



CAT 2019

SLOT

2

CAT 2019 Slot 2 VARC

DIRECTIONS for the question: Read the passage and answer the question based on it.

British colonial policy . . . went through two policy phases, or at least there were two strategies between which its policies actually oscillated, sometimes to its great advantage. At first, the new colonial apparatus exercised caution, and occupied India by a mix of military power and subtle diplomacy, the high ground in the middle of the circle of circles. This, however, pushed them into contradictions. For, whatever their sense of the strangeness of the country and the thinness of colonial presence, the British colonial state represented the great conquering discourse of Enlightenment rationalism, entering India precisely at the moment of its greatest unchecked arrogance. As inheritors and representatives of this discourse, which carried everything before it, this colonial state could hardly adopt for long such a self-denying attitude. It had restructured everything in Europe—the productive system, the political regimes, the moral and cognitive orders—and would do the same in India, particularly as some empirically inclined theorists of that generation considered the colonies a massive laboratory of utilitarian or other theoretical experiments. Consequently, the colonial state could not settle simply for eminence at the cost of its marginality; it began to take initiatives to introduce the logic of modernity into Indian society. But this modernity did not enter a passive society. Sometimes, its initiatives were resisted by pre-existing structural forms. At times, there was a more direct form of collective resistance. Therefore, the map of continuity and discontinuity that this state left behind at the time of independence was rather complex and has to be traced with care.

Most significantly, of course, initiatives for . . . modernity came to assume an external character. The acceptance of modernity came to be connected, ineradicably, with subjection. This again points to two different problems, one theoretical, the other political. Theoretically, because modernity was externally introduced, it is explanatorily unhelpful to apply the logical format of the ‘transition process’ to this pattern of change. Such a logical format would be wrong on two counts. First, however subtly, it would imply that what was proposed to be built was something like European capitalism. (And, in any case, historians have forcefully argued that what it was to replace was not like feudalism, with or without modificatory adjectives.) But, more fundamentally, the logical structure of endogenous change does not apply here.

Here transformation agendas attack as an external force. This externality is not something that can be casually mentioned and forgotten. It is inscribed on every move, every object, every proposal, every legislative act, each line of causality. It comes to be marked on the epoch itself. This repetitive emphasis on externality should not be seen as a nationalist initiative that is so well rehearsed in Indian social science. . . .

Quite apart from the externality of the entire historical proposal of modernity, some of its contents were remarkable. . . . Economic reforms, or rather alterations did not foreshadow the construction of a classical capitalist economy, with its necessary emphasis on extractive and

transport sectors. What happened was the creation of a degenerate version of capitalism —what early dependency theorists called the ‘development of underdevelopment’.

Question No: 1

All of the following statements about British colonialism can be inferred from the first paragraph, EXCEPT that it:

- A) Was at least partly an outcome of Enlightenment rationalism
- B) Was at last partly shaped by the project of European modernity
- C) Faced resistance from existing structural forms of Indian modernity
- D) Allowed the treatment of colonies as experimental sites

Question No. : 2

Consequently, the colonial state could not settle simply for eminence at the cost of its marginality; it began to take initiatives to introduce the logic of modernity into Indian society.” Which of the following best captures the sense of this statement?

- A) The colonial enterprise was a costly one; so to justify the cost it began to take initiatives to introduce the logic of modernity into Indian society.
- B) The cost of the colonial state’s eminence was not settled; therefore, it took the initiative to introduce the logic of modernity into indian society.
- C) The colonial state’s eminence was unsettled by its marginal position; therefore, it developed Indian society by modernizing it.
- D) The colonial state felt marginalized from Indian society because of its own modernity; therefore, it sought to address the marginalization by bringing its modernity to change Indian society.

Question No. : 3

Which one of the following 5-word sequences best captures the flow of the arguments in the passage?

- A) Colonial Policy-Enlightenment-external modernity-subjection-underdevelopment
- B) Military Power-Colonialism-restructuring-feudalism-capitalism
- C) Military power-arrogance-laboratory-modernity-capitalism
- D) Colonial policy-arrogant rationality- resistance-independence- development

Question No. : 4

Which of the following observations is a valid conclusion to draw from the author’s statement that “the logical structure of endogenous change does not apply here. Here transformation agendas attack as an external force”?

- A) The transformation of Indian society did not happen organically, but was forced by colonial agendas.
- B) The endogenous logic of colonialism can only bring change if it attacks and transforms external forces.
- C) Colonized societies cannot be changed through logic; they need to be transformed with external force.
- D) Indian society is not endogamous; it is more accurately characterized as aggressively exogamous.

Question No. : 5

- A) All of the following statements, if true, could be seen as supporting the arguments in the passage, EXCEPT:
- B) The introduction of capitalism in India was not through the transformation of feudalism, as happened in Europe
- C) Modernity was imposed upon India by the British and, therefore, led to underdevelopment
- D) Throughout the history of colonial conquest, natives have often been experimented on by the colonizers.
- E) The change in British colonial policy was induced by resistance to modernity in Indian society

DIRECTIONS for the question: Read the passage and answer the question based on it.

For two years, I tracked down dozens of . . . Chinese in Upper Egypt [who were] selling lingerie. In a deeply conservative region, where Egyptian families rarely allow women to work or own businesses, the Chinese flourished because of their status as outsiders. They didn't gossip, and they kept their opinions to themselves. In a New Yorker article entitled "Learning to Speak Lingerie," I described the Chinese use of Arabic as another non-threatening characteristic. I wrote, "Unlike Mandarin, Arabic is inflected for gender, and Chinese dealers, who learn the language strictly by ear, often pick up speech patterns from female customers. I've come to think of it as the lingerie dialect, and there's something disarming about these Chinese men speaking in the feminine voice." . . .

When I wrote about the Chinese in the New Yorker, most readers seemed to appreciate the unusual perspective. But as I often find with topics that involve the Middle East, some people had trouble getting past the black-and-white quality of a byline. "This piece is so orientalist I don't know what to do," Aisha Gani, a reporter who worked at The Guardian, tweeted. Another colleague at the British paper, Iman Amrani, agreed: "I wouldn't have minded an article on the subject written by an Egyptian woman—probably would have had better insight." . . .

As an MOL (man of language), I also take issue with this kind of essentialism. Empathy and understanding are not inherited traits, and they are not strictly tied to gender and race. An individual who wrestles with a difficult language can learn to be more sympathetic to outsiders and open to different experiences of the world. This learning process—the embarrassments, the frustrations, the gradual sense of understanding and connection—is invariably transformative. In Upper Egypt, the Chinese experience of struggling to learn Arabic and local culture had made them much more thoughtful. In the same way, I was interested in their lives not because of some kind of voyeurism, but because I had also experienced Egypt and Arabic as an outsider. And both the Chinese and the Egyptians welcomed me because I spoke their languages. My identity as a white male was far less important than my ability to communicate.

And that easily lobbed word—“Orientalist”—hardly captures the complexity of our interactions. What exactly is the dynamic when a man from Missouri observes a Zhejiang native selling lingerie to an Upper Egyptian woman? . . . If all of us now stand beside the same river, speaking in ways we all understand, who’s looking east and who’s looking west? Which way is Oriental?

For all of our current interest in identity politics, there’s no corresponding sense of identity linguistics. You are what you speak—the words that run throughout your mind are at least as fundamental to your selfhood as is your ethnicity or your gender. And sometimes it’s healthy to consider human characteristics that are not inborn, rigid, and outwardly defined. After all, you can always learn another language and change who you are.

Question No. : 6

The author’s critics would argue that:

- A) Language is insufficient to bridge cultural barriers
- B) Linguistic politics can be erased
- C) Empathy can overcome identity politics
- D) Orientalism cannot be practiced by Egyptians

Question No. : 7

A French ethnographer decides to study the culture of a Nigerian tribe. Which of the following is most likely to be the view of the author of the passage?

- A) The author would encourage the ethnographer and recommend him/her to hire a good translator for the purpose of holding interviews.
- B) The author would discourage the ethnographer from conducting the study as Nigerian ethnographers can better understand the tribe.

- C) The author would encourage the ethnographer, but ask him/her to be mindful of his/her racial and gender identity in the process.
- D) The author would encourage the ethnographer, but ask him/her to first learn the language of the Nigerian tribe s/he wishes to study.

Question No. : 8

According to the passage, which of the following is not responsible for language's ability to change us?

- A) Language's ability to mediate the impact of identity markers one is born with.
- B) Language's intrinsic connection to our notions of self and identity.
- C) The twists and turns in the evolution of language over time.
- D) The ups and downs involved in the course of learning a language.

Question No. : 9

Which of the following can be inferred from the author's claim, "Which way is Oriental?"

- A) Goodwill alone mitigates cultural hierarchies and barriers.
- B) Orientalism is a discourse of the past, from colonial times, rarely visible today.
- C) Globalization has mitigated cultural hierarchies and barriers.
- D) Learning another language can mitigate cultural hierarchies and barriers.

DIRECTIONS for the question: Read the passage and answer the question based on it.

War, natural disasters and climate change are destroying some of the world's most precious cultural sites. Google is trying to help preserve these archaeological wonders by allowing users access to 3D images of these treasures through its site.

But the project is raising questions about Google's motivations and about who should own the digital copyrights. Some critics call it a form of "digital colonialism."

When it comes to archaeological treasures, the losses have been mounting. ISIS blew up parts of the ancient city of Palmyra in Syria and an earthquake hit Bagan, an ancient city in Myanmar, damaging dozens of temples, in 2016. In the past, all archaeologists and historians had for restoration and research were photos, drawings, remnants and intuition.

But that's changing. Before the earthquake at Bagan, many of the temples on the site were scanned. . . . [These] scans . . . are on Google's Arts & Culture site. The digital renditions allow viewers to virtually wander the halls of the temple, look up-close at paintings and turn the building over, to look up at its chambers. [Google Arts & Culture] works with museums and other nonprofits to put high-quality images online. The images of the temples in Bagan are part

of a collaboration with CyArk, a nonprofit that creates the 3D scanning of historic sites. . . . Google says [it] doesn't make money off this website, but it fits in with Google's mission to make the world's information available and useful.

Critics say the collaboration could be an attempt by a large corporation to wrap itself in the sheen of culture. Ethan Watrall, an archaeologist, professor at Michigan State University and a member of the Society for American Archaeology, says he's not comfortable with the arrangement between CyArk and Google. Watrall says this project is just a way for Google to promote Google. "They want to make this material accessible so people will browse it and be filled with wonder by it," he says. "But at its core, it's all about advertisements and driving traffic." Watrall says these images belong on the site of a museum or educational institution, where there is serious scholarship and a very different mission. . . .

[There's] another issue for some archaeologists and art historians. CyArk owns the copyrights of the scans — not the countries where these sites are located. That means the countries need CyArk's permission to use these images for commercial purposes.

Erin Thompson, a professor of art crime at John Jay College of Criminal Justice in New York City, says it's the latest example of a Western nation appropriating a foreign culture, a centuries-long battle. CyArk says it copyrights the scans so no one can use them in an inappropriate way. The company says it works closely with authorities during the process, even training local people to help. But critics like Thompson are not persuaded....She would prefer the scans to be owned by the countries and people where these sites are located.

Question No. : 10

Of the following arguments, which one is LEAST likely to be used by the companies that digitally scan cultural sites?

- A) It provides images free of cost to all users
- B) It enables people who cannot physically visit these sites to experience them
- C) It allows a large corporation to project itself as a protector of culture
- D) It helps preserve precious images in case the sites are damaged or destroyed

Question No. : 11

By "digital colonialism", critics of the CyArk–Google project are referring to the fact that:

- A) CyArk and Google have not shared the details of digitization with the host countries.
- B) The scanning process can damage delicate frescos and statues at the sites.
- C) Countries where the scanned sites are located do not own the scan copyrights.

D) CyArk and Google have been scanning images without copyright permission from host countries.

Question No. : 12

Which of the following, if true, would most strongly invalidate Dr. Watrall's objections?

- A) CyArk does not own the copyright on scanned images of archaeological sites.
- B) CyArk uploads its scanned images of archaeological sites onto museum websites
- C) Google takes down advertisements on its website hosting CyArk's scanned images
- D) There is a ban on CyArk scanning archeological sites located in other countries

Question No. : 13

In Dr. Thompson's view, CyArk owning the copyright of its digital scans of archaeological sites is akin to:

- A) The seizing of ancient Egyptian artefacts by a Western museum.
- B) The illegal downloading of content from the internet.
- C) Digital platforms capturing users' data for market research
- D) Tourists uploading photos of monuments onto social media.

Question No. : 14

Based on his views mentioned in the passage, one could best characterize Dr. Watrall as being:

- A) uneasy about the marketing of archaeological images for commercial use by firms such as Google and CyArk.
- B) dismissive of laypeople's access to specialist images of archaeological and cultural sites.
- C) opposed to the use of digital technology in archaeological and cultural sites in developing countries.
- D) critical about the links between a non-profit and a commercial tech platform for distributing archaeological images

DIRECTIONS for the question: Read the passage and answer the question based on it.

The magic of squatter cities is that they are improved steadily and gradually by their residents. To a planner's eye, these cities look chaotic. I trained as a biologist and to my eye, they look organic. Squatter cities are also unexpectedly green. They have maximum density—1 million people per square mile in some areas of Mumbai—and have minimum energy and material use. People get around by foot, bicycle, rickshaw, or the universal shared taxi.

Not everything is efficient in the slums, though. In the Brazilian favelas where electricity is stolen and therefore free, people leave their lights on all day. But in most slums recycling is literally a way of life. The Dharavi slum in Mumbai has 400 recycling units and 30,000 ragpickers. Six thousand tons of rubbish are sorted every day. In 2007, the Economist reported that in Vietnam and Mozambique, “Waves of gleaners sift the sweepings of Hanoi’s streets, just as Mozambiquan children pick over the rubbish of Maputo’s main tip. Every city in Asia and Latin America has an industry based on gathering up old cardboard boxes.” . . .

In his 1985 article, Calthorpe made a statement that still jars with most people: “The city is the most environmentally benign form of human settlement. Each city dweller consumes less land, less energy, less water, and produces less pollution than his counterpart in settlements of lower densities.” “Green Manhattan” was the inflammatory title of a 2004 New Yorker article by David Owen. “By the most significant measures,” he wrote, “New York is the greenest community in the United States, and one of the greenest cities in the world . . . The key to New York’s relative environmental benignity is its extreme compactness. Placing one and a half million people on a twenty-three-square-mile island sharply reduces their opportunities to be wasteful.” He went on to note that this very compactness forces people to live in the world’s most energy-efficient apartment buildings. . . .

Urban density allows half of humanity to live on 2.8 per cent of the land. Consider just the infrastructure efficiencies. According to a 2004 UN report: “The concentration of population and enterprises in urban areas greatly reduces the unit cost of piped water, sewers, drains, roads, electricity, garbage collection, transport, health care, and schools.” . . .

[T]he nationally subsidized city of Manaus in northern Brazil “answers the question” of how to stop deforestation: give people decent jobs. Then they can afford houses, and gain security. One hundred thousand people who would otherwise be deforesting the jungle around Manaus are now prospering in town making such things as mobile phones and televisions. . . .

Of course, fast-growing cities are far from an unmitigated good. They concentrate crime, pollution, disease and injustice as much as business, innovation, education and entertainment. But if they are overall a net good for those who move there, it is because cities offer more than just jobs. They are transformative: in the slums, as well as the office towers and leafy suburbs, the progress is from hick to metropolitan to cosmopolitan . . .

Question No. : 15

We can infer that Calthorpe’s statement “still jars” with most people because most people:

- A) Do not consider cities to be eco-friendly places
- B) Do not regard cities as good places to live in
- C) Regard cities as places of disease and crime

D) Consider cities to be very crowded and polluted

Question No. : 16

From the passage it can be inferred that cities are good places to live in for all of the following reasons EXCEPT that they:

- A) Offer employment opportunities
- B) Have suburban areas as well as office areas
- C) Help prevent destruction of the environment
- D) Contribute to the cultural transformation of residents

Question No. : 17

In the context of the passage, the author refers to Manaus in order to:

- A) Explain where cities source their labor for factories
- B) Describe the infrastructure efficiencies of living in a city
- C) Explain how urban areas help the environment
- D) Promote cities as employment hubs for people

Question No. : 18

According to the passage, squatter cities are environment-friendly for all of the following reasons EXCEPT:

- A) They sort out garbage
- B) They recycle material
- C) Their streets are kept clean
- D) Their transportation is energy efficient

Question No. : 19

Which one of the following statements would undermine the author's stand regarding the greenness of cities?

- A) Sorting through rubbish contributes to the rapid spread of diseases in the slums
- B) The high density of cities leads to an increase in carbon dioxide and global warming
- C) The compactness of big cities in the West increases the incidence of violent crime
- D) Over the last decade the cost of utilities has been increasing for city dwellers

DIRECTIONS for the question: Read the passage and answer the question based on it.

Around the world, capital cities are disgorging bureaucrats. In the post-colonial fervor of the 20th century, coastal capitals picked by trade-focused empires were spurned for “regionally neutral” new ones But decamping wholesale is costly and unpopular; governments these days prefer piecemeal dispersal. The trend reflects how the world has changed. In past eras, when information travelled at a snail’s pace, civil servants had to cluster together. But now desk-workers can ping emails and video-chat around the world. Travel for face-to-face meetings may be unavoidable, but transport links, too, have improved. . . .

Proponents of moving civil servants around promise countless benefits. It disperses the risk that a terrorist attack or natural disaster will cripple an entire government. Wonks in the sticks will be inspired by new ideas that walled-off capitals cannot conjure up. Autonomous regulators perform best far from the pressure and lobbying of the big city. Some even hail a cure for ascendant cynicism and populism. The unloved bureaucrats of faraway capitals will become as popular as firefighters once they mix with regular folk.

Beyond these sunny visions, dispersing central-government functions usually has three specific aims: to improve the lives of both civil servants and those living in clogged capitals; to save money; and to redress regional imbalances. The trouble is that these goals are not always realized.

The first aim—improving living conditions—has a long pedigree. After the second world war Britain moved thousands of civil servants to “agreeable English country towns” as London was rebuilt. But swapping the capital for somewhere smaller is not always agreeable. Attrition rates can exceed 80%. The second reason to pack bureaucrats off is to save money. Office space costs far more in capitals. Agencies that are moved elsewhere can often recruit better workers on lower salaries than in capitals, where well-paying multinationals mop up talent.

The third reason to shift is to rebalance regional inequality Norway treats federal jobs as a resource every region deserves to enjoy, like profits from oil. Where government jobs go, private ones follow. Sometimes the aim is to fulfil the potential of a country’s second-tier cities. Unlike poor, remote places, bigger cities can make the most of relocated government agencies, linking them to local universities and businesses and supplying a better-educated workforce. The decision in 1946 to set up America’s Centers for Disease Control in Atlanta rather than Washington, D.C., has transformed the city into a hub for health-sector research and business.

The dilemma is obvious. Pick small, poor towns, and areas of high unemployment get new jobs, but it is hard to attract the most qualified workers; opt for larger cities with infrastructure and better-qualified residents, and the country’s most deprived areas see little benefit. . . .

Others contend that decentralization begets corruption by making government agencies less accountable. A study in America found that state-government corruption is worse when the

state capital is isolated—journalists, who tend to live in the bigger cities, become less watchful of those in power.

Question No. : 20

The “long pedigree” of the aim to shift civil servants to improve their living standards implies that this move:

- A) Takes a long time to achieve its intended outcomes
- B) Has become common practice in several countries worldwide
- C) Is supported by politicians and the ruling elites
- D) Is not a new idea and has been tried in the past

Question No. : 21

According to the author, relocating government agencies has not always been a success for all of the following reasons EXCEPT:

- A) A rise in pollution levels and congestion in the new locations
- B) High staff losses, as people may not be prepared to move to smaller towns
- C) The difficulty of attracting talented, well-skilled people in more remote areas
- D) Increased avenues of corruption away from the capital city

Question No. : 22

The “dilemma” mentioned in the passage refers to:

- A) Relocating government agencies to boost growth in remote areas with poor amenities or to relatively larger cities with good amenities.
- B) Concentrating on decongesting large cities or focusing on boosting employment in relatively larger cities.
- C) Encouraging private enterprises to relocate to smaller towns or not incentivizing them in order to keep government costs in those towns low.
- D) Keeping government agencies in the largest city with good infrastructure or moving them to a remote area with few amenities.

Question No. : 23

People who support decentralizing central government functions are LEAST likely to

- A) Policy makers may benefit from fresh thinking in a new environment
- B) It reduces expenses as infrastructure costs and salaries are lower in smaller cities

- C) More independence could be enjoyed by regulatory bodies located away from political centers
- D) It could weaken the nexus between bureaucrats and media in the capital

Question No. : 24

According to the passage, colonial powers located their capitals:

- A) Based on political expediency.
- B) To promote their trading interests.
- C) To showcase their power and prestige.
- D) Where they had the densest populations.

Question No. : 25

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

1. Conceptualizations of ‘women’s time’ as contrary to clock-time and clock-time as synonymous with economic rationalism are two of the deleterious results of this representation.
2. While dichotomies of ‘men’s time’, ‘women’s time’, clock-time, and caring time can be analytically useful, this article argues that everyday caring practices incorporate a multiplicity of times; and both men and women can engage in these multiple-times
3. When the everyday practices of working sole fathers and working sole mothers are carefully examined to explore conceptualizations of gendered time, it is found that caring time is often more focused on the clock than generally theorized.
4. Clock-time has been consistently represented in feminist literature as a masculine artefact representative of a ‘time is money’ perspective

Question No. : 26

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

1. Such a belief in the harmony of nature requires a purpose presumably imposed by the goodness and wisdom of a deity.
2. These parts, all fit together into an integrated, well-ordered system that was created by design.

3. Historically, the notion of a balance of nature is part observational, part metaphysical, and not scientific in any way.

4. It is an example of an ancient belief system called teleology, the notion that what we call nature has a predetermined destiny associated with its component parts.

Question No. : 27

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

1. To the uninitiated listener, atonal music can sound like chaotic, random noise.
2. Atonality is a condition of music in which the constructs of the music do not 'live' within the confines of a particular key signature, scale, or mode.
3. After you realize the amount of knowledge, skill, and technical expertise required to compose or perform it, your tune may change, so to speak.
4. However, atonality is one of the most important movements in 20th century music.

Question No. : 28

DIRECTIONS for the question: Identify the most appropriate summary for the paragraph.

Language is an autapomorphy found only in our lineage, and not shared with other branches of our group such as primates. We also have no definitive evidence that any species other than Homo sapiens ever had language. However, it must be noted straightaway that 'language' is not a monolithic entity, but rather a complex bundle of traits that must have evolved over a significant time frame.... Moreover, language crucially draws on aspects of cognition that are long established in the primate lineage, such as memory: the language faculty as a whole comprises more than just the uniquely linguistic features.

- A) Language is not a single, uniform entity but the end result of a long and complex process of linguistic evolution.
- B) Language, a derived trait found only in humans, has evolved over time and involves memory.
- C) Language is a distinctively human feature as there is no evidence of the existence of language in any other species.
- D) Language evolved with linguistic features building on features of cognition such as memory.

Question No. : 29

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

1. Socrates told us that ‘the unexamined life is not worth living’ and that to ‘know thyself’ is the path to true wisdom
2. It suggests that you should adopt an ancient rhetorical method favored by the likes of Julius Caesar and known as ‘illeism’ – or speaking about yourself in the third person.
3. Research has shown that people who are prone to rumination also often suffer from impaired decision making under pressure and are at a substantially increased risk of depression.
4. Simple rumination – the process of churning your concerns around in your head – is not the way to achieve self-realization.
5. The idea is that this small change in perspective can clear your emotional fog, allowing you to see past your biases.

Question No. : 30

DIRECTIONS for the question: Identify the most appropriate summary for the paragraph.

Social movement organizations often struggle to mobilize supporters from allied movements in their efforts to achieve critical mass. Organizations with hybrid identities—those whose organizational identities span the boundaries of two or more social movements, issues, or identities—are vital to mobilizing these constituencies. Studies of the post-9/11 U.S. antiwar movement show that individuals with past involvement in non-anti-war movements are more likely to join hybrid organizations than are individuals without involvement in non-anti-war movements. In addition, they show that organizations with hybrid identities occupy relatively more central positions in inter-organizational contact networks within the antiwar movement and thus recruit significantly more participants in demonstrations than do nonhybrid organizations.

- A) Movements that work towards social change often find it difficult to mobilize a critical mass of supporters.
- B) Hybrid organizations attract individuals that are deeply involved in anti-war movements.
- C) Organizations with hybrid identities are able to mobilize individuals with different points of view.
- D) Post 9/11 studies show that people who are involved in non anti-war movements are likely to join hybrid organizations.

Question No. : 31

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

1. A particularly interesting example of inference occurs in many single panel comics.
2. It's the creator's participation and imagination that makes the single-panel comic so engaging and so rewarding.
3. Often, the humor requires you to imagine what happened in the instant immediately before or immediately after the panel you're being shown.
4. To get the joke, you actually have to figure out what some of these missing panels must be.
5. It is as though the cartoonist devised a series of panels to tell the story and has chosen to show you only one – and typically not even the funniest.

Question No. : 32

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

1. Living things—animals and plants—typically exhibit correlational structure.
2. Adaptive behavior depends on cognitive economy, treating objects as equivalent.
3. The information we receive from our senses, from the world, typically has structure and order, and is not arbitrary.
4. To categorize an object means to consider it equivalent to other things in that category, and different—along some salient dimension—from things that are not.

Question No. : 33

DIRECTIONS for the question: Identify the most appropriate summary for the paragraph.

Privacy-challenged office workers may find it hard to believe, but open-plan offices and cubicles were invented by architects and designers who thought that to break down the social walls that divide people, you had to break down the real walls, too. Modernist architects saw walls and rooms as downright fascist. The spaciousness and flexibility of an open plan would liberate homeowners and office dwellers from the confines of boxes. But companies took up their idea less out of a democratic ideology than a desire to pack in as many workers as they could. The typical open-plan office of the first half of the 20th century was a white-collar assembly line. Cubicles were interior designers' attempt to put some soul back in.

- A) Wall-free office spaces did not quite work out the way their utopian inventors intended, as they became tools for exploitation of labor.
- B) Wall-free office spaces could have worked out the way their utopian inventors intended had companies cared for workers' satisfaction.
- C) Wall-free office spaces did not quite work out as companies don't believe in democratic ideology.
- D) Wall-free office spaces did not quite work out as desired and therefore cubicles came into being.

Question No. : 34

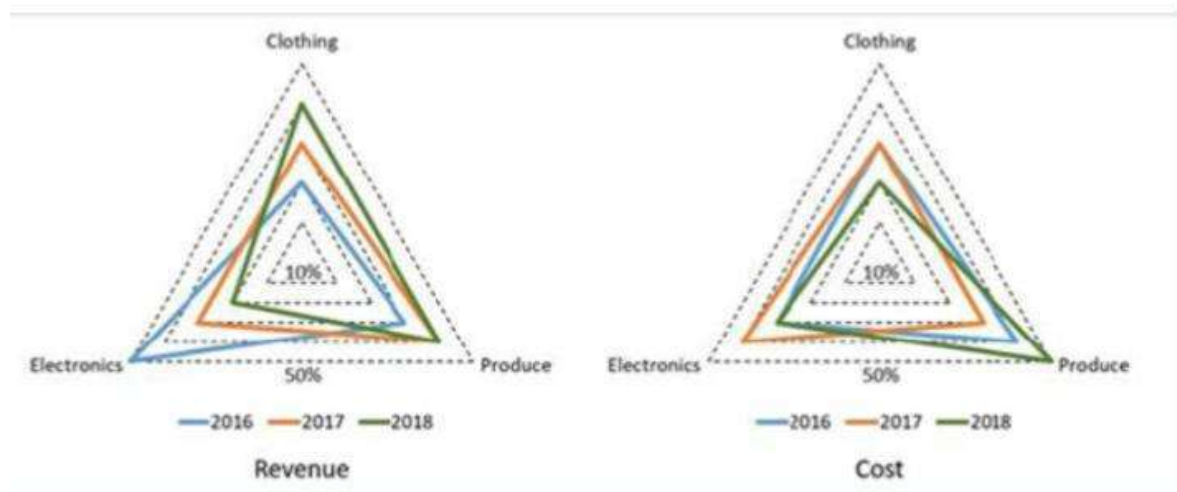
DIRECTIONS for the question: Five sentences related to a topic are given below. Four of them can be put together to form a meaningful and coherent short paragraph. Identify the odd one out. Choose its number as your answer and key it in.

1. Ocean plastic is problematic for a number of reasons, but primarily because marine animals eat it.
2. The largest numerical proportion of ocean plastic falls in small size fractions.
3. Aside from clogging up the digestive tracts of marine life, plastic also tends to adsorb pollutants from the water column.
4. Plastic in the oceans is arguably one of the most important and pervasive environmental problems today.
5. Eating plastic has a number of negative consequences such as the retention of plastic particles in the gut for longer periods than normal food particles.

CAT 2019 SLOT 2 DILR

DIRECTIONS for the question: Analyse the graph/s given below and answer the question that follows.

A large store has only three departments, Clothing, Produce, and Electronics. The following figure shows the percentages of revenue and cost from the three departments for the years 2016, 2017 and 2018. The dotted lines depict percentage levels. So for example, in 2016, 50% of store's revenue came from its Electronics department while 40% of its costs were incurred in the Produce department.



In this setup, Profit is computed as (Revenue – Cost) and Percentage Profit as $\text{Profit/Cost} \times 100\%$.

It is known that

1. The percentage profit for the store in 2016 was 100%.
2. The store's revenue doubled from 2016 to 2017, and its cost doubled from 2016 to 2018.
3. There was no profit from the Electronics department in 2017.
4. In 2018, the revenue from the Clothing department was the same as the cost incurred in the Produce department.

Question No. : 1

What was the percentage profit of the store in 2018? (type in box)

Question No. : 2

What was the ratio of revenue generated from the Produce department in 2017 to that in 2018?

- A) 4 : 3
- B) 9 : 16
- C) 8 : 5
- D) 16 : 9

Question No. : 3

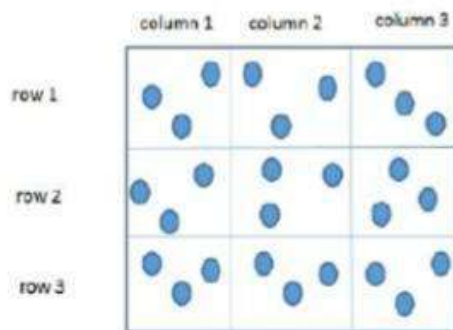
What percentage of the total profits for the store in 2016 was from the Electronics department?
(type in box)

Question No. : 4

What was the approximate difference in profit percentages of the store in 2017 and 2018?

- A) 8.3
- B) 15.5
- C) 25.0
- D) 33.3

DIRECTIONS for the question: Go through the graph and the information given below and answer the question that follows.



	Column 1	Column 2	Column 3
Row 1	(2, 4)	(6, 8)	(1, 3)
Row 2	(3, 5)	(1, 1)	(6, 20)
Row 3	(1, 2)	(1, 2)	(2, 5)

Three pouches (each represented by a filled circle) are kept in each of the nine slots in a 3×3 grid, as shown in the figure. Every pouch has a certain number of one-rupee coins. The minimum and maximum amounts of money (in rupees) among the three pouches in each of the nine slots are given in the table. For example, we know that among the three pouches kept in the second column of the first row, the minimum amount in a pouch is Rs. 6 and the maximum amount is Rs. 8.

There are nine pouches in any of the three columns, as well as in any of the three rows. It is known that the average amount of money (in rupees) kept in the nine pouches in any column or in any row is an integer. It is also known that the total amount of money kept in the three pouches in the first column of the third row is Rs. 4.

Question No. : 5

What is the total amount of money (in rupees) in the three pouches kept in the first column of the second row? (type in box)

Question No. : 6

How many pouches contain exactly one coin? (type in box)

Question No. : 7

What is the number of slots for which the average amount (in rupees) of its three pouches is an integer? (type in box)

Question No. : 8

The number of slots for which the total amount in its three pouches strictly exceeds Rs. 10 is (type in box)

DIRECTIONS for the question: Solve the following question and mark the best possible option.

Students in a college are discussing two proposals –

A: a proposal by the authorities to introduce dress code on campus, and

B: a proposal by the students to allow multinational food franchises to set up outlets on college campus.

A student does not necessarily support either of the two proposals.

In an upcoming election for student union president, there are two candidates in fray: Sunita and Ragini. Every student prefers one of the two candidates.

A survey was conducted among the students by picking a sample of 500 students. The following information was noted from this survey.

1. 250 students supported proposal A and 250 students supported proposal B.
2. Among the 200 students who preferred Sunita as student union president, 80% supported proposal A.
3. Among those who preferred Ragini, 30% supported proposal A.
4. 20% of those who supported proposal B preferred Sunita.
5. 40% of those who did not support proposal B preferred Ragini.
6. Every student who preferred Sunita and supported proposal B also supported proposal A.
7. Among those who preferred Ragini, 20% did not support any of the proposals.

Question No. : 9

Among the students surveyed who supported proposal A, what percentage preferred Sunita for student union president? (type in box)

Question No. : 10

What percentage of the students surveyed who did not support proposal A preferred Ragini as student union president? (type in box)

Question No. : 11

What percentage of the students surveyed who supported both proposals A and B preferred Sunita as student union president?

- A) 25
- B) 50
- C) 20
- D) 40

Question No. : 12

How many of the students surveyed supported proposal B, did not support proposal A and preferred Ragini as student union president?

- A) 150
- B) 210

- C) 200
D) 40

DIRECTIONS for the question: Read the information given below and answer the question that follows.

In the table below the check marks indicate all languages spoken by five people: Paula, Quentin, Robert, Sally and Terence. For example, Paula speaks only Chinese and English.

	Arabic	Basque	Chinese	Dutch	English	French
Paula			√		√	
Quentin				√	√	
Robert	√					√
Sally		√			√	
Terence			√			√

These five people form three teams, Team 1, Team 2 and Team 3. Each team has either 2 or 3 members. A team is said to speak a particular language if at least one of its members speak that language.

The following facts are known.

- (1) Each team speaks exactly four languages and has the same number of members.
- (2) English and Chinese are spoken by all three teams, Basque and French by exactly two teams and the other languages by exactly one team.
- (3) None of the teams include both Quentin and Robert.
- (4) Paula and Sally are together in exactly two teams.
- (5) Robert is in Team 1 and Quentin is in Team 3.

Question No. : 13

Who among the following four is not a member of Team 2?

- A) Sally
B) Terence
C) Paula
D) Quentin

Question No. : 14

Who among the following four people is a part of exactly two teams?

- A) Quentin
- B) Robert
- C) Paula
- D) Sally

Question No. : 15

Who among the five people is a member of all teams?

- A) Paula
- B) No one
- C) Sally
- D) Terence

Question No. : 16

Apart from Chinese and English, which languages are spoken by Team 1?

- A) Basque and Dutch
- B) Arabic and French
- C) Basque and French
- D) Arabic and Basque

DIRECTIONS for the question: Read the information given below and answer the question that follows.

Three doctors, Dr. Ben, Dr. Kane and Dr. Wayne visit a particular clinic Monday to Saturday to see patients. Dr. Ben sees each patient for 10 minutes and charges Rs. 100/-. Dr. Kane sees each patient for 15 minutes and charges Rs. 200/-, while Dr. Wayne sees each patient for 25 minutes and charges Rs. 300/-.

The clinic has three rooms numbered 1, 2 and 3 which are assigned to the three doctors as per the following table.

Room No.	Monday & Tuesday	Wednesday & Thursday	Friday & Saturday
1	Ben	Wayne	Kane
2	Kane	Ben	Wayne
3	Wayne	Kane	Ben

The clinic is open from 9 a.m. to 11.30 a.m. every Monday to Saturday.

On arrival each patient is handed a numbered token indicating their position in the queue, starting with token number 1 every day. As soon as any doctor becomes free, the next patient

in the queue enters that emptied room for consultation. If at any time, more than one room is free then the waiting patient enters the room with the smallest number. For example, if the next two patients in the queue have token numbers 7 and 8 and if rooms numbered 1 and 3 are free, then patient with token number 7 enters room number 1 and patient with token number 8 enters room number 3.

Question N0; 17

What is the maximum number of patients that the clinic can cater to on any single day?

- A) 30
- B) 12
- C) 15
- D) 31

Question No. : 18

The queue is never empty on one particular Saturday. Which of the three doctors would earn the maximum amount in consultation charges on that day?

- A) Dr. Ben
- B) Dr. Wayne
- C) Both Dr. Wayne and Dr. Kane
- D) Dr. Kane

Question No. : 19

Mr. Singh visited the clinic on Monday, Wednesday, and Friday of a particular week, arriving at 8:50 a.m. on each of the three days. His token number was 13 on all three days. On which day was he at the clinic for the maximum duration?

- A) Monday
- B) Wednesday
- C) Same duration on all three days
- D) Friday

Question No. : 20

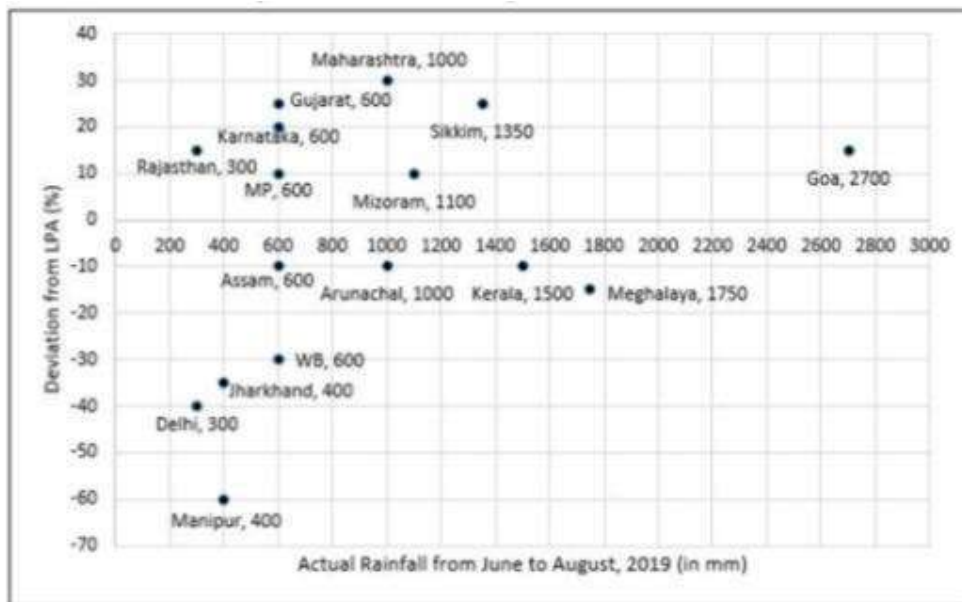
On a slow Thursday, only two patients are waiting at 9 a.m. After that two patients keep arriving at exact 15 minute intervals starting at 9:15 a.m. – i.e. at 9:15 a.m., 9:30 a.m., 9:45 a.m. etc. Then the total duration in minutes when all three doctors are simultaneously free is

- A) 0
- B) 15
- C) 10

D) 30

DIRECTIONS for the question: Analyze the graph/s given below and answer the question that follows.

To compare the rainfall data, India Meteorological Department (IMD) calculated the Long Period Average (LPA) of rainfall during period June-August for each of the 16 states. The figure



given below shows the actual rainfall (measured in mm) during June-August, 2019 and the percentage deviations from LPA of respective states in 2018. Each state along with its actual rainfall is presented in the figure.

Question No. : 21

If a 'Heavy Monsoon State' is defined as a state with actual rainfall from June-August, 2019 of 900 mm or more, then approximately what percentage of 'Heavy Monsoon States' have a negative deviation from respective LPAs in 2019?

- A) 57.14
- B) 14.29
- C) 75.00
- D) 42.86

Question No. : 22

If a 'Low Monsoon State' is defined as a state with actual rainfall from June-August, 2019 of 750 mm or less, then what is the median 'deviation from LPA' (as defined in the Y-axis of the figure) of 'Low Monsoon States'?

A) -30%

B) -20%

C) 10%

D) -10%

Question No. : 23

What is the average rainfall of all states that have actual rainfall of 600 mm or less in 2019 and have a negative deviation from LPA?

A) 500 mm

B) 460 mm

C) 367 mm

D) 450 mm

Question No. : 24

The LPA of a state for a year is defined as the average rainfall in the preceding 10 years considering the period of June-August. For example, LPA in 2018 is the average rainfall during 2009-2018 and LPA in 2019 is the average rainfall during 2010-2019. It is also observed that the actual rainfall in Gujarat in 2019 is 20% more than the rainfall in 2009. The LPA of Gujarat in 2019 is closest to

A) 490 mm

B) 505 mm

C) 525 mm

D) 475 mm

DIRECTIONS for the question: Read the information given below and answer the question that follows.

The first year students in a business school are split into six sections. In 2019 the Business Statistics course was taught in these six sections by Annie, Beti, Chetan, Dave, Esha, and Fakir. All six sections had a common midterm (MT) and a common endterm (ET) worth 100 marks each. ET contained more questions than MT. Questions for MT and ET were prepared collectively by the six faculty members. Considering MT and ET together, each faculty member prepared the same number of questions.

Each of MT and ET had at least four questions that were worth 5 marks, at least three questions that were worth 10 marks, and at least two questions that were worth 15 marks. In both MT and ET, all the 5-mark questions preceded the 10-mark questions, and all the 15- mark questions followed the 10-mark questions.

The following additional facts are known.

1. Annie prepared the fifth question for both MT and ET. For MT, this question carried 5 marks.
2. Annie prepared one question for MT. Every other faculty member prepared more than one questions for MT.
3. All questions prepared by a faculty member appeared consecutively in MT as well as ET.
4. iv. Chetan prepared the third question in both MT and ET; and Esha prepared the eighth question in both.
5. Fakir prepared the first question of MT and the last one in ET. Dave prepared the last question of MT and the first one in ET.

Question No. : 25

The second question in ET was prepared by:

- A) Chetan
- B) Beti
- C) Dave
- D) Esha

Question No. : 26

How many 50 mark questions were there in MT and ET combined?

- A) 13
- B) 10
- C) Cannot be determined
- D) 12

Question No. : 27

Who prepared 15-mark questions for MT and ET?

- A) Only Beti, Dave, Esha and Fakir
- B) Only Esha and Fakir
- C) Only Dave, Esha and Fakir
- D) Only Dave and Fakir

Question No. : 28

Which of the following questions did Beti prepare in ET?

- A) Fourth question
- B) Seventh question
- C) Tenth question
- D) Ninth question

DIRECTIONS for the question: Go through the graph and the information given below and answer the question that follows.

Ten players, as listed in the table below, participated in a rifle shooting competition comprising of 10 rounds. Each round had 6 participants. Players numbered 1 through 6 participated in Round 1, players 2 through 7 in Round 2,..., players 5 through 10 in Round 5, players 6 through 10 and 1 in Round 6, players 7 through 10, 1 and 2 in Round 7 and so on.

The top three performances in each round were awarded 7, 3 and 1 points respectively. There were no ties in any of the 10 rounds. The table below gives the total number of points obtained

Player No.	Player Name	Points after Round	Points after Round
		6	10
1	Amita	8	18
2	Bala	2	5
3	Chen	3	6
4	David	6	6
5	Eric	3	10
6	Fatima	10	10
7	Gordon	17	17
8	Hansa	1	4
9	Ikea	2	17
10	Joshin	14	17

by the 10 players after Round 6 and Round 10.

The following information is known about Rounds 1 through 6:

1. Gordon did not score consecutively in any two rounds.
2. Eric and Fatima both scored in a round.

The following information is known about Rounds 7 through 10:

1. Only two players scored in three consecutive rounds. One of them was Chen. No other player scored in any two consecutive rounds.
2. Joshin scored in Round 7, while Amita scored in Round 10.

3. No player scored in all the four rounds.

Question No. : 29

What were the scores of Chen, David, and Eric respectively after Round 3?

- A) 3, 6, 3
- B) 3, 0, 3
- C) 3, 3, 3
- D) 3, 3, 0

Question No. : 30

Which three players were in the last three positions after Round 4?

- A) Bala, Ikea, Joshin
- B) Bala, Hansa, Ikea
- C) Hansa, Ikea, Joshin
- D) Bala, Chen, Gordon

Question No. : 31

Which player scored points in maximum number of rounds?

- A) Ikea
- B) Joshin
- C) Chen
- D) Amita

Question No. : 32

Which players scored points in the last round?

- A) Amita, Chen, Eric
- B) Amita, Chen, David
- C) Amita, Bala, Chen
- D) Amita, Eric, Joshin

CAT 2019 SLOT 2 QUANT

Question No. : 1

The strength of a salt solution is $p\%$ if 100 ml of the solution contains p grams of salt. Each of three vessels A, B, C contains 500 ml of salt solution of strengths 10%, 22%, and 32%, respectively. Now, 100 ml of the solution in vessel A is transferred to vessel B. Then, 100 ml of the solution in vessel B is transferred to vessel C. Finally, 100 ml of the solution in vessel C is transferred to vessel A. The strength, in percentage, of the resulting solution in vessel A is

- A) 15
- B) 13
- C) 14
- D) 12

Question No. : 2

The quadratic equation $x^2 + bx + c = 0$ has two roots $4a$ and $3a$, where a is an integer. Which of the following is a possible value of $b^2 + c$?

- A) 3721
- B) 549
- C) 361
- D) 427

Question No. : 3

Two ants A and B start from a point P on a circle at the same time, with A moving clock-wise and B moving anti-clockwise. They meet for the first time at 10:00 am when A has covered 60% of the track. If A returns to P at 10:12 am, then B returns to P at

- A) 10:25 am
- B) 10:18 am
- C) 10:27 am
- D) 10:45 am

Question No. : 4

The base of a regular pyramid is a square and each of the other four sides is an equilateral triangle, length of each side being 20 cm. The vertical height of the pyramid, in cm, is

- A) 12

- B) $10\sqrt{2}$
- C) $8\sqrt{3}$
- D) $5\sqrt{5}$

Question No. : 5

What is the largest positive integer such that $\frac{n^2 + 7n + 12}{n^2 - n - 12}$ is also a positive integer?

- A) 6
- B) 16
- C) 12
- D) 8

Question No. : 6

Let A be a real number. Then the roots of the equation $x^2 - 4x - \log_2 A = 0$ are real and distinct if and only if

- A) $A < 1/16$
- B) $A < 1/8$
- C) $A > 1/16$
- D) $A > 1/8$

Question No. : 7

Mukesh purchased 10 bicycles in 2017, all at the same price. He sold six of these at a profit of 25% and the remaining four at a loss of 25%. If he made a total profit of Rs. 2000, then his purchase price of a bicycle, in Rupees, was

- A) 4000
- B) 6000
- C) 8000
- D) 2000

Question No. : 8

The average of 30 integers is 5. Among these 30 integers, there are exactly 20 which do not exceed 5. What is the highest possible value of the average of these 20 integers?

- A) 5
- B) 3.5
- C) 4.5
- D) 4

Question No. : 9

Let f be a function such that $f(mn) = f(m)f(n)$ for every positive integers m and n . If $f(1)$, $f(2)$ and $f(3)$ are positive integers, $f(1) < f(2)$, and $f(24) = 54$, then $f(18)$ equals (type in box)

Question No. : 10

Let $a_1, a_2, \dots$ be integers such that

$$a_1 - a_2 + a_3 - a_4 + \dots + (-1)^{n-1}a_n = n, \text{ for all } n \geq 1.$$

Then $a_{51} + a_{52} + \dots + a_{1023}$ equals

- A) -1
- B) 1
- C) 0
- D) 10

Question No. : 11

In an examination, Rama's score was one-twelfth of the sum of the scores of Mohan and Anjali. After a review, the score of each of them increased by 6. The revised scores of Anjali, Mohan, and Rama were in the ratio 11:10:3. Then Anjali's score exceeded Rama's score by

- A) 32
- B) 35
- C) 24
- D) 26

Question No. : 12

A cyclist leaves A at 10 am and reaches B at 11 am. Starting from 10:01 am, every minute a motor cycle leaves A and moves towards B. Forty-five such motor cycles reach B by 11 am. All motor cycles have the same speed. If the cyclist had doubled his speed, how many motor cycles would have reached B by the time the cyclist reached B?

- A) 20
- B) 23
- C) 15
- D) 22

Question No. : 13

Let ABC be a right-angled triangle with hypotenuse BC of length 20 cm. If AP is perpendicular on BC, then the maximum possible length of AP, in cm, is

- A) 10
- B) $6\sqrt{2}$
- C) 5
- D) $8\sqrt{2}$

Question No. : 14

In a triangle ABC, medians AD and BE are perpendicular to each other, and have lengths 12 cm and 9 cm, respectively. Then, the area of triangle ABC, in sq cm, is

- A) 80
- B) 72
- C) 78
- D) 68

Question No. : 15

How many pairs (m, n) of positive integers satisfy the equation $m^2 + 105 = n^2$? (type in box)

Question No. : 16

The real root of the equation $2^{6x} + 2^{3x+2} - 21 = 0$ is

- A) $\frac{\log_2 7}{3}$ B) $\log^2 27$ C) $\frac{\log_2 3}{3}$ D) $\log^2 9$

Question No. : 17

If x is a real number, then $\sqrt{\log e^{\frac{4x-x^2}{3}}}$ is a real number if and only if

- A) $-3 \leq x \leq 3$
- B) $1 \leq x \leq 2$
- C) $-1 \leq x \leq 3$
- D) $1 \leq x \leq 3$

Question No. : 18

John gets Rs 57 per hour of regular work and Rs 114 per hour of overtime work. He works altogether 172 hours and his income from overtime hours is 15% of his income from regular hours. Then, for how many hours did he work overtime? (type in box)

Question No. : 19

Two circles, each of radius 4 cm, touch externally. Each of these two circles is touched externally by a third circle. If these three circles have a common tangent, then the radius of the third circle, in cm, is

- A) $\pi/3$
- B) 1
- C) $1/\sqrt{2}$
- D) $\sqrt{2}$

Question No. : 20

If $5^x - 3^y = 13438$ and $5^{x-1} + 3^{y+1} = 9686$, then $x + y$ equals (type in box)

Question No. : 21

A man makes complete use of 405 cc of iron, 783 cc of aluminium, and 351 cc of copper to make a number of solid right circular cylinders of each type of metal. These cylinders have the same volume and each of these has radius 3 cm. If the total number of cylinders is to be kept at a minimum, then the total surface area of all these cylinders, in sq cm, is

- A) $1044(4 + \pi)$
- B) $1026(1 + \pi)$
- C) 8464π
- D) 928π

Question No. : 22

In an examination, the score of A was 10% less than that of B, the score of B was 25% more than that of C, and the score of C was 20% less than that of D. If A scored 72, then the score of D was (type in box)

Question No. : 23

How many factors of $2^4 \times 3^5 \times 10^4$ are perfect squares which are greater than 1? (type in box)

Question No. : 24

John jogs on track A at 6 kmph and Mary jogs on track B at 7.5 kmph. The total length of tracks A and B is 325 metres. While John makes 9 rounds of track A, Mary makes 5 rounds of track B. In how many seconds will Mary make one round of track A? (type in box)

Question No. : 25

Let a, b, x, y be real number such that $a^2 + b^2 = 25$, $x^2 + y^2 = 169$, and $ax + by = 65$. If $k = ay - bx$, then

- A) $K = 0$
- B) $K = 5/13$
- C) $0 < K \leq 5/13$
- D) $K > 5/13$

Question No. : 26

The number of common terms in the two sequences: 15, 19, 23, 27,, 415 and 14, 19, 24, 29,, 464 is

- A) 19
- B) 20
- C) 21
- D) 18

Question No. : 27

In 2010, a library contained a total of 11500 books in two categories – fiction and non-fiction. In 2015, the library contained a total of 12760 books in these two categories. During this period, there was 10% increase in the fiction category while there was 12% increase in the non-fiction category. How many fiction books were in the library in 2015?

- A) 6600
- B) 6160
- C) 5500
- D) 6000

Question No. : 28

In a six-digit number, the sixth, that is, the rightmost, digit is the sum of the first three digits, the fifth digit is the sum of first two digits, the third digit is equal to the first digit, the second digit is twice the first digit and the fourth digit is the sum of fifth and sixth digits. Then, the largest possible value of the fourth digit is (type in box)

Question No. : 29

The salaries of Ramesh, Ganesh and Rajesh were in the ratio 6:5:7 in 2010, and in the ratio 3:4:3 in 2015. If Ramesh's salary increased by 25% during 2010-2015, then the percentage increase in Rajesh's salary during this period is closest to:

- A) 9
- B) 7
- C) 8
- D) 10

Question No. : 30

If $(2n + 1) + (2n + 3) + (2n + 5) + \dots + (2n + 47) = 5280$, then what is the value of $1 + 2 + 3 + \dots + n$? (type in box)

Question No. : 31

Let A and B be two regular polygons having a and b sides, respectively. If $b = 2a$ and each interior angle of B is $\frac{3}{2}$ times each interior angle of A, then each interior angle, in degrees, of a regular polygon with $a + b$ sides is (type in box)

Question No. : 32

Anil alone can do a job in 20 days while Sunil alone can do it in 40 days. Anil starts the job, and after 3 days, Sunil joins him. Again, after a few more days, Bimal joins them and they together finish the job. If Bimal has done 10% of the job, then in how many days was the job done?

- A) 15
- B) 12
- C) 13
- D) 14

Question No. : 33

Amal invests Rs 12000 at 8% interest, compounded annually, and Rs 10000 at 6% interest, compounded semi-annually, both investments being for one year. Bimal invests his money at 7.5% simple interest for one year. If Amal and Bimal get the same amount of interest, then the amount, in Rupees, invested by Bimal is (type in box)

Question No. : 34

A shopkeeper sells two tables, each procured at cost price p , to Amal and Asim at a profit of 20% and at a loss of 20%, respectively. Amal sells his table to Bimal at a profit of 30%, while Asim sells his table to Barun at a loss of 30%. If the amounts paid by Bimal and Barun are x and y , respectively, then $(x - y) / p$ equals

- A) 0.7
- B) 1
- C) 0.50
- D) 1.2

SOLUTIONS

VARC

1. Correct Answer:- C

option 1 can be inferred from lines " For, whatever their sense of the strangeness of the country and the thinness of colonial presence, the British colonial state represented the great conquering discourse of Enlightenment rationalism, entering India precisely at the moment of its greatest unchecked arrogance. As inheritors and representatives of this discourse, which carried everything before it, this colonial state could hardly adopt for long such a self-denying attitude" option 2 and 4 can be inferred from "It had restructured everything in Europe—the productive system, the political regimes, the moral and cognitive orders—and would do the same in India, particularly as some empirically inclined theorists of that generation considered the colonies a massive laboratory of utilitarian or other theoretical experiments."

option 3 is true for British Modernity while the question is about British colonialism. Hence option 3 is the correct answer here to the 'except' ques

2. Correct Answer:- D

The colonial enterprise was a costly one is incorrect

The cost of colonial state's eminence was not settled or colonial state was 'unsettled/in doubt' are also not implied

The statement talks about the colonial state could not settle simply for eminence at the cost of its marginality. option 4 captures the essence of the statement

3. Correct Answer:- A

The passage start with policy refer lines "British colonial policy . . . went through two policy phases, or at least there were two strategies between which its policies actually oscillated, sometimes to its great advantage" and is followed by enlightenment refer lines

" For, whatever their sense of the strangeness of the country and the thinness of colonial presence, the British colonial state represented the great conquering discourse of Enlightenment rationalism, entering India precisely at the moment of its greatest unchecked arrogance."

Option 3 is incorrect because of multiple phrases most clear of which is 'arrogance' Enlightenment would have been better

Option 4 is clearly incorrect because of use of word 'arrogant rationality'. The rationality wasn't arrogant rather ".... Enlightenment rationalism, entering India precisely at the moment of its greatest unchecked arrogance"

4. Correct Answer:- A

refer to lines

"Here transformation agendas attack as an external force. This externality is not something that can be casually mentioned and forgotten. It is inscribed on every move, every object, every proposal, every legislative act, each line of causality" and

"Theoretically, because modernity was externally introduced, it is explanatorily unhelpful to apply the logical format of the 'transition process' to this pattern of change"

Option 4 is completely incorrect as endogenous and endogamous are 2 very different things

5. Correct Answer:- D

the change in British colonial policy was induced by resistance to modernity in Indian society goes against the passage

Refer following lines which talk about why modernity was introduced in India "Consequently, the colonial state could not settle simply for eminence at the cost of its marginality; it began to take initiatives to introduce the logic of modernity into Indian society."

There was resistance to modernity undoubtedly but that resistance induced change in british colonial policy is incorrect.

Option 1 is in consonance with following lines from para2 "historians have forcefully argued that what it was to replace was not like feudalism"

Option 2 is in consonance with last line of passage "What happened was the creation of a degenerate version of capitalism —what early dependency theorists called the 'development of underdevelopment'."

Option 3 can be inferred from following lines of para 1 "considered the colonies a massive laboratory of utilitarian or other theoretical experiments."

6. Correct Answer:- A

The main idea that the author expressed over here is that Language is sufficient to bridge cultural barriers. Hence option A is the correct option which states a conflicting point with the main point as discussed by author in the passage. Or we can say this would be the major point by the author's critics.

Nothing has been mentioned about linguistic politics so option B is out of the context.

Option C can be inferred from the passage and hence is in consonance with the main idea of the author. Refer to the line" An individual who wrestles with a difficult language can learn to be more"

Option D is also irrelevant as author wasn't an Egyptian, so critics gain nothing from this specific point. Refer lines

"I had also experienced Egypt and Arabic as an outsider."

"What exactly is the dynamic when a man from Missouri?"

7. Correct Answer:- D

Option A is incorrect as nothing has been mentioned throughout the passage about hiring translator rather it is going against the viewpoint of the author. Refer lines "An individual who wrestles with a difficult language can learn to be more sympathetic to outsiders and open to different experiences of the world. This learning process—the embarrassments, the frustrations, the gradual sense of understanding and connection—is invariably transformative."

option B and C are incorrect. Referring to the 3rd para in para 4 "If all of us now stand beside the same river, speaking in ways we all understand, who's looking east and who's looking west? "

in para 3 " And both the Chinese and the Egyptians welcomed me because I spoke their languages. My identity as a white male was far less important than my ability to communicate."

Option D is the correct option .Refer to the points he mentioned about the chinese dealers as well as his own real experiences with the chinese and Egyptian people. Refer lines in para 4 "If all of us now stand beside the same river, speaking in ways we all understand, who's looking east and who's looking west? "

in para 3 " And both the Chinese and the Egyptians welcomed me because I spoke their languages. My identity as a white male was far less important than my ability to communicate."

"An individual who wrestles with a difficult language can learn to be more sympathetic to outsiders and open to different experiences of the world. This learning process—the embarrassments, the frustrations, the gradual sense of understanding and connection—is invariably transformative."

8. Correct Answer:- C

Option C talks only about language and unlike other options, doesn't talk about people or impact of language on people. hence the correct option here

Option A can be inferred from the line "after all you can always learn....".so this option is incorrect.

Option B can be inferred from the line "you are what you speak....your gender". So this option is incorrect.

Option D can be inferred from the line" This learning process—the embarrassments, the frustrations, the gradual sense of understanding and connection—is invariably transformative."

Only option C cannot be inferred from the given passage as author has not mentioned anything about the inherent ability of language to evolve over time to change a person hence, this is the right answer.

9. Correct Answer:- D

Referring to the last and penultimate paragraph it is clear that the author is of the opinion that learning new languages actually bridges the gap between different cultures. Refer lines ""

in para 4 "If all of us now stand beside the same river, speaking in ways we all understand, who's looking east and who's looking west? "

in para 3 " And both the Chinese and the Egyptians welcomed me because I spoke their languages. My identity as a white male was far less important than my ability to communicate." So, option D is the right option.

Moreover, nothing has been mentioned about goodwill or Orientalism has disappeared

Option 3 is incorrect by virtue of being too generic. Author talks mainly from POV of language.

10. Correct Answer:- C

All the given options are valid arguments to be used by companies that digitally scan cultural sites except 'It allows a large corporation to project itself as a protector of culture'. This option shows arrogant and supercilious behavior of the corporation claiming to be protector of culture. One can only be the promoter of culture.

So it is the least likely argument to be used by corporations involved in the digital scanning of cultural sites.

11. Correct Answer:- C

The term 'digital colonialism' finds mention in the opening lines of the passage and how critics of the CyArk–Google project describe it is given in the line, 'There's another issue for some archaeologists and art historians. CyArk owns the copyrights of the scans — not the countries where these sites are located. That means the countries need CyArk's permission to use these images for commercial purposes'. It clearly means that countries where the scanned sites are located do not own the scan copyrights.

Options 2 and 4 do not find mention in the passage hence eliminated.

Option 1 is ambiguous wrt which details aren't shared. Undoubtedly, countries don't own copyrights but wrt details refer following lines of last para and para 4 respectively

"The company says it works closely with authorities during the process, even training local people to help. "

"[These] scans . . . are on Google's Arts & Culture site. The digital renditions allow viewers to virtually wander the halls of the temple, look up-close at paintings and turn the building over, to look up at its chambers. [Google Arts & Culture] works with museums and other nonprofits to put high-quality images online."

12. Correct Answer:- B

Refer to the lines, 'Watrall says this project is just a way for Google to promote Google. "They want to make this material accessible so people will browse it and be filled with wonder by it," he says. "But at its core, it's all about advertisements and driving traffic." Watrall says these images belong on the site of a museum or educational institution, where there is serious scholarship and a very different mission. . . .'

This gives us an idea that Watrall doesn't has any objection if the digitally scanned pictures belong on the site of a museum or educational institution and his opinion gets invalidated if the option CyArk uploads its scanned images of archaeological sites onto museum websites stands true.

Just taking down advertisements by Google to promote itself would not invalidate Watrall's claim.

Any ban on CyArk scanning archeological sites located in other countries would certainly not prevent promotion by Google.

CyArk does not own the copyright on scanned images of archaeological sites would not prevent using it for commercial purposes.

13. Correct Answer:- A

Refer line in the last paragraph, 'it's the latest example of a Western nation appropriating a foreign culture, a centuries-long battle'. This line clearly helps us to understand that Erin Thompson blames CyArk of misappropriating foreign culture.

Seizing means to snatch or to have or to receive possession of something

So Dr. Thompson's view of CyArk owning the copyright of its digital scans of archaeological sites is akin to only one option i.e. the seizing of ancient Egyptian artefacts by a Western museum.

Illegal downloading of content from the internet does not make one the owner of it.

Digital platforms capturing users' data for market research is not bringing the relationship asked.

Tourists uploading photos of monuments onto social media is not same as being the owner of it.

14. Correct Answer:- D

By reading views of Ethan Watrall in the passage

"Ethan Watrall, an archaeologist, professor at Michigan State University and a member of the Society for American Archaeology, says he's not comfortable with the arrangement between CyArk and Google. Watrall says this project is just a way for Google to promote Google. "They want to make this material accessible so people will browse it and be filled with wonder by it," he says. "But at its core, it's all about advertisements and driving traffic." Watrall says these images belong on the site of a museum or educational institution, where there is serious scholarship and a very different mission. . . ."

Option 4 Critical about the links between a non-profit (alluding to CyArk) and a commercial tech platform(alluding to Google) for distributing archaeological images properly characterise the views of Watrall mentioned in the passage.

Option 1 Though Google's traffic would increase as a result of this project but it is nowhere mentioned that both Google and CyArk are using the images as a marketing tool hence rejected.

option 2 Dismissive of laypeople's access to specialist images of archaeological and cultural sites is not mentioned.

Option 3 Watrall is against the intention and not technology itself, so opposed to the use of digital technology in archaeological and cultural sites in developing countries is eliminated.

15. Correct Answer:- A

Refer the lines in 2nd paragraph,

In his 1985 article, Calthorpe made a statement that still jars with most people: "The city is the most environmentally benign form of human settlement. Each city dweller consumes less land, less energy, less water, and produces less pollution than his counterpart in settlements of lower densities."

The term "still jars" means something that is against or what disturbs most of the people.

So the answer option should be one which is opposite to the views of Calthorpe because views of people and Calthorpe do not match and the option is people do not consider cities to be eco-friendly places.

Options 2 and 3 don't talk about environment so rejected.

Another option, option 4, which is close is people consider cities to be very crowded and polluted which is half true i.e. only about pollution (nothing about crowded cities) is mentioned, so eliminated.

16. Correct Answer:- B

In this question we have to find the odd one i.e. the option which cannot be considered as reason to cities are good places to live in for all .

Offer employment opportunities is mentioned in the 2nd paragraph, so it can be inferred from the passage and hence rejected.

Help prevent destruction of the environment can be inferred from second last paragraph ([T]he nationally subsidised city of Manaus in northern Brazil "answers the question" of how to stop deforestation) and therefore eliminated.

Contribute to the cultural transformation of residents can be properly inferred from last paragraph and hence eliminated.

It seems that the option have suburban areas as well as office areas can also be inferred from last portion of the passage but it is not the reason author mentions to consider cities as good places to live. So it is the right answer.

17. Correct Answer:- C

Refer to the second last paragraph of the passage where the term Manaus has been mentioned From the paragraph lines we understand that Manaus were the community of people involved in deforestation have changed (by stopping deforestation) and prospered by making mobile phones and televisions.

Hence the reason for giving example of Manaus was to explain how urban areas help the environment

To explain where cities source their labour for factories is not mentioned in the passage.

To describe the infrastructure efficiencies of living in a city is the positive aspect of being in a city and not the reason for citing example of Manaus

To promote cities as employment hubs for people is another positive aspect of being in a city and not the reason for citing example of Manaus

18. Correct Answer:- C

In this question we have to select the option which will not fit as an adequate reason for squatter cities being environment friendly.

All the mentioned options would help keep the squatter cities environment friendly (i.e. sorting out garbage, recycling the material and energy efficient transportation) except keeping the streets clean which is least related to environment. Also because this would possible mean that somewhere the waste has to be dumped which means a negative impact on the surrounding environment.

19. Correct Answer:- B

It is a critical reasoning based question wherein we have to weaken the author's argument regarding the greenness of the cities.

The options concerning the increase in the incidence of crime and increase in the cost of utilities would be easily eliminated because the context of argument is greenness and not crime or cost of utilities.

Similarly rapid spread of diseases in slum areas is also eliminated on the ground that the diseases would impact the population i.e. persons residing in those slums; it is nowhere connected to the greenness of the city.

We are left with only one option and it is a valid point that weakens the author's argument regarding the greenness of city because increase in the level of carbon-di-oxide and global warming would definitely impact the verdancy in a negative manner.

20. Correct Answer:- D

The first line of the fourth paragraph mentions "long pedigree". The following line talks of how it has already been tried in the past in Britain. So, "is not a new idea and has been tried in the past" is the answer.

21. Correct Answer:- A

The option "high staff losses, as people may not be prepared to move to smaller towns" is referred to as a reason for why relocating government agencies has not always been a success in the last line of the fourth paragraph. Similarly, the option "the difficulty of attracting talented, well-skilled people in more remote areas" is referred to as a reason in the penultimate paragraph in the lines " Pick small, poor towns, and areas of high unemployment get new jobs, but it is hard to attract the most qualified workers".

And the option " increased avenues of corruption away from the capital city" is referred to as a reason in the last paragraph.

The option " a rise in pollution levels and congestion in the new locations" is not mentioned anywhere and hence is the answer

22. Correct Answer:- A

The penultimate paragraph

"The dilemma is obvious. Pick small, poor towns, and areas of high unemployment get new jobs, but it is hard to attract the most qualified workers; opt for larger cities with infrastructure and better-qualified residents, and the country's most deprived areas see little benefit. . . ."

helps us identify "relocating government agencies to boost growth in remote areas with poor amenities or to relatively larger cities with good amenities." as the answer.

Option 4 "keeping government agencies in the largest city with good infrastructure or moving them to a remote area with few amenities." is incorrect as penultimate para talks about which ones to relocate to. Keeping govt agencies in largest city isn't one of the 2 options discussed in the para

23. Correct Answer:- D

Refer to the second paragraph of the passage. The lines "Wonks in the sticks will be inspired by new ideas that walled-off capitals cannot

conjure up." imply that the people who support decentralising central government functions are likely to agree with the option "Policy makers may benefit from fresh thinking in a new environment".

Similarly, the lines "Autonomous regulators perform best far from the pressure and lobbying of the big city." imply the agreement with the option "More independence could be enjoyed by regulatory bodies located away from political centres".

For the agreement with the option "It reduces expenses as infrastructure costs and salaries are lower in smaller cities", refer to the second half of the fourth paragraph.

The option "It could weaken the nexus between bureaucrats and media in the capital" is not mentioned and hence should be the most appropriate answer.

24. Correct Answer:- B

The second line of the passage determines "to promote their trading interests" as the answer.

25. Correct Answer:- 4132

The opener in this case will be 4 as it introduces the idea of representation of 'clock - time' with respect to 'time is money' perspective'. After this 1 as there is clear link 'this representation'. 3 is explaining that actually caring time is often more focussed on clock though clock time has been seen as a masculine artefact. Hence 3 questions stts concept of clock time as masculine artefact.

2 concludes and answers the question being raised in 3

26. Correct Answer:- 3421

The opening sentence is 3 as it introduces the topic of the discussion i.e. 'balance of nature' and its perception as per the author. After this 4 will come as it defines this 'balance of nature as 'teleology'. After this 2 will come as 'parts' in 4 can be linked clearly with 'parts' in 2. 1 will conclude the sequence.

27. Correct Answer:- 2143

Sentence 2 is an opener as it clearly defines and introduces 'atonality'.

1 & 4 form a mandatory pair as 4 is in contrast with 1.

'your tune may change' in 3 implies that your opinion may change. so the opinion i.e stt 1 has to come before 3 though not necessarily immediately precede it. hence 143 The sequence is concluded by 3.

28. Correct Answer:- D

The passage says that the language evolved over a period of time, and it is a complex process based on features of cognition such as memory. This has been best captured by option 4. Option 1 misses the cognition and role of the memory. Option 2 is partial in terms of summarizing the passage. Option 3 touches that this feature is seen only in humans and not in other species.

29. Correct Answer:- 1

After reading all the sentences, a clear pair that emerges is 2-5

2-5 'speaking about yourself in the third person' is the change being talked about in 5 'this small change'

'It' in 2 refers to 'research' in 3 Hence 3-2-5

3 talks about rumination which is introduced in 4 Hence 4325

we find that context is about ways of self realization' and it says that 'Simple rumination' is not the way to achieve it. Then 3 describes the drawback of this process. 'It' in 2 refers to 'research' in 3 Hence 3-2 After this 5 highlights the benefit of 'ancient method i.e. "illeism"'. The sequence of these four sentences is 4325. 1 is odd one out.

30. Correct Answer:- C

The passage mentions that social movement organizations struggle to achieve critical mass. Also, that the organizations with hybrid identities are able to mobilize individuals with different points of view. To state this point, the author gives example of individuals with past involvement in non-anti-war movements and those related to the antiwar movement are likely to join hybrid organizations. Hence, "Organizations with hybrid identities are able to mobilize individuals with different points of view" captures the essence of the passage the best out of the given options and should be the answer. The other three options talk only of a part of the passage and hence cannot be a better summary.

31. Correct Answer:- 2

After reading all the sentences, it is seen that context is about 'inference occurs in many single panel comics.' So the opening sentence of the discussion is 1. 'inferences' in 1 can be linked with 'requires you to imagine'.

5 further tells 'how it goes'. stts 3 and 5 both talk about the panel being shown. As funniest not has been shown so to get the joke 'you actually have to figure out' something regarding the missing panel(s). The plural panels being talked about in 4 'These' are introduced in their plural form in 5 "a series of panels"

The sequence becomes '1354' and sentence 2 is misfit here as it doesn't fit in the para

32. Correct Answer:- 2431

After reading all the sentences, we find that topic of the discussion is on 'Adaptive behaviour' and on what factors does it depend'. So sentence 2 has to be the opener. The word 'equivalent' in 2 can be linked with same word in 4. How we cognitively economize(Stt 2) is by categorizing(Stt4) How this 'categorization' is perceived is highlighted by 3.

The information is not arbitrary(Stt3) because Living things typically exhibit correlational structure(stt1).. Hence the sequence is 2431.

In the source article, stt pairs 24 and 31 are from different paras though the paras are in continuity

33. Correct Answer:- A

The passage highlights following points:

1. open-plan offices and cubicles were invented by architects and designers who thought that to break down the social walls that divide people, you had to break down the real walls, too.
2. Modernist architects saw walls and rooms as downright fascist.
3. But companies took up their idea less out of a democratic ideology than a desire to pack in as many workers as they could. the essence has been well captured by option 1.

Option 2 is incorrect as nowhere does the author opine that Wall-free office spaces could have worked out the way their utopian inventors intended

Option 3 is incorrect as it's not stated that companies don't believe in democratic ideology which the designers believed in, rather what mattered more to companies was cost cutting which open-planned offices allowed for.

Option 4 is incorrect as cubicles have been talked about in line 1 of para 2, so cubicles weren't a soln which the option represents them as

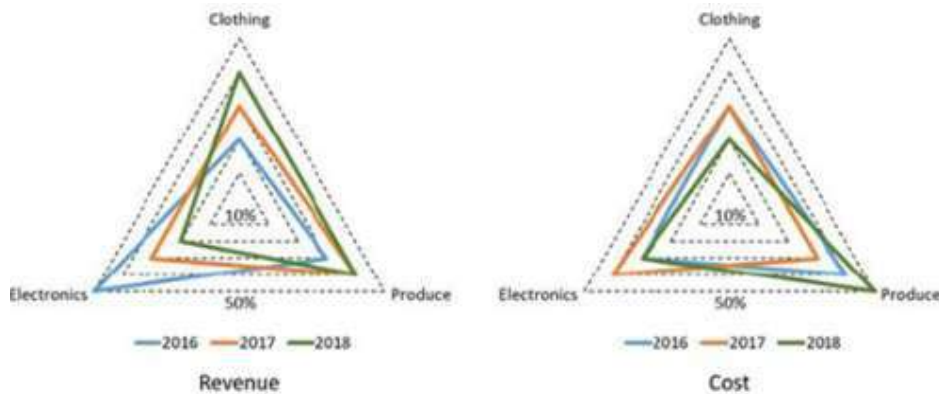
34. Correct Answer:- 2

After reading all the sentences , we find that context is about plastic pollution in seas and how it is dangerous for marine creatures. The opening sentence is therefore 4. After this 1 will come as it tells 'why it is problematic'. 5 further explains it and 3 is the extension of 5. The coherent sequence thus become 4153. 2 is odd one out as it tells the 'numerical proportion of ocean plastic falls' , which is not discussed in other sentences.

DILR

1. Correct Answer:- 25

The information in the given triangles is summarized in following table:



As Profit is computed as (Revenue – Cost) and Percentage Profit as Profit/Cost

It is known that

1. The percentage profit for the store in 2016 was 100%.it means that half of revenue is cost and half the revenue is profit. Now let revenue in 2016 is 100 so cost in 2016 is 50.

2.store's revenue doubled from 2016 to 2017, and its cost doubled from 2016 to 2018.so revenue in 2107 is 200 and cost in 2108 is 150.

3.There was no profit from the Electronics department in 2017.from this we can find the cost in 2017 shown below:

No profit means revenue and cost are equal . as revenue in the Electronics department in 2017 is 30% of 200 which is equal to cost in the Electronics department in 2017 which further is 40% of total cost.

40% of total cost in 2017=30% of 200 =60

So total cost in 2017=60/40%=150

4. In 2018, the revenue from the Clothing department was the same as the cost incurred in the Produce department from this we can find the total revenue in 2018 as shown below

as the cost incurred in the Produce department in 2018 is 50% of 100 which is equal to revenue from the Clothing department in 2018 which further is 40% of total revenue.

40% of total revenue in 2018=50% of 100 =50

So total revenue in 2018= 50/40%=125

Now whole solution is summarized as below:

	Revenue			Cost			
Year	Electronic	Clothing	Produce	Electronic	Clothing	Produce	
2016	50%	20%	30%	30%	30%	40%	
2017	30%	30%	40%	40%	30%	30%	
2018	20%	40%	40%	30%	20%	50%	

Total revenue in 2018 is 125 and total cost =100

Hence % profit=25%

2. Correct Answer:- C

The information in the given triangles is summarized in following table:

	Revenue			Cost			
	Year	Electronic	Clothing	Produce	Electronic	Clothing	Produce
	2016	50%	20%	30%	30%	30%	40%
	2017	30%	30%	40%	40%	30%	30%
	2018	20%	40%	40%	30%	20%	50%

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So total revenue in 2018= 50/40%=125

Now whole solution is summarized as below:

Revenue					Cost			
Total	year	Electronics	Clothing	Produce	Total	Electronic	Clothing	Produce
100	2016	50%	20%	30%	50	30%	30%	40%
200	2017	30%	30%	40%	150	40%	30%	30%
125	2018	20%	40%	40%	100	30%	20%	50%

Required ratio=40% of 200:40% of 125=80:50=8:5

3. Correct Answer:- 70

The information in the given triangles is summarized in following table:

Revenue					Cost			
Total	year	Electronics	Clothing	Produce	Total	Electronic	Clothing	Produce
100	2016	50%	20%	30%	50	30%	30%	40%
200	2017	30%	30%	40%	150	40%	30%	30%
125	2018	20%	40%	40%	100	30%	20%	50%

As Profit is computed as (Revenue – Cost) and Percentage Profit as Profit/Cost

It is known that

1. The percentage profit for the store in 2016 was 100%.it means that half of revenue is cost and half the revenue is profit. Now let revenue in 2016 is 100 so cost in 2016 is 50.

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So total revenue in 2018= 50/40%= 125

Now whole solution is summarized as below:

Revenue					Cost			
Total	year	Electronics	Clothing	Produce	Total	Electronic	Clothing	Produce
100	2016	50%	20%	30%	50	30%	30%	40%
200	2017	30%	30%	40%	150	40%	30%	30%
125	2018	20%	40%	40%	100	30%	20%	50%

Total profit in 2016=100-50=50

Profit in 2016 from Electronics dept=50% of 100-30% of 50=50-15=35

Hence required %= 35/50* 100 =70%

4. Correct Answer:- A

Revenue					Cost			
Total	year	Electronics	Clothing	Produce	Total	Electronic	Clothing	Produce
100	2016	50%	20%	30%	50	30%	30%	40%
200	2017	30%	30%	40%	150	40%	30%	30%
125	2018	20%	40%	40%	100	30%	20%	50%

As Profit is computed as (Revenue – Cost) and Percentage Profit as Profit/Cost

It is known that

1. The percentage profit for the store in 2016 was 100%.it means that half of revenue is cost and half the revenue is profit. Now let revenue in 2016 is 100 so cost in 2016 is 50.

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200	2017	30%	30%	40%	150	40%	30%	30%
125	2018	20%	40%	40%	100	30%	20%	50%

$$\text{profit percentages of the store in 2017} = \frac{200-150}{150} \times 100 = \frac{50}{150} \times 100 = 33.33\%$$

$$\text{profit percentages of the store in 2018} = \frac{125-100}{100} \times 100 = \frac{25}{100} \times 100 = 25\%$$

hence required difference=33.33%-25%=8.3

5. Correct Answer:- 13

Now there were two important points that had to be kept in mind while solving this block were that

(i) As it is known that the average amount of money (in rupees) kept in the nine pouches in any column or in any row is an integer. Hence the sum of nine pouches in any row or column should be a multiple of 9.

(ii) In any of nine slots of 3×3 grid minimum and maximum amount should be kept in mind while placing the amount in third pouch.

The minimum and maximum amounts of money (in rupees) among the three pouches in each of the nine slots are given in the table below

	Column 1	Column 2	Column 3
Row 1	(2, 4)	(6, 8)	(1, 3)
Row 2	(3, 5)	(1, 1)	(6, 20)
Row 3	(1, 2)	(1, 2)	(2, 5)

It is also known that the total amount of money kept in the three pouches in the first column of the third row is Rs. 4. so amount of money kept in the third pouch should have been 1 and also the maximum and minimum amount of money kept in second column of the second row is (1,1) so amount of money kept in the third pouch here should also be 1.

Now further money in the first column in seven of nine pouches is $6+8+4=18$. also no pouch is empty and sum of all in pouches any column or row is a multiple of 9. so in remaining two pouches in column 1 the sum should be 9 making total sum as 27 in first column. (we cannot make sum 36 or next multiple of 9 as it will violate max and min range given). so third pouch in column 1 of row 1 is 4 and column 2 of row 5.

Further moving in same way and keeping all condition in mind we get the following solution

	Column 1	Column 2	Column 3	total
Row 1	(2, 4), 4 Sum=2+4+4=10	(6, 8), 6 Sum=6+8+6=20	(1, 3), 2 Sum=1+3+2=6	10+20+6=36
Row 2	(3, 5), 5 Sum=3+5+5=13	(1, 1), 1 Sum=1+1+1=3	(6, 20), 12 Sum=6+20+12=38	13+3+38=54
Row 3	(1, 2), 1 Sum=1+2+1=4	(1, 2), 1 Sum=1+2+1=4	(2, 5), 3 Sum=2+5+3=10	4+4+10=18
Total	10+13+6=27	20+3+4=27	6+38+10=54	

As shown the required sum is 13

6. Correct Answer:- 8

Now there were two important points that had to be kept in mind while solving this block were that

(i) As it is known that the average amount of money (in rupees) kept in the nine pouches in any column or in any row is an integer. Hence the sum of nine pouches in any row or column should be a multiple of 9.

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	Column 1	Column 2	Column 3
Row 1	(2, 4)	(6, 8)	(1, 3)
Row 2	(3, 5)	(1, 1)	(6, 20)
Row 3	(1, 2)	(1, 2)	(2, 5)

It is also known that the total amount of money kept in the three pouches in the first column of the third row is Rs. 4. so amount of money kept in the third pouch should have been 1 and also the maximum and minimum amount of money kept in second column of the second row is (1, 1) so amount of money kept in the third pouch here should also be 1.

Now further money in the first column in seven of nine pouches is $6+8+4=18$. also no pouch is empty and sum of all in pouches any column or row is a multiple of 9. so in remaining two pouches in column 1 the sum should be 9 making total sum as 27 in first column. (we cannot make sum 36 or next multiple of 9 as it will violate max and min range given) .so third pouch in column 1 of row 1 is 4 and column 1 of row 2 is 5

Further moving in same way and keeping all condition in mind we get the following solution

	Column 1	Column 2	Column 3	total
Row 1	(2, 4), 4 Sum=2+4+4=10	(6, 8), 6 Sum=6+8+6=20	(1, 3), 2 Sum=1+3+2=6	10+20+6=36
Row 2	(3, 5), 5 Sum=3+5+5=13	(1, 1), 1 Sum=1+1+1=3	(6, 20), 12 Sum=6+20+12=38	13+3+38=54
Row 3	(1, 2), 1 Sum=1+2+1=4	(1, 2), 1 Sum=1+2+1=4	(2, 5), 3 Sum=2+5+3=10	4+4+10=18
Total	10+13+6=27	20+3+4=27	6+38+10=54	

As shown 8 pouches contain exactly one coin

7. Correct Answer:- 2

Now there were two important points that had to be kept in mind while solving this block were that

(i) As it is known that the average amount of money (in rupees) kept in the nine pouches in any column or in any row is an integer. Hence the sum of nine pouches in any row or column should be a multiple of 9.

(ii) In any of nine slots of 3×3 grid minimum and maximum amount should be kept in mind while placing the amount in third pouch.

The minimum and maximum amounts of money (in rupees) among the three pouches in each of the nine slots are given in the table below

	Column 1	Column 2	Column 3
Row 1	(2, 4)	(6, 8)	(1, 3)
Row 2	(3, 5)	(1, 1)	(6, 20)
Row 3	(1, 2)	(1, 2)	(2, 5)

It is also known that the total amount of money kept in the three pouches in the first column of the third row is Rs. 4. so amount of money kept in the third pouch should have been 1 and also the maximum and minimum amount of money kept in second column of the second row is (1,1) so amount of money kept in the third pouch here should also be 1.

Now further money in the first column in seven of nine pouches is $6+8+4=18$. also no pouch is empty and sum of all in pouches any column or row is a multiple of 9. so in remaining two pouches in column 1 the sum should be 9 making total sum as 27 in first column. (we cannot make sum 36 or next multiple of 9 as it will violate max and min range given) .so third pouch in column 1 of row 1 is 4 and column 2 of row 5.

Further moving in same way and keeping all condition in mind we get the following solution

	Column 1	Column 2	Column 3	total
Row 1	(2, 4), 4 Sum=2+4+4=10	(6, 8), 6 Sum=6+8+6=20	(1, 3), 2 Sum=1+3+2=6	10+20+6=36
Row 2	(3, 5), 5 Sum=3+5+5=13	(1, 1), 1 Sum=1+1+1=3	(6, 20), 12 Sum=6+20+12=38	13+3+38=54
Row 3	(1, 2), 1 Sum=1+2+1=4	(1, 2), 1 Sum=1+2+1=4	(2, 5), 3 Sum=2+5+3=10	4+4+10=18
Total	10+13+6=27	20+3+4=27	6+38+10=54	

average amount (in rupees) of its three pouches will be an integer in the slot in which sum of amount is multiple of 3 which is there in two slots i.e. column 3 of row 1 where sum is 6 and column two of row two where sum is 3

8. Correct Answer:- 3

Now there were two important points that had to be kept in mind while solving this block were that

(i) As it is known that the average amount of money (in rupees) kept in the nine pouches in any column or in any row is an integer. Hence the sum of nine pouches in any row or column should be a multiple of 9.

(ii) In any of nine slots of 3×3 grid minimum and maximum amount should be kept in mind while placing the amount in third pouch..

The minimum and maximum amounts of money (in rupees) among the three pouches in each of the nine slots are given in the table below

	Column 1	Column 2	Column 3
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Row 2	(3, 5)	(1, 1)	(6, 20)
Row 3	(1, 2)	(1, 2)	(2, 5)

It is also known that the total amount of money kept in the three pouches in the first column of the third row is Rs. 4. so amount of money kept in the third pouch should have been 1 and also the maximum and minimum amount of money kept in second column of the second row is (1,1) so amount of money kept in the third pouch here should also be 1.

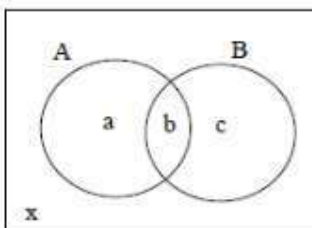
Now further money in the first column in seven of nine pouches is $6+8+4=18$. also no pouch is empty and sum of all in pouches any column or row is a multiple of 9. so in remaining two pouches in column 1 the sum should be 9 making total sum as 27 in first column. (we cannot make sum 36 or next multiple of 9 as it will violate max and min range given) .so third pouch in column 1 of row 1 is 4 and column 2 of row 5.

Further moving in same way and keeping all condition in mind we get the following solution

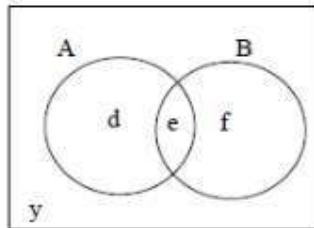
	Column 1	Column 2	Column 3	total
Row 1	(2, 4), 4 Sum=2+4+4=10	(6, 8), 6 Sum=6+8+6=20	(1, 3), 2 Sum=1+3+2=6	10+20+6=36
Row 2	(3, 5), 5 Sum=3+5+5=13	(1, 1), 1 Sum=1+1+1=3	(6, 20), 12 Sum=6+20+12=38	13+3+38=54
Row 3	(1, 2), 1 Sum=1+2+1=4	(1, 2), 1 Sum=1+2+1=4	(2, 5), 3 Sum=2+5+3=10	4+4+10=18
Total	10+13+4=27	20+3+4=27	6+38+10=54	

As shown above, the number of slots for which the total amount in its three pouches strictly exceeds Rs. 10 is 3

9. Correct Answer:- 64



Ragini (300)



Sunita (200)

From second point we have $d + e = 160$ --(1)

From third point we have $a + b = 90$ --(2)

From fourth point we have $e + f = 50$ --(3)

From fifth point we have $(150 + a + x)/5 = a + x$

$$\Rightarrow 300 + 2a + 2x = 5a + 5x$$

$$\Rightarrow 100 = a + x \dots\dots\dots(4)$$

From point six, we have, $f = 0$

From point seven, we have $x = 20\%$ of $300 = 60$

Now as $f = 0$, (3) $\Rightarrow e = 50$

$$\therefore (1) \Rightarrow d = 110$$

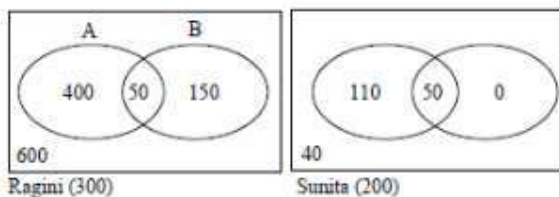
$$\Rightarrow y = 200 - (110 + 50) = 40$$

From (4), we get $100 = a + 60 \Rightarrow a = 40$

From (2) we get $b = 50$

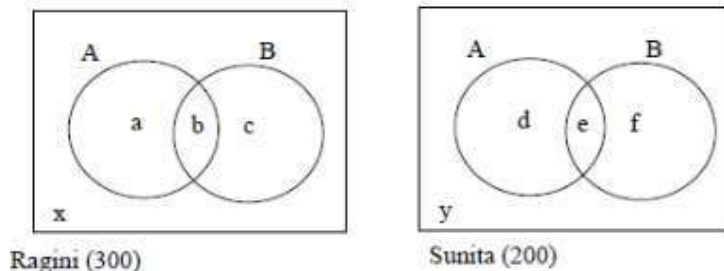
$$\therefore c = 300 - (40 + 50 + 60) = 150$$

So we have



$$\text{Required \%age} = \frac{160}{250} \times 100 = 64\%$$

10. Correct Answer:- 84



From third point we have $a + b = 90$ --(2)

From fourth point we have $e + f = 50$ --(3)

From fifth point we have $(150 + a + x)/5 = a + x$

$$\Rightarrow 300 + 2a + 2x = 5a + 5x$$

$$\Rightarrow 100 = a + x \dots\dots\dots(4)$$

From point six, we have, $f = 0$

From point seven, we have $x = 20\%$ of $300 = 60$

Now as $f = 0$, (3) $\Rightarrow e = 50$

$$\therefore (1) \Rightarrow d = 110$$

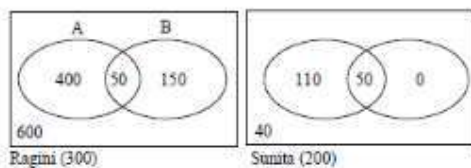
$$\Rightarrow y = 200 - (110 + 50) = 40$$

From (4), we get $100 = a + 60 \Rightarrow a = 40$

From (2) we get $b = 50$

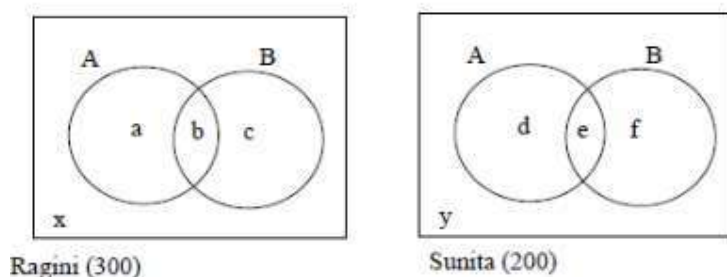
$$\therefore c = 300 - (40 + 50 + 60) = 150$$

So we have



Students who did not support A = $150 + 60 + 40 = 250$

11. Correct Answer:- B



From second point we have $d + e = 160$ --(1)

From third point we have $a + b = 90$ --(2)

From fourth point we have $e + f = 50$ --(3)

From fifth point we have $(150 + a + x)/5 = a + x$

$$\Rightarrow 300 + 2a + 2x = 5a + 5x$$

$$\Rightarrow 100 = a + x \dots\dots\dots(4)$$

From point six, we have, $f = 0$

From point seven, we have $x = 20\% \text{ of } 300 = 60$

Now as $f = 0$, (3) $\Rightarrow e = 50$

$$\therefore (1) \Rightarrow d = 110$$

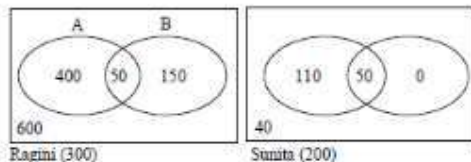
$$\Rightarrow y = 200 - (110 + 50) = 40$$

From (4), we get $100 = a + 60 \Rightarrow a = 40$

From (2) we get $b = 50$

$$\therefore c = 300 - (40 + 50 + 60) = 150$$

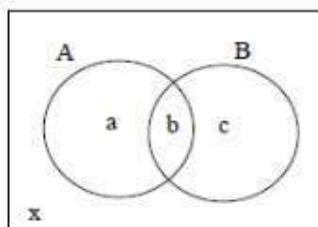
So we have



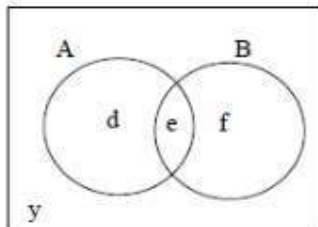
Students who supported both proposals = $50 + 50 = 100$

$\therefore$ required %age

12. Correct Answer:- A



Ragini (300)



Sunita (200)

From second point we have $d + e = 160$ --(1)

From third point we have $a + b = 90$ --(2)

From fourth point we have $e + f = 50$ --(3)

From fifth point we have $(150 + a + x)/5 = a + x$

$$\Rightarrow 300 + 2a + 2x = 5a + 5x$$

$$\Rightarrow 100 = a + x \dots\dots\dots(4)$$

From point six, we have, $f = 0$

From point seven, we have $x = 20\%$ of $300 = 60$

Now as $f = 0$, (3) $\Rightarrow e = 50$

$$\therefore (1) \Rightarrow d = 110$$

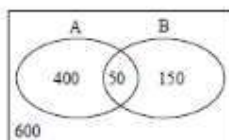
$$\Rightarrow y = 200 - (110 + 50) = 40$$

From (4), we get $100 = a + 60 \Rightarrow a = 40$

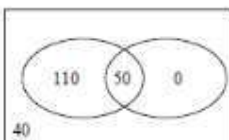
From (2) we get $b = 50$

$$\therefore c = 300 - (40 + 50 + 60) = 150$$

So we have



Ragini (300)



Sunita (200)

Students who supported both proposals = $50 + 50 = 100$

150 students supported proposal B only supported Ragini

13. Correct Answer:- D

Explanation:- After analyzing the information following teams are made

	Members	Languages spoken
Team 1	Robert, Paula, Terence	Arabic, French, Chinese, English
Team 2	Paula, Sally, Terence	French, Basque, Chinese, English
Team 3	Quentin, Paula, Sally	Dutch, Basque, Chinese, English

14. Correct Answer:- D

Explanation:- After analyzing the information following teams are made

	Members	Languages spoken
Team 1	Robert, Paula, Terence	Arabic, French, Chinese, English
Team 2	Paula, Sally, Terence	French, Basque, Chinese, English
Team 3	Quentin, Paula, Sally	Dutch, Basque, Chinese, English

15. Correct Answer:- A

Explanation:- After analyzing the information following teams are made

	Members	Languages spoken
Team 1	Robert, Paula, Terence	Arabic, French, Chinese, English
Team 2	Paula, Sally, Terence	French, Basque, Chinese, English
Team 3	Quentin, Paula, Sally	Dutch, Basque, Chinese, English

16. Correct Answer:- B

Explanation:- After analyzing the information following teams are made

	Members	Languages spoken
Team 1	Robert, Paula, Terence	Arabic, French, Chinese, English
Team 2	Paula, Sally, Terence	French, Basque, Chinese, English
Team 3	Quentin, Paula, Sally	Dutch, Basque, Chinese, English

17. Correct Answer:- D

Maximum number of patients can be catered on single day when The queue is never empty and all doctors work to full capacity.

The clinic is open from 9 a.m. to 11.30 a.m i.e. for 150 minutes every day.

Maximum number of patients that can be seen by Dr. Ben are $150/10=15$

Maximum number of patients that can be seen by Dr. Kane are $150/15=10$

Maximum number of patients that can be seen by Dr. Dr. Wayne are $150/25=6$

So the maximum number of patients that the clinic can cater to on any single day are $=15+10+6=31$

18. Correct Answer:- D

The queue is never empty on one particular Saturday it means all the doctor are working to their full capacity.

(i) Maximum number of patients that can be seen by Dr. Ben are $150/10=15$.

As charges of Dr. Ben are 100/-

So maximum amount in consultation charges earned by Dr. Ben are $15 \times 100 = 1500/-$

(ii) Maximum number of patients that can be seen by Dr. Kane are $150/15=10$

As charges of Dr. Kane are 200/-

So maximum amount in consultation charges earned by Dr. Kane are $10 \times 200 = 2000/-$

(iii) Maximum number of patients that can be seen by Dr. Wayne are $150/25=6$

As charges of Dr. Wayne are 300/-

So maximum amount in consultation charges earned by Dr. Ben are $6 \times 300 = 1800/-$

Hence among three doctors Dr. Kane would earn the maximum amount in consultation charges on Saturday.

19. Correct Answer:- A

Mr. Singh who is having token no 13 will be in clinic for the maximum duration on the on which he will be attended by Dr. Wayne

The movement of patients having token number number 1-13 on each given day is shown below

Movement of patients having token number 1-13 on Monday					
Ben		Kane		Wayne	
Token no	Time	Token no	Time	Token no	Time
1	9:00-9:10	2	9:00-9:15	3	9:00-9:25
4	9:10-9:20	5	9:15-9:30	7	9:25-9:50
6	9:20-9:30				
8	9:30-9:40	9	9:30-9:45		
10	9:40-9:50	11	9:45-10:00		
12	9:50-10:00			13	9:50-10:15

Movement of patients having token number 1-13 on Wednesday					
Wayne		Ben		Kane	
Token no	Time	Token no	Time	Token no	Time
1	9:00-9:25	2	9:00-9:10	3	9:00-9:15
		4	9:10-9:20	5	9:15-9:30
		6	9:20-9:30		
7	9:25-9:50	8	9:30-9:40	9	9:30-9:45
		10	9:40-9:50	11	9:45-10:00
12	9:50-10:15	13	9:50-10:00		

movement of patients having token number 1-13 on Friday					
Kane		Wayne		Ben	
Token no	Time	Token no	Time	Token no	Time
1	9:00-9:15	2	9:00-9:25	3	9:00-9:10
5	9:15-9:30			4	9:10-9:20
				6	9:20-9:30
		7	9:25-9:50		
8	9:30-9:45			9	9:30-9:40
				10	9:40-9:50
11	9:45-10:00	12	9:50-10:15	13	9:50-10:00

As shown above Mr. Singh will be in clinic for maximum duration on Monday

20. Correct Answer:- A

movement on Thursday as per condition					
Wayne		Ben		Kane	
Token no	Time	Token no	Time	Token no	Time
1	9:00-9:25	2	9:00-9:10		
		3	9:10-9:20	4	9:15-9:30
5	9:30-9:55	6	9:30-9:40		
		7	9:45-9:55	8	9:45-10:00
9	10:00-10:25	10	10:00-10:10		

As shown above token number 11,12 will have same movement as of token number 3 and 4 and the same sequence will follow between 10:11 and between 11:0-11:30.

Hence there is no time duration in which all the three doctors are simultaneously free.

21. Correct Answer:- D

There are seven states (Mizoram, Sikkim, Maharashtra, Goa, Arunachal, Kerala and Meghalaya) which are under Heavy Monsoon State' as per given criterion out of which three (Arunachal, Kerala and Meghalaya) have a negative deviation from respective LPA.

Hence Required% = $3/7 \times 100 = 42.86\%$

22. Correct Answer:- D

There are nine states(Gujarat, Karnataka, Rajasthan, MP, Assam, WN, Jharkhand, Delhi and Manipur) which are under 'Low Monsoon State' as per given criterion and their respective 'deviation from LPA' are 30,20,15,10,-10,-30,-35,-40 and -60 res.

Hence required median is -10.

23. Correct Answer:- B

states that have actual rainfall of 600 mm or less in 2019 and have a negative deviation from LPA are Assam, WB, Jharkhand, Delhi and Manipur and their respective rainfall are 600,600,400,300 and 400

Hence Required average = $\frac{600+600+400+300+400}{5} = \frac{2300}{5} = 460\text{mm}$

24. Correct Answer:- A

25. Correct Answer:- C

If we broadly see the block two important tasks are to be done

(i) to find the number of questions in each categories of 5 marks, 10 marks and 15 marks

For both MT and ET

i. To allot each question number the faculty that has made that question for both ET and MT

As minimum the number of questions in each categories of 5 marks, 10 marks and 15 marks for both MT and ET are given. Also ET contained more questions than MT. Now considering all these facts total number of questions categories wise for both MT and ET are given below:

ET			
	Number of questions	Marks for each question	Total marks
	8	5	40
	3	10	30
	2	15	30
Total	13		100

For MT there are two possible cases

Case1

MT			
	Number of questions	Marks for each question	Total marks
	5	5	25
	3	10	30
	3	15	45
Total	11		100

Case2

MT			
	Number of questions	Marks for each question	Total marks
	4	5	20
	5	10	50
	2	15	30
Total	11		100

Further it is given that Annie prepared one question for MT. Every other faculty member prepared more than one questions for MT ,Also considering MT and ET together, each faculty member prepared the same number of questions

Total number of questions are $13+11=24$ so each faculty made 4 questions. So keeping in mind all this fact following table gives us the number of question made by each faculty in MT and ET are

	MT	ET
Annie	1	3
Beti	2	2
Chetan	2	2
Dave	2	2
Esha	2	2
Fakir	2	2
	11	13

Now the information given is “All questions prepared by a faculty member appeared consecutively in MT as well as ET.”

This information will help us to narrow down the cases. Fakir prepared the first question of MT so he will also solve the second one

Chetan prepared the third question in both MT and ET. So considering MT he will solve the forth one. Annie prepared the fifth question for both MT and ET. For MT, this question carried

5 marks.it means first five questions in MT are of 5 marks this eliminates the second possible case for MT. now filling the faculty name consecutively we come to the conclusion as follows:

MT		ET	
Q no	faculty	Q no	faculty
1	Fakir	1	Dave
2	Fakir	2	Dave
3	Chetan	3	Chetan
4	Chetan	4	Chetan
5	Annie	5	Annie
6	Beti	6	Annie
7	Beti	7	Annie
8	Esha	8	Esha
9	Esha	9	Esha
10	Dave	10	Beti
11	Dave	11	Beti
		12	Fakir
		13	Fakir

The second question in ET was prepared by Dave

26. Correct Answer:- A

If we broadly see the block two important tasks are to be done

(i)to find the number of questions in each categories of 5 marks ,10 marks and 15 marks

For both MT and ET

i. To allot each question number the faculty that has made that question for both ET and MT

As minimum the number of questions in each categories of 5 marks ,10 marks and 15 marks for both MT and ET are given. Also ET contained more questions than MT. Now considering all these facts total number of questions categories wise for both MT and ET are given below:

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Total	13		100

For MT there are two possible cases

Case1

MT			
	Number of questions	Marks for each question	Total marks
	5	5	25
	3	10	30
	3	15	45
Total	11		100

Case2

MT			
	Number of questions	Marks for each question	Total marks
	4	5	20
	5	10	50
	2	15	30
Total	11		100

Further it is given that Annie prepared one question for MT. Every other faculty member prepared more than one questions for MT, Also considering MT and ET together, each faculty member prepared the same number of questions

Total number of questions are $13+11=24$ so each faculty made 4 questions. So keeping in mind all this fact following table gives us the number of question made by each faculty in MT and ET are

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2	Fakir	2	Dave
3	Chetan	3	Chetan
4	Chetan	4	Chetan
5	Annie	5	Annie
6	Beti	6	Annie
7	Beti	7	Annie
8	Esha	8	Esha
9	Esha	9	Esha
10	Dave	10	Beti
11	Dave	11	Beti
		12	Fakir
		13	Fakir

As shown above ,5-mark questions were there in MT and ET combined were 8+5=13

27. Correct Answer:- C

If we broadly see the block two important tasks are to be done

(i)to find the number of questions in each categories of 5 marks ,10 marks and 15 marks

For both MT and ET

i. To allot each question number the faculty that has made that question for both ET and MT

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Total	13		100

For MT there are two possible cases

* Case1

MT			
	Number of questions	Marks for each question	Total marks
	5	5	25
	3	10	30
	3	15	45
Total	11		100

Case2

MT			
	Number of questions	Marks for each question	Total marks
	4	5	20
	5	10	50
	2	15	30
Total	11		100

Further it is given that Annie prepared one question for MT. Every other faculty member prepared more than one questions for MT, Also considering MT and ET together, each faculty member prepared the same number of questions

Total number of questions are $13+11=24$ so each faculty made 4 questions. So keeping in mind all this fact following table gives us the number of question made by each faculty in MT and ET are

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Q no	faculty	Q no	faculty
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2	Fakir	2	Dave
3	Chetan	3	Chetan
4	Chetan	4	Chetan
5	Annie	5	Annie
6	Beti	6	Annie
7	Beti	7	Annie
8	Esha	8	Esha
9	Esha	9	Esha
10	Dave	10	Beti
11	Dave	11	Beti
		12	Fakir
		13	Fakir

Among given options Tenth question was prepared by Beti in ET

Only Dave, Esha and Fakir prepared 15-mark questions for MT and ET

28. Correct Answer:- C

If we broadly see the block two important tasks are to be done

(i)to find the number of questions in each categories of 5 marks ,10 marks and 15 marks

For both MT and ET

i. To allot each question number the faculty that has made that question for both ET and MT

As minimum the number of questions in each categories of 5 marks ,10 marks and 15 marks for both MT and ET are given. Also ET contained more questions than MT. Now considering all these facts total number of questions categories wise for both MT and ET are given below:

ET			
	Number of questions	Marks for each question	Total marks
	8	5	40
	3	10	30
	2	15	30
Total	13		100

For MT there are two possible cases

Case1

MT			
	Number of questions	Marks for each question	Total marks
	5	5	25
	3	10	30
	3	15	45
Total	11		100

Case2

MT			
	Number of questions	Marks for each question	Total marks
	4	5	20
	5	10	50
	2	15	30
Total	11		100

Further it is given that Annie prepared one question for MT. Every other faculty member prepared more than one questions for MT, Also considering MT and ET together, each faculty member prepared the same number of questions

Total number of questions are $13+11=24$ so each faculty made 4 questions. So keeping in mind all this fact following table gives us the number of question made by each faculty in MT and ET are

	MT	ET
Annie	1	3
Beti	2	2
Chetan	2	2
Dave	2	2
Esha	2	2
Fakir	2	2
	11	13

Now the information given is “All questions prepared by a faculty member appeared consecutively in MT as well as ET.”

This information will help us to narrow down the cases. Fakir prepared the first question of MT so he will also solve the second one

Chetan prepared the third question in both MT and ET. So considering MT he will solve the forth one. Annie prepared the fifth question for both MT and ET. For MT, this question carried

5 marks.it means ist five questions in MT are of 5 marks this eliminates the second possible case for MT. now filling the faculty name consecutively we come to the conclusion as follws:

MT		ET	
Q no	faculty	Q no	faculty
1	Fakir	1	Dave
2	Fakir	2	Dave
3	Chetan	3	Chetan
4	Chetan	4	Chetan
5	Annie	5	Annie
6	Beti	6	Annie
7	Beti	7	Annie
8	Esha	8	Esha
9	Esha	9	Esha
10	Dave	10	Beti
11	Dave	11	Beti
		12	Fakir
		13	Fakir

Among given options Tenth question was prepared by Beti in ET

Among given options Tenth question was prepared by Beti in ET

29. Correct Answer:- C

If we broadly see the block two important tasks are to be done

(i) to find the break up of points of each player after round 6 and between round 7-10

(ii) To allot each match its Ist , second and third winner

Round 1-6

Player No.	Player Name	Points after Round 6	Possible break up 1	Possible break up 2	Possible break up 3
1	Amita	8	7+1		
2	Bala	2	1+1		
3	Chen	3	3	1+1+1	
4	David	6	3+3	3+1+1+1	
5	Eric	3	3	1+1+1	
6	Fatima	10	7+3	3+3+3+1	7+1+1+1
7	Gordon	17	7+7+3	7+3+3+1	
8	Hansa	1	1		
9	Ikea	2	1+1		
10	Joshin	14	7+7		

Player No.	Player Name	Points after Round 6	Final breakup
1	Amita	8	7+1
2	Bala	2	1+1
3	Chen	3	3
4	David	6	3+3
5	Eric	3	3
6	Fatima	10	7+3
7	Gordon	17	7+7+3
8	Hansa	1	1
9	Ikea	2	1+1
10	Joshin	14	7+7

now after round 6 we need six 7's, six 3's and six 1's as in each round there will one first, one second and one seven position.to balance that we need to reject other possible breakups of

Chen, David. Eric, Fatima, Gordon (shown yellow). now final break up of scores for each player after round 6 is shown in table given below

The next task is to now find the top three players of each round. As we know that

Amita will be playing in first round and sixth round. so her scores 7 and 1 could be only in these rounds. As Joshin has scored two 7's and in first 6 round he is playing in nly 5th band 6th round . so both 7 scored by him are in these two rounds. So score 7 scored by Amita will be for round 1 . proceeding in this way we will reach the

Round	Ist position (7)	IInd position (3)	III rd position (1)	Following conclusion for round 1-6
1	Amita	Chen/ David	Bala	
2	Gordon	Chen/ David	Bala	
3	Fatima	Eric	Hansa	
4	Gordon	David	Ikea	
5	Joshin	Fatima	Ikea	
6	Joshin	Gordon	Amita	

Now we will do the same process for round 7-10

Round 7-10

Player No.	Player Name	Points scored for round 7- 10	Possible break up 1	Possible break up 2
1	Amita	10	7+3	3+3+3+1
2	Bala	3	3	1+1+1
3	Chen	3	1+1+1	3
4	David	0	7	3+3+1
5	Eric	7	0	0
6	Fatima	0	0	0
7	Gordon	0	3	1+1+1
8	Hansa	3	1	
9	Ikea	15	7+7+1	
10	Joshin	3	3	1+1+1

now after round 7-10 we need four 7's, four 3's and four 1's as in each round there will one first ,one second and one seven position.

Further it is given that

Only two players scored in three consecutive rounds. One of them was Chen. No other player scored in any two consecutive rounds. So apart from Chen, other one should be Ikea as she is having a option of three scores only so she will have to be settled down with 7+7+1. So we will get the following table

Player No.	Player Name	Points after Round 7-10	Final breakup
1	Amita	10	7+3
2	Bala	3	3
3	Chen	3	1+1+1
4	David	0	0
5	Eric	7	7
6	Fatima	0	0
7	Gordon	0	0
8	Hansa	3	3
9	Ikea	15	7+7+1
10	Joshin	3	3

As Only two players scored in three consecutive rounds in this stage and they are Chen and Ikea having scores 1,1,1 and 7,7 and 1. Further Ikea which is not in 10th round will have scores in 7th 8th and 9th round and chen would have scored in 8th 9th and 10th round. Proceeding in this way we get the following table for round 7-10.

Round	Ist position (7)	IIInd position (3)	III rd position (1)
7	Amita	Joshin	Ikea
8	Ikea	Bala Hansa	Chen
9	Ikea	Bala Hansa	Chen
10	Eric	Amita	Chen

As solved above
Final conclusion after round 6 is

Round	Ist position (7)	IIInd position (3)	III rd position (1)
1	Amita	Chen/ David	Bala
2	Gordon	Chen/ David	Bala
3	Fatima	Eric	Hansa
4	Gordon	David	Ikea
5	Joshin	Fatima	Ikea
6	Joshin	Gordon	Amita

As shown above the scores of Chen, David, and Eric respectively after Round 3 are 3, 3, 3

30. Correct Answer:- C

If we broadly see the block two important tasks are to be done

- (i) to find the break up of points of each player after round 6 and between round 7-10
- (ii) To allot each match its Ist , second and third winner

Round 1-6

Player No.	Player Name	Points after Round 6	Possible break up 1	Possible break up 2	Possible break up 3
1	Amita	8	7+1		
2	Bala	2	1+1		
3	Chen	3	3	1+1+1	
4	David	6	3+3	3+1+1+1	
5	Eric	3	3	1+1+1	
6	Fatima	10	7+3	3+3+3+1	7+1+1+1
7	Gordon	17	7+7+3	7+3+3+1	
8	Hansa	1	1		
9	Ikea	2	1+1		
10	Joshin	14	7+7		

Player No.	Player Name	Points after Round 6	Final breakup
1	Amita	8	7+1
2	Bala	2	1+1
3	Chen	3	3
4	David	6	3+3
5	Eric	3	3
6	Fatima	10	7+3
7	Gordon	17	7+7+3
8	Hansa	1	1
9	Ikea	2	1+1
10	Joshin	14	7+7

now after round 6 we need six 7's, six 3's and six 1's as in each round there will one first, one second and one seven position.to balance that we need to reject other possible breakups of Chen, David, Eric, Fatima, Gordon (shown yellow).now final break up of scores for each player after round 6 is shown in table given below

The next task is to now find the top three players of each round. As we know that Amita will be playing in first round and sixth round. so her scores 7 and 1 could be only in these rounds. As Joshin has scored two 7.s and in first 6 round he is playing in only 5th band 6th round . so both 7 scored by him are in these two rounds. So score 7 scored by Amita will be for round 1 . proceeding in this way we will reach the

Round	Ist position (7)	IIInd position (3)	III rd position (1)	Following conclusion for round 1-6
1	Amita	Chen/ David	Bala	
2	Gordon	Chen/ David	Bala	
3	Fatima	Eric	Hansa	
4	Gordon	David	Ikea	
5	Joshin	Fatima	Ikea	
6	Joshin	Gordon	Amita	

Now we will do the same process for round 7-10

Round 7-10

Player No.	Player Name	Points scored for round 7-10	Possible break up 1	Possible break up 2
1	Amita	10	7+3	3+3+3+1
2	Bala	3	3	1+1+1
3	Chen	3	1+1+1	3
4	David	0	7	3+3+1
5	Eric	7	0	0
6	Fatima	0	0	0
7	Gordon	0	3	1+1+1
8	Hansa	3	1	
9	Ikea	13	7+7+1	
10	Joshin	3	3	1+1+1

now after round 7-10 we need four 7's, four 3's and four 1's as in each round there will one first ,one second and one seven position.

Further it is given that

Only two players scored in three consecutive rounds. One of them was Chen. No other player scored in any two consecutive rounds. So apart from Chen , other one should be Ikea as she is having a option of three scores only so she will have to be settled down with 7+7+1. So we will get the following table

Player No.	Player Name	Points after Round 7-10	Final breakup
1	Amita	10	7+3
2	Bala	3	3
3	Chen	3	1+1+1
4	David	0	0
5	Eric	7	7
6	Fatima	0	0
7	Gordon	0	0
8	Hansa	3	3
9	Ikea	15	7+7+1
10	Joshin	3	3

As Only two players scored in three consecutive rounds in this stage and they are Chen and Ikea having scores 1,1,1 and 7,7 and 1. Further Ikea which is not in 10th round will have scores in 7th 8th and 9th round and chen would have scored in 8th 9th and 10th round. Proceeding in this way we get the following table for round 7-10

Round	Ist position (7)	IInd position (3)	III rd position (1)
7	Amita	Joshin	Ikea
8	Ikea	Bala/Hansa	Chen
9	Ikea	Bala/Hansa	Chen
10	Eric	Amita	Chen

As shown in table last three positions after Round 4 are of Hansa, Ikea, Joshin with scores 1,1 and 0

31. Correct Answer:- A

If we broadly see the block two important tasks are to be done

(i) to find the break up of points of each player after round 6 and between round 7-10

(ii) To allot each match its Ist , second and third winner

Round 1-6

Player No.	Player Name	Points after Round 6	Possible break up 1	Possible break up 2	Possible break up 3
1	Amita	8	7+1		
2	Bala	2	1+1		
3	Chen	3	3	1+1+1	
4	David	6	3+3	3+1+1+1	
5	Eric	3	3	1+1+1	
6	Fatima	10	7+3	3+3+3+1	7+1+1+1
7	Gordon	17	7+7+3	7+3+3+1	
8	Harwa	1	1		
9	Ikea	2	1+1		
10	Joshin	14	7+7		

Player No.	Player Name	Points after Round 6	Final breakup
1	Amita	8	7+1
2	Bala	2	1+1
3	Chen	3	3
4	David	6	3+3
5	Eric	3	3
6	Fatima	10	7+3
7	Gordon	17	7+7+3
8	Harwa	1	1
9	Ikea	2	1+1
10	Joshin	14	7+7

now after round 6 we need six 7's, six 3's and six 1's as in each round there will one first ,one second and one seven position.to balance that we need to reject other possible breakups of Chen, David, Eric, Fatima, Gordon(shown yellow).now final break up of scores for each player after round 6 is shown in table given below

The next task is to now find the top three players of each round. As we know that

Amita will be playing in first round and sixth round . so her scores 7 and 1 could be only in these rounds. As Joshin has scored two 7.s and in first 6 round he is playing in nly 5th band 6th round . so both 7 scored by him are in these two rounds. So score 7 scored by Amita will be for round 1 . proceeding in this way we will reach the

Round	Ist position (7)	IInd position (3)	III rd position (1)
1	Amita	Chen/ David	Bala
2	Gordon	Chen/ David	Bala
3	Fatima	Eric	Hansa
4	Gordon	David	Ikea
5	Joshin	Fatima	Ikea
6	Joshin	Gordon	Amita

Following conclusion for round 1-6

Round 7-10

Player No.	Player Name	Points scored for round 7- 10	Possible break up 1	Possible break up 2
1	Amita	10	7+3	3+3+3+1
2	Bala	3	3	1+1+1
3	Chen	3	1+1+1	3
4	David	0	7	3+3+1
5	Eric	7	0	0
6	Fatima	0	0	0
7	Gordon	0	3	1+1+1
8	Hansa	3	1	
9	Ikea	15	7+7+1	
10	Joshin	3	3	1+1+1

now after round 7-10 we need four 7's, four 3's and four 1's as in each round there will one first ,one second and one seven position.

Further it is given that

Only two players scored in three consecutive rounds. One of them was Chen. No other player scored in any two consecutive rounds. So apart from Chen , other one should be Ikea as she is having a option of three scores only so she will have to be settled down with 7+7+1. So we will get the following table

Player No.	Player Name	Points after Round 7-10	Final breakup
1	Amita	10	7+3
2	Bala	3	3
3	Chen	3	1+1+1
4	David	0	0
5	Eric	7	7
6	Fatima	0	0
7	Gordon	0	0
8	Hansa	3	3
9	Ikea	15	7+7+1
10	Joshin	3	3

As Only two players scored in three consecutive rounds in this stage and they are Chen and Ikea having scores 1,1,1 and 7,7 and 1. Further Ikea which is not in 10th round will have scores in 7th 8th and 9th round and chen would have scored in 8th 9th and 10th round. Proceeding in this way we get the following table for round 7-10

Round	Ist position (7)	IInd position (3)	III rd position (1)
7	Amita	Joshin	Ikea
8	Ikea	Bala/Hansa	Chen
9	Ikea	Bala/Hansa	Chen
10	Eric	Amita	Chen

As shown Ikea scored points in five rounds which was maximum in number .

32. Correct Answer:- A

If we broadly see the block two important tasks are to be done

(i) to find the break up of points of each player after round 6 and between round 7-10

(ii) To allot each match its 1st , second and third winner

Round 1-6

Player No.	Player Name	Points after Round 6	Possible break up 1	Possible break up 2	Possible break up 3
1	Amita	8	7+1		
2	Bala	2	1+1		
3	Chen	3	3	1+1+1	
4	David	6	3+3	3+1+1+1	
5	Eric	3	3	1+1+1	
6	Fatima	10	7+3	3+3+3+1	7+1+1+1
7	Gordon	17	7+7+3	7+3+3+1	
8	Hansa	1	1		
9	Ikea	2	1+1		
10	Joshin	14	7+7		

Player No.	Player Name	Points after Round 6	Final breakup
1	Amita	8	7+1
2	Bala	2	1+1
3	Chen	3	3
4	David	6	3+3
5	Eric	3	3
6	Fatima	10	7+3
7	Gordon	17	7+7+3
8	Hansa	1	1
9	Ikea	2	1+1
10	Joshin	14	7+7

now after round 6 we need six 7's, six 3's and six 1's as in each round there will one first ,one second and one seven position.to balance that we need to reject other possible breakups of Chen, David, Eric, Fatima, Gordon (shown yellow).now final break up of scores for each player after round 6 is shown in table given below

The next task is to now find the top three players of each round. As we know that

Amita will be playing in first round and sixth round . so her scores 7 and 1 could be only in these rounds. As Joshin has scored two 7.s and in first 6 round he is playing in nly 5th band 6th round . so both 7 scored by him are in these two rounds. So score 7 scored by Amita will be for round 1 . proceeding in this way we will reach the

Round	Ist position (7)	IInd position (3)	III rd position (1)
1	Amita	Chen/ David	Bala
2	Gordon	Chen/ David	Bala
3	Fatima	Eric	Hansa
4	Gordon	David	Ikea
5	Joshin	Fatima	Ikea
6	Joshin	Gordon	Amita

Following conclusion for round 1-6

Now we will do the same process for round 7-10

Round 7-10

Player No.	Player Name	Points scored for round 7- 10	Possible break up 1	Possible break up 2
1	Amita	10	7+3	3+3+3+1
2	Bala	3	3	1+1+1
3	Chen	3	1+1+1	3
4	David	0	7	3+3+1
5	Eric	7	0	0
6	Fatima	0	0	0
7	Gordon	0	3	1+1+1
8	Hansa	3	1	
9	Ikea	15	7+7+1	
10	Joshin	3	3	1+1+1

now after round 7-10 we need four 7's, four 3's and four 1's as in each round there will one first ,one second and one seven position.

Further it is given that

Only two players scored in three consecutive rounds. One of them was Chen. No other player scored in any two consecutive rounds. So apart from Chen , other one should be Ikea as she is having a option of three scores only so she will have to be settled down with 7+7+1. So we will get the following table

Player No.	Player Name	Points after Round 7-10	Final breakup
1	Amita	10	7+3
2	Bala	3	3
3	Chen	3	1+1+1
4	David	0	0
5	Eric	7	7
6	Fatima	0	0
7	Gordon	0	0
8	Hansa	3	3
9	Ikea	15	7+7+1
10	Joshin	3	3

As Only two players scored in three consecutive rounds in this stage and they are Chen and Ikea having scores 1,1,1 and 7,7 and 1. Further Ikea which is not in 10th round will have scores in 7th 8th and 9th round and chen would have scored in 8th 9th and 10th round. Proceeding in this way we get the following table for round 7-10

<i>Round</i>	<i>Ist position (7)</i>	<i>IInd position (3)</i>	<i>III rd position (1)</i>
7	Amita	Joshin	Ikea
8	Ikea	Bala Hansa	Chen
9	Ikea	Bala Hansa	Chen
10	Eric	Amita	Chen

As shown Amita, Chen, Eric scored points in the last round.

QUANT

1. Correct Answer:- C

Vessel A Contains 50 gm of salt and 450 ml water

vessel B contains 110 gm of salt and 390 ml water

vessel C contains 160 gm of salt & 340 ml water

After the transfer of 100 ml from A to B

A will contain 360 ml water & 40 gm salt and B will contain 120 gm of salt and 480 ml water which makes B having 20% salt strength. After the transfer of 100 ml from B to C, C will Contain 180 gm of salt & 420 ml of water making it have salt strength = 30% After the final transfer of 100 ml from C to A, A will contain 70 gm of salt and 430 ml water making the salt strength in A = 14%

Alternate method:-

Vessel	A	B	C
Salt Strength	10%	22%	32%
After 100 ml transfer from A to B	10% (400 ml total)	$\frac{10 + 22 \times 5}{6} = 20\%$	32%
After 100 ml Transfer from B to C	10% (400 ml Total)		$\frac{20 + 5 \times 32}{6} = 30\%$
After 100 ml transfer from C to A	$\frac{10 \times 4 + 30}{5} = 14\%$		

Answer = 14%

2. Correct Answer:- B

Explanation:- $7a = -b = b^2 = 49a^2$

$$12a^2 = c$$

$$\text{So, } b^2 + c = 61a^2$$

So, option + 61 has to be a perfect square. Trying options

$$(i) \frac{3721}{61} = 61 \text{ which is not a perfect square}$$

$$(ii) \frac{549}{61} = 9 \text{ which is a perfect square}$$

(iii) Not a multiple of 61

$$(iv) \frac{427}{61} = 7 \text{ which is not a perfect square}$$

(So option B is Correct)

3. Correct Answer:- C

Let the circumference = 100m. Let the meeting point is X.

The Distance P to X clockwise is 60 m and distance P to X anti-clockwise is 40 m.

A Travelled 40 m in 12 min, so he can cover 60 m in

Speeds of A and B are in the ratio 6:4 (Because A and B covered 60 m & 40 m respectively in the same time so their speeds are in the ratio 6:4)

So the time taken by B to cover 60 m = min., So 10:27 am is the answer.

4. Correct Answer:- B

The equilateral triangle has side 20 cm so its height = $\sqrt{3} \times 20/2$ cm. Let the height of the pyramid = x cm then, 10 cm, x cm and $\sqrt{3} \times 20/2$ are Pythagoras triplets with hypotenuse = $\sqrt{3} \times 20/2$

$$\Rightarrow x^2 + 100 = 300$$

$$\Rightarrow x = 10\sqrt{2}$$

(2nd Option)

5. Correct Answer:- C

Explanation:- $\frac{n^2 + 7n + 12}{n^2 - n - 12}$
 $\frac{(n+4)(n+3)}{(n-4)(n+3)} = \frac{n+4}{n-4}$

Taking the largest option 16, we get $\frac{20}{12}$ which is not an integer. Next, we can try n = 12 which gives $\frac{16}{8} = 2$ which is an integer. So 3rd option.

6. Correct Answer:- C

Explanation:- $X^2 - 4x - \log_2 A = 0$

For real and distinct roots the quadratic $ax^2 + bx + c = 0$ must have,

$$b^2 - 4ac > 0$$

$$\Rightarrow 16 + 4 \log_2 A > 0$$

$$\Rightarrow \log_2 A > -4$$

$$\Rightarrow A > 2^{-4}$$

$$\Rightarrow A > \frac{1}{16}$$

(3rd option)

7. Correct Answer:- A

Profit from six of the bicycles = $6 \times 25\%$ of x (where x is the purchase price of a bicycle)

Loss from four of the bicycles = $4 \times 25\%$ of x

Total net profit = 2000 = $6 \times 25\%$ of x - $4 \times 25\%$ of x

$$\Rightarrow 1.5x - x = 2000$$

$$\Rightarrow x = 4000$$

8. Correct Answer:- C

The sum of integers is $30 \times 5 = 150$. According to the question, exactly 20 integers do not exceed 5.

Since the question is asking about the maximum value of the average of 20 integers, so we will find the minimum value of the remaining 10 integers which have to be greater than 5.

So the sum of 10 integers each of them having value 6 is $= 10 \times 6 = 60$. So remaining sum = $150 - 60 = 90$.

Hence the maximum value of the average of the remaining 20 integers is $90/20 = 4.5$

9. Correct Answer:- 12

$$f(1 \times 2) = f(1) f(2)$$

$$f(2) = f(1) f(2)$$

$$\Rightarrow f(1) = 1$$

$$\text{Also, } f(2) > f(1)$$

$$\text{Let } f(2) = a, f(3) = b.$$

$$f(4) = f(2) \times f(2) = a^2$$

$$f(6) = f(2) \times f(3) = ab$$

$$f(24) = a^3 b = 54$$

$$\Rightarrow a = 3, b = 2$$

$$\text{So } f(18) = f(3) \times f(6) = ab^2 = 12.$$

10. Correct Answer:- B

$$a_1 = 1$$

$$a_1 - a_2 = 2 \Rightarrow a_2 = -1$$

$$a_1 - a_2 + a_3 = 3 \Rightarrow a_3 = 1$$

$$a_1 - a_2 + a_3 - a_4 = 4 \Rightarrow a_4 = -1$$

$$\text{Similarly, } a_5 = 1, a_6 = -1, a_7 = 1, \dots$$

$$a_{\text{odd}} = 1, a_{\text{even}} = -1$$

$$a_{51} + a_{52} + \dots + a_{1023}$$

$$1 - 1 + 1 - 1 \dots + 1$$

$$= 1$$

11. Correct Answer:- A

Let the scores of Rama, Mohan and Anjali are R, M and A respectively.

$$R = (M + A)$$

After the score of each of them increased by 6, the ratio of their scores are 11:10:3 for Anjali, Mohan & Rama respectively.

Let their scores are $11x, 10x, 3x$.

Their original scores before the increase were

$11x-6, 10x-6, 3x-6$ respectively

$$\text{So } 3x-6 = (11x-6 + 10x-6)$$

$$3x - 6 = (21x - 12)$$

$$\Rightarrow x = 4$$

Anjali's score exceeded Rama's score by

$$(11x-6) - (3x-6) = 8x = 32$$

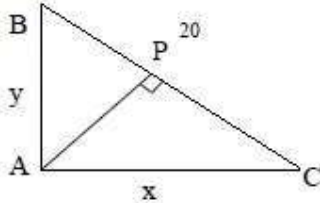
12. Correct Answer:- C

Since cyclist takes one hour to reach from A to B and 45 motorcycles starting from 10:01, 10:02, -----, 10:45 am leave from A to reach B by 11 am, So the last motorcycle takes 15 min to reach from A to B. Hence every motorcycle takes 15 min to reach from A to B. If the cyclist doubles his speed then he will reach B at 10:30 am and hence the last motorcyclist

who will reach B at 10:30 am has to leave from A at 10:15. Therefore 15 motorcycles will reach B in the given time.

Answer= 15

13. Correct Answer:- A



$$\frac{1}{2} xy = \frac{1}{2} \times 20 \times AP$$

$$\Rightarrow AP = \frac{xy}{20}$$

For the maximum possible value of AP, $x=y=10\sqrt{2} \Rightarrow$ maximum (in cm) AP

$$= \frac{(10\sqrt{2})(10\sqrt{2})}{20} = 10$$

14. Correct Answer:- B

BF = 6 cm, FE = 3cm,

AF = 8cm, FD = 4 cm

Area of triangle ABE =

So area of triangle ABC = 72 cm^2

15. Correct Answer:- 4

$$105 = n^2 - m^2 = (n-m)(n+m)$$

$$31 \times 71 \times 51 = (n-m)(n+m)$$

Number of factors of 105

$$= (1+1)(1+1)(1+1) = 8$$

So possible pairs for (n-m) & (n+m) are four

(Answer = 4.)

16. Correct Answer:- C

$$\text{Let } 23x = y$$

$$\Rightarrow y^2 + 22y - 21 = 0$$

$$\Rightarrow y^2 + 4y - 21 = 0$$

$$\Rightarrow y = 3, -7.$$

The only possible value is $y = 3$

$$\Rightarrow 23x = 3$$

$$\Rightarrow 3x = \log 23$$

$$\Rightarrow x =$$

17. Correct Answer:- D

Explanation:- $\sqrt{\log e \frac{4x-x^2}{3}}$ is a real number
 If $\frac{4x-x^2}{3} \geq 1$ (because $\log a \geq 0$ for $a \geq 1$)
 $4x - x^2 \geq 3$
 $\Rightarrow x^2 - 4x + 3 \leq 0$
 $\Rightarrow (x-3)(x-1) \leq 0$
 Which is true for $1 \leq x \leq 3$

18. Correct Answer:- 12

Let number of regular working hours = x hours and number of overtime working hours = y hours.

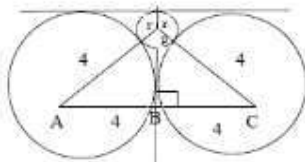
$$x + y = 172$$

$$15\% \text{ of } 57x = 114 y$$

$$57 \times 15\% \text{ of } (172 - y) = 114 y$$

$$\Rightarrow y = 12$$

19. Correct Answer:- B



Considers ΔAPB having right angle at B

$$AP = 4 + r$$

$$BP = 4 - r$$

$$AB = 4$$

Applying Pythagoras theorem

$$(4+r)^2 = (4-r)^2 + 4^2$$

$$\Rightarrow (4+r)^2 - (4-r)^2 = 16$$

$$\Rightarrow 16r = 16$$

$$\Rightarrow r = 1 \text{ cm}$$

20. Correct Answer:- 13

Explanation:- $5^x \cdot 3^y = 13438$
 $\Rightarrow 5^{x-1} \times 5^1 \cdot 3^y = 13438$ _____ 1
 $\Rightarrow 5^{x-1} + 3^{y+1} = 9686$
 $\Rightarrow 5^{x-1} + 3^y \times 3^1 = 9686$ _____ 2
 Let $5^{x-1} = a$ & $3^y = b$
 Then $5a - b = 13438$ and
 $a + 3b = 9686$
 $\Rightarrow a = 3125, b = 2187$
 $\Rightarrow 5^{x-1} = 3125 \Rightarrow x = 6$
 $\Rightarrow 3^y = 2187 \Rightarrow y = 7$
 Answer = 13

21. Correct Answer:- B

radius = 3 cm

Let height = h cm

HCF of 405, 783, 351 = 27

So each cylinder has used 27 cc of material which is equal to the volume of each cylinder.

$27 \text{ cc} = \pi r^2 h$

So total surface area of all the cylinders = $57 (2\pi rh + 2\pi r^2) \text{ cm}^2$
 $= 1026 (\pi + 1) \text{ cm}^2$

22. Correct Answer:- 80

Let the score of D = 100

Then Score of C = 80

$\Rightarrow$ Score of B = 100

$\Rightarrow$ Score of A = 90

So if A scores 90 then D scores 100

$\Rightarrow$ if A scores 72 then D scores 80

(Answer = 80)

23. Correct Answer:- 44

Explanation:- $2^4 \times 3^5 \times 10^4$
 $= 2^8 \times 3^5 \times 5^4$

Which has (8+1) (5+1) (4+1) factors

i.e. 270 factors out of which perfect squares greater than 1 will be made by combinations of $(2^0, 2^2, 2^4, 2^6, 2^8) \times (3^0, 3^2, 3^4) \times (5^0, 5^2, 5^4)$ excluding the combination $2^0 \times 3^0 \times 5^0$

So, possible combinations are $= (5 \times 3 \times 3) - 1 = 44$

Alternate method

$2^8 \times 3^5 \times 5^4 = (2^4 \times 3^2 \times 5^2)^2 \times 3$

Total factors which are perfect squares = $(4+1)(2+1)(2+1) = 45$

Required factors = $45 - 1 = 44$

24. Correct Answer:- 48

Explanation:- Let the length of track A = x m
and that of track B = y m

$$x + y = 325$$

$$\text{And } \frac{9x}{6} = \frac{5y}{7.5} \Rightarrow x : y = 4 : 9$$

$$\text{So } x = \frac{4}{13} \times 325 = 100$$

Mary will complete one round of A which is of length 100m with a speed of 7.5 kmph

$$\text{Or } 7.5 \times \frac{5}{18} \text{ m/s in } \frac{100}{7.5 \times \frac{5}{18}} \text{ sec}$$

$$= 48 \text{ sec.}$$

25. Correct Answer:- A

Hit and trial approach: Take a = 5 then b = 0, x = 13 and y = 0. So, k = ay - bx = 0

The only option that works here is 1st option.

Technical approach: ax + by = 65 and -bx + ay = k, solving these two equations for x and y, we get, x = (65a - kb) / 25 and y = (65b + ak) / 25

By substituting these values in $x^2 + y^2 = 169$, we get k = 0.

26. Correct Answer:- B

15, 19, 23, 27, ----- 415 A.P. with common difference = 4

14, 19, 24, 29, ----- 464 A.P. with common difference = 5

LCM of 4 & 5 = 20 which has to be the common difference in the sequence of common terms.

So, Common terms are :

19, 39, 59 ----- 415

$$19 + 20(n-1) \leq 415$$

$$20(n-1) \leq 396$$

$$n \leq 20.8 \text{ So, } n = 20$$

27. Correct Answer:- A

Let the number of Fiction books = x

and the number of Non-fiction books = y

Given that,

$$x + y = 11500$$

$$1.1x + 1.12y = 12760$$

Solving the above two equations by multiplying the first one by 1.1 and then subtracting from the second equation:

$$\text{we get } .02y = 110$$

$$\text{So } y = 5500 \text{ and } x = 6000$$

$$\text{So, } 1.1x = 6000 \times 1.1 = 6600$$

28. Correct Answer:- 7

Let the six digit number be 100000a + 10000b + 1000c + 100d + 10e + f

Where a, b, c, d, e and f are digits.

Given that,

$$f = a + b + c \Rightarrow f = a + 2a + a = 4a$$

$$e = a + b \Rightarrow e = a + 2a = 3a$$

$$c = a \Rightarrow d = 7a$$

$$b = 2a$$

$$d = e + f \Rightarrow \text{largest value possible for } d \text{ is } 7$$

29. Correct Answer:- B

Let the salaries of Ramesh, Ganesh and Rajesh were $6x, 5x, 7x$ respectively in 2010.

Let the salaries of Ramesh, Ganesh and Rajesh were $3y, 4y, 3y$ respectively in 2015.

Salary of Ramesh in 2010 = $6x$

Salary of Ramesh in 2015 = $3y = 6x \times 1.25 = 7.5x$

So $y = 2.5x$

Salary of Rajesh in 2010 = $7x$ and that in 2015 = $3y = 7.5x$

$$\text{Percentage increase in salary of Rajesh} = \frac{7.5x - 7x}{7x} \times 100$$

$$\approx 7\%$$

30. Correct Answer:- 4851

The given series has 24 terms and hence can be written as:

$$48n + [1 + 3 + 5 + \dots + 47] = 5280$$

$$48n + 576 = 5280$$

$$\text{So, } n = 98$$

31. Correct Answer:- 150

Explanation:- Using the formula: each interior angle for a regular polygon having n sides = $\frac{(n-2)}{n} 180^\circ$

Given that,

$$3/2 \text{ times of } \frac{(a-2)}{a} 180^\circ = \frac{(2a-2)}{2a} 180^\circ \quad (\text{because } b = 2a)$$

$$\Rightarrow 3a - 6 = 2a - 2$$

$$\Rightarrow a = 4 \text{ and } b = 8$$

$$\Rightarrow a + b = 12$$

Then each interior angle (in degrees) for a regular polygon having 12 sides

$$= \frac{(12-2)180}{12} = 150$$

32. Correct Answer:- C

Explanation:- Let the job was done in x days then given that, 90 % of the job was done by Anil and Sunil, so the work done by them is 0.9

$$\frac{x}{20} + \frac{x-3}{40} = \frac{9}{10}$$

$$x = 13$$

So the answer is 13 days.

33. Correct Answer:- 20920

Explanation:- Let the amount invested by Bimal is x Rs

The interest earned by Amal = 8% of $12,000 + 10,000 (1 + 6/200)^2 - 10,000$
 $= 960 + 609 = 1569$

The interest earned by Bimal = $x \times \frac{7.5}{100} \times 1$

Since both got the same amount of interest

$$\text{So, } 1569 = x \times \frac{7.5}{100}$$

$$\text{So, } x = 20920$$

34. Correct Answer:- B

Explanation:- The amount paid by Bimal = $x = p \times 1.2 \times 1.3 = 1.56p$

The amount paid by Barun = $y = p \times 0.8 \times 0.7 = .56p$

$$\frac{x-y}{p} = \frac{p}{p} - 1$$