This is the fallacious argument made by the economists that 'the vexing problem' undermines. The economists falsely concluded that more is the consumption, more is the general well-being which may not be the case. Hence, Option C is the answer.

Option D: Increase in consumption doesn't always lead to greater welfare. This is the conclusion strengthened by 'the vexing problem' since the author mentions that *increases in consumption have no positive impact on welfare if they are general across the population*. Hence, Option D is not the answer. Choice (C)

Q14. The author disagrees with the economists of the post-Second World War era on the grounds that:

a) greater importance was attributed to the size of the income than the range of choice.

b) the economists didn't inspect when and why consumer choices didn't contribute to social welfare schemes.

c) the economists focused on consumers' expenses rather than on their income. Your answer is incorrect

d) the economic theories were ill-equipped to dissect the nature of consumption.

Number of words and Explanatory notes for RC:

Number of words: 503

Option A: Consider the sentence: '*Liberal theory, in both political science and economics became almost adamant about ignoring the content of consumer choices,* ***defining its project as the expansion of income and the range of choice***.' So, the expansion of income and range of choice were both the parameters the economists used. It is not that range of choice was relegated. It is the nature of the consumption that they had ignored, not the range of choice available to consumers. Hence, Option A is not the answer.
Option B: The author was interested in what kind of consumption contributed to welfare and what kind didn't. That is not the same as consumers contributing to welfare schemes. Welfare here is used in the sense of social well-being. Schemes is an entirely out-of-context usage. Hence, Option B is not the answer.
Option C: This is not true, since the economists focused more on the income and its expansion rather than how the income was spent. Hence, Option C is not the answer.
Option D: This can be understood from the sentences: '*Liberal theory, in both political science and economics became almost adamant about ignoring the content of consumer choices, defining its project as the expansion of income and the range of choice. This provided an appealing democratic veneer to the theory,* ***but left these perspectives unable to critically analyse consumption***, *even when choice was obviously not welfare-enhancing.* 'So, the liberal theory couldn't dissect the nature and quality of consumption. Hence, Option D is the answer. Choice (D)

DIRECTIONS for questions 15 to 19: The passage given below is accompanied by a set of five questions. Choose the best answer to each question.

The issue of the democratic character of Israel is not only challenging from an academic perspective but also of high political relevance…According to the Freedom House index, which is commonly taken as a reference source for assessing political systems as democratic or undemocratic, Israel is a democracy. Although Israel's score of 79 is well below that of the three best performers (Finland, Norway, and Sweden, with a score of 100), it is better rated on the basis of political rights and civil liberties than some other major democracies, for instance India and Brazil (whose score is 77 and 78, respectively) and is listed among the eighty-eight countries that Freedom House evaluated as free in 2018. Thus, the question arises as to what the arguments of those who reject that Israel is a democracy are.

… [T]here are authors who attempt to prove the non-existence of an Israeli democracy [like] Ilan Pappe, [who believes] "the litmus test of any democracy is the level of tolerance it is willing to extend towards the minorities living in it." He concludes that, "in this respect, Israel falls far short of being a true democracy." Pappe shows that the State of Israel systematically discriminates

against one-fifth of its citizens, i.e. those Arab inhabitants of the British Mandate of Palestine and their descendants who were not expelled or did not flee during the 1947–49 Palestine War.

There is a sophisticated debate surrounding Sammy Smooha's model of "ethnic democracy" and its application to Israel... Smooha explicates that Israel, albeit not qualifying as a liberal democracy, is still a democracy. Israel is not a liberal democracy as its Palestinian citizens do not enjoy equal rights. Rather, the state, which is "based on Jewish and Zionist hegemony and on structural subordination of the Arab minority" systematically discriminates against them. At the same time, Smooha outlines that Israel qualifies as a democratic state because Israeli Palestinians have full access to democratic political rights.

Alan Dowty resorts to a 'thin' definition of democracy as first developed by the Nestor of research on modern democracy, Robert Dahl who lists the following democracy prerequisites: Freedom to form and join organizations, freedom of expression, right to vote, eligibility for public office, right of political leaders to compete for support and right of political leaders to compete for votes, alternative sources of information, free and fair elections, and institutions for making government policies depend on votes and other expressions of preference.

As Palestinian Israelis are not excluded from this catalogue, Israel […] qualifies as a democracy. However, in their critique on Smooha, As'ad Ghanem et al. apply a 'thick' concept of democracy, according to which equality (and consent) is an "essential characteristic of a democracy". As it is uncontested that Palestinian Israelis are discriminated against by their state, it is unsurprising that, on the basis of this definition of democracy, they conclude that Israel is not a democracy.

The academic discourse on thick versus thin concepts of democracy reflects that, in the end, the term democracy refers to an ideal that can hardly match with reality to its fullest degree… If the criteria of equality as proposed by Ghanem et al. are applied to the fullest degree, hardly any political system would qualify as a fully-fledged democracy, because most, if not all, political systems discriminate to a certain degree against some social groups…

Q15. The author would most likely agree with which of the following statements?

a) Democratic countries have impossible ideals.

b) A thin democracy is a practical compromise.

c) Political systems are incapable of being fair to all their social groups.

d) Full-fledged democracies seldom offer equality to all social groups.

Number of words and Explanatory notes for RC:

Number of words: 559

Option A: The author talks about democracy as an ideal that is hard to achieve in reality. The option talks about democratic countries having ***other impossible ideals***. The author doesn't talk about any other ideals. Democracy is the ideal being discussed here. Hence, Option A is not the answer.
Option B: While the author does talk about what can and cannot be expected from a full-fledged democracy, and what is too difficult or impractical to expect, it is not mentioned what exactly counts as a 'practical compromise'. Also, how far is the author satisfied with a thin democracy hasn't been mentioned in the passage. Therefore, Option B is not the answer.
Option C: The capability of a political system, (an extrapolation from a democratic system) is too far-fetched for us to infer anything about. While the author says political systems ***discriminate to a certain*** degree, we cannot take it to imply that political systems ***cannot be fair at all***. Hence, Option B is not the answer.
Option D: The author is likely to agree to this. This can be understood from the sentence: '*If the criteria of equality as proposed by Ghanem et al. are applied to the fullest degree,* ***hardly any political system would qualify as a fully-fledged democracy****, because most, if not all, political systems discriminate to a certain degree against some social groups…*' In other words, the author points out that no full-fledged democracy offers equality as proposed by Ghanem et al. Hence, Option D is the answer. Choice (D)

Q16. Which of the following best summarises the argument offered by As'ad Ghanem et al. on the idea of democracy?

a) A country that doesn't provide equality and consent is only a thin democracy.

b) A country is not a thick democracy unless it provides equality and consent to all its minorities.

c) A country is not a democracy if its minorities are discriminated against by the state.

d) A country is not a liberal democracy unless it gives its minorities full access to democratic political rights.

Number of words and Explanatory notes for RC:

Number of words: 559

This can be understood from the following sentences: '*As'ad Ghanem et al. apply a* ***'thick' concept of democracy,*** *according to which equality (and consent) is an "essential characteristic of a democracy". As it is uncontested that Palestinian Israelis are discriminated against by their state, it is unsurprising that, on the basis of this definition of democracy, they conclude that Israel is not a democracy.*'

Option A: Ghanem et al do not really discuss what constitutes a thin democracy. In fact, it is the author who attributes the term 'thick democracy' to their definition of what a democracy is. Hence, Option A is not the answer.

Option B: It must be noted that Ghanem et al do not distinguish between a thin and thick democracy. It is the author who calls their definition a thick democracy (a more rigid/heavier version). Hence, Option B is not the answer.

Option C: Ghanem et al clearly explain that equality and consent are the essential characteristics of a democracy. So, it can be extrapolated to say that if minorities are discriminated against by the state, such a country will not be a democracy. Hence, Option C is the answer.

Option D: Ghanem et all argue against Smooha's opinion that Israel is a democracy. Their opinion on the difference between a democracy and a liberal democracy have neither been explained nor implied. Hence, Option D is not the answer.

Choice (C)

Q17. A 'thin' definition of democracy would probably include all the following EXCEPT

a) the right to compete for a public office and ask for support.

b) the right to voice opinions.

c) equal rights for all voters.

d) an opportunity to frame government policies.

Number of words and Explanatory notes for RC:

Number of words: 559

The 'thin' definition of democracy can be understood from the following lines: '*Alan Dowty resorts to a 'thin' definition of democracy as first developed by the Nestor of research on modern democracy, Robert Dahl* ***who lists the following democracy prerequisites****: Freedom to form and join organizations, freedom of expression, right to vote, eligibility for public office, right of political leaders to compete for support and right of political leaders to compete for votes, alternative sources of information, free and fair elections, and institutions for making government policies depend on votes and other expressions of preference.*'

Option A: This has been mentioned in the list of prerequisites as '*right of political leaders to compete for support and right of political leaders to compete for votes.*' Hence, Option A is not the answer.

Option B: The author mentions that voters have a right to expression. So, it can be said that they will have the right to voice their opinions. So, Option B will be part of a thin democracy.

Option C: Because the prerequisites include 'free and fair elections', it can be safely said that a thin democracy would offer equal rights to all voters while participating in the process of elections.

Option D: While the author mentions that '*institutions for making government policies depend on votes and other expressions of preference',* it cannot be inferred that everyone has a right to ***frame government policies***. Citizens only have a right to creation of institutions. It is the institutions which depend on votes or citizen preference. That doesn't mean that the citizens make the policy. They may influence the policy framework, at best, through voting. Hence, Option D is the answer.

Choice (D)

Q18. Sammy Smooha's stand on Israel is that it is

a) a liberal democracy because Israeli Palestinians have democratic political rights.

b) a democratic state because a majority of the Israelis have full access to democratic political rights.

c) not a democratic state because it is based on the structural subordination of the Arab minority.

d) not a liberal democratic state because Palestinians are treated as inferior citizens.

Number of words and Explanatory notes for RC:

Number of words: 559

Smooha's stand can be understood from the following sentences: '*Smooha explicates that Israel, **albeit not qualifying as a liberal democracy, is still a democracy**. Israel is not a liberal democracy as its Palestinian citizens do not enjoy equal rights. Rather, the state, which is "based on Jewish and Zionist hegemony and on structural subordination of the Arab minority" **systematically discriminates against them**. At the same time, Smooha outlines that **Israel qualifies as a democratic state** because Israeli Palestinians have full access to democratic political rights.*'

Option A: Smooha clearly explicates that Israel is not a liberal democracy. Hence, Option A is not the answer.

Option B: Smooha explains that Israel qualifies as a democratic state because Israeli Palestinians have full access to democratic political rights. This cannot be equated to saying ***a majority ofthe Israelis*** have full access to democratic political rights (it should be all Israelis and Israeli Palestinians). Hence, Option B is not the answer.

Option C: Smooha calls Israel a democratic state (but not a liberal democracy) and explains the reasons for the same. Hence, Option C is not the answer.

Option D: Israeli Palestinians do not have equal rights. So, this option is true that they are treated as ***inferior citizens*** by Israel. Hence, Option D is the answer.

Choice (D)

Q19. Which of the following can be understood to be true about Israel from the passage?

a) Israel offers more democratic rights to its citizens than India or Brazil do.

b) Israel is a secular country despite Zionist and Jewish domination.

c) At least one-fifth of the Israeli citizens do not have access to equal rights.

d) All Palestinians in Israel have democratic rights but not the right to equality.

Number of words and Explanatory notes for RC:

Number of words: 559

Option A: While Israel scores better on the Freedom House Index than India or Brazil, we are not aware of the parameters of that index. So, we cannot quite infer that higher rating means more democratic rights to the citizens. (For example, one possible question would be – what percentage of citizens have which level of democratic rights for a country to be higher on the index?) Hence, Option A is not the answer.
Option B: Israel's stand on secularism cannot be exactly understood from the passage, given secularism is about no religion being dominant. We can infer that Israel probably is not secular given that the author does mention that there is Zionist and Jewish hegemony and subordination of Arabs. Hence, Option B is not the answer.
Option C: IlanPappe shows that *'the State of* ***Israel systematically discriminates against one-fifth of its citizens****, i.e. those Arab inhabitants of the British Mandate of Palestine and their descendants who were not expelled or did not flee during the 1947–49 Palestine War*. This number has not been contested anywhere in the passage. Even the fact that Israel discriminates against these citizens has not been contested in the passage (only whether Israel is a true-blue democracy has been debated). Hence, Option C is true, and hence, the answer.
Option D: There are two issues with this option. Firstly, the author doesn't use the term Palestinians broadly. We are only discussing 'those Arab inhabitants of the British Mandate of Palestine and their descendants who were not expelled or did not flee during the 1947-49 Palestine War' and not all Palestinians. So, we are not sure if all Palestinians have all the democratic rights. Secondly, we are discussing ***equal rights*** and not ***Right to Equality.*** Hence, Option D is not the answer. Choice (C)

DIRECTIONS for questions 20 to 24: The passage given below is accompanied by a set of five questions. Choose the best answer to each question.

...Stem cells were first identified and characterized in bone marrow in the 1950s and '60s... These blood stem cells were rare, slow to divide, and capable of both self-renewal and differentiation into any of the blood's more specialized cell types...Because of their relevance to healing and recovery, stem cells in other tissues became coveted prizes among researchers and physicians searching for ways to treat all sorts of conditions and diseases.

Then the story got more complicated. Stem cells were identified in other adult tissues throughout the body: in the skin, in hair follicles, in the gut, and in bone. They, too, could self-renew and give rise to their tissue's various cell lineages. But otherwise, they looked very different from the blood stem cells. They expressed different genes, exhibited different protein and surface markers, and divided in different ways and at different rates.

In the 1990s, scientists isolated embryonic stem cells, which were even more powerful than those in adult tissues, with the ability to become any cell type in the body.... And in 2006, researchers succeeded in transforming differentiated connective tissue cells into induced

pluripotent stem cells (iPSCs), which had the versatility of embryonic stem cells. That result showed that stemness could be induced.

Yet looming over these findings, according to the molecular geneticist Hans Clevers, an author on the new PNAS cardiac stem cell paper, is the assumption that stem cells throughout the body are “a precious, hard-wired, magical entity” like the ones in bone marrow. In fact, he said, those first insights gained from blood stem cells have coloured how scientists think about stem cells in other tissues – sometimes in ways that have been profoundly limiting.

One often-overlooked point is that many tissues can repair themselves in very ingenious ways. In the blood, the small stem cell population is the only means of regeneration, but in solid tissues, that’s not always the case. The stem cells themselves are different: They tend to divide more rapidly, for instance, and because they exhibit unique molecular profiles, they have to be identified by methods specific to them. Reliance on tissue-specific markers (which aren’t always stringent) is one of the reasons there’s been so much debate surrounding whether cardiac stem cells exist – and why it remains so difficult to determine other types of stem cells.

Moreover, when the stem cells in solid tissues are destroyed, more specialized cells in those tissues can often revert to a stemlike state to take over repair functions on their behalf. Cells are therefore much more plastic than previously thought possible, with less fixed identities. There’s more and more evidence saying that our bodies can respond to damage independently of what we would consider a classic stem cell population...

That’s been shown in a slew of organs, including the kidney, lung, stomach, and intestine. Perhaps most striking, some tissues don’t seem to have a stem cell population. The adult liver – the epitome of efficient organ regeneration – has no stem cells; instead, its differentiated cells can act like stem cells when needed. “In essence,” Clevers said, “every cell in the liver has the potential to behave like a stem cell.”

And so, “it’s more useful to find out how a particular tissue performs its stem cell function than to identify individual stem cells,” he said. The way various cells all contribute to maintaining a tissue constitutes stemness – not any one cell type or entity. Sticking to the more dogmatic definition of what a “true” stem cell should be, instead of considering that they fall along a more nebulous spectrum, has hindered progress...

Q20. Stem cells identified in other tissues throughout the body are different from blood stem cells in all the following ways EXCEPT:

a) they have different protein and surface markers.

b) they have different rates and methods of division.

c) they can repair themselves and give rise to the tissues' various cell lineages. Your answer is correct

d) they exhibit unique molecular profiles

Number of words and Explanatory notes for RC:

Number of words: 594

Consider the following sentences: '*They, too, could self-renew and give rise to their tissue's various cell lineages. But otherwise, they looked very different from the blood stem cells. They expressed different genes,* ***exhibited different protein and surface markers (1)****, and* ***divided in different ways and at different rates (2)****.*' The differences have been underlined.
Option A: This has been mentioned in the underlined portion above (1). Hence, Option A is not the answer.
Option B: This has been mentioned in the underlined portion above (2). Hence, Option B is not the answer.
Option C: This is a characteristic of all stem cells, as mentioned here: '***They, too****, could self-renew and give rise to their tissue's various cell lineages*'. Hence, it is not a difference. Option C is the answer.
Option D: This has been mentioned in the underlined portion above (1). Hence, Option D is not the answer. Choice (C)

Q21. The main argument of the passage can be weakened if it is proven that

a) only a specific type of cells has the genetic content that can initiate response to tissue damage. Your answer is correct

b) stem cells have various other functions apart from self-repair and renewal.

c) it is not just designated stem cells which are responsible for maintaining a tissue.

d) not all tissues in the body are capable of maintaining and repairing themselves.

Number of words and Explanatory notes for RC:

Number of words: 594

The main argument in the passage is that it is not a specific designated stem cell that does the job of repair and renewal. Rather, stem-ness is a function and several tissues in several organs of the body are capable of doing it independently of any stem cells.
Option A: This shows that there is in fact, a very specific type of cell, that does the job the author attributes to 'stemness'. This goes against the whole argument of the passage that there are no specific stem cells, just the function which different cells take up in different tissues. Hence, Option A will weaken the author's argument.
Option B: Even if cells performing the role of stemness (repair/renewal/responding to damage) have other functions, it doesn't go against the grain of the author's main argument. In fact, the author does mention that plasticity is seen in many cells which switch functions depending on the requirement. Hence, Option B is not the answer.
Option C: This option strengthens the author's main argument by pointing out that there are no designated stem cells. Hence, Option C is not the answer.
Option D: The passage doesn't really argue that every cell has to perform the function of repair and renewal and should have the 'stemness' characteristic. We only understand that several organs are capable of doing it. Hence, this option doesn't necessarily weaken the central argument of the passage. Choice (A)

Q22. The 'assumption' pointed out by Hans Clevers in the sentence ('Yet looming over these findings…is the assumption…') is that

a) all stem cells throughout the body are precious.

b) the function performed by stem cells is akin to magic because of lack of comprehension of their functions.

c) stem cells are hard-wired to perform only repair and renewal functions.

d) specific cells are designated to perform the role of a stem cell. Your answer is correct

Number of words and Explanatory notes for RC:

Number of words: 594

Consider the sentences: '*Yet looming over these findings, according to the molecular geneticist Hans Clevers, an author on the new PNAS cardiac stem cell paper,* ***is the assumption that stem cells throughout the body are "a precious, hard-wired, magical entity****" like the ones in bone marrow.*' The main contention of Clevers can be understood from: '*…it's more useful to find out how a particular tissue performs its stem cell function than to identify individual stem cells," he said.*'

Option A: The assumption is that stem cells a precious (valuable), hard-wired entity. Here, Clevers is not trying to draw our attention to how valuable they are, or how valueless. It is not about their preciousness. Rather, it is arguing against the idea that there is a bunch of cells called stem cells, precious because of their hard-wired function. But there is no such hardwiring, as explained later in the passage. So, the assumption is not about their value. Option A is not the answer.

Option B: Whether we understand the function performed by cells acting like stem cells, has not been discussed in this context. So, the assumption pointed out is definitely not about what they do, and definitely not magic. What they do is special – that has been rhetorically explained as a 'magical entity'. Hence, Option B is not the answer.

Option C: The stemness function being hardwired is the assumption, not that they ***perform only one function.*** Hence, Option C is not the answer.

Option D: This is the assumption pointed to in the para by Clevers, that many believe there are designated and functionally specific stem cells – hardwired to perform the magical and precious function of repair and renewal. Hence, Option D is the answer.

Choice (D)

Q23. Based on the information provided in the passage, which of the following statements is the author most likely to approve of?

a) The imposing of our understanding from blood stem cells has led to false conclusions.

b) Tissue-specific markers are the only way to identify stem cells.

c) We do not entirely understand how a tissue performs its stem cell function. Your answer is correct

d) Regeneration of tissues is dependent on the stem cell population.

Number of words and Explanatory notes for RC:

Number of words: 594

Option A: This can be understood from Clevers remark: '*In fact, he said, those first insights gained from blood stem cells have coloured how scientists think about stem cells in other tissues—sometimes in ways that have been profoundly limiting.*' So, while it is ***profoundly limiting*** and has ***coloured how scientists think*** (in other words, has influenced the direction and has hampered how much progress could have been made), we cannot infer that it has led to false conclusions. So, the author is not highly likely to agree with this.
Option B: We are dependent on the tissue-specific markers to identify stem cells, according to the author, and that is a major constraint. However, the author doesn't assert anywhere that it is the only way of identifying tissues. Hence, Option B is not the answer.
Option C: The author quotes Clevers' statement '*it's more useful to find out how a particular tissue performs its stem cell function than to identify individual stem cells*' indicating that we still don't understand how a particular tissue performs its stem cell function. Hence, Option C is the answer.
Option D: Consider this: '*There's more and more evidence saying that our bodies can respond to damage* ***independently of*** *what we would consider a classic stem cell population...*' From this, it is clear that stem cell population is not mandatory for response to damage/restoration of tissues in the body. Hence, Option D is not the answer. Choice (C)

Q24. The author uses the example of the liver to demonstrate that

a) the body doesn't need stem cells.

b) plasticity of cell function drives tissue regeneration.

c) livers regenerate themselves efficiently.

d) specialized cells can perform repair functions when stem cells are damaged.

Number of words and Explanatory notes for RC:

Number of words: 594

Consider the sentences: '***Cells are therefore much more plastic than previously thought possible,*** *with less fixed identities.* ***There's more and more evidence saying that our bodies can respond to damage independently*** *of what we would consider a classic stem cell population...* ***That's been shown*** *in a slew of organs, including the kidney, lung, stomach, and intestine. Perhaps* ***most striking****,* ***some tissues don't seem to have a stem cell population****. The adult liver–the epitome of efficient organ regeneration–has no stem cells; instead, its differentiated cells can act like stem cells when needed. "In essence," Clevers said, "every cell in the liver has the potential to behave like a stem cell."* So, the author is building a case for how there are not ***specific stem cells***; rather cells that take up the function when the need arises. Hence, the use of the word 'plastic' – flexible. The liver has no stem cells and yet is the epitome of regeneration.

Option A: The example of the liver is not to talk about the 'uselessness' of the stem cells, but to show that tissues can take up the repair function independently of the stem cells. So, it is not that stem cells are 'useless', rather that stemness is not a cell-specific function. Hence, Option A is not the answer.

Option B: From '***Cells are therefore much more plastic than previously thought possible,*** *with less fixed identities',* we can safely say that the author wants to draw our attention to the flexibility of functions of the cell, making it possible for them to take up regeneration without depending on explicitly maintained stem cells. Liver is a good example of this phenomenon. Hence, Option B is the answer.

Option C: While this is understood and directly mentioned, we are trying to understand why the author had given the example of the liver. It wouldn't definitely be to talk about the liver, but for a broader idea of which the liver is one strengthening case. Hence, Option C is not the answer.

Option D: Various cells (and not specialized cells) can perform repair function, and not just when stem cells are damaged. It could also be when there are no specific stem cells. Hence, Option D is not the answer. Choice (B)

Q25. DIRECTIONS for question 25: The sentences 1, 2 and 3 given below along with exactly one sentence from the sentences numbered 4, 5, 6 and 7, when properly sequenced, form a coherent paragraph. Enter the correct sequence of four numbers, corresponding to the sentences forming the coherent paragraph, in the input box provided below the question.

(1) They would, he believed, soon be replaced by silent films.

(2) Each new wave of information technology – radio, television, computers – has led to similar predictions.

(3) "Books will soon be obsolete in schools," Thomas Edison announced in 1913.

- -

(4) Like teachers, digital educational technology comes in many forms, from wonderful to appalling.

(5) Technology can help solve the problem of bad, absent teachers in poor-country schools.

(6) And each time, the old technologies of books, classrooms and teachers have proved startingly resilient.

(7) Alas, the figures are not as impressive as they sound.

It is known that sentences 1, 2 and 3 are a part of the same paragraph. So, we look for clues among these sentences to sequence them in the correct order. At the same time, we look for one sentence among the ones numbered 4, 5, 6 and 7 that can either serve as a link to one of the sentences numbered 1, 2 and 3 or which can be a part of the overall thought flow of the paragraph containing sentences 1, 2 and 3.
Sentence 1: Sentence 1 has the pronoun "they".
Sentence 2: Sentence 2 has a clue "similar predictions".
Sentence 3: Sentence 3 has a view of Thomas Edison.
So, we can say that sentence 3 is a general sentence that can begin the paragraph. Thomas Edison said that "Books will soon be obsolete in schools." Sentences 3 and 1 form a logical block. The pronouns 'they' and 'he' in sentence 1 point to 'books' and 'Thomas Edison' in sentence 3 respectively. So sentence 3 is followed by sentence 1.
Sentences 1 and 2 also form a logical block. "replaced by silent films" in sentence 1 links with "led to similar predictions" in sentence 2. So, we have 312 and we observe that no sentence from amongst those given in 4, 5, 6 and 7 can come between sentences 3 and 1 or between sentences 1 and 2. Now, one of the sentences amongst 4, 5, 6 and 7 can only be placed before the unit 312 or after it.
Sentence 4: Sentence 4 cannot be a part of the para. "many forms of digital educational technology" in sentence 4 would need more substantiation.
Sentence 5: "The problem of bad, absent teachers" given in sentence 5 does not point to "getting obsolete", "be replaced by" or " similar predictions" given in sentences 3, 2 and 1. It only talks about the use of technology without referring to the 'negative prediction'. So 5 also cannot be a part of this para.
Sentence 6: Sentence 6 runs with the thoughtflow of the main para. "each time" in sentence 6 links with "each new wave .... similar predictions" in sentence 2. "the old technologies of books, classrooms and teachers have proved startingly resilient" in sentence 6 contrasts "soon be replaced by silent films" in sentence 1 and "similar predictions" in sentence 2. So, 3126.
Sentence 7: There is no mention of 'figures' / numbers in sentences 1, 2 and 3. So the negative exclamation in sentence 7 cannot be a part of the para.
The required answer is 3126. Ans: (3126)

Q26. DIRECTIONS for question 26: The paragraph given below is followed by four summaries. Choose the option that best represents the author's position in the paragraph.

One of the very best aspects of studying and teaching contemporary fiction is the ability to help shape a canon very much in formation. No wonder, then, that many scholars are loathe to concede that role to institutions like the Booker. It is easy, even tempting, to write the prize off as a publicity-focused MacGuffin, a stunt that doesn't always get it right and often gets it wrong. Yet, given the vast volume and variety of contemporary literature and the enormous power of literary awards to predict – if not guide – scholarly, pedagogical, and readerly attention, the prize and its shortlist appear, for scholars most of all, as an ideal, if unexpected, sample for future research.

a) The Booker is yet to receive approval, from enthusiasts of contemporary fiction, as a standard to shape future research.

b) Scholars of contemporary fiction could use the Booker Prize as a yardstick to handpick an ideal sample for future research.

c) The Booker Prize, despite its inconsistent record, helps scholars of contemporary fiction to pick and choose a sample that can help shape a canon in formation.

d) Scholars loathe to concede ground to the Booker as the primary authority in the world of contemporary fiction despite its accurate estimation of literature that attracts readers and pedagogists alike.

Option A: The author clearly points out that: '*Yet, given the vast volume and variety of contemporary literature and the enormous power of literary awards to predict – if not guide – scholarly, pedagogical, and readerly attention,* ***the prize and its shortlist appear, for scholars most of all, as an ideal****, if unexpected, sample for future research.*' So, it is incorrect to say that the Booker prize is yet to receive "approval". Also, 'enthusiasts' of contemporary fiction is a loose and vague term. Hence, Option A is not the answer.

Option B: This represents the author's position as it conveys all the three aspects of the author's argument – ***scholars of contemporary fiction(1),*** considering ***Booker as a yardstick***, to select a ***sample for future research.*** Hence, Option B is the answer.

Option C: The Booker's record is not ***inconsistent.*** This is a factual inaccuracy. The author mentions that it ***is tempting to write off the Booker as a publicity stunt because it gets it wrong sometimes.*** So, generalising that to call the Booker's record inconsistent is not correct. Secondly, the Booker wouldn't help choose a sample to ***shape a canon in formation.*** It is studying and teaching contemporary fiction that does that. Hence, Option C is not the answer.

Option D: The Booker's estimation, firstly, cannot really be dubbed 'accurate'. Secondly, scholars aren't loathe to concede ground to the Booker as an ***authority.*** Scholars use it to help them pick a reasonable sample. Hence, Option D is not the answer.

Choice (B)

Q27. DIRECTIONS *for question 27:* 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. And they accumulate in filter-feeding bivalve molluscs of the sort that end up on dinner tables, to the serious detriment of the diner.
2. This ghostly light is produced by single-celled planktonic creatures called dinoflagellates.
3. Many of those who think about bioluminescence suspect that it has a defensive purpose.
4. Ironically, dinoflagellates are also responsible for 'red tides' which are water-discolouring, toxin-generating blooms of the organisms that kill fish and other wildlife.
5. One of nature's most beautiful phenomena is the nocturnal bioluminescence visible in the world's oceans, particularly on shores where waves are breaking and in the wakes of moving objects such as swimmers and ships.

Sentence 1: Sentence 1 has the starter "and". This sentence can only follow another sentence.
Sentence 2: Sentence 2 has a reference to 'this ghostly light'. It introduces 'dinoflagellates'.
Sentence 3: Sentence 3 mentions some specific detail about bioluminescence.
Sentence 4: This sentence has the clues "ironically" and "also".
Sentence 5: Sentence 5 sounds introductory in tone: One of nature's most beautiful phenomena. It introduces the topic of discussion – nocturnal bioluminescence.
On a careful reading of the sentences, it can be observed that sentence 5 is a general sentence that can begin the paragraph. The remaining sentences need a precedent and more substantiation. Sentences 5 and 2 form a logical block. "nocturnal bioluminescence" in sentence 5 links with "ghostly light" in sentence 2. Sentence 2 also introduces "dinoflagellates" as single-celled planktonic creatures.
It can be understood that sentences 4 and 1 are slightly negative sentences as far as 'dinoflagellates' are concerned. So, the word 'ironically' in sentence 4 serves as a bridge to connect the positive sentences 5 and 1 (highlighting and expanding on nocturnal bioluminescence as nature's most beautiful phenomenon) with the slightly negative sentences 4 and 1. So sentence 4 follows sentence 2.
Sentence 2 is followed by sentence 1. "dinoflagellates are also responsible for 'red tides'" in sentence 2 links with "And they accumulate in filter-feeding bivalve molluscs" in sentence 1. Sentence 1 concludes the para. So, 5241.
Sentence 3 is the odd sentence out. "suspect that it has a defensive purpose" in sentence 3 would need more substantiation. Ans: (3)

Q28. DIRECTIONS for question 28: The paragraph given below is followed by four summaries. Choose the option that best represents the author's position in the paragraph.

The Soviet Communist ideology was deeply invested in presenting a world in which there were no obstacles to the sons (and daughters) of farmers – not even to 'storming the heavens.' Indeed, the promise of social mobility that transcended gender, ethnicity, and social origins was the legitimating myth of the Russian Revolution and the entire Soviet project. In this context, the Soviet space program, among its other functions – military, scientific, or social – was, from the outset, a powerful propaganda tool. Already with the first person in space, Yuri Gagarin, Soviet newspapers celebrated that he was the son of collective farmers – a message that they never tired of repeating.

a) The Soviet Communist ideology used the space program to further its pro-farmer agenda.

b) Soviet communists attributed the success of the Soviet space program to the social mobility promised to the farmers of the country.

c) Soviet communism was rooted in the belief that farmers' children can literally touch the skies.

d) Soviet communism pushed its promise of social mobility for the farmers through propaganda tools like the space program.

The important ideas have been underlined: '*The **Soviet Communist ideology was deeply invested in presenting a world** in which there were **no obstacles** to the sons (and daughters) of **farmers** – not even to 'storming the heavens.' Indeed, **the promise of social mobility** that transcended gender, ethnicity, and social origins was the legitimating myth of the Russian Revolution and the entire Soviet project. In this context, **the Soviet space program,** among its other functions – military, scientific, or social*
*– was, from the outset, **a powerful propaganda tool**. Already with the first person in space, Yuri Gagarin, Soviet newspapers celebrated that **he was the son of collective farmers** – a message that they never tired of repeating.'*
Option A: The agenda was not pro-farmer. The ideology was invested ***in presenting*** itself as pro-farmers. Also, that is not the main theme the author wanted to discuss through the para. There is more to the author's position. Hence, Option A is not the answer.
Option B: The Soviet space program has been presented as an example of a larger Soviet scheme – of presenting the world as one conducive for farmers to become bigger and greater. Also, no causation has been established between the social mobility promise and the space program. The author simply mentions that they have the same context. Hence, Option B is not the answer.
Option C: It was not rooted in such a belief. It was invested in ***presenting*** such a belief, which may or may not be what they really believed in. Hence, Option C is easy to eliminate.
Option D: All the ideas have been represented here. Soviet communism pushed its ***promise of social mobility for the farmers*** using the ***space program as a propaganda*** tool. The author's position was that the communist ideology wanted to present itself as an ideology that would push the farmers to great heights. Hence, Option D is the answer. Choice (D)

Q29. DIRECTIONS for question 29: The sentences 1, 2 and 3 given below along with exactly one sentence from the sentences numbered 4, 5, 6 and 7, when properly sequenced, form a coherent paragraph. Enter the correct sequence of four numbers, corresponding to the sentences forming the coherent paragraph, in the input box provided below the question.

(1) They see in the growth of large-scale organisation nothing more than a linear expansion of old-fashioned bureaucracy.

(2) Conditioned to think in straight lines, economists have great difficulty imagining alternatives to communism and capitalism.

(3) This conformist tendency stems from the fact that, being born of scarcity, the economists are trained to think in terms of limited resources.

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(4) Yet, the super-industrial revolution challenges the ends as well.

(5) This paradox vanishes once the psychic component of production is taken into account.

(6) Under conditions of scarcity, men struggle to meet their immediate material needs.

(7) They also see technological advance as a simple, non-revolutionary extension of the known.

It is known that sentences 1, 2 and 3 are a part of the same paragraph. So, we look for clues among these sentences to sequence them in the correct order. At the same time, we look for one sentence among the ones numbered 4, 5, 6 and 7 that can either serve as a link to one of the sentences numbered 1, 2 and 3 or which can be a part of the overall thought flow of the paragraph containing sentences 1, 2 and 3.
We can understand that the pronouns 'they' in sentence 1 point to 'economists' in sentence 2. Let us have a closer look at the sentences 1, 2 and 3.
Sentence 1: Sentence 1 has the pronoun 'they' and the clue 'nothing more than a linear expansion'.
Sentence 2: Sentence 2 sounds general in tone. It talks about the difficulty of economists. It mentions a clue "Conditioned to think in straight lines".
Sentence 3: Sentence 3 has the noun 'The economists' and the reference 'This conformist tendency'.
Among all the seven sentences, only sentences 2 and 6 can serve as possible introductory sentences. The remaining sentences need a precedent. Now, sentence 6 cannot begin the paragraph as sentences 1, 2 and 3 point to the difficulty of 'economists' and not of 'men' in general. The pronoun 'they' in sentences 1 and 3 point to 'economists'.
So sentence 2 is a general sentence that can begin the paragraph. Sentences 2 and 1 form a logical block. "Conditioned to think in straight lines, economists" in sentence 2 links with "they see nothing more than a linear expansion" in sentence 1. So sentence 1 can follow sentence 2. "difficulty imagining alternatives to communism and capitalism" in sentence 2 links with "nothing more than a linear expansion of old-fashioned bureaucracy" in sentence 1.
Now, sentence 1 cannot be directly connected to sentence 3. We need to insert a sentence, from one among sentences 4, 5, 6 and 7 between sentence 1 and 3. If we scan through sentences 4, 5, 6 and 7, we understand that sentence 7 has the pronoun 'they'. And "simple, non-revolutionary extension of the known" in sentence 7 links with "nothing more than a linear expansion of old-fashioned bureaucracy" in sentence 1. So, 217.
Sentence 3 follows sentence 7 and concludes the paragraph. 'This non-conformist tendency' in 3 refers to 'non-revolutionary extension' in 7. Sentence 4 (the super-industrial revolution) and sentence 5 (This paradox) has terms which are out of scope and so they cannot be a part of the paragraph. The correct answer is 2173.
Ans: (2173)

Q30. DIRECTIONS for question 30: The paragraph given below is followed by four summaries. Choose the option that best represents the author's primary position in the paragraph.

Privatizing media and eliminating gatekeepers went hand in hand with the anti-regulation market boosterism known on the right as libertarianism and on the left as neoliberalism that provided an ideological justification for growing income inequality and social self-segregation. In fact, it wouldn't be hard to put the rise of "identity" politics under that rubric too. Our collective complacency about the well-being of our fellow citizens is just part of our complacency about our democracies. Perhaps seeing our democratic institutions threatened so openly as we have recently, will be the jolt we need to rise to their defence.

a) The threat to our democratic institutions is largely a result of our complacency towards inequality caused by neoliberalism.

b) An open threat to democracy will probably shake us up from the complacency that has let inequality grow on the back of ideological justifications.

c) Neoliberalism or libertarianism arose from media privatisation and pro-market policies giving birth to the inequality and identity politics now destroying our democracy.

d) It is complacency that has led to the growth of inequality and self-segregation and now looks to threaten the democratic institutions we were supposed to defend.

Option A: The threat to democracy is ***not a result of our complacency towards inequality.*** Our collective complacency about the well-being of our fellow citizens (an extension of 'inequality) ***is just part of our complacency about our democracies.*** So, the threat to democracy is a much bigger idea than the complacency we share towards inequality. Hence, Option A is not the answer.
Option B: This represents the author's main argument that we need a threat to wake us up from the stupor - the complacency towards inequality, which has been justified by libertarianism/neoliberalism (ideological justifications). Hence, Option B is the answer.
Option C: Neoliberalism didn't rise form media privatisation. This is factually incorrect. Media privatisation ***goes hand in hand (work together)*** with neoliberalism (market boosterism). Hence, Option C is easy to eliminate.
Option D: There are two issues with this option. The option doesn't clarify what complacency it is. The para talks about complacency towards inequality. Here, it says complacency has led to the growth of inequality and self-segregation. Secondly, this option states that the complacency threatens the democratic institutions. But, that is not true. Democracy is under threat from other factors probably. We need to be shaken up to come out of that complacency and defend democracy. Hence, Option D is not the answer. Choice (B)

Q31. DIRECTIONS *for questions 31 and 32:* 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. It would have made more sense for me to be inclined toward long walks in wildflower meadows or pine-scented hills, which I was, and had been from my earliest childhood.
2. Had you asked my teenage self this question, I would have pulled my answer from the same emotional grab bag used to sell cars on television: adventure, accomplishment, excitement.
3. Why did I choose rock climbing as a cure for anxiety disorder?
4. But what made the image of a man doing a sport I was barely aware of strike me with the force of a calling?
5. Yet by these same tokens, I might as easily have become a rodeo clown or hedge fund trader.

Sentence 1: Sentence 1 mentions an inclination.
Sentence 2: Sentence 2 has a reference to 'this question'.
Sentence 3: Sentence 3 poses a question which sounds general in tone.
Sentence 4: Sentence 4 poses a question and has a reference to 'force of a calling'.
Sentence 5: Sentence 5 has a reference to 'these same tokens'.
Sentence 3 is the best sentence that can begin the paragraph. It poses a question about the author's choice of rock climbing as a cure for anxiety disorder. Sentences 3 and 2 form a logical block. "Why did I choose rock climbing....?" in sentence 3 links with "had you asked my teenage self this question" in sentence 2. So sentence 2 follows sentence 3.
Sentences 2 and 5 form a logical block. "by these same tokens" in sentence 5 links with "adventure, accomplishment, excitement" in sentence 2. So sentence 5 follows sentence 2.
Sentence 4 concludes the para. "But what made the image of a man doing a sport I was barely aware of.." in sentence 4 contrasts "I might as easily have become a rodeo clown or hedge fund trader" in sentence 5. So, 3254.
Sentence 1 is the odd one out. It needs to connected to the remaining sentences with a contrast conjunction like 'however'. The 'yet' in sentence 5 drifts away from the point made in sentence 1. So, 5 cannot be linked to sentence 1. In fact, there are multiple clues in the remaining sentences, as explained above, that make them fit together like a tight unit. Sentence 1 can be a part of another para. It does not belong to the given para. Ans: (1)

Q32. DIRECTIONS *for questions 31 and 32:* 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. It was also a struggle to determine how the world would be governed: the Second World War was an ideological battle in which different visions of the future were competing, and after which the winners – notably the United States and the Soviet Union – imposed their institutions and ideas on the territory they were fighting over.

2. Now, 80 years later, nearly everyone old enough to remember that time as an adult has passed from the scene, and the world that war created is rapidly disappearing before our eyes.
3. Twenty-one years before World War II began, in November of 1918 imperial Germany had lost the First World War.
4. On the first day of September of 1939, German troops crossed the border into Poland, and two decades of European peace came to an end, as Great Britain and France declared war on Germany.
5. Within two more years, the war, unleashed by Adolf Hitler, became a global tussle to determine who would govern the world for decades to come.

Sentence 1 has the connector word 'also' indicating that a previous sentence talks about a struggle following the ideological battle of the Second World War.
Sentence 2 talks about a point 80 years from some war, in the present.
Sentence 3 talks about a point 21 years prior to the Second World War.
Sentence 4 talks about a particular date, 1939 when a war was sparked.
Sentence 5 points to a war unleashed by Adolf Hitler that became a global tussle.
5 connects to 1 because of the word 'tussle' which provides the basis for '***also*** a struggle' in 1. So, 1 and 5 form a logical block, indicating that the war we are talking about in 5 is the Second World War. 'Within two more years' indicates that a previous sentence is talking about dates/timeframes. It cannot be 2, because 2 talks about the present (so you cannot really say 'two more years'). 3 talks about '21 years before' and ends with World War I, so it cannot be followed by 2 years later and World War II. That only leaves 4. So, 451 becomes one block.
Between 2 and 3, 2 fits better with the 451 block as it is talking about the consequence of the Second World War after all this while ('the world that war created' is a reference to what 1 is talking about when it says 'how the world would be governed'). Chronologically, if 3 has to be used, it precedes the 451 block but there is no connect between 3 and the subsequent statements about the Second World War.

Ans: (3)

Q33. DIRECTIONS for question 33: The sentences 1, 2 and 3 given below along with exactly one sentence from the sentences numbered 4, 5, 6 and 7, when properly sequenced, form a coherent paragraph. Enter the correct sequence of four numbers, corresponding to the sentences forming the coherent paragraph, in the input box provided below the question.

(1) But if it is the map of two-thirds of Earth's surface, then the cost per square kilometre, about $8.30, is not, perhaps, too bad.

(2) GEBCO plans to chart the seabed completely, even though, until now, it has managed less than a fifth of that task in detail.

(3) And making such a map at such a cost is just what an organisation called the General Bathymetric Chart of the Oceans (GEBCO) is proposing to do.

- -

(4) Despite water's apparent transparency, the sea absorbs light so well that anywhere below 200 metres is in pitch darkness.

(5) Three billion dollars sounds a lot to spend on a map.

(6) Such mapping has not, however, been well co-ordinated.

(7) The other, larger job that GEBCO faces is filling in the blanks.

It is known that sentences 1, 2 and 3 are a part of the same paragraph. So, we look for clues among these sentences to sequence them in the correct order. At the same time, we look for one sentence among the ones numbered 4, 5, 6 and 7 that can either serve as a link to one of the sentences numbered 1, 2 and 3 or which can be a part of the overall thoughtflow of the paragraph containing sentences 1, 2 and 3.
Sentence 1: Sentence 1 has the contrast conjunction 'but'. It refers to a map (i.e. of two-thirds of Earth's surface) and the costs. It has the pronoun 'it'.
Sentence 2: Sentence 2 refers to GEBCO's plan (to chart the seabed completely).
Sentence 3: Sentence 3 has some clues: making such a map at such a cost. It also gives us the full form of GEBCO.
We can understand that sentence 2 can only come after sentence 3. Also sentence 3 (making such a map at such a cost) has to come after sentence 1 (then the cost per square kilometre, about $8.30.) So, 132. However, sentence 1 is not the introductory sentence of the para. We look for an introductory sentence for the para amongst sentences 4, 5, 6 and 7.
The introductory sentence has to be connected to sentence 1 (But if it is a map of two-thirds of Earth's surface). The reference to 'map' is present in sentence 5.
Sentence 5 is a general sentence that can begin the para. It is general in tone and mentions 'a map' which refers to the topic of discussion. Sentences 5 and 1 form a logical block. The general descripton "**a map**" in sentence 5 links with the specific example "if it is **the map** of two-thirds of Earth's surface" in sentence 1. Also "cost per square kilometre, about $8.30" in sentence 1 links with "Three billion dollars" in sentence 5. So sentence 1 follows sentence 5.
Sentences 1 and 3 form another logical block. "making such a map at such a cost" in sentence 3 links with "the cost per square kilometre, about $8.30" in sentence 1 and " Three billion dollars" given earlier in sentence 5. So sentence 3 follows sentence 1.
Sentences 3 and 2 form another logical block. "organisation called the General Bathymetric Chart of the Oceans (GEBCO) is proposing to do" in sentence 3 links with " GEBCO plans to chart the seabed completely..." in sentence 2. So sentence 2 follows sentence 3. Hence 5132. Sentence 2 concludes the para.
Sentence 4: Sentence 4 mentions some limitations: "despite water's apparent transparency" and " the sea absorbs light so well ..... pitch darkness." This constraint does not find a continuing thoughtflow in any of the sentences 1, 2 and 3
Sentence 6: Sentence 6 has the conjunctive adverb 'however'. This sentence brings in a new point of view which will need further elaboration.
Sentence 7: Sentence 7 talks about another larger job of GEBCO. This viepoint can be a part of another para, much later in the flow.
The required answer is 5132. Ans: (5132)

Q34. DIRECTIONS *for question 34:* 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. Less obvious are the ways the conflagration stems from years of slashing government budgets for the environment and dismantling support for indigenous and traditional subsistence communities
2. Photos of the blackened sky began to pop on Twitter, and soon the world was paying attention to the blazes rampaging across the forest called "the lungs of the world."
3. Many blame President Jair Bolsonaro's rhetoric as the central factor in the crisis.
4. The Bolsonaro government has "persecuted" indigenous people by attempting to halt the processes that define the boundaries of indigenous territories.

5. On the afternoon of August 19, the sky over São Paulo, Brazil's largest city, went dark, and a cold front combined with ash from forest fires in the Amazon rainforest and formed ominous clouds that blocked out the sun.

Sentence 1 has a comparison 'less obvious', indicating that a sentence before this talks about something more obvious. The sentence also mentions '**the** conflagration (fire)', indicating that a fire has been mentioned elsewhere.
Sentence 2 talks about the event – blazes rampaging across ***the forest***.
Sentence 3 talks about who people blame for ***the crisis*** (possibly the conflagration/the blazes rampaging the forest).
Sentence 4 talks the action taken by the Bolsonaro government against local people.
Sentence 5 connects to Sentence 2 in talking about the actual event – the sky went dark/a cold front combined with ash/formed ominous clouds. The forest in 2 connects to the Amazon rainforest in 5.
So, 2 and 5 are a logical block. People blaming Bolsonaro for the crisis and 'a less obvious reason for the conflagration', 3 and 1, form the other block.
Sentence 4 is one of the examples mentioned in 1, and so is dependent on the presence of 1, which is connected to 3. So, the odd-one is 4. Ans: (4)

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

The tables below provide the statistics of students from two regions, Asia and Africa, going to two countries, USA or U.K., for higher studies for the years 2014 to 2018.

- Table I provides the percentage breakup of students going to any of the two countries from Asia and Africa for each year.
- Table II provides the percentage breakup of students from each region going to USA or U.K. for each year.
- Table III provides the percentage of male students among the students from each region going to each country for each year.

Table I

Year	Asia	Africa
2014	60	40
2015	50	50
2016	65	35
2017	30	70
2018	45	55

Table II

Year	Asia		Africa	
	USA	UK	USA	UK
2014	50	50	70	30
2015	70	30	40	60
2016	20	80	0	100
2017	40	60	20	80
2018	20	80	60	40

Table III

Year	Asia		Africa	
	USA	UK	USA	UK
2014	50	40	25	33.33
2015	60	20	15	90
2016	45	50	0	40
2017	25	75	50	25
2018	100	25	9.09	20

Q1. DIRECTIONS *for questions 1 to 4:* Select the correct alternative from the given choices.

In the year 2015, what is the ratio of the number of male students from Asia going to USA to the number of female students from Africa going to UK?

a) **7 : 1**

b) **9 : 7**

c) **14 : 9**

d) **7 : 9**

From the given tables
Percentage distribution of males and females from Asia and Africa going to U.S. or U.K is as follows.

	Asia				Africa			
	U.S.A		U.K		U.S.A		U.K	
	Males	Females	Males	Females	Males	Females	Males	Females
2014	15	15	12	18	7	21	4	8
2015	21	14	3	12	3	17	27	3
2016	5.85	7.15	26	26	0	0	14	21
2017	3	9	13.5	4.5	7	7	14	42
2018	9	0	9	27	3	30	4.4	17.6

Let the total number of students in 2015 be x.
The number of male students from Asia going to U.S.A = (50) (70) (60x)
The number of females students from Africa to U.K = (50) (60) (10x)
The required ratio = (7) (6x) : (6) × (x) = 7 : 1 Choice (A)

Q2. DIRECTIONS *for questions 1 to 4:* Select the correct alternative from the given choices.

If the total number of students from Asia and Africa going to USA or UK in 2015 is 100% more than that in 2014, then what is the approximate percentage increase/decrease in the number of female students from Asia and Africa going to UK in 2015, when compared to that in the previous year?

a) **73.3% decrease**

b) **73.3% increase**

c) **15.4% increase**

d) **15.4% decrease**

From the given tables
Percentage distribution of males and females from Asia and Africa going to U.S. or U.K is as follows.

	Asia				Africa			
	U.S.A		U.K		U.S.A		U.K	
	Males	Females	Males	Females	Males	Females	Males	Females
2014	15	15	12	18	7	21	4	8
2015	21	14	3	12	3	17	27	3
2016	5.85	7.15	26	26	0	0	14	21
2017	3	9	13.5	4.5	7	7	14	42
2018	9	0	9	27	3	30	4.4	17.6

Let the total number of students in 2014 be x, then in 2015 it is 2x.
The number of female students from Asia going to U.K = 18x
The number of female students from Africa going to U.K = 8x
The total number of female students to going U.K = 26x
Similarly the total number of female students going to U.K in 2015 = 15(2x) = 30x

% increase = $\frac{4x}{26x} \times 100 \approx 15.4\%$ Choice (C)

Q3. DIRECTIONS *for questions 1 to 4:* Select the correct alternative from the given choices.

If the ratio of the number of male students from Asia and Africa going to USA or UK in 2014 and that in 2015 is 2 : 3, then what is the ratio of the total number of students from Asia and Africa going to USA or UK in 2015 and 2014?

a) **18 : 19**

b) **19 : 18**

c) **2 : 19**

d) **Cannot be determined**

From the given tables
Percentage distribution of males and females from Asia and Africa going to U.S. or U.K is as follows.

	Asia				Africa			
	U.S.A		U.K		U.S.A		U.K	
	Males	Females	Males	Females	Males	Females	Males	Females
2014	15	15	12	18	7	21	4	8
2015	21	14	3	12	3	17	27	3
2016	5.85	7.15	26	26	0	0	14	21
2017	3	9	13.5	4.5	7	7	14	42
2018	9	0	9	27	3	30	4.4	17.6

Let the total number of students in 2014 be x and that in 2015 be y.
The number of male students from Asia and Africa in 2014 = 38x
The number of male students from Asia and Africa in 2015 = 54y

Given $\frac{38x}{54y} = 2/3 \Rightarrow \frac{y}{x} = \frac{19}{18}$ Choice (B)

Q4. DIRECTIONS *for questions 1 to 4:* Select the correct alternative from the given choices.

In 2016, approximately by what percentage is the number of male students from Asia and Africa going to USA or UK more/less than the corresponding number of female students in that year?

a) **22% more**

b) **22% less**

c) **18% more**

d) **15% less**

From the given tables
Percentage distribution of males and females from Asia and Africa going to U.S. or U.K is as follows.

	Asia				Africa			
	U.S.A		U.K		U.S.A		U.K	
	Males	Females	Males	Females	Males	Females	Males	Females
2014	15	15	12	18	7	21	4	8
2015	21	14	3	12	3	17	27	3
2016	5.85	7.15	26	26	0	0	14	21
2017	3	9	13.5	4.5	7	7	14	42
2018	9	0	9	27	3	30	4.4	17.6

The number of Male students in 2016 = 45.85x
The number of female students in 2016 = 54.15x

The required percentage = $\frac{54.15x - 45.85x}{54.15x}$ = 15.3% less. Choice (D)

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

In an international film festival, ten films are screened. The ten films are of five languages, Spanish, German, French, English and Russian, such that there are exactly two films of each of the five languages. The films are screened in a week from Monday through Friday, not necessarily in the same order. Exactly two films are screened on each day – one in the morning session and the other in the evening session.

Further, the following information is known:

i. Both the Russian films are screened before the first French film is screened.
ii. No two films of the same language are screened either on the same day or on consecutive days.
iii. Each of the five films screened in the morning sessions is of a different language.
iv. A Spanish film is screened on Tuesday morning.
v. An English film is screened on Thursday evening.

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

The films of which two languages are screened on Wednesday morning and Wednesday evening respectively?

a) **German and French**

b) **Russian and French**

c) **Russian and German**

d) **None of these**

It is given that ten films from five languages (two from each language) are screened from Monday through Friday in a week.
Exactly two films, one in the morning and the other in the evening, are screened everyday.
Two films of the same language are screened neither on the same day nor on two consecutive days.
As all the films that are screened in the morning session are of different languages, the films that are screened in the evening session are also to be of different languages.
A Spanish film is scheduled to be screened on Tuesday morning and a English film on Thursday evening. From this we get another Spanish film is screened on Friday evening and another English film on Monday morning.
As both the Russian films are screened before the first French film, the only possibility is that the Russian films are screened on Monday evening and Wednesday morning and the French films are screened on Wednesday evening and Friday morning.
The German films are screened on Tuesday evening and Thursday morning.
The final schedule is as follows:

Day	Morning	Evening
Monday	English	Russian
Tuesday	Spanish	German
Wednesday	Russian	French
Thursday	German	English
Friday	French	Spanish

On Wednesday the Russian and the French films are screened in the morning and in the evening sessions respectively. Choice (B)

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

Which of the following statements is definitely false?

a) **The film screened on Wednesday morning is of the same language as that of the film screened on Monday evening.**

b) **The day on which a German film is screened always immediately precedes the day on which a French film is screened.**

c) **A Russian film is never screened on the same day on which an English film is screened.**

d) **A Spanish film is always screened on a day immediately following the day on which an English film is screened.**

It is given that ten films from five languages (two from each language) are screened from Monday through Friday in a week.
Exactly two films, one in the morning and the other in the evening, are screened everyday.
Two films of the same language are screened neither on the same day nor on two consecutive days.
As all the films that are screened in the morning session are of different languages, the films that are screened in the evening session are also to be of different languages.
A Spanish film is scheduled to be screened on Tuesday morning and a English film on Thursday evening. From this we get another Spanish film is screened on Friday evening and another English film on Monday morning.
As both the Russian films are screened before the first French film, the only possibility is that the Russian films are screened on Monday evening and Wednesday morning and the French films are screened on Wednesday evening and Friday morning.
The German films are screened on Tuesday evening and Thursday morning.
The final schedule is as follows:

Day	Morning	Evening
Monday	English	Russian
Tuesday	Spanish	German
Wednesday	Russian	French
Thursday	German	English
Friday	French	Spanish

On Monday the Russian and the English films are screened.
Hence, (C) is definitely false. Choice (C)

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

On what date was the last English movie screened, if the first Russian movie was screened on 26th March?

a) **30th March**

b) **28th March**

c) **29th March**

d) **Cannot be determined**

It is given that ten films from five languages (two from each language) are screened from Monday through Friday in a week.
Exactly two films, one in the morning and the other in the evening, are screened everyday.
Two films of the same language are screened neither on the same day nor on two consecutive days.
As all the films that are screened in the morning session are of different languages, the films that are screened in the evening session are also to be of different languages.
A Spanish film is scheduled to be screened on Tuesday morning and a English film on Thursday evening. From this we get another Spanish film is screened on Friday evening and another English film on Monday morning.
As both the Russian films are screened before the first French film, the only possibility is that the Russian films are screened on Monday evening and Wednesday morning and the French films are screened on Wednesday evening and Friday morning.
The German films are screened on Tuesday evening and Thursday morning.
The final schedule is as follows:

Day	Morning	Evening
Monday	English	Russian
Tuesday	Spanish	German
Wednesday	Russian	French
Thursday	German	English
Friday	French	Spanish

The first Russian and the last English movie was screened on Monday and Thursday respectively, i.e., with a gap of 3 days. If Monday is 26th March, Thursday must be 29th March. Choice (C)

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

If it is known that the two Russian movies were screened on days that belong to two different months, which of the following can be the date of the day on which the second German movie was screened?

a) **29th February**

b) **2nd March**

c) **3rd November**

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

It is given that ten films from five languages (two from each language) are screened from Monday through Friday in a week.
Exactly two films, one in the morning and the other in the evening, are screened everyday.
Two films of the same language are screened neither on the same day nor on two consecutive days.
As all the films that are screened in the morning session are of different languages, the films that are screened in the evening session are also to be of different languages.
A Spanish film is scheduled to be screened on Tuesday morning and a English film on Thursday evening. From this we get another Spanish film is screened on Friday evening and another English film on Monday morning.
As both the Russian films are screened before the first French film, the only possibility is that the Russian films are screened on Monday evening and Wednesday morning and the French films are screened on Wednesday evening and Friday morning.
The German films are screened on Tuesday evening and Thursday morning.
The final schedule is as follows:

Day	Morning	Evening
Monday	English	Russian
Tuesday	Spanish	German
Wednesday	Russian	French
Thursday	German	English
Friday	French	Spanish

The two Russian movies were screened on Monday and Wednesday. For these two to be screened in two different months, either Monday or Tuesday should be the last day of one of the months. Further, Wednesday can be either 1st or 2nd of the other month. Hence, Thursday can be either 2nd or 3rd of the second month. Choice (D)

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

Seven friends – Anton Chekov, Hikaru Nakamura, Walter Scott, Elizabeth Barrett, Benjamin Spock, Nyota Inyoka and Ang Lee – are to be seated in a row as per the following conditions:

i. Exactly one person must be seated between Hikaru Nakamura and Anton Chekov.
ii. Ang Lee must be seated to the left of Hikaru Nakamura.
iii. Walter Scott should be seated to the right of Elizabeth Barett.
iv. Nyota Inyoka should be seated in the second position from left.
v. Walter Scott should be either the fifth or the sixth person from left.
vi. Hikaru Nakamura should be seated to the left of Anton Chekov.

Q9. DIRECTIONS *for question 9:* Select the correct alternative from the given choices.

Which of the following is definitely true?

a) **If Ang Lee is at the leftmost end of the row, Elizabeth Barett must be in the 3rd position from left.**

b) **If Hikaru Nakamura doesn't occupy the 3rd position either from left or right, then Anton Chekov occupies the 2nd position from right.**

c) **If Benjamin Spock is seated at the extreme right end, then Ang Lee is located at the extreme left end.**

d) **If Elizabeth Barret is seated in the middle of the row, then Anton Chekov is seated in the fifth position from left.**

Let the seven friends be represented as AC, HN, WS, EB, BS, NI and AL (in the order mentioned in the question).
From the given conditions
(i) and (vi) $\Rightarrow$ HN – AC
(ii) $\Rightarrow$ AL $\leftarrow$ HN
(iii) $\Rightarrow$ EB $\leftarrow$ WS
(iv) $\Rightarrow$ NI in 2nd position from left
(v) $\Rightarrow$ WS in 5th or 6th position from left.
Consider the following cases

Case(i)
S in 5th position from left.

___	NI	___	___	WS	___	___
1	2	3	4	5	6	7

In the above arrangement, HS and PC have to occupy positions 4 and 6 respectively.

___	NI	___	HN	WS	AC	___
1	2	3	4	5	6	7

From (ii) & (iii), positions 1 and 3 have to be occupied by GL and MB in any order $\Rightarrow$ SP must occupy 7th position.
$\therefore$ There are two possible arrangements in this case as shown below.

(1)	AL	NI	EB	HN	WS	AC	BS
	1	2	3	4	5	6	7

(2)	EB	NI	AL	HN	WS	AC	BS

Case (ii)
WS is in the 6th position.
In this case, there are two further sub-cases possible.
(a) HN and AC occupy 3rd and 5th positions respectively from left.
(b) HN and AC occupy 5th and 7th positions respectively from left.
Under (a) the arrangement would be as follows.

(3)	AL	NI	HN	EB	AC	WS	BS
	1	2	3	4	5	6	7

under (b) the arrangement would be as follows.

___	NI	___	___	HN	WS	AC
1	2	3	4	5	6	7

Positions 1, 3, 4 can be occupied by MB, GL, SP in any order which gives a total of six possible arrangements.

(4)	EB	NI	AL	BS	HN	WS	AC
	1	2	3	4	5	6	7
(5)	EB	NI	BS	AL	HN	WS	AC
	1	2	3	4	5	6	7
(6)	BS	NI	EB	AL	HN	WS	AC
	1	2	3	4	5	6	7
(7)	BS	NI	AL	EB	HN	WS	AC
	1	2	3	4	5	6	7
(8)	AL	NI	BS	EB	HN	WS	AC
	1	2	3	4	5	6	7
(9)	AL	NI	EB	BS	HN	WS	AC
	1	2	3	4	5	6	7

Option (A) is incorrect as shown in case (8).
Option (B) is correct.
Option (C) is incorrect as shown in case (2).
Option (D) is incorrect as shown in cases (7) and (8). Choice (B)

Q10. DIRECTIONS *for question 10:* Type in your answer in the input box provided below the question.

How many distinct seating arrangements are possible?

Let the seven friends be represented as AC, HN, WS, EB, BS, NI and AL (in the order mentioned in the question).
From the given conditions
(i) and (vi) $\Rightarrow$ HN – AC
(ii) $\Rightarrow$ AL $\leftarrow$ HN
(iii) $\Rightarrow$ EB $\leftarrow$ WS
(iv) $\Rightarrow$ NI in 2nd position from left
(v) $\Rightarrow$ WS in 5th or 6th position from left.
Consider the following cases

Case(i)
S in 5th position from left.

___	NI	___	___	WS	___	___
1	2	3	4	5	6	7

In the above arrangement, HS and PC have to occupy positions 4 and 6 respectively.

___	NI	___	HN	WS	AC	___
1	2	3	4	5	6	7

From (ii) & (iii), positions 1 and 3 have to be occupied by GL and MB in any order $\Rightarrow$ SP must occupy 7th position.
$\therefore$ There are two possible arrangements in this case as shown below.

(1)	AL	NI	EB	HN	WS	AC	BS
	1	2	3	4	5	6	7

(2)	EB	NI	AL	HN	WS	AC	BS

Case (ii)
WS is in the 6th position.
In this case, there are two further sub-cases possible.
(a) HN and AC occupy 3rd and 5th positions respectively from left.
(b) HN and AC occupy 5th and 7th positions respectively from left.
Under (a) the arrangement would be as follows.

(3)	AL	NI	HN	EB	AC	WS	BS
	1	2	3	4	5	6	7

under (b) the arrangement would be as follows.

___	NI	___	___	HN	WS	AC
1	2	3	4	5	6	7

Positions 1, 3, 4 can be occupied by MB, GL, SP in any order which gives a total of six possible arrangements.

(4)	EB	NI	AL	BS	HN	WS	AC
	1	2	3	4	5	6	7
(5)	EB	NI	BS	AL	HN	WS	AC
	1	2	3	4	5	6	7
(6)	BS	NI	EB	AL	HN	WS	AC
	1	2	3	4	5	6	7
(7)	BS	NI	AL	EB	HN	WS	AC
	1	2	3	4	5	6	7
(8)	AL	NI	BS	EB	HN	WS	AC
	1	2	3	4	5	6	7
(9)	AL	NI	EB	BS	HN	WS	AC
	1	2	3	4	5	6	7

A total of 9 distinct arrangements are possible. Ans: (9)

Q11. DIRECTIONS *for question 11 and 12:* Select the correct alternative from the given choices.

Who among the following can never be seated in the fourth position from the left?

a) **Benjamin Spock**

b) **Ang Lee**

c) **Hikaru Nakamura**

d) **Anton Chekov**

Let the seven friends be represented as AC, HN, WS, EB, BS, NI and AL (in the order mentioned in the question).
From the given conditions
(i) and (vi) ⇒ HN – AC
(ii) ⇒ AL ← HN
(iii) ⇒ EB ← WS
(iv) ⇒ NI in 2nd position from left
(v) ⇒ WS in 5th or 6th position from left.
Consider the following cases

Case(i)
S in 5th position from left.

___	NI	___	___	WS	___	___
1	2	3	4	5	6	7

In the above arrangement, HS and PC have to occupy positions 4 and 6 respectively.

___	NI	___	HN	WS	AC	___
1	2	3	4	5	6	7

From (ii) & (iii), positions 1 and 3 have to be occupied by GL and MB in any order ⇒ SP must occupy 7th position.
∴ There are two possible arrangements in this case as shown below.

(1)	AL	NI	EB	HN	WS	AC	BS
	1	2	3	4	5	6	7

(2)	EB	NI	AL	HN	WS	AC	BS

Case (ii)
WS is in the 6th position.
In this case, there are two further sub-cases possible.
(a) HN and AC occupy 3rd and 5th positions respectively from left.
(b) HN and AC occupy 5th and 7th positions respectively from left.
Under (a) the arrangement would be as follows.

(3)	AL	NI	HN	EB	AC	WS	BS
	1	2	3	4	5	6	7

under (b) the arrangement would be as follows.

___	NI	___	___	HN	WS	AC
1	2	3	4	5	6	7

Positions 1, 3, 4 can be occupied by MB, GL, SP in any order which gives a total of six possible arrangements.

(4)	EB	NI	AL	BS	HN	WS	AC
	1	2	3	4	5	6	7
(5)	EB	NI	BS	AL	HN	WS	AC
	1	2	3	4	5	6	7
(6)	BS	NI	EB	AL	HN	WS	AC
	1	2	3	4	5	6	7
(7)	BS	NI	AL	EB	HN	WS	AC
	1	2	3	4	5	6	7
(8)	AL	NI	BS	EB	HN	WS	AC
	1	2	3	4	5	6	7
(9)	AL	NI	EB	BS	HN	WS	AC
	1	2	3	4	5	6	7

Anton Chekov can never be in the fourth position from the left. Choice (D)

Q12. DIRECTIONS *for question 11 and 12:* Select the correct alternative from the given choices.

Which of the following statements is sufficient to accurately determine the person sitting to the immediate right of Nyota Inyoka?

a) **There are two persons sitting between Ang Lee and Elizabeth Barett.**

b) **Ang Lee and Elizabeth Barett are sitting adjacent each other.**

c) **There are exactly two persons sitting between Benjamin Spock and Ang Lee.**

d) **Benjamin Spock is sitting to the right of Anton Chekov.**

Let the seven friends be represented as AC, HN, WS, EB, BS, NI and AL (in the order mentioned in the question).
From the given conditions
(i) and (vi) ⇒ HN – AC
(ii) ⇒ AL ← HN
(iii) ⇒ EB ← WS
(iv) ⇒ NI in 2nd position from left
(v) ⇒ WS in 5th or 6th position from left.
Consider the following cases

Case(i)
S in 5th position from left.

___	NI	___	___	WS	___	___
1	2	3	4	5	6	7

In the above arrangement, HS and PC have to occupy positions 4 and 6 respectively.

___	NI	___	HN	WS	AC	___
1	2	3	4	5	6	7

From (ii) & (iii), positions 1 and 3 have to be occupied by GL and MB in any order ⇒ SP must occupy 7th position.
∴ There are two possible arrangements in this case as shown below.

(1)	AL	NI	EB	HN	WS	AC	BS
	1	2	3	4	5	6	7

(2)	EB	NI	AL	HN	WS	AC	BS

Case (ii)
WS is in the 6th position.
In this case, there are two further sub-cases possible.
(a) HN and AC occupy 3rd and 5th positions respectively from left.
(b) HN and AC occupy 5th and 7th positions respectively from left.
Under (a) the arrangement would be as follows.

(3)	AL	NI	HN	EB	AC	WS	BS
	1	2	3	4	5	6	7

under (b) the arrangement would be as follows.

___	NI	___	___	HN	WS	AC
1	2	3	4	5	6	7

Positions 1, 3, 4 can be occupied by MB, GL, SP in any order which gives a total of six possible arrangements.

(4)	EB	NI	AL	BS	HN	WS	AC
	1	2	3	4	5	6	7
(5)	EB	NI	BS	AL	HN	WS	AC
	1	2	3	4	5	6	7
(6)	BS	NI	EB	AL	HN	WS	AC
	1	2	3	4	5	6	7
(7)	BS	NI	AL	EB	HN	WS	AC
	1	2	3	4	5	6	7
(8)	AL	NI	BS	EB	HN	WS	AC
	1	2	3	4	5	6	7
(9)	AL	NI	EB	BS	HN	WS	AC
	1	2	3	4	5	6	7

Option A: From this statement, the possible cases are (3), (5) and (8). The person sitting to the immediate right of Nyota Inyoka can be Hikaru Nakamura or Benjamin Spock. Hence, this statement is not sufficient.
Option B: From this statement, the possible cases are (6) and (7). The person sitting to the immediate right of Nyota Inyoka can be Elizabeth Barett or Ang Lee. Hence, this statement is also not sufficient.
Option C: From this statement, the possible cases are (6) and (9). In each of these cases, the person sitting to the immediate right of Nyota Inyoka is Elizabeth Barett. Hence, the statement is sufficient.
Option D: From this statement, the possible cases are (1), (2) and (3). The person sitting to the immediate right of Nyota Inyoka can be Elizabeth Barett or Ang Lee or Hikaru Nakamura. Hence, this statement is not sufficient.
∴ The statement given in option C is suffient. Choice (C)

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

Twelve countries – A through L – participated in an international T20 tournament. The teams are divided into 2 groups, X and Y, each consisting of 6 teams. In this stage, called the group stage, each team plays with every other team in its group, exactly once. The winner of a match gets 2 points and the loser gets 0 points. If the match ends in a draw, both the teams get 1 point each. The top three teams from each group, in terms of the points scored, proceed to the next round called the Super Six stage. In the Super Six stage, each team from a group plays with all the three teams from the other group. The points in the Super Six stage are awarded as in the group stage. At the end of all the matches, the top four teams, in terms of the points scored in the Super Six stage, proceed to the semifinals. Winners of the semifinals play the finals. In the Super Six stage, the semifinals and the finals, no match ends in a draw. At any stage, in case of a tie in the number of points between two teams, the team with the higher net run rate proceeds to the next round.

Q13. DIRECTIONS *for question 13:* Select the correct alternative from the given choices.
What is the minimum number of points a team should score in the Super Six stage to reach the semifinals?

a) **1**

b) **2**

c) **4**

d) **None of the above**

The team need not score any points in the super six stage but can still reach the semifinals. This happens when all the three teams from one of the groups wins all the nine matches in the super six stage and thus reaching the semifinals, whereas one team from the other group with zero wins but higher net run rate than the other two teams also reaches the semifinals. Choice (D)

Q14. DIRECTIONS *for questions 14 and 15:* Type in your answer in the input box provided below the question.
If a team has already won the first match that it played in the group stage, then what is the minimum number of matches it should win among the remaining matches, in order to reach the Super Six?

We need to find the minimum number of points required for a team to ensure a place in the super six stage.
There are 15 league matches in the group stage. To find out the minimum number of points required for a team to ensure a place in the super six, divide the total points equally among the six teams i.e., $\frac{15 \times 2}{6}$ = 5 points for each team. Then based on the net run rate 3 teams proceed to the next round. ∴ a team after winning the first match, can draw with the remaining four teams and still ensure a place in the super six.
Ans: (0)

Q15. DIRECTIONS *for questions 14 and 15:* Type in your answer in the input box provided below the question.
What is the maximum number of matches a team could have lost and still have become the winner of the tournament?

The minimum number of points required for a team to reach the super six stage is 3 (Let one team win all 5 matches and other team 4 matches. Then these two teams move to the super six. The remaining 12 points are to be distributed equally among the remaining 4 teams. Then based on the run rate, one of the 4 teams can proceed to the super six). ∴ a team can proceed to super six with a maximum of 3 losses. The same team can proceed to the semifinals with 3 losses in the super six stage. It then has to win the semifinal and the final match to become the champion.
∴ maximum possible losses = 3 + 3 + 0 + 0 = 6. Ans: (6)

Q16. DIRECTIONS *for question 16:* Select the correct alternative from the given choices.
What is the maximum possible draws in a group in the group stage such that none of the six teams in the group end up with the same number of points?

a) **2**

b) **6**

c) **9**

d) **12**

This is possible in the following case : (3W, 2D); (2W, 3D), (1W, 4D); (1L, 4D); (2L, 3D), (3L, 2D), where W - Win, L – Loss and D - Draw
If A through F are the six teams, then the results of the matches can be as follows: (a ' – ' in the table indicates a draw, and the name of a team in a cell indicates that team won the match)

	A	B	C	D	E	F
A	X	–	–	–	–	A
B	–	X	–	–	E	–
C	–	–	X	C	–	C
D	–	–	C	X	E	–
E	–	E	–	E	X	E
F	A	–	C	–	E	X

∴ The maximum possible draws
$= \frac{2+3+4+4+3+2}{2} = 9.$ Choice (C)

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

Nine cards are numbered from 2 to 10, with each card bearing a distinct number. They are equally divided into three groups and put into three boxes – Box 1, Box 2, and Box 3. The sum of the numbers on the cards in the three boxes are denoted by S_1, S_2 and S_3, in that order. The cards were put in the three boxes subject to the following conditions:

i. S_2 is as much more than S_1 as S_3 is more than S_2.
ii. Of the three sums, S_1, S_2 and S_3, two are prime numbers.
iii. The difference between S_1 and S_2 is a prime number.

Q17. DIRECTIONS *for question 17:* Type in your answer in the input box provided below the question.
What is the value of S_3?

It is given that $S_3 - S_2 = S_2 - S_1$
$\Rightarrow S_1 + S_3 = 2S_2$
$\therefore S_1 + S_3 + S_2 = 2S_2 + S_2 = 3S_2$
Now, the sum of the numbers on the cards = 2 + 3 + ... + 10 = 54
$3S_2 = 54$
$\therefore S_2 = 18$
It is given that 2 out of S_1, S_2 and S_3 are prime numbers. Using these, we find that there are 2 possibilities.

S_1	S_2	S_3
17	18	19
13	18	23

Again, it is given that the difference between S_1 and S_2 is a prime number.
The only possible values of S_1, S_2 and S_3 are 13, 18 and 23 respectively.
Let us list down the different cases where all the conditions are satisfied.

	S_1	S_2	S_3
Case I	2, 3, 8	5, 6, 7	4, 9, 10
Case II	2, 3, 8	4, 5, 9	6, 7, 10
Case III	2, 4, 7	3, 6, 9	5, 8, 10
Case IV	2, 4, 7	3, 5, 10	6, 8, 9
Case V	2, 5, 6	3, 7, 8	4, 9, 10
Case VI	3, 4, 6	2, 7, 9	5, 8, 10

The value of S_3 is 23. Ans: (23)

Q18. DIRECTIONS *for questions 18 to 20:* Select the correct alternative from the given choices.
If no two of the cards numbered 8, 9 and 10 go into the same box, then which of following must be true?

a) **The card numbered 4 goes into box 1.**

b) **The card numbered 3 goes into box 2.**

c) **The card numbered 7 goes into box 3.**

d) **The card numbered 5 goes into box 1.**

It is given that $S_3 - S_2 = S_2 - S_1$
$\Rightarrow S_1 + S_3 = 2S_2$
$\therefore S_1 + S_3 + S_2 = 2S_2 + S_2 = 3S_2$
Now, the sum of the numbers on the cards = 2 + 3 + ... + 10 = 54
$3S_2 = 54$
$\therefore S_2 = 18$
It is given that 2 out of S_1, S_2 and S_3 are prime numbers. Using these, we find that there are 2 possibilities.

S_1	S_2	S_3
17	18	19
13	18	23

Again, it is given that the difference between S_1 and S_2 is a prime number.
The only possible values of S_1, S_2 and S_3 are 13, 18 and 23 respectively.
Let us list down the different cases where all the conditions are satisfied.

	S_1	S_2	S_3
Case I	2, 3, 8	5, 6, 7	4, 9, 10
Case II	2, 3, 8	4, 5, 9	6, 7, 10
Case III	2, 4, 7	3, 6, 9	5, 8, 10
Case IV	2, 4, 7	3, 5, 10	6, 8, 9
Case V	2, 5, 6	3, 7, 8	4, 9, 10
Case VI	3, 4, 6	2, 7, 9	5, 8, 10

If the cards numbered 8, 9 and 10 go into different boxes, we can have only case II.

S_1	S_2	S_3
2, 3, 8	4, 5, 9	6, 7, 10

We can see that only choice C is true. Choice (C)

Q19. DIRECTIONS *for questions 18 to 20:* Select the correct alternative from the given choices.
If the numbers on the three cards in Box 2 are in arithmetic progression, then which of the following is definitely false?

a) **The card numbered 3 is in Box 2.**

b) **The card numbered 8 is in Box 1.**

c) **The card numbered 4 is in Box 1.**

d) **The card numbered 7 is in Box 3.**

It is given that $S_3 - S_2 = S_2 - S_1$
$\Rightarrow S_1 + S_3 = 2S_2$
$\therefore S_1 + S_3 + S_2 = 2S_2 + S_2 = 3S_2$
Now, the sum of the numbers on the cards = 2 + 3 + ... + 10 = 54
$3S_2 = 54$
$\therefore S_2 = 18$
It is given that 2 out of S_1, S_2 and S_3 are prime numbers. Using these, we find that there are 2 possibilities.

S_1	S_2	S_3
17	18	19
13	18	23

Again, it is given that the difference between S_1 and S_2 is a prime number.
The only possible values of S_1, S_2 and S_3 are 13, 18 and 23 respectively.
Let us list down the different cases where all the conditions are satisfied.

	S_1	S_2	S_3
Case I	2, 3, 8	5, 6, 7	4, 9, 10
Case II	2, 3, 8	4, 5, 9	6, 7, 10
Case III	2, 4, 7	3, 6, 9	5, 8, 10
Case IV	2, 4, 7	3, 5, 10	6, 8, 9
Case V	2, 5, 6	3, 7, 8	4, 9, 10
Case VI	3, 4, 6	2, 7, 9	5, 8, 10

The there cards in box 3 are in A.P. We have the three cards in box 2 in AP only in case I and case II.

S_1	S_2	S_3
2, 3, 8	5, 6, 7	4, 9, 10
2, 4, 7	3, 6, 9	5, 8, 10

We can see that only choice D is definitely false. Choice (D)

Q20. DIRECTIONS *for questions 18 to 20:* Select the correct alternative from the given choices.
If the cards numbered 2 and 7 are in the same box, then which of the following cards must be in Box 3?

a) **The card numbered 6**

b) **The card numbered 8**

c) **The card numbered 9**

d) **The card numbered 10**

It is given that $S_3 - S_2 = S_2 - S_1$
$\Rightarrow S_1 + S_3 = 2S_2$
$\therefore S_1 + S_3 + S_2 = 2S_2 + S_2 = 3S_2$
Now, the sum of the numbers on the cards = 2 + 3 + ... + 10 = 54
$3S_2 = 54$
$\therefore S_2 = 18$
It is given that 2 out of S_1, S_2 and S_3 are prime numbers. Using these, we find that there are 2 possibilities.

S_1	S_2	S_3
17	18	19
13	18	23

Again, it is given that the difference between S_1 and S_2 is a prime number.
The only possible values of S_1, S_2 and S_3 are 13, 18 and 23 respectively.
Let us list down the different cases where all the conditions are satisfied.

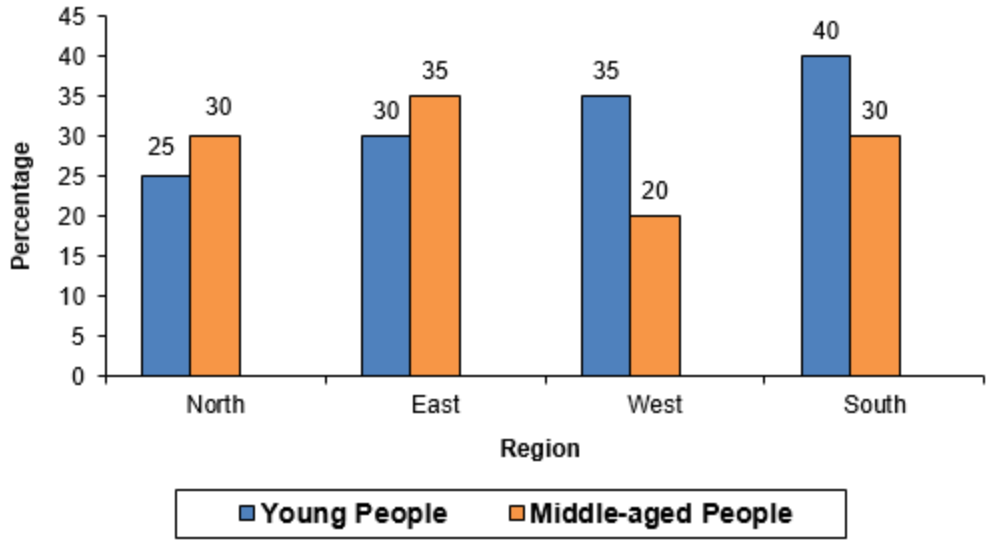
	S_1	S_2	S_3
Case I	2, 3, 8	5, 6, 7	4, 9, 10
Case II	2, 3, 8	4, 5, 9	6, 7, 10
Case III	2, 4, 7	3, 6, 9	5, 8, 10
Case IV	2, 4, 7	3, 5, 10	6, 8, 9
Case V	2, 5, 6	3, 7, 8	4, 9, 10
Case VI	3, 4, 6	2, 7, 9	5, 8, 10

The cards numbered 2 and 7 are in the same box.
This is true in cases III, IV and VI.

	S_1	S_2	S_3
Case III	2, 4, 7	3, 6, 9	5, 8, 10
Case IV	2, 4, 7	3, 5, 10	6, 8, 9
Case VI	3, 4, 6	2, 7, 9	5, 8, 10

The only card which is always in box 3 is 8. Choice (B)

DIRECTIONS *for questions 21 to 24:* Answer the questions on the basis of the information given below.
The following graph gives the percentage of young and middle-aged people in each of the four regions of a state, as a percentage of the total population of the respective region.



Note :The total population is classified into people of only three age groups – young, middle-aged and old.

Q21. DIRECTIONS *for questions 21 to 23:* Select the correct alternative from the given choices.
If the number of old people in the Southern region exceeds the number of old people in the Eastern region by 20%, then by approximately what percentage does the number of young people in the Southern region exceed that in the Eastern region?

a) **66 1/6%**

b) **86 2/3%**

c) **96 1/6%**

d) **78 1/3%**

Let the total population in the southern region and the eastern region be x and y respectively.
Given that, 30% of x = 1.2 × 35% of y

$$\frac{x}{y} = \frac{7}{5}$$

Let the population in the southern region and the eastern region be $7k$ and $5k$ respectively.
The young people in the southern region
= 40% of 7 k = $0.28k$
Those in the eastern region = 30% of $5k$ = $0.15k$
The number of young people in the southern region exceeds that in the eastern region by $\frac{13k}{15k} \times 100 \cong 86^2/_3\%$ Choice (B)

Q22. DIRECTIONS *for questions 21 to 23:* Select the correct alternative from the given choices.
If the number of middle-aged people in each of the four regions is the same, then the number of young people is the greatest in the

a) **Northern region.**

b) **Eastern region.**

c) **Western region.**

d) **Southern region.**

Let the total population of the middle aged people in the north, east west and southern regions be m.
∴ The number of young people in each of the four regions is as follows:-

North = $\frac{25}{30}$ m East = $\frac{30}{35}$ m

West = $\frac{35}{20}$ m South = $\frac{40}{30}$ m

It will be highest for the Western region. Choice (C)

Q23. DIRECTIONS *for questions 21 to 23:* Select the correct alternative from the given choices.

If the respective number of young people in the Northern, Eastern, Western and Southern regions are in the increasing order and the number of old people in these regions are denoted by *a*, *b*, *c* and *d* respectively, then which of the following is always true?

a) ***a < b***

b) ***b < c***

c) ***c < d***

d) ***c > a***

Let the total population in the north, east, west, and southern regions be *p*, *q*, *r* and *s* respectively.
Given that 25% of *p* < 30% of *q* < 35% of *r* <40% of *s* → (1)
Given that
a = 45% of *p*
b = 35% of *q*
c = 45% of *r*
d = 30% of *s*
Now, considering the choices:
Choice (A): 45% of p vs 35% of q
Using (1), a may or may not be less than b.
Choice (B): 35% of q vs 45% of r.
Using (1) we can say that b < c always.
We need not check for the other choices. Choice (B)

Q24. DIRECTIONS *for question 24:* Type in your answer in the input box provided in the question.
The number of middle-aged people in the Northern region is the same as the number of old people in the Western region. If the population of the Northern region as a percentage of the population of the Western region is *x*%, then the value of *x* is

Let n and w represent the population of Northern region and Western region respectively.
Given that 30n = 45w ⇒ n = 1.5 w
Required percentage = 150% Ans: (150)

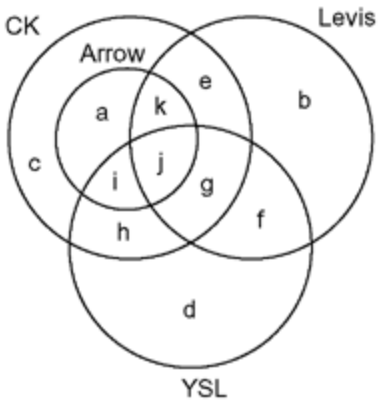
DIRECTIONS *for questions 25 to 28:* Answer the questions on the basis of the information given below.

In a brand equity survey, 250 persons were asked to choose their favourite apparel brand/s from four brands – Arrow, CK, Levi's and YSL. Each person can choose more than one brand but has to choose at least one brand.

i. Everyone who chose Arrow also chose CK.
ii. The number of people who chose exactly three brands was twice the number of people who chose all four brands.
iii. 50 persons chose Levi's but not YSL, while 70 persons chose Arrow but not Levi's.
iv. Among those who did not choose Arrow, 40 persons chose CK and at least one other brand, while 100 persons did not choose CK.
v. 90 persons chose exactly one brand.
vi. Everyone who chose Levi's chose at most one other brand.

Q25. DIRECTIONS *for questions 25 and 26:* Type in your answer in the input box provided below the question.
How many persons chose only CK?

Given that everyone who chose Arrow also chose CK. From this, we can draw the Venn diagram shown beside.

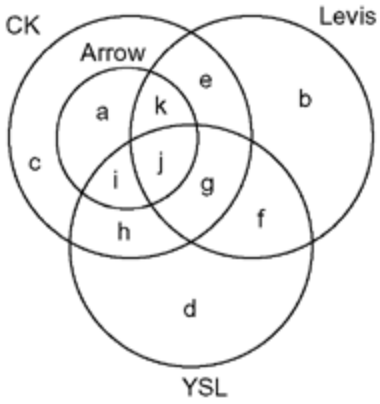


From (ii), k + i + g = 2j ..... (1)
From (iii), b + e + k = 50 ..... (2)
and a + i = 70 .....(3)
From (iv), g + h + e = 40 ..... (4)
and b + f + d = 100 .....(5)
From (v), c + b + d = 90 ..... (6)
From (vi), k = j = g = 0. Since k + i + g = 2j, i = 0.
Therefore, a = 70. (from (3))
Since a + b + c + d + e + f + g + h + i + j + k = 250,
c = 250 – (b + f + d) – (a) – (g + h + e)-i – j – k
Therefore, c = 250 – 100 – 70 – 40 = 40
From (6), b + d = 50 ..... (7)
From (5), f = 100 – 50 = 50
From (2) and (7), b + e = 50 and b + d = 50. Therefore, d = e.
From (4), h + e = 40

The number of persons who chose only CK is 40. Ans: (40)

Q26. DIRECTIONS *for questions 25 and 26:* Type in your answer in the input box provided below the question.
How many persons chose at least one among Levi's and YSL?

Given that everyone who chose Arrow also chose CK. From this, we can draw the Venn diagram shown beside.



From (ii), k + i + g = 2j ..... (1)
From (iii), b + e + k = 50 ..... (2)
and a + i = 70 .....(3)
From (iv), g + h + e = 40 ..... (4)
and b + f + d = 100 .....(5)
From (v), c + b + d = 90 ..... (6)
From (vi), k = j = g = 0. Since k + i + g = 2j, i = 0.
Therefore, a = 70. (from (3))
Since a + b + c + d + e + f + g + h + i + j + k = 250,
c = 250 – (b + f + d) – (a) – (g + h + e)-i – j – k
Therefore, c = 250 – 100 – 70 – 40 = 40
From (6), b + d = 50 ..... (7)
From (5), f = 100 – 50 = 50
From (2) and (7), b + e = 50 and b + d = 50. Therefore, d = e.
From (4), h + e = 40

Number of persons who chose at least one among Levis and YSL = (b + f + d) + j + k + i + (g +e + h) = 100 + 40 = 140. Ans: (140)

Q27. DIRECTIONS *for questions 27 and 28:* Select the correct alternative from the given choices. Among the people who chose exactly one brand, which of the following brands was chosen as their favourite by the maximum number of people?

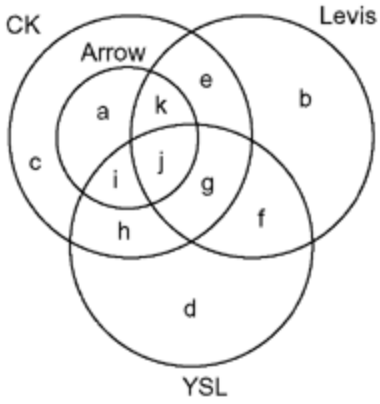
a) **CK**

b) **YSL**

c) **Levis**

d) **Cannot be determined**

Given that everyone who chose Arrow also chose CK. From this, we can draw the Venn diagram shown beside.



From (ii), k + i + g = 2j ..... (1)
From (iii), b + e + k = 50 ..... (2)
and a + i = 70 .....(3)
From (iv), g + h + e = 40 ..... (4)
and b + f + d = 100 .....(5)
From (v), c + b + d = 90 ..... (6)
From (vi), k = j = g = 0. Since k + i + g = 2j, i = 0.
Therefore, a = 70. (from (3))
Since a + b + c + d + e + f + g + h + i + j + k = 250,
c = 250 – (b + f + d) – (a) – (g + h + e)-i – j – k
Therefore, c = 250 – 100 – 70 – 40 = 40
From (6), b + d = 50 ..... (7)
From (5), f = 100 – 50 = 50
From (2) and (7), b + e = 50 and b + d = 50. Therefore, d = e.
From (4), h + e = 40

The number of persons who chose only CK = c = 40
The number of persons who chose only Levis = b = 50 – d (from (7))
The number of persons who chose only YSL = 50 – b
Since the last two can be a maximum of 50, the answer cannot be determined.

Choice (D)

Q28. DIRECTIONS *for questions 27 and 28:* Select the correct alternative from the given choices. Information regarding which of the following would be sufficient to determine the exact number of people who chose any combination of brands as their favourite?

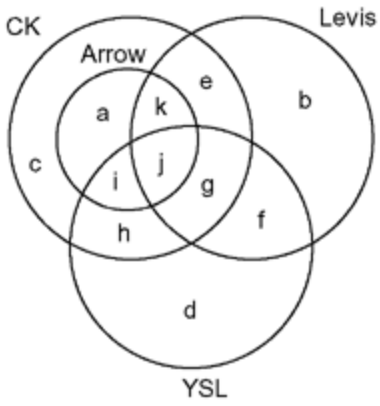
a) **The number of people who chose CK as their favourite brand.**

b) **The number of people who chose both Levis and YSL as their favourite brands.**

c) **The number of people who chose only CK and YSL as their favourite brands.**

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

Given that everyone who chose Arrow also chose CK. From this, we can draw the Venn diagram shown beside.



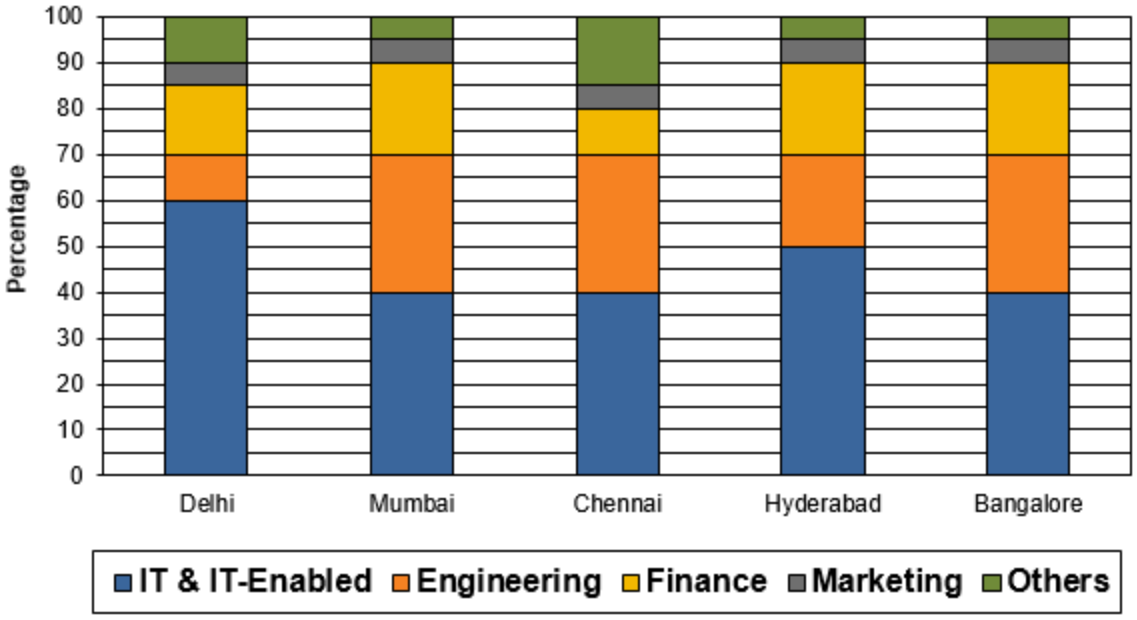
From (ii), k + i + g = 2j ..... (1)
From (iii), b + e + k = 50 ..... (2)
and a + i = 70 .....(3)
From (iv), g + h + e = 40 ..... (4)
and b + f + d = 100 .....(5)
From (v), c + b + d = 90 ..... (6)
From (vi), k = j = g = 0. Since k + i + g = 2j, i = 0.
Therefore, a = 70. (from (3))
Since a + b + c + d + e + f + g + h + i + j + k = 250,
c = 250 – (b + f + d) – (a) – (g + h + e)-i – j – k
Therefore, c = 250 – 100 – 70 – 40 = 40
From (6), b + d = 50 ..... (7)
From (5), f = 100 – 50 = 50
From (2) and (7), b + e = 50 and b + d = 50. Therefore, d = e.
From (4), h + e = 40

Option A is already known and is not required.
Option B is also already known.
Option C will be sufficient to determine the exact distribution of people. Since this option gives the value of h, this can be used to find the values of, e, b and d also.

Choice (C)

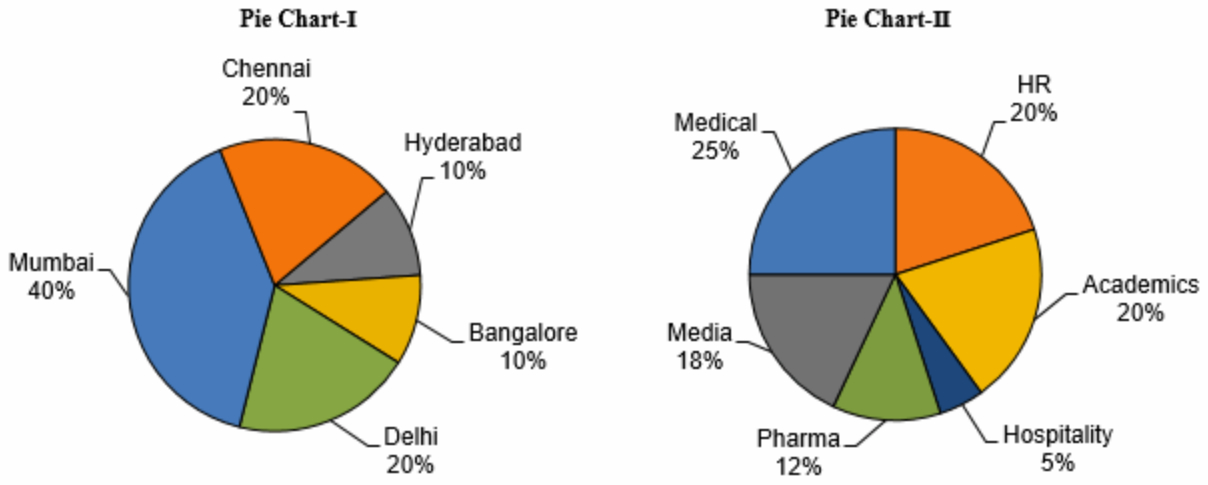
DIRECTIONS *for questions 29 to 32:* Answer the questions on the basis of the information given below.

The following bar chart provides the sector wise percentage distribution of jobs created in each of five different cities during the month of January:



Note:The total number of jobs created during the month of January in all the five cities together is 10,000.

The following two pie-charts give further information regarding the total jobs mentioned in the above bar graph. Pie chart-I gives the city-wise percentage distribution of the total number of jobs created in the month of January. Pie chart-II gives the sector-wise percentage distribution of the total number of jobs created in the "Others" category in the month of January across all the five cities together.



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

Considering the five cities, the total number of jobs created in the Pharma sector is what percentage of the total number of jobs created in the Engineering sector?

a) **3.84%**

b) **38.4%**

c) **0.384%**

d) **None of the above**

(i) Jobs in Pharma sector $= \left(\frac{12}{100}\right)$ (Others)

(ii) Others

$$= \left[\left(\frac{10}{100}\right)\left(\frac{2}{100}\right)+\left(\frac{5}{100}\right)\left(\frac{40}{100}\right) + \left(\frac{15}{100}\right)\left(\frac{20}{100}\right)+\left(\frac{5}{100}\right)\left(\frac{10}{100}\right) + \left(\frac{50}{100}\right)\left(\frac{10}{100}\right)\right] [\text{Total jobs}] = \left(\frac{8}{100}\right)(10{,}000)$$

(iii) Jobs in Engineering Sector

$$= \left[\left(\frac{10}{100}\right)\left(\frac{20}{100}\right)+\left(\frac{30}{100}\right)\left(\frac{40}{100}\right) + \left(\frac{30}{100}\right)\left(\frac{20}{100}\right)+\left(\frac{20}{100}\right)\left(\frac{10}{100}\right) + \left(\frac{30}{100}\right)\left(\frac{10}{100}\right)\right] [\text{Total jobs}] = \left(\frac{25}{100}\right)(10{,}000)$$

Required percentage

$$= \frac{\left(\frac{12}{100}\right)\left(\frac{8}{100}\right)}{\left(\frac{25}{100}\right)} \times 100 = \frac{96}{25}\% = 3.84\%$$

Choice (A)

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

The number of HR jobs created in Mumbai is what percentage more than the number of Media jobs created in Bangalore?

a) **10%**

b) **25%**

c) **20%**

d) **Cannot be determined**

HR jobs in Mumbai cannot be determined. Choice (D)

Q31. DIRECTIONS *for question 31:* Type in your answer in the input box provided below the question.
The difference between the total number of Finance jobs and Marketing jobs created in all the five cities together is

Required difference

$$= \left[\left(\frac{15-5}{100}\right)\left(\frac{20}{100}\right)+\left(\frac{20-5}{100}\right)\left(\frac{40}{100}\right)+\left(\frac{10-5}{100}\right)\left(\frac{20}{100}\right)\right.$$

$$\left.+\left(\frac{20-5}{100}\right)\left(\frac{10}{100}\right)+\left(\frac{20-5}{100}\right)\left(\frac{10}{100}\right)\right][\text{Total}]$$

$$= \left(\frac{2+6+1+1.5+1.5}{100}\right)(10{,}000) = \left(\frac{12}{100}\right)(10{,}000)$$

$$= 1200$$

Ans: (1200)

Q32. DIRECTIONS *for question 32:* Select the correct alternative from the given choices.
The total number of Hospitality jobs created in all the five cities together is what percentage of the total number of jobs created in Hyderabad?

a) **4%**

b) **0.25%**

c) **40%**

d) **25%**

$$\text{Hospitality jobs} = \left(\frac{5}{100}\right)\left(\frac{8}{100}\right)(10{,}000)$$

$$\text{Jobs in Hyderabad} = \left(\frac{10}{100}\right)(10{,}000)$$

$$\text{Required \%} = \frac{\left(\frac{5}{100}\right)\left(\frac{8}{100}\right)}{\left(\frac{10}{100}\right)} \times 100 = \frac{40\%}{10\%} = 4\% \qquad \text{Choice (A)}$$

QA

Q1. DIRECTIONS *for questions 1 to 5:* Select the correct alternative from the given choices.
If A can do a work in three times the time taken by B and C together to do the same work, in how much time will A, B and C together do a work, which A alone takes 20 days to complete?

a) **4 days**

b) **5 days**

c) **2 days**

d)

$6\frac{1}{3}$ days

If A takes thrice the time as (B + C), then the efficiencies of A and (B + C) will be k and $3k$ (i.e., in the ratio 1 : 3).
Hence, combined efficiency of (A + B + C) = $4k$
(i.e., 4 times that of A alone).

If A alone takes 20 days, then (A + B + C) will take $20 \times \frac{1}{4}$ = 5 days. Choice (B)

Q2. DIRECTIONS *for questions 1 to 5:* Select the correct alternative from the given choices.
Three times the age of A is 11 more than four times the age of B. If five years ago, A was twice as old as B, then what is the sum of their present ages? Assume all ages are in years.

a) **28 years**

b) **34 years** ✓ **Your answer is correct**

c) **39 years**

d) **48 years**

Let the present ages of A and B be denoted by a and b respectively.
$3a - 4b = 11$ ____ (1)
Their ages before 5 years were $(a - 5)$ and $(b - 5)$ respectively.
$a - 5 = 2(b - 5)$
$\Rightarrow a = 2b - 5$ ____ (2)
Solving Eq. (1) and Eq.(2), we get the ages of A and B as 21 years and 13 years respectively. Thus the sum of their present ages is (21 + 12) i.e., 34 years.
Choice (B)

Q3. DIRECTIONS *for questions 1 to 5:* Select the correct alternative from the given choices.

Find the number of digits in the number N, if it is given that N < x < (N + 2), where $x = \frac{\left(24^{24}\right)\left(27^{27}\right)}{(7776)^{12}}$ and N is an integer.

a) **24**

b) **25**

c) **26**

d) **27**

It is given that $x = \frac{(24^{24})(27^{27})}{(7776)^{12}} = \frac{(2^{72})(3^{105})}{6^{60}} = (2^{12})(3^{45})$

$\therefore x = (2^{12})(3^{45})$

Taking logarithm of both sides, we get

$\log x = 12 \log 2 + 45 \log 3$

$\Rightarrow \log x = 12(0.3010) + 45(0.4771)$

$\Rightarrow \log x = 3.612 + 21.4695$

$\Rightarrow \log x = 25.0815$

Since, the characteristic is 25, we can conclude that there must be 25 + 1 = 26 digits in x.

As x lies between N and N + 2, N must also have 26 digits.

[$\because$ x is neither of the form {1000 ..... (25 zeroes)} or {999 .... (26 times)}]

Choice (C)

Q4. DIRECTIONS *for questions 1 to 5:* Select the correct alternative from the given choices.

If *p* is a natural number not greater than 250, and there exist a total of N values of *p* for which the highest power of *p* in *p*! is 5, which of the following is true?

a) **N ≤ 4**

b) **N = 6**

c) **N = 8**

d) **N ≥ 12**

We get the highest power of p in $p!$ as 5, when $p = 5k$, where k is a prime greater than 5, as k repeats for only 5 times and 5 repeats for more than 5 times.
$\therefore$ Here p has 12 possibilities (i.e., up to 5(47)).
If k is a composite number, then the highest power of p in $p!$ is always greater than 5.
If $p = 2^a \times 3^b$, then for $a = 2$ and $b = 1$, the highest power of p in $p!$ is 5.
$\therefore$ There are at least 13 possibilities.

Alternative solution:

Let k be the greatest prime factor of p. (Let $k > 5$). The highest power of p in $p!$ is given to be 5. We need (at least) 5 'k' s among all the numbers upto p.
$\therefore$ $p \geq 5k$. Also $p < 6k$ (if $p = 6k$ or more, k occurs at least 6 times in $p!$ and the other prime factors would occur more times and hence p^6 would also be a factor of $p!$).
But as p itself is a multiple of k, $p = 5k$.
There are 12 numbers of this kind which are less than or equal to 250, namely 5(7), 5(11), 5(13),....5(47)
$\therefore$ N $\geq$ 12. Choice (D)

Q5. DIRECTIONS *for questions 1 to 5:* Select the correct alternative from the given choices.
Find the value of x, such that $\log_2 x + \log_x 16 = 4$.

a) **4** ✓ **Your answer is correct**

b) **8**

c) **16**

d) **2**

It is given that,

$\log_2 x + \log_x 16 = 4$

$\Rightarrow \log_2 x + 4 \log_x 2 = 4$

$\Rightarrow \log_2 x + \frac{4}{\log_2 x} = 4$ [since $\log_2 x = \frac{1}{\log_x 2}$]

Let $\log_2 x = t$

$t + \frac{4}{t} = 4$

$\Rightarrow t^2 - 4t + 4 = 0$

$\Rightarrow (t-2)^2 = 0$

$\therefore \log_2 x = 2 \Rightarrow x = 2^2 = 4$

Alternative Solution:

We can plug powers of 2 (given choices) for x in the L.H.S and check for the result.

Choice (A)

DIRECTIONS *for questions 6 and 7:* Answer the questions on the basis of the information given below.

Two positive real numbers, a and b, are expressed as the sum of m positive real numbers and n positive real numbers respectively as follows:

$a = s_1 + s_2 + \ldots\ldots + s_m$

$b = t_1 + t_2 + \ldots\ldots + t_n$

For any real number x, $\lfloor x \rfloor$ denotes the greatest integer less than or equal to x and $\lceil x \rceil$ denotes the least integer greater than or equal to x.

Q6. DIRECTIONS *for questions 6 and 7:* Select the correct alternative from the given choices.

If $\lfloor a \rfloor = \lfloor s_1 \rfloor + \lfloor s_2 \rfloor + \ldots\ldots + \lfloor s_m \rfloor + 6$ and $\lceil b \rceil = \lceil t_1 \rceil + \lceil t_2 \rceil + \ldots\ldots + \lceil t_n \rceil - 5$, what is the minimum possible value of $m + n$?

a) **14**

b) **13**

c) **12**

d) **11**

If a positive number a is expressed as the sum of two positive numbers s_1 and s_2 then $\lfloor a \rfloor$ could be at most one more than $\lfloor s_1 \rfloor + \lfloor s_2 \rfloor$, i.e., the fractional parts of s_1 and s_2 together, can provide at most 1.
Similarly, the fractional parts of $s_1, s_2, s_3 \ldots\ldots\ldots, s_7$ can together, provide at most 6.
If a positive number b is expressed as the sum of two positive numbers t_1 and t_2 then $\lceil b \rceil$ could be at most one less than $\lceil t_1 \rceil + \lceil t_2 \rceil$, i.e., the fractional parts of $\lceil t_1 \rceil - t_1$ and $\lceil t_2 \rceil - t_2$ together, can provide at most 1.
Similarly, the fractional parts of $\lceil t_1 \rceil - t_1$, $\lceil t_2 \rceil - t_2$, ... $\lceil t_6 \rceil - t_6$ together can provide at most 5.
$\therefore (m + n)_{min} = 7 + 6 = 13.$ Choice (B)

Q7. DIRECTIONS *for questions 6 and 7:* Select the correct alternative from the given choices.

If $\lfloor a \rfloor = \lceil s_1 \rceil + \lceil s_2 \rceil + \ldots\ldots + \lceil s_m \rceil - 11$ and $\lceil b \rceil = \lfloor t_1 \rfloor + \lfloor t_2 \rfloor + \ldots\ldots\ldots + \lfloor t_n \rfloor + 7$, what is the minimum possible value of $m + n$?

a) **21**

b) **20**

c) **19**

d) **18**

If a positive number a is expressed as the sum of two positive numbers t_1 and t_2 then $\lfloor a \rfloor$ could be at most two less than $\lceil s_1 \rceil + s_2$, i.e., the fractional parts of $\lceil s_1 \rceil - s_1, \lceil s_2 \rceil - s_2$ and $a - \lceil a \rceil$ together can provide two.
Similarly, the fractional parts of $\lceil s_1 \rceil - s_1, \lceil s_2 \rceil - s_2$, ..., $\lceil s_{11} \rceil - s_{11}$ and $a - \lceil a \rceil$ together can provide eleven.
$\therefore$ The minimum value of m is 11.
Similarly, the least value of n is 7.
$\therefore (m + n)_{min} = 11 + 7 = 18.$ Choice (D)

Q8. DIRECTIONS *for question 8:* Type in your answer in the input box provided below the question.
In a town with 12000 voters, two persons, A and B, contested for the position of the mayor, which ultimately was won by A. Had 50% of the voters who voted for B changed their minds and voted for A instead, then A would have won by a majority 1.5 times that with which he actually won. If A and B

were the only contestants for the position, and all the eligible voters voted, how many votes were cast in favour of B (in thousands)?

Let the number of votes polled in favour of B be denoted by $2k$.
Let us tabulate the number of votes polled in favour of the two candidates and the majority by which A won in the two following cases

	A	B	Majority by which A wins
Case I	12000 – 2k	2k	12000 – 4k
Case II	12000 – k	k	12000 – 2k

It is given that,
$12000 - 2k = 1.5\ (12000 - 4k)$
$\Rightarrow 24000 - 4k = 36000 - 12k$
$\Rightarrow k = 1500$
Number of votes cast in favour of B = $2k = 3000$ Ans: (3)

Q9. DIRECTIONS *for question 9:* Select the correct alternative from the given choices.

Let x and y be natural numbers such that xy = k, where k is a natural number not more than 1001. If (x_i, y_i) represents a solution to the above equation and z_k is defined as a set containing all distinct values of x_i for xy = k, then which of the following best describes the value of k for which z_k has the highest number of elements?

a) **829 ≤ k ≤ 853**

b) **921 ≤ k ≤ 960**

c) **980 ≤ k ≤ 1001**

d) **580 ≤ k ≤ 620**

The question can be rephrased as "which of the first 1001 natural numbers has the highest number of factors".

$N = a^x b^y c^z \ldots$

No. of factors = $(x + 1)(y + 1)(z + 1) \ldots$

$\therefore$ The total number of factors is decided by the number of prime factors as well as their powers.

For obtaining the maximum number of prime factors, the number should have as many prime factors as possible.

$2 \times 3 \times 5 \times 7 = 210$

$2 \times 3 \times 5 \times 7 \times 11 = 2310$

$\therefore$ It can be seen that when the number of prime factors have to be maximized, no prime greater than 7 can be included. The only prime factors that can be included are 2, 3, 5, 7.

Since the number can be any positive integer till 1001, the number of factors can be increased by increasing the powers of one or more of the prime factors chosen.

$2^2 \times 3 \times 5 \times 7 = 420$

$2^3 \times 3 \times 5 \times 7 = 840$

$2^4 \times 3 \times 5 \times 7 = 1680$

$2^3 \times 3^2 \times 5 \times 7 = 2520$

Since the number cannot exceed 1001, the highest number of factors is possible for 840.

Number of factors of 840 = $(3 + 1)(1 + 1)(1 + 1)(1 + 1) = 32$ Choice (A)

Q10. DIRECTIONS *for question 10:* Given below is a question statement followed by two statements, I and II, each giving some information. Study the sufficiency of the data given in each of the statements to answer the question and input your answer using the following instructions:

Input your answer as

(1) if the question can be answered by using statement I alone, but cannot be answered by using statement II alone.

(2) if the question can be answered by using statement II alone, but cannot be answered by using statement I alone.

(3) if the question can be answered by using either statement alone.

(4) if the question can be answered by using both the statements together, but cannot be answered by using either statement alone.

(5) if the question cannot be answered even by using both the statements together.

P, Q, R and S have a total amount of Rs.75 with them. P has four-thirds of the total amount with Q and R. Is the amount with P more than 3.5 times that with R?

I. Q has four-thirds of the total amount with R and S.

II. Q has one-fourth of the sum of P's amount and four times the amount with R.

Let the amounts with P, Q, R and S be ₹p, ₹q, ₹r and ₹s respectively

$p = \frac{4}{3}(q + r)$ - - - - - - - - (1)

Using statement I, $q = \frac{4}{3}(r + s)$ - - - - - - - - - (2)

(2) in (1) gives

$p = \frac{4}{3}\left(\frac{4}{3}(r+s)+r\right) = \frac{28}{9}r+\frac{16}{9}s$

$\Rightarrow p \geq \frac{28}{9} r \ (\because s \geq 0)$

$\Rightarrow p \geq 3\frac{1}{9}$ times r

But, we cannot comment on whether $\frac{p}{r} > 3.5$.

I is alone is not sufficient.

Using statement II, $q = \frac{1}{4}(p + 4r)$

i.e., $4q = p + 4r$

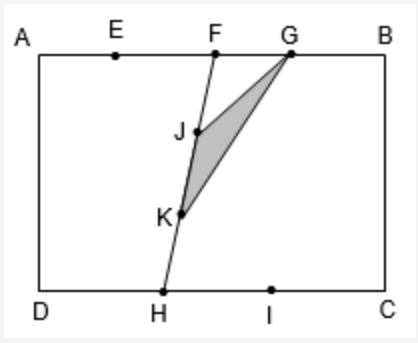
(1) $\Rightarrow 3p = 4q + 4r = p + 4r + 4r$

$\Rightarrow 2p = 8r$.

i.e., $\frac{p}{r} = 4$.

II alone is sufficient. Ans: (2)

Q11. DIRECTIONS *for questions 11 and 12:* Select the correct alternative from the given choices.



In the above figure, given that FJ = JK = KH, AE = EF = FG = GB, DH = HI = IC and AB = 2AD = 3DH = 4FG, find the ratio of the area of the shaded region to that of the rectangle ABCD.

a) **3 : 16**

b) **1 : 18**

c) **3 : 32**

d) **1 : 24**

Let AD = 2 ⇒ AB = 4 ⇒ FG = 1 and the altitudes of the triangles FGH, FGK and FGJ will be in the ratio 3 : 2 : 1 (Since FJ = JK = KM)
and these triangles are on the same base of FG = 1
⇒ altitude of GKJ, when JK is taken as base,
= 1/3 of AD = 2/3

∴ Area of the shaded region = $\frac{1}{2} \times 1 \times \frac{2}{3} = \frac{1}{3}$

Area of ABCD = 4 x 2 = 8
∴ Required ratio = 1/3 : 8 i.e., 1 : 24. Choice (D)

Q12. DIRECTIONS *for questions 11 and 12:* Select the correct alternative from the given choices.

If $abc \neq 0$ and $2a^2 + 17b^2 + 8c^2 - 6ab - 20bc = 0$, then what is the value of $\frac{a+b-c}{a+b+c}$?

a) $\frac{2}{3}$

b) $\frac{1}{3}$

c) $\frac{3}{4}$

d) **Cannot be determined**

Given $2a^2 + 17b^2 + 8c^2 - 6ab - 20bc = 0$
Now, the above expression, on the L.H.S., resembles the sum of two expressions of the form $(ma + nb)^2$ and $(pb + qc)^2$, where m, n, p and q are some constants. By a little trial an error, it can be seen that by multiplying the entire equation with 2, it is possible to easily arrive at a set of m, n, p and q.
$\therefore 4a^2 + 34b^2 + 16c^2 - 12ab - 40bc = 0$
$\Rightarrow (2a - 3b)^2 + (5b - 4c)^2 = 0$ ------ (2)
$\Rightarrow a = \frac{3}{2}b$ and $c = \frac{5b}{4}$
(Because the only way equation (2) can be true is if each term on the L.H.S., individually, equals zero)
Now $\frac{a+b-c}{a+b+c}$ can be found as $\frac{\left(\frac{3}{2}b\right)+b-\left(\frac{5}{4}b\right)}{\left(\frac{3}{2}b\right)+b+\left(\frac{5}{4}b\right)}$

$= \frac{6+4-5}{6+4+5} = \frac{5}{15} = \frac{1}{3}$ Choice (B)

Q13. DIRECTIONS *for questions 13 and 14:* Type in your answer in the input box provided below the question.

Let $a(x) = |4x2 + 4x + 1|$ and $b(x) = -|6x + 3|$, where x is a real number. What is the number of points at which these two curves meet?

$a(x) = |(2x + 1)^2|$ which is always non-negative while $b(x) = -|6x + 3|$ which is always non-positive.
$a(x) = b(x)$ is possible only if each equals 0.
$|(2x + 1)^2| = 0 \Rightarrow 2x + 1 = 0 \Rightarrow x = -1/2$
$-|6x + 3| = 0 \Rightarrow 6x + 3 = 0 \Rightarrow x = -3/6 = -1/2$
Hence, the two curves intersect at only one point (–1/2, 0). Ans: (1)

Q14. DIRECTIONS *for questions 13 and 14:* Type in your answer in the input box provided below the question.

Several identical cuboids of dimensions 4 cm × 3 cm × 2 cm are put together to form a large cube. What is the least possible volume (in cu.cm) of such a cube?

The smallest cube that can be constructed with the blocks of dimension 4 cm × 3 cm × 2 cm will have an edge equal to LCM (4, 3, 2) i.e., 12 cm. Hence its volume is 12^3 i.e., 1728 cu.cm. Ans: (1728)

Q15. DIRECTIONS *for question 15:* Select the correct alternative from the given choices.

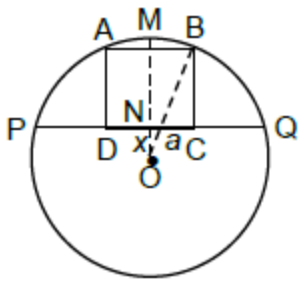
In a circle of radius 6 cm, a chord PQ is constructed at a distance of 2 cm from the centre. A square ABCD is constructed such that A and B lie on the minor arc PQ and C and D lie on PQ. What is the approximate length of AB?

a) **1.8 cm**

b) **2.4 cm**

c) **3.1 cm**

d) **3.7 cm**



Let M be the midpoint of AB and let OM intersect PQ at N.
Let NC = a. $\therefore$ BC = 2NC = $2a$
Let ON = x (given $x = 2$) and OB = r (given $r = 6$)
In ΔOMB, $OM^2 + MB^2 = OB^2$ i.e., $(x + 2a)^2 + a^2 = r^2$
$\Rightarrow x^2 + 4ax + 4a^2 + a^2 = r^2$
Given $x = 2$ and $r = 6$
$\therefore\ 5a^2 + 8a - 32 = 0$

$$\frac{-8 \pm \sqrt{64 - 4(5)(-32)}}{10}$$

$$\frac{-8 \pm 8\sqrt{11}}{10}$$

But a is positive.

$$\therefore\ a = \frac{8[\sqrt{11} - 1]}{10} = 1.85 \text{ and } 2a \cong 3.7$$

Choice (D)

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

In an arithmetic progression, the sum of the first N terms is T and the sum of the first 2N terms is 6T. If the sum of the first 3N terms is kT, then find k.

Let N = 1, then the first term is T, the second, 5T (i.e., 6T – T), and the third 9T (i.e., (5T + (5T – T))). Hence, sum to 3N terms = T + 5T + 9T = 15T.
∴ $k = 15$.

Alternative solution 1:

The sum of each successive set of N terms of an AP will also constitute an AP.

	First N terms	Next N terms	Next N terms
Sum	T	5T	?
Difference	4T	4T	

So the sum of the first 3N terms = T + 5T + 9T = 15T

Alternative solution 2:

Let the first term and the common difference of the AP be a and d respectively

$$\frac{N}{2}[2a + (N - 1)d] = T$$

$$\frac{2N}{2}[2a + (2N - 1)d] = 6T$$

So the sum of the second N terms i.e., $(N + 1)^{th}$ term to the $2N^{th}$ term is 5T.

$$\frac{N}{2}[a + Nd + a + (2N - 1)d] = 5T$$

$$\frac{N}{2}[2a + (3N - 1)d] = 5T$$

Multiplying both sides by 3, we get

$$\frac{3N}{2}[2a + (3N - 1)d] = 15T$$ Ans: (15)

Q17. DIRECTIONS *for question 17:* Select the correct alternative from the given choices.

Find the remainder when 3(12!) – 15(11!) divides 22(11!) + 22!.

a) **11!** ✓ **Your answer is correct**

b) **10!**

c) **12!**

d) **9!**

$$\frac{22(11!)+22!}{3(12!)-15(11!)} = \frac{22(11!)}{3(12!)-15(11!)} + \frac{22!}{3(12!)-15(11!)}$$

$$= \frac{11!\,(21+1)}{11!\,(3)\,(12-5)} + \frac{22!}{11!((3)\,(12-5)} = \frac{11!(21+1)}{11!(21)} + \frac{22!}{11!(21)}$$

$\therefore$ Required remainder

$$= \text{Rem}\left[\frac{11!(21+1)}{11!\,21}\right] + \text{Rem}\left[\frac{22!}{11!\,21}\right] = 11! + 0 = 11!$$ Choice (A)

Q18. DIRECTIONS *for questions 18:* Given below is a question statement followed by two statements, I and II, each giving some information. Study the sufficiency of the data given in each of the statements to answer the question and input your answer using the following instructions:

Input your answer as

(1) if the question can be answered by using statement I alone, but cannot be answered by using statement II alone.

(2) if the question can be answered by using statement II alone, but cannot be answered by using statement I alone.

(3) if the question can be answered by using either statement alone.

(4) if the question can be answered by using both the statements together, but cannot be answered by using either statement alone.

(5) if the question cannot be answered even by using both the statements together.

If a, b and c are single-digit natural numbers, such that $a < b < c$, and the roots of the equation $ax^2 + 2bx + c = 0$ are equal, then find a.

I. a is not prime.

II. *a* is not composite.

Discriminant = $(2b)^2 - 4(a)(c) = 4(b^2 - ac) = 0$ since the roots are equal.
$\therefore b^2 = ac$
$a < b < c$ with a, b and c being single digit natural numbers.
$\therefore a = 1$ or 2 or 4.
Using statement I, $a = 1$ or 4. I is not sufficient.
Using statement II, $a = 1$ or 2. II is not sufficient.
From I and II, $a = 1$ Ans: (4)

Q19. DIRECTIONS *for question 19:* Select the correct alternative from the given choices.

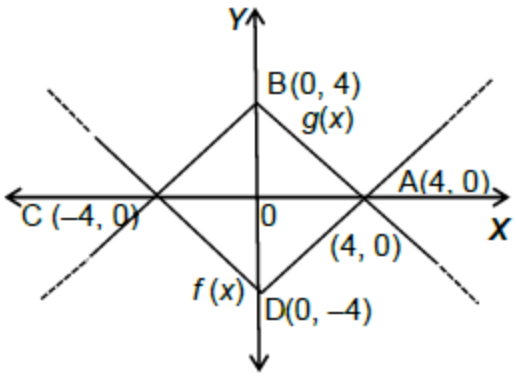
Given two functions, $f(x)$ and $g(x)$, where $f(x) = |x| - 4$ and $g(x) = 4 - |x|$, $\forall x \in R$, what is the area of the largest circle that can be drawn in the region bounded by the two curves $f(x)$ and $g(x)$ on the co-ordinate plane?

a) **10 π sq.units**

b) **4 π sq.units**

c) **8 π sq.units**

d) **16 π sq.units**



The graphs of $f(x)$ and $g(x)$ are shown above.
The area bounded by the curves is square ABCD with diagonals of length 8 units.

Side of square = $\frac{\text{diagonal}}{\sqrt{2}} = \frac{8}{\sqrt{2}} = 4\sqrt{2}$

Radius of largest circle inscribed in ABCD = side/2 = $2\sqrt{2}$

Area of circle = $\pi(\text{radius})^2 = \pi\left(2\sqrt{2}\right)^2 = 8\pi$ Choice (C)

Q20. DIRECTIONS *for question 20:* Type in your answer in the input box provided below the question.

A mixture of water and alcohol has 18% alcohol in it. It is known that, if eight litres of the mixture is replaced with water, the alcohol percentage would decrease to 15%. Instead, how many litres of the mixture should be replaced with water, for the alcohol percentage to decrease to 12%?

Let the total volume of the mixture be V to 18% $(v - 8)$
$= 15\%\ v$
$\Rightarrow v = 48$
Let the volume of mixture to be replaced by x lts
$(48 - x)\ 18\% = 12\%\ .48$
$(48 - x)\ 3 = 96$
$3x = 48$
$\Rightarrow x = 16$ Ans: (16)

Q21. DIRECTIONS *for questions 21 to 23:* Select the correct alternative from the given choices.

P and Q are two cities on a highway 155 km apart. R, S and T are three cities on the same highway, between P and Q, with R being between P and S, and T being between S and Q, such that 3PR = TQ and RS = 2ST. One day, an accident occurred on the highway at T. The medical facilities at Q, R, S and T were poor. Hence, the victim's friend called up a hospital at P for an ambulance. The ambulance started from P at 12:00 noon and reached R at 12:10 p.m. It then doubled its speed for the remaining part of the trip and returned to P at 2:10 p.m. Find the initial speed of the ambulance.

a) **50 kmph**

b) **55 kmph**

c) **60 kmph**

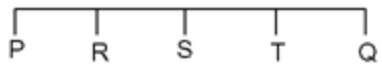
d) **65 kmph**

Let the speed of the ambulance be x km/hr.
Time taken by the ambulance to travel from P to R = 10 minutes.

$PR = \frac{10}{60}(x) = \frac{x}{6}$ km. $TQ = 3PR = \frac{x}{2}$ km.

Total time of travel of the ambulance after reaching R on its forward journey = 2 hours.
Total distance travelled in this time = $2(2x) = 4x$ km.
This is also equal to RT + TP
$= 2PT - PR = 2(PQ - TQ) - PR$

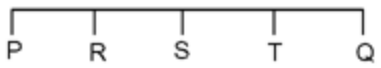
$= 2\left(155 - \frac{x}{2}\right) - \frac{x}{6} = 310 - \frac{7x}{6}$ km.



$310 - \frac{7x}{6} = 4x$, i.e., $x = 60$

Alternative Solution:

From the given information we can represent the five cities P, Q, R, S and T in a line as shown below.



The time taken by the ambulance to travel from P to R = 10 minutes.
$\Rightarrow$ the time taken by the ambulance to travel from R to P when it doubled its initial speed $= \frac{10}{2} = 5$ minutes.
The time taken to travel to and fro from R to T when it doubled its initial speed = 120 – 5 = 115 minutes.
$\Rightarrow$ the ambulance would take 115 minutes to travel from R to T at its initial speed.
The time the ambulance would take to travel from T to Q = 3 $\times$ (The time taken by the ambulance to travel from P to R) = 3 $\times$ 10 = 30 minutes.
$\therefore$ The total time the ambulance would take to travel from P to Q at its initial speed = 10 + 115 + 30 = 155 minutes.
$\therefore$ The initial speed of the ambulance $= \frac{155 \text{ km}}{155 \text{ min}} \times 60 = 60$ kmph. Choice (C)

Q22. DIRECTIONS *for questions 21 to 23:* Select the correct alternative from the given choices.

If an amount is compounded continuously at a nominal rate of interest of 12.5% per annum, then find the percentage increase in the amount in eight years. (Take e = 2.71828)

a) **71.82%**

b) **171.82%**

c) **271.82%**

d) **None of the above**

Let the initial amount be A.

The amount after 8 years = $Ae^{\frac{8r}{100}} = Ae^{\frac{8\times12.5}{100}} = Ae$

$= 2.71828A$

Increase in amount = 1.71828A

Percentage increase in amount = 171.82% Choice (B)

Q23. DIRECTIONS *for questions 21 to 23:* Select the correct alternative from the given choices.

Let x denote the sum of the squares of the sides of a right-angled triangle, and y denote the square of the perimeter of the right-angled triangle. $\frac{x}{y}$ has a minimum value of

a) $1-\frac{\sqrt{2}}{2}$

b) $\frac{3-\sqrt{2}}{7}$

c) $\sqrt{2}-1$

d) **None of these**

In an isosceles right-angled triangle, the required ratio will be either the highest or the lowest.
By taking a few non-isosceles and one isosceles triangle we can arrive at the answer.

Let 1, 1, $\sqrt{2}$ be the sides, $x = 1^2 + 1^2 + (\sqrt{2})^2 = 4$, $y = (1 + 1 + \sqrt{2})^2 = (2 + \sqrt{2})^2$

$$\frac{x}{y} = \frac{4}{\left(2+\sqrt{2}\right)^2} = \frac{4}{(\sqrt{2})^2(\sqrt{2}+1)^2} = 2\left(\sqrt{2}-1\right)^2 = 6 - 4\sqrt{2} \cong 0.343$$

Let 3, 4, 5 be the sides, $\frac{x}{y} = \frac{50}{144} \cong 0.347$

Let 7, 24, 25 be the sides, $\frac{x}{y} = \frac{1250}{(56)^2} \cong 0.398$

Hence, for 1, 1, $\sqrt{2}$ it is minimum, of $6 - 4\sqrt{2}$
None of the choices numerically evaluates to this value.

Alternative solution:

Let a and b be the lengths of perpendicular sides of the right-angled triangle (in cm)
Let c be the length of its hypotenuse. (in cm)

$$\frac{x}{y} = \frac{a^2+b^2+c^2}{(a+b+c)^2}$$

By Pythagoras theorem, $a^2 + b^2 = c^2$
$\therefore a^2 + b^2 + c^2 = 2c^2$
Let the angle between side of length a cm and the hypotenuse be θ.
$a = c\cos\theta$
$b = c\sin\theta$
$a + b = c(\sin\theta + \cos\theta)$
In a right-angled triangle, if one of the angles is θ
$\sin\theta + \cos\theta$ is maximum if $\theta = 45°$
If $\theta = 45°$, its value is $\sqrt{2}$
$\therefore a + b \leq c\sqrt{2}$

$$\therefore \frac{x}{y} \geq \frac{2c^2}{c^2\left(\sqrt{2}+1\right)^2} \text{ i.e., } 6-4\sqrt{2}.$$

Choice (D)

Q24. DIRECTIONS *for question 24:* Given below is a question statement followed by two statements, I and II, each giving some information. Study the sufficiency of the data given in each of the statements to answer the question and input your answer using the following instructions:

Input your answer as

(1) if the question can be answered by using statement I alone, but cannot be answered by using statement II alone.

(2) if the question can be answered by using statement II alone, but cannot be answered by using statement I alone.

(3) if the question can be answered by using either statement alone.

(4) if the question can be answered by using both the statements together, but cannot be answered by using either statement alone.

(5) if the question cannot be answered even by using both the statements together.

A sum of Rs.77,000 was divided among Sunil, Prasad and Arvind. Who received the minimum amount?

I. Sunil received two-ninths of what Prasad and Arvind together received.

II. Prasad received three-elevenths of what Sunil and Arvind together received.

Sunil = $\frac{2}{9}$ (Prasad + Arvind) → statement I

Prasad = $\frac{3}{11}$ (Sunil + Arvind) → statement II

Either statement alone will not give the answer. Combining both we get
$9s = 2p + 2a$ and
$11p = 3s + 3a$. So also $s + p + a = 77{,}000$
We have three equations and three unknowns which can be solved. Ans: (4)

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

If *a* is a single digit from 0 to 9, find the value of *a*, given that 743*a*6 is divisible by 44.

a) **1** ✓ **Your answer is correct**

b) **3**

c) **5**

d) **Cannot be determined**

As 743*a*6 is divisible by 44, it must be divisible by 11 as well as by 4.
Now for 743*a*6 to be divisible by 11,
(7 + 3 + 6) – (4 + *a*) must be divisible by 11.
⇒ 12 – *a* must be divisible by 11
∴ *a* must be equal to 1
We can check that 74316 is also divisible by 4. Choice (A)

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

There are *n* + 1 workers in a group. The first worker started a job. The *i* th worker, where 2 ≤ *i* ≤ (*n* + 1), joined the previous worker/workers after exactly (2^(*i* – 2))*x* days of the previous worker joining it. The job was completed just before the last worker was supposed to join. If the total wage paid to the group for completing the job was Rs.40962, of which the first worker got Rs.4094, find *n*.

The second worker (i.e., $i = 2$) joined the first worker after $2^{2-2}x = x$ days, i.e., 1 worker worked for x days.
The third worker joined the team after $2x$ days i.e., 2 workers worked for $2x$ days.
The fourth worker joined the team after $4x$ days, i.e. 3 workers worked for $4x$ days and so on.
The n^{th} worker joined $(2^{n-2})x$ days after the $(n-1)^{th}$ worker joined, i.e. $(n-1)$ workers worked for $2^{n-2}x$ days
The $(n+1)^{th}$ worker would have joined $(2^{n-1})x$ days after the n^{th} worker joined. But just before, the work was completed, and n workers worked for $2^{n-1}x$ days.
The first worker worked for
$x + 2x + 4x + \ldots + 2^{n-2}x + 2^{n-1}x = (2^n - 1)x$ days.....(i)
The entire work (W) is given by
$W = 1(x) + 2(2x) + 3(4x) + \ldots + n(2^{n-1})x$
$\Rightarrow 2W = (2x) + \ldots + (n-1)(2^{n-1})x + n(2^n)x$
$\therefore W = (n2^n - 1)x - (2x + \ldots + 2^{n-1}x)$
$= (n2^n - 1)x - (2^n - 2)x$ ..... (ii)
The first workers share = ₹4094
The total wage = ₹40962
$\therefore$ From (i) and (ii)

$$\frac{2^n-1}{n2^n+1-2^n} = \frac{2^n-1}{(n-1)2^n+1} = \frac{4094}{40962}$$

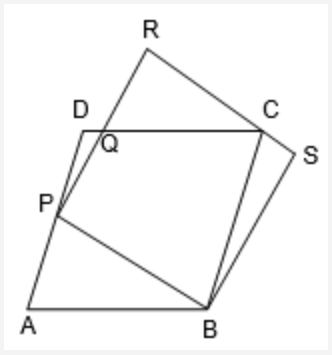
$$= \frac{2047}{20481} = \frac{2^{11}-1}{10(2^{11})+1} \text{ i.e., } \frac{2^n-1}{(n-1)2^n+1} = \frac{2^{11}-1}{10(2^{11})+1}$$

Comparing the two sides, we conclude that $n = 11$ Ans: (11)

Q27. DIRECTIONS *for questions 26 to 28:* Type in your answer in the input box provided below the question.
A staircase has a total of five steps. If a person covers a minimum of one and a maximum of three steps in each stride, in how many ways can he climb the staircase?

A person can take one step, two steps or three steps in a stride.
So, the possible number of ways (combinations) of climbing the staircase are:
(1, 1, 1, 1, 1), (2, 1, 1, 1), (1, 2, 1, 1), (1, 1, 2, 1),
(1, 1, 1, 2), (2, 2, 1), (2, 1, 2), (1, 2, 2), (3, 1, 1),
(1, 3, 1), (1, 1, 3) (3, 2) and (2, 3)
Hence, he can climb the staircase in 13 ways. Ans: (13)

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



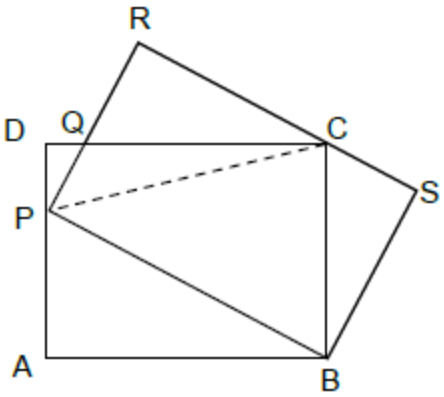
In the above figure, ABCD and BPRS are parallelograms. PR intersects DC at Q and RS passes through the point C. How many of the following statements are always true?

I. The sum of the areas of the triangles QRC and BCS is half the area of the parallelogram BPRS.

II. The sum of the areas of the triangles APB and PDQ is half the area of the parallelogram ABCD.

III. The sum of the areas of the triangles BCS and QRC is equal to the sum of the areas of the triangles PDQ and APB.

IV. The areas of the parallelograms ABCD and BPRS are equal.



We see that the area of parallelogram ABCD = 2
(Area of ΔBPC)
= Area of parallelogram BPRS (∵ the area of ΔPCB is half that of each parallelogram)
Moreover,
Area of ΔBCS + Area of ΔQRC
= Area BPRS – Area BPQC and Area of ΔPDQ + Area of ΔAPB
= Area ABCD – Area BPQC
∴ Statements IV and III are true.
We can now see that
Area of ΔQRC + Area of ΔBCS < (1/2) Area of BPRS and Area of ΔAPB + Area of PDQ < (1/2) Area of ABCD.
∴ Statements I, II are false. Ans: (2)

Q29. DIRECTIONS *for question 29:* Select the correct alternative from the given choices.
If the value of a two-digit number increases by 20% when the order of its digits is reversed, then find the difference between the two digits of that number.

a) **1** ✓ **Your answer is correct**

b) **2**

c) **3**

d) **4**

Let the two digit number be denoted by xy
Value of the two digit number = $10x + y$
Value of the two digit number, when the order of the digits is reversed = $10y + x$
It is given that,
$10y + x = 1.2(10x + y)$
$10y - 1.2y = 12x - x$
$8.8y = 11x$

$$\frac{x}{y} = \frac{8.8}{11} = \frac{4}{5}$$

Thus the two digit number is 45 and the difference between the two digit is 1.

Choice (A)

Q30. DIRECTIONS *for question 30:* Given below is a question statement followed by two statements, I and II, each giving some information. Study the sufficiency of the data given in each of the statements to answer the question and input your answer using the following instructions:
Input your answer as

(1) if the question can be answered by using statement I alone, but cannot be answered by using statement II alone.

(2) if the question can be answered by using statement II alone, but cannot be answered by using statement I alone.

(3) if the question can be answered by using either statement alone.

(4) if the question can be answered by using both the statements together, but cannot be answered by using either statement alone.

(5) if the question cannot be answered even by using both the statements together.

Among 100 people who attended the office today, 12 persons who left on time came either early or on time. How many people came late but left on time?

I. 65 people came either late or early and 60 left late.

II. 20 people came late and 20 left early.

. From statement I alone, 35 people came on time and 60 left late. But, how many came late is not known. Hence statement I alone is not sufficient.
From statement II alone, we know that 20 people came late and 20 left early, but, how many came late and left on time can not be determined. Hence, statement II alone is not sufficient.
By combining both statements together we can determine how many out of 20, who came late, left on time i.e., (20 – 12) = 8. We can tabulate the data as in the following table.

	Arrival to office	Leaving office
On time	35	20
Early	45	20
Late	20	60

Hence both the statements together are sufficient. Ans: (4)

Q31. DIRECTIONS *for question 31:* Select the correct alternative from the given choices.
If the difference between the roots of the equation $x^2 - px + 2p = 0$ is 3, where both the roots are positive, find the equation whose roots are 2 more than the roots of the given equation.

a) $\boldsymbol{x^2 - 5x + 4 = 0}$

b) $\boldsymbol{x^2 - 9x + 18 = 0}$

c) $\boldsymbol{x^2 + 5x + 18 = 0}$

d) $\boldsymbol{x^2 - 13x + 40 = 0}$

Let m and n be the roots of the given equation.
Sum of the roots, $m + n = p$
Product of the roots, $mn = 2p$
$(m - n)^2 = (m + n)^2 - 4mn$
$(3)^2 = p^2 - 4(2p)$
$p^2 - 8p - 9 = 0$
$(p + 1)(p - 9) = 0$
Since both the roots are positive so
$p \neq -1$
$\therefore$ The equation is $x^2 - 9x + 18 = 0$.
The equation whose roots are 2 more than the roots of the above equation is given by
$(x - 2)^2 - 9(x - 2) + 18 = 0$
$x^2 - 4x + 4 - 9x + 18 + 18 = 0$
$x^2 - 13x + 40 = 0$

Alternative Solution:

The equation whose roots are 2 more than the roots of $x^2 - px + 2p = 0$ will be
$(x - 2)^2 - p(x - 2) + 2p = 0$
i.e., $x^2 - x(4 + p) + 4(p + 1) = 0$.
Now, checking for Choice (A) and comparing the constant terms, if $4(p + 1) = 4$
$\Rightarrow p = 0$, for which the coefficient of x does not satisfy.
Similarly, trying the other choices, only choice (D) satisfies. Choice (D)

Q32. DIRECTIONS *for question 32:* Type in your answer in the input box provided below the question.
A sequence of four digits, when considered as a number in base 10 is four times the number it represents in base 6. What is the sum of the digits of the sequence?

Let the 4-digit sequence be $abcd$.
In base 6, this represents $216a + 36b + 6c + d$ and each of a, b, c, d is less than 6.
In base 10, it represents $1000a + 100b + 10c + d$.
Given $4(216a + 36b + 6c + d) = 1000a + 100b + 10c + d$
$\Rightarrow 136a = 44b + 14c + 3d$ ------ (A)
By trial $a = 1, b = 2, c = 3, d = 2$
If $a = 2$, the LHS = 272
[If we consider $b = 5$, we need $272 - 220$ or 52 from $14c + 3d$ $(c, d) = (2, 8)$ but 8 is not a proper digit in base 6.
If $a = 3$, the LHS = 408, while $44b + 14c + 3d$ can at the most be $(44 + 14 + 3)5$ or 305.
$\therefore$ There are no other possible values that satisfy (A)]
$\therefore abcd = 1232$ and $a + b + c + d = 8$ Ans: (8)

Q33. DIRECTIONS *for question 33:* Select the correct alternative from the given choices.

P, *Q* and *R* are distinct natural numbers. If $V = \frac{P(Q^2+R^2)+Q(P^2+R^2)+R(P^2+Q^2)}{PQR}$, then V must be

a) **greater than or equal to 16 but less than 64.**

b) **greater than 6.** ✓ **Your answer is correct**

c) **greater than 24 but less than 87.**

d) **greater than 16.**

$$V = \frac{P(Q^2+R^2)+Q(P^2+R^2)+R(P^2+Q^2)}{PQR},$$

$$\Rightarrow V = \frac{Q}{R}+\frac{R}{Q}+\frac{P}{R}+\frac{R}{P}+\frac{P}{Q}+\frac{Q}{P}$$

Let $\frac{P}{Q} = a$, $\frac{Q}{R} = b$ and $\frac{R}{P} = c$

As P, Q and R are distinct, $a \neq 1$, $b \neq 1$, $c \neq 1$

$$\therefore V = a + \frac{1}{a} + b + \frac{1}{b} + c + \frac{1}{c}$$

As a, b and c are positive, $a + \frac{1}{a} > 2$, $b + \frac{1}{b} > 2$ and $c + \frac{1}{c} > 2$

$$\therefore \frac{Q}{R}+\frac{R}{Q}+\frac{P}{R}+\frac{R}{P}+\frac{P}{Q}+\frac{Q}{P} > 6.$$

$\therefore$ V can be any value greater than 6.

Alternative Solution:

This question can be solved by considering two extreme cases, i.e., when P, Q and R are very large and when they are the least possible, i.e., 1, 2 and 3.
If P, Q and R are very large, then assume that they are also consecutive, then for all practical purposes, the given expression can be evaluated by considering P = Q = R. This evaluation to, say in term of 'p' as

$\frac{P(2P^2)+P(2P^2)+2(2P^2)}{P^3}$ i.e., the expression equals 6.

In the other case, when P = 1, Q = 2, R = 3, the expression

$= \frac{1(4+9)+2(1+9)+3(4+1)}{1.2.3} = 16 > 6.$

Hence, we can conclude that the value of the expression will always be greater than 6.

Choice (B)

Q34. DIRECTIONS *for question 34:* Type in your answer in the input box provided below the question.

Find the smallest natural number which can be expressed both as a sum of 7 consecutive numbers and as a sum of 9 consecutive numbers.

Considering the seven consecutive numbers as
$a - 3$, $a - 2$, $a - 1$, a, $a + 1$, $a + 2$ and $a + 3$,
we get a sum of $7a$.
Similarly if we consider the numbers as $b - 4$,
$b - 3$, $b - 2$, $b - 1$, b, $b + 1$, $b + 2$, $b + 3$ and $b + 4$, we get a sum of $9b$
It is given that $7a = 9b = 63k$
A number of this form can be expressed as the sum of 7 consecutive numbers or 9 consecutive numbers. The minimum value will be obtained for $k = 1$, i.e., 63.

Ans: (63)