DIRECTIONS *for questions 1 to 6:* The passage given below is followed by a set of six questions. Choose the best answer to each question.

The first thing to acknowledge about diversity is that it can be difficult. In the U.S., where the dialogue of inclusion is relatively advanced, even the mention of the word "diversity" can lead to anxiety and conflict. ... Corporations spend billions of dollars to manage diversity, yet they still face discrimination lawsuits, and the leadership ranks of the business world remain predominantly white and male. Diversity of expertise confers obvious benefits – you would not think of building a new car without engineers and quality-control experts – but what about social diversity? What good comes from diversity of race, ethnicity, gender and sexual orientation? Social diversity can cause discomfort, rougher interactions, a lack of trust and greater perceived interpersonal conflict. But diversity enhances creativity. It encourages the search for novel information and perspectives, leading to better decision making and problem solving. Diversity can lead to unfettered discoveries and breakthrough innovations.

When people are brought together to solve problems in groups, they bring different information, opinions and perspectives. This makes sense when we talk about diversity of disciplinary backgrounds – think again of the interdisciplinary team building a car. The same logic applies to social diversity. People who are different from another in race and gender bring unique experiences to bear on the task at hand. ...

Business professors Cristian Deszö of the University of Maryland and David Ross of Columbia University studied the effect of gender diversity on the top firms in Standard & Poor"s Composite 1500 list, a group designed to reflect the overall U.S. equity market. First, they examined the size and gender composition of firms" top management teams from 1992 through 2006. Then they looked at the financial performance of the firms. On average, "female representation in top management led to an increase of $42 million in firm value." They also measured the firms" "innovation intensity" through the ratio of research and development expenses to assets. They found that companies that prioritized innovation saw greater financial gains when women were part of top leadership ranks.

Racial diversity can deliver the same benefits. In a 2003 study, Orlando Richard, a professor at the University of Texas, found that for 177 innovation-focused U.S. banks, increases in racial diversity were clearly related to enhanced financial performance. ….

Diversity provokes thought. In 2004 Anthony Lising Antonio, a professor at the Stanford Graduate School of Education, examined the influence of racial and opinion composition in small group discussions. Group members were asked to discuss a prevailing social issue (either child labor practices or the death penalty) for 15 minutes. The researchers wrote dissenting opinions and had both black and white members deliver them to their groups. When a black person presented a dissenting perspective to a group of whites, the perspective was perceived as more novel and led to broader thinking and consideration of alternatives than when a white person introduced *that same dissenting perspective*. The lesson: when we hear dissent from someone who is different from us, it provokes more thought than when it comes from someone who looks like us.

Diversity leads to higher-quality scientific research. Richard Freeman, an economics professor at Harvard University found that papers written by diverse groups receive more citations and have higher impact factors than papers written by people from the same ethnic group. Stronger papers were associated with a greater number of author addresses; geographical diversity, and a larger number of references, is a reflection of more intellectual diversity.

Members of a homogeneous group rest somewhat assured that they will agree with one another and will understand one another"s perspectives and will easily come to a consensus. But when members of a group notice that they are socially different from one another, they change their expectations. They anticipate differences of opinion and perspective. They assume they will need to work harder to come to a consensus. People work harder in diverse environments both cognitively and socially, leading to better outcomes. ...

This is how diversity works: by promoting hard work and creativity; by encouraging the consideration of alternatives even before any interpersonal interaction takes place. ...

Q1. What is the primary objective of the author in the passage?

a) To conclude that diversity in the corporations in the United States is not encouraged as of now but it is very easy to do so in the future.
b) To assert that top positions in business continue to be predominantly occupied by white males.
c) To prove that social diversity in a group can cause or lead to differences among the members of the group.
d) To highlight the positive influence of diversity in different areas by providing empirical evidence.

Q2. All of the following are the benefits of diversity, according to the passage, EXCEPT?
Identify all that apply and enter the corresponding number in the input box given below. You must enter your answer in increasing order only. For example, if you think (1) and (2) apply, then enter 12 (but not 21) in the input box.
(1) Greater effort spent in inquiry.
(2) More harmony within groups.
(3) Innovation and increased performance.
(4) Greater diligence.

Q3. According to the passage, what is the conclusion of the experiment done with the objective of examining the influence of racial composition in small group discussions?

a) A difference in opinion from someone different from us enables that person to be accepted in our group.

2

b) A dissenting opinion from someone different from us provokes more thought.

c) The perspective of black persons was considered to be more novel.

d) A topic when presented by white persons was considered as something very important and it led to broader thinking.

Q4. What is a finding of the experiment conducted by the professors of the University of Maryland and Columbia University as discussed in the passage?

a) Women are considered lucky charms of an organization and it is important to give women the highest priority position.

b) A male and a female engineer might have perspectives as different from one another as an engineer and a physicist and that is a good thing.

c) Companies that designated innovation as important observed greater financial success when women occupied the top echelons.

d) Companies that treated innovation as important ascertained greater financial achievements when women were denied top ranks in organizations.

Q5. Which of the following is true according to the passage?

a) A diverse environment will lead one to consider eclectic information, opinions and perspective; and hard work may be needed to resolve differences in views of socially different persons.

b) Diversity jolts us into cognitive action in ways that homogeneity simply cannot.

c) People tend to work less in a socially diverse environment.

d) When disagreement comes from a socially different person, people are prompted to work less harder.

Q6. The passage covers different types of diversity. Which type(s) of diversity has (have) not been mentioned in the passage?
Identify all that apply and enter the corresponding number in the input box given below. You must enter your answer in increasing order only. For example, if you think (1) and (2) apply, then enter 12 (but not 21) in the input box.
(1) Historical
(2) Ethnic
(3) Intellectual
(4) Geographical
(5) Gender

DIRECTIONS *for questions 7 to 9:* The passage given below is followed by a set of three questions. Choose the best answer to each question.
An analysis of available ancient genome sequences suggests that the genome of the woolly mammoth, *Mammuthus primigenius*, began taking on ever more potentially deleterious mutations as populations dwindled and the species got closer to extinction – a finding that may have implications for recognizing species at risk and implementing appropriate conservation measures.

Rebekah Rogers and Montgomery Slatkin analyzed available genome sequences from a 45,000-year-old mammoth specimen from the Oimyakon district of mainland Siberia, representing a point in time when the mammoth population remained robust. They compared those sequences to ones from a 4,300-year-old mammoth from a miniscule Wrangel Island population that endured after mainland populations disappeared. This mammoth is estimated to have gone extinct 3,700 years ago.

Compared to the older mammoth genome and to available elephant sequences, the team saw a jump in gene-altering deletions and retrogenes in the Wrangel Island mammoth genome, along with new point mutations predicted to upend protein function. The apparent "genomic meltdown" in the waning island population included pseudogenized olfactory genes, along with a loss of genes coding for urinary proteins related to elephant mate choice, and mutations in genes like FOXQ1 implicated in mammoth coat features, the researchers noted.

"These data bear the signature of genomic meltdown in small populations, consistent with nearly-neutral genome evolution," Rogers and Slatkin wrote in their *PLOS Genetics* paper. "They furthermore suggest large numbers of detrimental variants collecting in pre-extinction genomes, a warning for continued efforts to protect current endangered species with small population sizes."

For the new study, the pair set out to characterize genetic variants, deletions, point mutations, and more using existing genome sequence data for the Oimyakon mammoth and the Wrangel mammoth, sequenced to average depths of 11-fold and 17-fold coverage by the Swedish Museum of Natural History.

When they compared these sequences to sequences from an Indian elephant and an African bush elephant reference genome, the researchers found significant differences between the two woolly mammoth genomes. The Wrangel Island mammoth genome contained more overall deletions, gene deletions, retrogene content, and stop codon-causing point mutations relative to the genome of the Oimyakon mammoth. ...

A rise in deletions was also detected in the genome of the Indian elephant, albeit to a lesser extent, reflecting declines in that animal"s population, the researchers reported, pointing to the possibility of tapping genomic data for future conservation efforts in the Indian elephant and other species.

"Although compensatory mutations might conceivably correct for some detrimental mutations, with small effective population sizes, adaptation through both new mutation and standing variation may be severely limited," Rogers and Slatkin concluded. "Thus, we might expect genomes affected by genomic meltdown to show lasting repercussions that will impede population recovery."

Q7.   Which of the following best explains the relationship between the second and the third paragraphs of the passage?

a) Para 2 deals with the objective/ cause of/ for a study and para 3 discusses the consequences of the results.
b) Para 2 provides the details of an experiment and para 3 provides the results.
c) Para 2 talks about the methodology of the research while para 3 reports answers to several questions that have long puzzled researchers.
d) Both paras attempt to explain a commonly misunderstood but alarming biological phenomenon.

Q8. Which of the following summarizes the main conclusion of the research of Rebekah Rogers and Montgomery Slatkin, as discussed in the passage?

a) Once genomic decline has begun in a threatened species, it is irreversible.
b) There is genetic meltdown in small populations of any species but it is unlikely that this can possibly influence conservation efforts of a species.
c) The purging of bad mutations is less efficient in small populations leading to loss of genes and a slow meltdown of the genome. Once genetic decline becomes irreversible, then species numbers may not be salvaged and this has important implications for conservation biology.
d) There are significant differences between the genomes of two woolly mammoth species, viz, the Oimyakon mammoth and the Wrangel mammoth. The Wrangel mammoth's genome carried so many detrimental mutations that the population had suffered a "genomic meltdown".

Q9. According to the passage, which of the following correctly captures differences between the genome of the woolly mammoth from the Oimyakon district of Siberia and that of the woolly mammoth from Wrangel Island?

a) The Oimyakon mammoth's genome indicated an effective population size of 13000 individuals whereas the Wrangel mammoth's genome indicated an effective population size of 300 individuals.
b) The genome of the Oimyakon mammoth contained more mutations relative to the Indian elephant and African bush elephant reference genomes but the Wrangel Island mammoth genome had fewer mutations.
c) The older Oimyakon mammoth had more gene altering deletions, retrogenes and stop codon-causing point mutations than the newer Wrangel Island mammoth.
d) The Oimyakon mammoth had fewer gene altering deletions, retrogenes and stop codon-causing point mutations than the Wrangel Island mammoth.

DIRECTIONS *for questions 10 to 15:* The passage given below is followed by a set of six questions. Choose the best answer to each question.
The Viking warriors swept down from the northern most part of the globe like ravenous wolves, spreading terror and bloodshed wherever they went. From their Scandinavian homelands, they ranged as far south as Spain and as far east as Russia. Throughout Europe, people trembled in fear at the very mention of their name.

The Viking raids began in the ninth century, and the destruction they wrought greatly contributed to the turmoil experienced by western Europe during the Dark Ages. The French region of Normandy was conquered in the tenth century by Viking warriors whose descendants achieved important military victories in the 1000s, including the Norman Conquest of England in 1066 and the liberation of Sicily from the Muslims in 1091. Around the turn of the millennium, Viking sailors from Iceland discovered North America and established settlements on its coast – the first Europeans to do so.

Clearly, the exploits of the Vikings had positive and negative effects on Europe, and their accomplishments were essential in shaping the course of European history. Yet as the year 1000 dawned, the Viking age was already nearing its end. Across Scandinavia, the pagan worshipers of Odin and Thor began to convert to Christianity; as good Christians, they became reticent to attack the churches and monasteries that they had once plundered with abandon. The growth of strong centralized monarchies in Norway, Denmark, and Sweden also ultimately resulted in taming the Viking spirit. As Scandinavia became increasingly civilized, its kings discouraged the activities of roaming warrior bands, and its social environment gave rise to a more humdrum life. By the middle of the eleventh century, the glory days of the Viking raiders had faded into twilight, never to return.

In the year 1000 Vikings attempted to settle on the North American coast. The earliest written source having this information is not the known saga accounts but *The History of the Archbishops of Hamburg*, completed by Adam of Bremen in about 1075. Two saga accounts, arising out of a different tradition, support this information. The *Greenlanders' Saga*, the earlier of the two was committed to writing in the twelfth century and has about it a primitive crudeness which, while not particularly attractive literally, adds to its historical credibility. The great anthology of Icelandic material*,* the Flatey Book, compiled towards the end of the fourteenth century in northern Iceland, contains the earliest extant text of this saga. The *Eric Saga* has a more polished appearance and dates, in its earliest written form, from the mid-thirteenth century, but exists only in two later medieval versions. . . . The *Greenlanders' Saga* and the *Eric Saga* tell essentially the same story, yet in some places they complement and in other places they contradict one another. The *Greenlanders' Saga* is more reliable and its text and story more faithful to an oral original.

The Greenlanders' Saga discusses the existence of Vinland in Iceland. This land to the south and west of Greenland was discovered not by Leif Ericsson but by Bjarni Herjolfsson who was accustomed to spend alternative winters in Iceland, with his father, and Norway. One winter while Bjarni was in Norway, his father Herjolf moved from Iceland to Greenland with Eric the Red and established a homestead there at Herjolfsnes. Bjarni headed to Herjolfsnes and settled there.

Some years later Eric the Red's son Leif Ericsson, who, like all Greenlanders, was curious about new lands, decided to explore the places sighted by Bjarni. Going south from Greenland, he sighted, first, the mountainous, glacier-topped land, which Bjarni had sighted last. The land was, indeed, worthless: glaciers inland and, between glaciers and the sea, slabs of rock. He called the place Helluland (i.e. Slab-Land). The next land he sighted, after going further south, had white sandy beaches and, beyond these, flat woodlands. Leif landed, called it Markland (i.e. Forest-land), and sailed on. Two days later after going further south, they caught

sight of land again. Leif called the place Vinland (i.e. Wine-land). Night and day in this land were of more equal length than in Greenland. Leif readied a cargo of vines, grapes, and timber and returned to Greenland the following summer.

Q10.   What is the style of the passage?

 a) Narrative
 b) Descriptive
 c) Analytical
 d) Argumentative

Q11.   Which of the following can be understood about the Viking warriors?

 a) Their exploits had greater positive effects on Europe than negative ones.
 b) Their raids began in the 1000s and they became more unruly and barbaric as the glue of custom and tradition in the native homelands was lost.
 c) They belonged to the northernmost part of the earth (Scandinavian homelands) and were the first Europeans to discover North America.
 d) They were not so feared by the people of Europe as the bond that held them together was broken and they became isolated.

Q12.   Which of the following statements correspond to what is stated in the passage regarding the end of the Viking age?

 a) As good Christians, the converted Vikings eschewed violence.
 b) The end of the 10th century was known to be the end of the glorious days of the Vikings.
 c) The kings of Spain and Iceland discouraged the activities of the Vikings.
 d) The growth of monarchies in certain countries was responsible for the end of the Viking Age.

Q13.   What does the author mean by "its social environment gave rise to a more humdrum life" (para 3)?

 a) The future of a race is determined by its historical past and present social milieu.
 b) As Scandinavians became more civilized, the environment became more peaceful.
 c) The environment of Scandinavia was better than that of Spain in terms of daily living.
 d) The environment of Scandinavia became more peaceful like never before.

Q14.   What is the meaning of the statement "Night and Day in this land were of more equal length than in Greenland" (last para)?

 a) Night and day were of equal length in Greenland.

b) Night and Day were of equal length in Vinland.
c) Vinland had 12 hours of daylight whereas Greenland had 11.
d) The difference between the lengths of night and day in Vinland was less than that of Greenland.

Q15. Which of the following can be inferred about the sagas discussed in the passage?

a) The Eric saga provides cruder details than the Greenlanders' saga.
b) Flatey's saga, Greenlander's saga, Eric's saga and Hamburg's saga are the four saga accounts of the attempted Viking settlement in America as mentioned in the passage.
c) The Eric saga was more literally attractive and more reliable than the Greenlanders' saga.
d) The Eric saga repeats some of the details of the earlier Greenlanders' saga but also adds more details and changes others.

DIRECTIONS *for questions 16 to 21:* The passage given below is followed by a set of six questions. Choose the best answer to each question.

Whether vaccines are designed to prepare the immune system for the encounter with a pathogen or with cancer, certain common challenges need to be faced, such as what antigen and what adjuvant to use, what type of immune response to generate and how to make it long lasting. Cancer, additionally, presents several unique hurdles. Cancer vaccines must overcome immune suppression exerted by the tumour, by previous therapy or by the effects of advanced age of the patient. If used for cancer prevention, vaccines must elicit effective long-term memory without the potential of causing autoimmunity. One needs to address the common and the unique challenges to cancer vaccines and the progress that has been made in meeting them. Considering how refractory cancer has been to standard therapy, efforts to achieve immune control of this disease are well justified.

> Between the idea
> And the reality
> Between the motion
> And the act
> Falls the shadow
>
> - T. S. Eliot

Edward Jenner's landmark publication in 1798, that describes a vaccine against small pox, is considered to be the official beginning of the science of immunology. Immunology has since then made many contributions to scientific enterprise and to many different scientific disciplines, including genetics, molecular biology and cellular biology. The most important contribution of immunology to improving the quality of human life is the development of vaccines.

Thirty one infectious diseases are preventable through vaccination, at present. In spite of two centuries of vaccine development, however, there are still several parasitic, bacterial and viral diseases, such as Malaria, Dengue fever, Zika virus disease, Lyme disease, Chikungunya, Cytomegalovirus infection, Leishmaniasis, and several others that still don"t have proper vaccines for their cure. Modern times have also brought new diseases such as AIDS and cancer. The successes from the past and an ever-increasing level in our understanding of basic immune mechanisms, and the ability to manipulate them, predict future victories.

In addition to taking on the challenge to design better vaccines against infectious diseases, immunologists are exploring the possibility of using vaccines against other ailments that involve the immune system. Most notable efforts are directed to developing vaccines for cancer and certain autoimmune diseases. Vaccines that are designed to prepare the immune system for encounter with either infectious pathogens or with cancer or mediators of autoimmunity, all face certain common challenges.

Traditionally, successful vaccines have consisted of live attenuated pathogens. Although effective at the population level, these vaccines have a small but significant risk of activation that can cause disease or other harmful side effects. On the basis of the successes of attenuated pathogen vaccines and owing to the initial lack of defined tumour antigens, the first cancer vaccines were composed of whole tumour cells that were previously irradiated or otherwise inactivated. In mouse models, this immunization strategy was successful, producing tumour specific immune responses and rejection of a tumour challenge. These early vaccines used either tumour cell lines that had accumulated many mutations through numerous passages in vivo or in vitro and were, therefore, highly immunogenic, or carcinogenic-induced tumours with unique mutations that function as highly stimulatory antigens.

Just as vaccines that are based on whole pathogens are associated with risks of reactivation and development of disease, whole tumour cell vaccines present significant health risks. The most serious is the potential for causing autoimmunity. Immature dendritic cells (DCs) that reside in tissues take up and process dying cells and self antigens, but in the absence of strong activating signals, such as those given by pathogens, no immune response to these antigens is generated. To elicit strong immunity, the tumour-cell vaccine must include substances that activate DCs. In the case of whole tumour cells, however, it should be expected that in addition to presenting tumour-specific antigens, activated DCs would prime immunity to many other antigens (autoantigens) that are otherwise subject to peripheral tolerance. This is not a hypothetical case – evidence for auto-immune reactions following vaccination has accumulated from work in animal models especially mouse models, as well as clinical trials.

Q16. According to the passage, which of the following choices correctly represents the health hazards posed by whole tumour cell vaccines and vaccines based on whole pathogens?

 a) Vaccines based on whole pathogens pose a threat of autoimmunity. Whole tumour cell vaccines integrate into the host genome, increasing the risk of carcinogenesis or other genetic abnormalities.

b) Tumour cell vaccines may deactivate dendritic cells and reduce immunity. Whole pathogen vaccines stimulate autoantibody production, accelerating the development of autoimmune diseases.

c) Whole pathogen vaccines have a risk of reactivation and whole tumour cell vaccines may cause autoimmunity.

d) Whole pathogen vaccines induce the development of tolerance rather than immunity. Whole tumour cell vaccines selectively alter the host's cytokine response to infections.

Q17. The T.S. Eliot quotation is employed in the passage to suggest that

a) success is often a case of trial and error in the case of vaccine development – a major challenge/ shadow is the unavailability of novel adjuvants that enhance the immunogenicity of novel antigens.

b) in the case of making cancer vaccines, there exists a shadow in our understanding of the infinite and unknown risks that far outweigh the real benefits.

c) in the case of making cancer vaccines, nothing is certain until the final outcome is attained because things can be unmanageable or can go haywire in between.

d) between the theoretical and the practical, between the objective and the observation lie the artifacts of scientific experimentation that undermine the effectiveness of cancer vaccines.

Q18. According to the passage, which of the following is true about whole tumour cell vaccines or the cells themselves?

a) Substances that activate dendritic cells are present in these vaccines.

b) These vaccines pose a threat of causing autoimmunity.

c) Activated dendritic cells produce only tumour specific antigens.

d) The vaccines generate immunity to antigens that deactivate dendritic cells.

Q19. According to the passage, which characteristic(s) must cancer vaccines possess?

a) They must possess the potential to control tumour cell growth and increase autoimmune responses.

b) They should be less toxic than the harsh immuno-suppressive regimens for the treatment of autoimmune diseases.

c) They must be neither infectious nor capable of replication and should simultaneously induce the same responses that underlie autoimmunity and host defence surveillance.

d) They must be able to overcome immune suppression that may have been caused due to previous therapy to fight the disease.

Q20. Which statement(s) is/ are consistent with the information presented in the passage?

Identify all that apply and enter the corresponding number of the statement in the input box given below. You must enter your answer in increasing order only. For example, if you think that (1) and (2) apply, then enter 12 (but not 21) in the input box.

1. So far, only thirty one vaccines have been successfully tried and tested against infectious diseases.
2. Autoimmune responses following vaccination have been proved through tests in murine models.
3. As cancer vaccines become more potent, we might see a concomitant increase in autoimmune sequelae.
4. The small pox vaccine is the oldest vaccine and has been successful in the eradication of smallpox in 1798.
5. Vaccines designed to strengthen immune system are usually based on live attenuated pathogens for effectiveness.
6. Chagas, malaria, tuberculosis and hepatitis B have so far eluded protection through vaccines.

Q21. What do you conceive as the primary concern of the author in the passage?

a) To present a historical analysis of vaccine development over the centuries.
b) To outline the challenges facing the makers of all vaccines in general, with a specific focus on the problems associated with cancer vaccines.
c) To emphasize the importance of using well-defined tumour antigens while developing a whole tumour cell vaccine.
d) To make a case for the prophylactic use of cancer vaccines based on the correct identification and characterization of tumour antigens.

DIRECTIONS *for questions 22 to 24:* The passage given below is followed by a set of three questions. Choose the best answer to each question.

Edward Said"s evaluation and critique of the set of beliefs known as Orientalism forms an important background for postcolonial studies.

The Orient signifies a system of representations framed by political forces that brought the Orient into Western learning, consciousness and empire. The Orient exists for the West, and is constructed by and in relation to the West. It is a mirror image of what is inferior and alien ("Other") to the West.

The first "Orientalists" were 19th century scholars who translated the writings of "the Orient" into English, based on the assumption that a truly effective colonial conquest required knowledge of the conquered peoples. ... The most significant construction of Orientalist scholars is that of the Orient itself. What is considered the Orient is a vast region, one that spreads across a myriad of cultures and countries.

Said argues that Orientalism can be found in current Western depictions of "Arab" cultures: as "irrational", "menacing", "untrustworthy", "anti-Western", "dishonest"... These notions are trusted as foundations for both ideologies and policies developed by the Occident. Said writes: "One would find this kind of procedure less objectionable as political propaganda - which is what it is, of

course - were it not accompanied by sermons on the objectivity, the fairness, the impartiality of a real historian, the implication always being that Muslims and Arabs cannot be objective, but that Orientalists ... writing about Muslims are, by definition, by training, by the mere fact of their Westernness."

Said calls into question the underlying assumptions that form the foundation of Orientalist thinking. A rejection of Orientalism entails a rejection of biological generalizations, cultural constructions, and racial and religious prejudices. It is a rejection of greed as a primary motivating factor in intellectual pursuit. It is an erasure of the line between "the West" and "the Other". Said argues for the use of "narrative" rather than "vision" in interpreting the geographical landscape known as the Orient, meaning that a historian and a scholar would turn not to a panoramic view of half of the globe but to a focused and complex type of history that allows space for the dynamic variety of human experience. Rejection of Orientalist thinking does not entail a denial of the differences between "the West" and "the Orient", but rather an evaluation of such differences in a critical and objective fashion. "The Orient" cannot be studied in a non-Orientalist manner; rather, the scholar is obliged to study more focussed and smaller culturally consistent

regions. **The person who has until now been known as "the Oriental" must be given a voice. Scholarship from afar and second-hand representation must take a back seat to narrative and self-representation on the part of the "Oriental".**

Q22. Which of the following can be understood from the boldfaced portions of the passage?

a) Postcolonial studies advocate the renewal of Eastern cultures and a rejection of Western influence over them.

b) Internalizing colonial assumptions about the inferiority of the conquered peoples and constructing the Orient through the lens of Europeans form the substratum of postcolonial studies.

c) Postcolonial studies highlight the economic exploitation of native people and analyze the western ways of depicting the Eastern world.

d) Postcolonial studies should question western conceptions of the east and assimilate the Eastern sentiment.

Q23. Which of the following statements about 'Orientalism' is false as per the passage?

a) The discourse of Orientalism is laced with notions of political power, formulated to facilitate a colonizing mission on the part of the West.

b) According to Said, a rejection of Orientalism entails a denial of the differences between 'the West' and 'the Orient'.

c) Though the Orient is a vast region encompassing the East and the Middle East, a scholar of Orientalism should study more focussed and smaller culturally homogeneous regions.

d) The identity of the Orient should be defined by the scholar who gives it a voice and life.

Q24. What does the author imply when he says "The Orient exists for the West .... alien to the West." (para 2)?

a) Since the notion of the Orient is created by the Orientalist, it exists solely for him or her.
b) The Orient is a servile follower of the ideologies and plans of the West.
c) The notion of the Orient as created by the West serves to indicate their superciliousness and perceived exclusivity.
d) The Orient awaits the dominance of the West, it is a defenseless and unintelligent entity that depends on the Western counterpart to represent itself.

Q25. DIRECTIONS *for questions 25 to 27:* Five sentences related to a topic are given below. Four of them can be put together to form a meaningful and coherent short paragraph. Identify the odd one out. Choose its number as your answer and key it in.

1. Another solar aircraft (this time equipped with batteries, to store surplus power) is now being flown around the world by a Swiss team.
2. The first person to cross the English Channel in an electric plane was Paul MacCready, an American aeronautical engineer, who made the journey in the flimsy *Solar Challenger* in 1981.
3. E-Fans are mechanically simpler than combustion-engined aircraft, so running and maintenance costs should be lower.
4. Although this aircraft used an electric motor to drive a propeller, it did not have a battery, for it obtained its power directly from solar cells.
5. But after a record-breaking five days and nights in the air crossing the Pacific from Japan, *Solar Impulse 2* is stuck in Hawaii because its batteries overheated.

Q26. DIRECTIONS *for questions 25 to 27:* Five sentences related to a topic are given below. Four of them can be put together to form a meaningful and coherent short paragraph. Identify the odd one out. Choose its number as your answer and key it in.

1. This philosophical division is also present in the debate about bitcoin.
2. Nearly 200 titles about the crypto-currency came out last year, according to Amazon.
3. In 2014 it lost more than half of its value against the dollar, beating even Ukraine's hryvnia and the Russian rouble.
4. Bitcoin may well be the world's worst-performing currency.
5. But measured by the number of new books it has inspired, bitcoin is top of the pile.

Q27. DIRECTIONS *for questions 25 to 27:* Five sentences related to a topic are given below. Four of them can be put together to form a meaningful and coherent short paragraph. Identify the odd one out. Choose its number as your answer and key it in.

    1.   Mr Forsyth may have exaggerated how fixed adjective order is, but his little nugget is broadly true, and it has delighted people to examine something they didn't know they knew.

    2.   Mark Forsyth, in "The Elements of Eloquence", describes it as: opinion, size, age, shape, colour, origin, material, purpose and then Noun.

    3.   Who can say what order should be used to list adjectives in English?

    4.   Clearly, then, the discipline of linguistics needs a marketing overhaul, because this is exactly what linguistics consists of.

    5.   So you can have a "lovely little old rectangular green French silver whittling knife" but if you mess with this word order in the slightest you'll sound like a maniac.

Q28. DIRECTIONS *for questions 28 to 32:* The sentences given below, when properly sequenced, form a coherent paragraph. Each sentence is labeled with a number (1, 2, 3, 4 or 5). Decide on the proper order for the sentences and key in the correct sequence as your answer in the input box given below the question.

    1.   This made breathing very difficult, and it regularly blocked vital blood vessels nearby, including the aorta, triggering cardiac and pulmonary arrest.

    2.   In February of 2012, a medical team at the University of Michigan's C. S. Mott Children's Hospital, in Ann Arbor, carried out an unusual operation on a three-month-old boy.

    3.   The team consulted with the baby's doctors at Akron Children's Hospital, in Ohio, and they soon agreed that they had just the right tool for this delicate, lifesaving task: a 3-D printer.

    4.   The baby had been born with a rare condition called tracheobronchomalacia: the tissue of one portion of his airway was so weak that it persistently collapsed.

    5.   The infant was placed on a ventilator, while the medical team set about figuring out how to repair or replace the area of weak tissue.

Q29. DIRECTIONS *for questions 28 to 32:* The sentences given below, when properly sequenced, form a coherent paragraph. Each sentence is labeled with a number (1, 2, 3, 4 or 5). Decide on the proper order for the sentences and key in the correct sequence as your answer in the input box given below the question.

    1.   During the industrial revolution the county in northwest England pioneered machinery that churned out manufactured goods by the ton; other countries copied it.

    2.   The old man was half right.

3.   In a factory in Blackburn highly skilled workers produce top-of-the-range jackets and jeans for companies including Community Clothing, of which Mr. Trickett is general manager.

4.   Traces of that past glory linger on.

5.   "Lancashire invented the world," Iain Trickett's grandfather told him.

Q30. DIRECTIONS *for questions 28 to 32:* The sentences given below, when properly sequenced, form a coherent paragraph. Each sentence is labeled with a number (1, 2, 3, 4 or 5). Decide on the proper order for the sentences and key in the correct sequence as your answer in the input box given below the question.

1.   Four months later Russian-backed militia in eastern Ukraine shot down MH17, another 777, killing all 298 people on board.

2.   Customers have deserted the airline and flyers fear it is jinxed.

3.   Disaster struck Malaysia Airlines twice in 2014.

4.   Two years on, Malaysia's struggling national carrier is still flying, but its financial health remains under scrutiny.

5.   In March, flight MH370 from Kuala Lumpur to Beijing, a Boeing 777 carrying 239 passengers and crew, disappeared an hour after take-off.

Q31. DIRECTIONS *for questions 28 to 32:* The sentences given below, when properly sequenced, form a coherent paragraph. Each sentence is labeled with a number (1, 2, 3, 4 or 5). Decide on the proper order for the sentences and key in the correct sequence as your answer in the input box given below the question.

1.   But new research shows that coffee and cacao yeasts are far more genetically diverse than wine strains.

2.   The yeast that they unknowingly harnessed for the purpose can now be found in every vineyard on the planet.

3.   This opens up the intriguing possibility of imparting entirely new tastes to the terroir of coffee and chocolate.

4.   More than 7000 years ago, people living in the Middle East discovered that they could ferment grapes to make wine.

5.   As with wine, the processing of coffee beans and cacao, used to make chocolate, also requires some fermentation.

Q32. DIRECTIONS *for questions 28 to 32:* The sentences given below, when properly sequenced, form a coherent paragraph. Each sentence is labeled with a number (1, 2, 3, 4 or 5). Decide on the proper order for the sentences and key in the correct sequence as your answer in the input box given below the question.

1.   Britain's tortured relationship with the European Union has felled most recent Conservative prime ministers, and none faced a task remotely as daunting as the one that confronts you.

2.   At your first cabinet meeting, you Theresa May, said that your government would not be defined by Brexit.
3.   It could go horribly wrong.
4.   Disentangling Britain from the EU will be like extracting one glue-slathered octopus from a basket of 27 other ones.
5.   Good luck with that.

Q33. DIRECTIONS *for questions 33 and 34:* Four alternative summaries are given below the text. Choose the option that best captures the essence of the text and key its number in the input box provided below the options.

Starving is not the best way to lose body fat and you have to 'eat right' in order to transform your body. You'll hear many men and women saying, "If you want to lose weight you have to give up those in-between snacks. They are the worst." We don't know exactly where that idea of 'three meals a day is best' comes from, but it wasn't the way our ancestors ate. If you look at how humans evolved, you'll see that our long-lost relatives were 'frequent feeders', not bingers. In fact, it's revealing to take a look at the animal kingdom and notice the relationship between the way animals consume their meals and their body 'type' and 'shape'. At one end of the spectrum are animals such as bears, which store vast amounts of fat in wide, round bodies, for hibernation periods when they may go for weeks without food. These animals are 'bingers' and carry lots of body fat. At the other end of the spectrum are the 'frequent feeders'. The lean, mean, munching machines – horses, elk, deer – spend all day nibbling on small bits of vegetation – little portions, all day. They have whippet-lean limbs and taut, muscular bodies. I can't say I have ever wanted to be a horse, but the rippled, tight and frequently filled part sounds fab!

1.   Animals are of different types: hedgehogs and foxes. Those that go without eating for months would have stored food in their huge fat bodies and those that eat at regular intervals have lean bodies with low body fat.
2.   The relationship between eating habits and body structure of animals can be explained by the fact that those eating large amounts infrequently (bingers) have huge fat bodies whereas those eating less but regularly (grazers) have lean bodies. Starving may not help one lose body fat. Frequent feeding in required quantities can help a human being achieve a desired taut, muscular and lean physique.
3.   Animals are of two types. Bingers like bears load up on large amounts of food at one meal and then go for long periods without eating. They have huge body fat storage compartments. Frequent feeders like horses eat almost constantly but in far lesser amounts. Relatively speaking, they have very low body fat and lots of lean muscle.
4.   Animals are of different types; primarily bingers and grazers. It is good to be a grazer as it helps one lose body fat. Studies show that eating often accelerates the metabolism, hence one burns more calories.

Q34. **DIRECTIONS** *for questions 33 and 34:* Four alternative summaries are given below the text. Choose the option that best captures the essence of the text and key its number in the input box provided below the options.

Israel, as such a close and key strategic partner of the United States, is in ways a model of what India aims to become. For India, the reasoning is simple: if I wish to strengthen friendship with your brother, it makes sense that I be friends with you. It's almost inevitable and, from India's perspective, highly desirable, to build a solid foundation of trust and shared interests with Israel. Since India and Israel established diplomatic relations in 1992, the two countries have inexorably moved closer – a radical shift from India's earlier stance. Since this shift, trade relations between India and Israel have skyrocketed. Prior to that time, the country was an active supporter of Palestinian cause and was one of the first non-Muslim and non-Arab nations to support Yasir Arafat – at a time, when Israel, the United States and some other Western nations considered his Palestine Liberation Organization to be a terrorist outfit. In the United Nations, India supported virtually every motion that asked Israel to vacate Palestine and other Arab territories it had captured during the wars in 1948, 1967 and 1973.

1. India aspires to become like Israel, which owns the world's most sophisticated weapons. Befriending Israel will help India become a close and key strategic partner of the United States.

2. The trade relations between India and Israel have not improved as India extended support to Palestine. Even so, India's perspective is to build a solid foundation of trust and shared interests with Israel through the mediation of the United States.

3. Establishing close ties with Israel which is a strategic ally of the United States may enable India to get closer to the United States. Prior to 1992, India did not have friendly relations with Israel as it largely supported Palestine.

4. Since 1992, India and Israel have become just slightly closer to each other. Apart from India, some other non-Muslim and Arab nations had also previously supported Yasir Arafat.

DILR

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

Balu and Hari joined a travel agency as bus drivers and were both assigned to drive one of the agency's buses between Mumbai and Bangalore every day. Both the drivers drive the bus in shifts. The time they take to travel between the two cities depends on the time at which they start from the origin city. If they start at the origin city at 9:00 AM or 10:00 AM or 11:00 AM, it will take them 15 hours to travel from one city to another. If they start at the origin city at 6:00 PM or 7:00 PM

or 8:00 PM, it will take them 16 hours to travel from one city to another. If they start at the origin city at any other time, it will take them exactly 14 hours to travel between the two cities. Further, each time they reach Mumbai or Bangalore, they rest for exactly 1 hour in the city before they start driving back to Bangalore or Mumbai. Each journey they make from one city to another is called a trip.

Q1. DIRECTIONS *for questions 1 and 2:* Select the correct alterative from the given choices.
If they started on their first trip from Mumbai at 5:00 AM, what will be the average time per trip for the first 50 trips?

 a) 14.72 hours
 b) 14.6 hours
 c) 14.96 hours
 d) 14.88 hours

Q2. DIRECTIONS *for questions 1 and 2:* Select the correct alterative from the given choices.
If they started on their first trip from Mumbai at 6:00 PM, what will be the average time that they take to travel from Bangalore to Mumbai during their first 100 trips?

 a) 15.02 hours
 b) 15.12 hours
 c) 15.22 hours
 d) 15 hours

Q3. DIRECTIONS *for questions 3 and 4:* Type in your answer in the input box provided below the question.
If they started on their first trip from Bangalore at 2:00 PM, what is the minimum number of trips (including the first trip) after which they will start from Bangalore at 3:00 AM?

Q4. DIRECTIONS *for questions 3 and 4:* Type in your answer in the input box provided below the question.
If they started on their first trip from Mumbai starting at 4:00 PM, how many times will they start from Bangalore between 6:00 AM and 12:00 noon (both inclusive) during their first 100 trips?

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

The currency of the country Banama is Rupas (Rp). There are exactly five denominations in which the currency is available – Rp 2, Rp 3, Rp 7, Rp 17 and Rp 19.

Each of five persons, A through E, had notes of exactly one denomination with him and no two persons among the five had notes of the same denomination. On a particular day, the five persons visited a shop and each of them purchased a different product. The amounts that A through E paid the shopkeeper were Rp 102, Rp 357, Rp 399, Rp 238 and Rp 147, in that order. Further, the number of notes that each person gave the shopkeeper was distinct. However, the amount that each person paid the shopkeeper was more than the price of the product that he purchased. Therefore, the shopkeeper returned the excess amounts to each of A through E in the form of 2 notes, 4 notes, 1 note, 2 notes and 1 note respectively, but in denomination(s) different from that in which the person had paid the shopkeeper.

Q5. DIRECTIONS *for question 5:* Type in your answer in the input box provided below the question.
What is the total number of notes that the five persons paid the shopkeeper?

Q6. DIRECTIONS *for questions 6 to 8:* Select the correct alterative from the given choices.
Which of the following cannot be the price (in Rp) of the product that A purchased?

a) **76**
b) **92**
c) **80**
d) **82**

Q7. DIRECTIONS *for questions 6 to 8:* Select the correct alterative from the given choices.
How many of the following statements are definitely true?
I. The price of the product that A purchased is an even number.
II. The price of the product that B purchased is an even number.
III. The price of the product that C purchased is an odd number.
IV. The price of the product that D purchased is an even number.

a) **0**
b) **1**
c) **2**
d) **3**

Q8. DIRECTIONS *for questions 6 to 8:* Select the correct alterative from the given choices.
Which of the following statements is sufficient to determine the price of the product that E purchased?

a) The price of the product is not a multiple of 10.

b) The price of the product is a multiple of 10.
c) The price of the product is not a multiple of 5.
d) None of the above

DIRECTIONS *for questions 9 to 12:* Answer these questions on the basis of the information given below.
A group of *n* persons, where *n* is an even number greater than 2, were sitting in *n* equally spaced chairs around a circular table. Each person was wearing a shirt of a different colour among Black, Red or Grey. Among the *n* persons, there is at least one person wearing a shirt of each colour. It is known that no person wearing a Black shirt was sitting to the left of a person wearing a Red shirt and no person wearing a Grey shirt was sitting opposite a person wearing a Red shirt. Also, no two persons sitting next to each other are wearing a shirt of the same colour.

Q9.   DIRECTIONS *for questions 9 to 12:* Select the correct alterative from the given choices.
If n = 6, which of the following is definitely true?

 a) Each person wearing a Grey shirt is sitting to the left of a person wearing a Black shirt.
 b) Each person wearing a Grey shirt is sitting opposite a person wearing a Black shirt.
 c) Each person wearing a Red shirt is sitting opposite a person wearing a Black shirt.
 d) Each person wearing a Red shirt is sitting to the left of a person wearing a Black shirt.

Q10.   DIRECTIONS *for questions 9 to 12:* Select the correct alterative from the given choices.
If n = 8, which of the following cannot be the colour of the shirt of a person sitting opposite a person wearing a Black shirt?

 a) **Red**
 b) Black
 c) Grey
 d) None of the above

Q11.   DIRECTIONS *for questions 9 to 12:* Select the correct alterative from the given choices.
Which of the following is definitely true for n ≥ 6?

 a) There will be at least one pair of persons who are sitting opposite each other wearing Red shirts.

b) There will be at least one pair of persons who are sitting opposite each other wearing Black shirts.

c) There will be at least one pair of persons who are sitting opposite each other wearing Grey shirts.

d) None of the above

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

If $n = 8$, the number of persons wearing a black shirt can be at most

a) **2.**
b) **3.**
c) **4.**
d) **5.**

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

Pavan operates a taco stall outside a shopping mall. On any day, the first 50 tacos that he sells are sold at a price of Rs. 17 per taco. From the 51st taco to the 60th taco that he sells, he sells each taco at a price of Rs. 19. Similarly, for every subsequent batch of 10 tacos that he sells, he increases his selling price by Rs. 2 per taco, as compared to the selling price of the previous batch. Further, it costs Pavan Rs.10 for making each taco. He incurs no other cost in making and selling each taco. The profit that he makes is defined as the total revenue earned from sales minus the total cost incurred.

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

If the average selling price of each taco that Pavan sold on a particular day was more than Rs. 18, what is the minimum number of tacos that he would have sold on that day?

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

If the average profit that Pavan made for each taco that he sold on a particular day was less than Rs. 9, what is the maximum number of tacos that he would have sold on that day?

Q15.   DIRECTIONS *for questions 15 and 16:* Select the correct alterative from the given choices.

Due to the increase in the prices of vegetables, the cost of making a taco increased by x%. If in order to make a profit after this increase, Pavan had to sell a

minimum of 95 tacos, what is the value of x (rounded off to the first decimal place)?

a) 95.8
b) 96.3
c) 97.2
d) 98.1

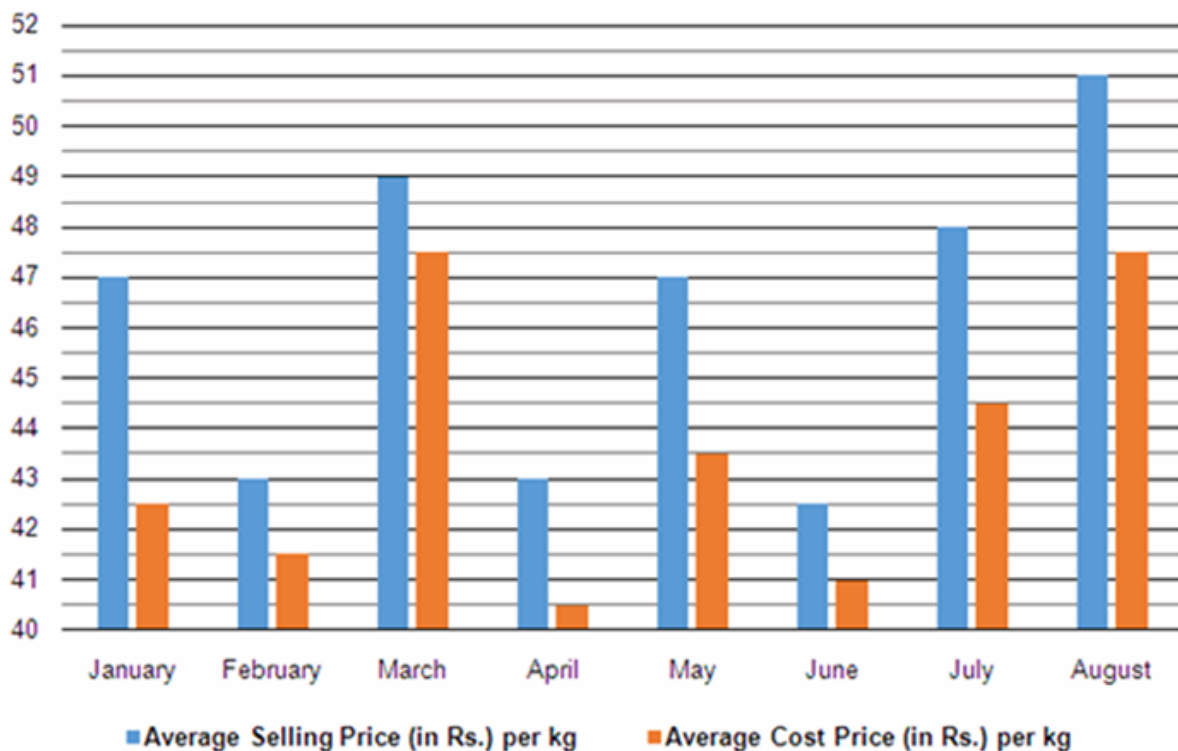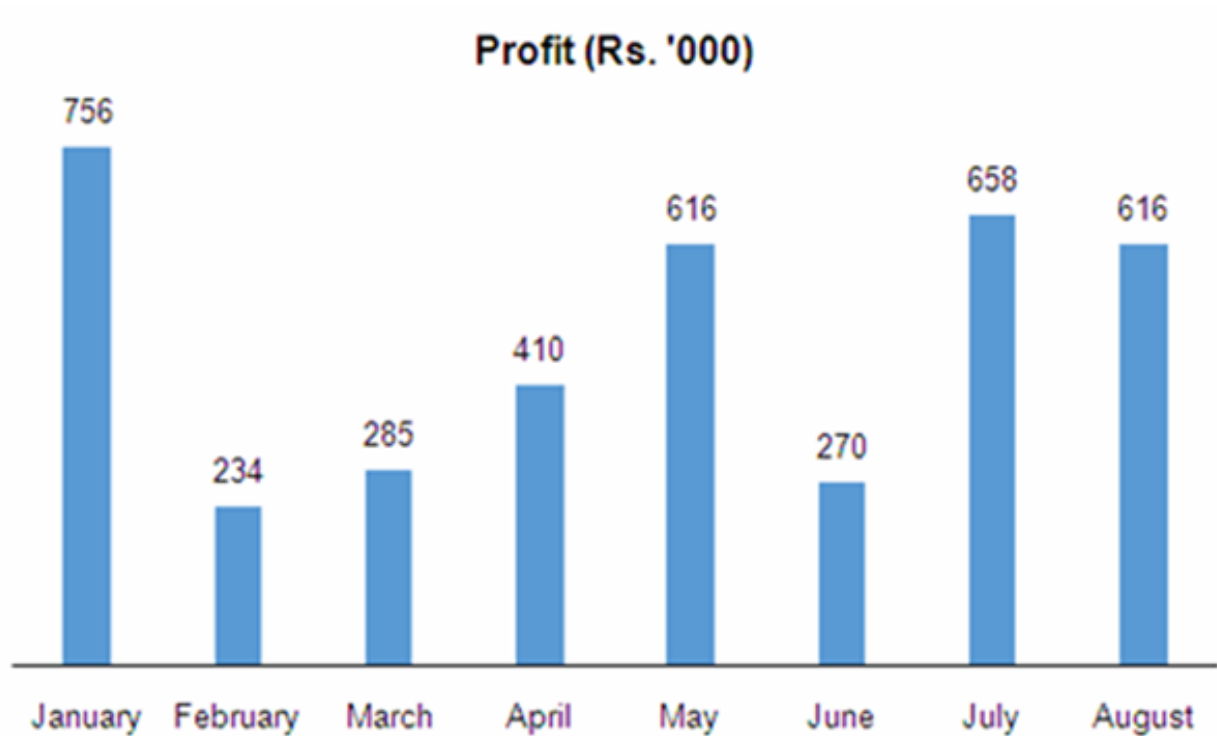**Q16.** **DIRECTIONS** *for questions 15 and 16:* Select the correct alterative from the given choices.
During the first quarter of a year, Pavan offered a discount of 10% to any customer who purchased tacos worth at least Rs. 950. If the total revenue that he generated during that period was Rs. 73746, what is the maximum number of tacos that he would have sold?

a) 4338
b) 4538
c) 4960
d) 4760

DIRECTIONS *for questions 17 to 20:* Answer these questions on the basis of the information given below.
Jai, a rice trader, buys and sells rice every day. The first chart below presents his average selling price per kg of rice and his average cost price per kg of rice for eight months, from January to August. The second chart provides the profit (in Rs. '000) that he earned in each month.

Profit (Rs. '000)

Q17. DIRECTIONS *for questions 17 to 20:* Select the correct alterative from the given choices.
In which of the following months did Jai sell the highest quantity of rice?

a) January
b) February
c) April
d) May

Q18. DIRECTIONS *for questions 17 to 20:* Select the correct alterative from the given choices.
What is the average quantity of rice that Jai sold per month during the given period?

a) 176000 kg
b) 175250 kg
c) 174750 kg
d) 173250 kg

Q19. DIRECTIONS *for questions 17 to 20:* Select the correct alterative from the given choices.
During how many months did the average selling price per kg and the average profit per kg both increase by at least 10% as compared to the previous month?

a) **0**
b) 1
c) **2**
d) **3**

Q20. DIRECTIONS *for questions 17 to 20:* Select the correct alterative from the given choices.
What is the highest percentage increase in the quantity of rice sold during any month as compared to the previous month?

a) 20.56%
b) 21.79%
c) 22.13%
d) 23.45%

DIRECTIONS *for questions 21 to 24:* Answer these questions on the basis of the information given below.
James, who works in a limestone manufacturing factory, is in charge of purifying the limestone that is manufactured in the factory. For any batch of limestone that needs to be purified, he can use any of four processes – Process A through Process D. Process A removes 70% of the impurities present in the batch and takes 6 hours. Process B removes 60% of the impurities and takes 4 hours. Process C removes 80% of the impurities and takes 12 hours. Process D removes 50% of the impurities and takes 3 hours. Any process once initiated cannot be stopped till it ends.
He can use any process any number of times on any batch of limestone but he can use only one process at any point of time. Further, any combination of processes used one after the other will compound the effect of removal of impurities. For example, using Process A followed by Process B on a batch of limestone will remove 88% of impurities in the batch. For each batch of limestone that he receives, James has to decide the combination of processes that he will use based on the final level of purity required. All the batches of limestone that he receives for purification have the same level of impurities initially.

Q21. DIRECTIONS *for questions 21 to 24:* Select the correct alterative from the given choices.
If James receives a batch of limestone from which he needs to remove at least 90% of the impurities present initially, what is the minimum time that he will need for the purification?

a) 16 hours
b) 12 hours
c) 10 hours
d) 8 hours

Q22. **DIRECTIONS** *for questions 21 to 24:* Select the correct alterative from the given choices.
If James received a batch of limestone which must be purified in at most 16 hours, what is the maximum percentage of impurities that he can remove from the batch?

a) **96%**
b) 96.875%
c) 98.5%
d) 97.5%

Q23. **DIRECTIONS** *for questions 21 to 24:* Select the correct alterative from the given choices.
If James received a batch of limestone and he purified it exactly five times using any of the four processes each time, which of the following cannot be the percentage of impurities that were removed from the batch after the purification?

a) **98%**
b) 98.72%
c) 99.919%
d) 99.73%

Q24. **DIRECTIONS** *for questions 21 to 24:* Select the correct alterative from the given choices.
If James received a batch of limestone from which he should remove at least 97% of the impurities present and he is allowed to use only one of the four processes any number of times for purifying the batch of limestone, what is the minimum time required for purifying the batch of limestone?

a) 16 hours
b) 17 hours
c) 18 hours
d) 15 hours

DIRECTIONS *for questions 25 to 28:* Answer these questions on the basis of the information given below.
Each of six companies – Alpha, Beta, Chi, Delta, Epsilon and Fi – manufactures bottles. On each bottle, a five letter code is imprinted. Each letter of the code is a letter from among A through F.
The following information is known about the letters in the code:
      1.   One of the five letters provides information about the company that manufactured the bottle – A, B, C, D, E and F representing the six companies in the same order as mentioned above.
      2.   Another letter provides information about the capacity of the bottle – A, B, C, D, E and F indicating 250 ml, 500 ml, 750 ml, 1 litre, 1.25 litres and 1.5 litres respectively.

3. Another letter provides information about the material used in manufacturing the bottle – A, B, C, D, E and F indicating PVC, PET, HDP, LDP, PP and PS respectively.

4. Another letter provides information about the colour of the bottle – A, B, C, D, E and F indicating Blue, Grey, Yellow, Red, Orange and Violet respectively.

5. Another letter provides information about the type of cap that the bottle has – A, B, C, D, E and F indicating Screw cap, Flip cap, Measuring cap, Child resistant cap, Dispenser cap and Spray cap respectively.

The first letter in the five letter code of any bottle conveys the same information and the same is true for the second letter, the third letter and so on.

It is also known that

(i) the bottle with the code ABBBB is a bottle manufactured using PET by Beta.

(ii) the bottle with the code EEEBE is a 1.25 litre bottle.

(iii) the bottle with the code CCCDD is a HDP bottle with a Child resistant cap.

(iv) the bottle with the code ABBBC is a Yellow coloured bottle.

Q25. DIRECTIONS *for questions 25 to 28:* Select the correct alterative from the given choices.

Which of the following bottles will have the code DBBCE?

a) A 1 litre, Red coloured bottle with a Measuring cap manufactured using PET by Delta

b) A 1.5 litre, Orange coloured bottle with a Flip cap manufactured using PVC by Beta

c) A 1 litre, Orange coloured bottle with a Measuring cap manufactured using PET by Epsilon

d) A 1 litre, Orange coloured bottle with a Measuring cap manufactured using PET by Beta

Q26. DIRECTIONS *for questions 25 to 28:* Select the correct alterative from the given choices.

What is the code of a 250 ml, Grey coloured bottle with a Child resistant cap manufactured using PS by Fi?

a) DAFFB

b) AFFBD

c) AFFDB

d) Cannot be determined

Q27. DIRECTIONS *for questions 25 to 28:* Select the correct alterative from the given choices.

If ACDCC is a bottle manufactured using HDP, which of the following is the code on a 1.5 litre, Red coloured bottle with a Flip cap manufactured using PVC by Delta?

a) BADFD
b) EADBD
c) FADBB
d) None of the above

Q28. DIRECTIONS *for questions 25 to 28:* Select the correct alterative from the given choices.
Looking at which of the following codes can it be inferred that it belongs to a 1 litre Blue coloured bottle with a Spray cap which is definitely not manufactured by Alpha?

a) DAFFA
b) DBAFA
c) ADBFA
d) DCFFA

DIRECTIONS *for questions 29 to 32:* Answer these questions on the basis of the information given below.
Seven persons, A through G, were standing in a line, from left to right, all facing the same direction.
Among them, there are three married couples and one unmarried male. Further, it is also known that
      1.   for any couple, the number of persons who are to the left of the husband is the same as the number of persons to the right of the wife.
      2.   there are four persons to the left of B, who is a male, while E is one of the husbands.
      3.   A, who is a male, is to the immediate left of D, who is not married to E.
      4.   F, who is a female, is married to the person to the immediate right of C.
      5.   C is not at any of the ends.

Q29. DIRECTIONS *for question 29:* Select the correct alterative from the given choices.
Who is the unmarried male?

a) **B**
b) **G**
c) **C**
d) **A**

Q30. DIRECTIONS *for question 30:* Type in your answer in the input box provided below the question.
How many persons are standing between F and his/her spouse?

Q31.   DIRECTIONS *for questions 31 and 32:* Select the correct alterative from the given choices.
Who is standing to the immediate right of C's spouse?

 a) **A**
 b) **D**
 c) **E**
 d) C is not married.

Q32.   DIRECTIONS *for questions 31 and 32:* Select the correct alterative from the given choices.
The person who is standing to the immediate left of B's spouse is standing to the immediate right of

 a) E's spouse.
 b) C's spouse.
 c) F's spouse.
 d) D's spouse.

QA

Q1. DIRECTIONS *for questions 1 and 2:* Select the correct alterative from the given choices.
In a list of 11 numbers, seven numbers are 8, 9, 12, 5, 10, 8 and 9. Which of the following gives the least possible value of the median of all the 11 numbers?

 a) **5**
 b) **8**
 c) **9**
 d) None of the above

Q2. DIRECTIONS *for questions 1 and 2:* Select the correct alterative from the given choices.
An experiment in Physics found that four parameters a, b, c and d were related as follows: a varies as the square of b; b varies as the fourth root of c; and c varies as the cube of d. If a varies as the nth power of d, find n.

a) $\dfrac{1}{2}$

b) 2

c) $\dfrac{1}{3}$

d) $\dfrac{3}{2}$

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

In how many ways can the letters of the word NATION be arranged such that no two vowels occupy adjacent positions?

Q4. DIRECTIONS *for questions 4 to 7:* Select the correct alterative from the given choices.

In the figure below, ABCD is a square, inside which one circle of radius 1 cm and four semicircles, each also of radius 1 cm, are drawn as shown. Find the area (in sq. cm) of the square.
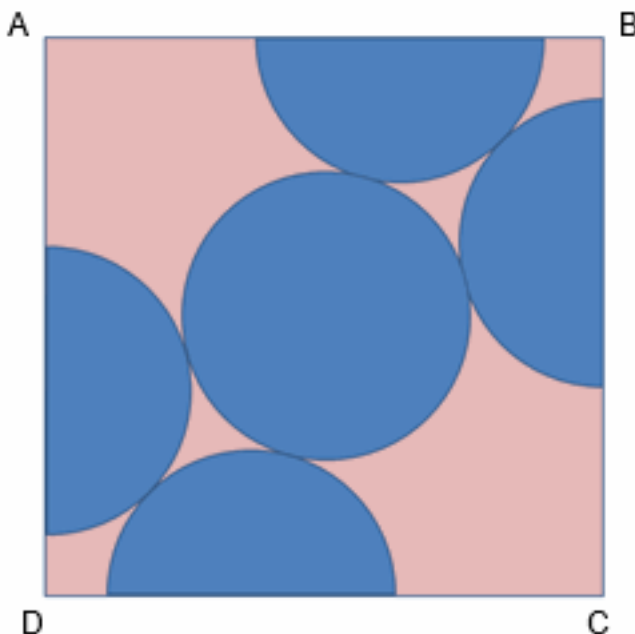
a) $8\left(2-\sqrt{3}\right)$

b) $4\left(2-\sqrt{3}\right)$

c) $8\left(2+\sqrt{3}\right)$

d) $4\left(2+\sqrt{3}\right)$

Q5. DIRECTIONS *for questions 4 to 7:* Select the correct alterative from the given choices.
For how many positive integral values of *n* is (6*n* − 1) a prime number?

a) **0**
b) 1
c) **2**
d) More than 2

Q6. DIRECTIONS *for questions 4 to 7:* Select the correct alterative from the given choices.

The sum of the terms $\dfrac{1}{\sqrt{17+\sqrt{17^2-1}}} + \dfrac{1}{\sqrt{15+\sqrt{15^2-1}}} + \dfrac{1}{\sqrt{13+\sqrt{13^2-1}}} + \dfrac{1}{\sqrt{11+\sqrt{11^2-1}}} + ... + \dfrac{1}{\sqrt{3+\sqrt{3^2-1}}}$ is equal to which of the following?

a) **3**
b) **2**
c) $\dfrac{1}{\sqrt{3}}$
d) $\left(\sqrt{2}-1\right)$

Q7. DIRECTIONS *for questions 4 to 7:* Select the correct alterative from the given choices.
Find the percentage increase in the volume of a sphere, if its radius increases by 200%.

a) 700%
b) 800%
c) 2600%
d) 2700%

Q8. DIRECTIONS *for question 8:* Type in your answer in the input box provided below the question.

A is the set of integers from 1 to 200. If B is a subset of A, such that none of the elements of B is four times another, find the maximum possible number of elements in B.

Q9. DIRECTIONS *for questions 9 and 10:* Select the correct alternative from the given choices.
If $a \theta b = a2 - 2b$, find the value of $(4 \theta 2) - (3 \theta 1)$.

a) 5
b) **6**
c) **8**
d) **11**

Q10. DIRECTIONS *for questions 9 and 10:* Select the correct alternative from the given choices.
If the point $(a, 0)$ is equidistant from the points $(2, 3)$ and $(5, 6)$, find the distance between the points $(0, a + 3)$ and $(a + 1, 3a - 1)$.

a) **10**
b) $8\sqrt{2}$
c) **8**
d) **15**

Q11. DIRECTIONS *for question 11:* Type in your answer in the input box provided below the question.
If a, b and c are the lengths of the sides of a triangle, such that $(a - b)2 = c2 - ab$, find the measure of angle C (in degrees).

Q12. DIRECTIONS *for questions 12 to 19:* Select the correct alternative from the given choices.
Maneka scored 46 marks and 68 marks in her first two General Awarness examinations respectively. If she scored n marks in the third exam, and her average score in the three exams decreased by 2 marks when compared to that in the first two, find n.

a) **53**
b) 51
c) **64**
d) **66**

Q13. DIRECTIONS *for questions 12 to 19:* Select the correct alternative from the given choices.

Chintu was very fond of orange juice and so he secretly took out a bottle containing 330 ml of orange juice from the fridge. In the first minute, he consumed half the contnets in the bottle. In the second minute, he consumed one-third of the contents remaining in the bottle, and in this manner he continued to consume $\dfrac{1}{(n+1)}$ th part of the remaining contents in the bottle in the nth minute. How many ml of orange juice was remaining in the bottle after 10 minutes?

a) **20**
b) **30**
c) **45**
d) **48**

Q14. DIRECTIONS *for questions 12 to 19:* Select the correct alternative from the given choices.
If a triangle with integral sides (in cm) has a perimeter of 6 cm, find the area (in sq. cm) of the triangle.

a) $\sqrt{3}$
b) $\dfrac{\sqrt{3}}{2}$
c) **2**
d) Cannot be determined

Q15. DIRECTIONS *for questions 12 to 19:* Select the correct alternative from the given choices.

If the product of all the possible values of x, such that $x^{\log_{10} x^2} = 1000x$ is given by 10m, find the value of m.

a) $\dfrac{3}{2}$
b) **1**
c) **−1**
d) $\dfrac{1}{2}$

Q16. DIRECTIONS *for questions 12 to 19:* Select the correct alternative from the given choices.
In an infinite geometric progression, if each term is equal to three times the sum of all the terms that follow it, then the common ratio of the progression is

a) $\dfrac{1}{3}$

b) $\dfrac{1}{4}$

c) $\dfrac{1}{2}$

d) $\dfrac{1}{6}$

Q17. DIRECTIONS *for questions 12 to 19:* Select the correct alternative from the given choices.
When $x^{11} + x^5 + 2$ is divided by $x + 1$, the remainder is

a) 0.
b) **1.**
c) **4.**
d) **18.**

Q18. DIRECTIONS *for questions 12 to 19:* Select the correct alternative from the given choices.
If $a + 2b + 3c + 4d = 120$, where a, b, c and d are positive real numbers, what is the maximum possible value of the product $a^4 b^3 c^2 d$?

a) **$2^{20} \times 3^{10}$**
b) **$2^{18} \times 3^{10}$**
c) **$2^{25} \times 3^{11}$**
d) **$2^{24} \times 3^{10}$**

Q19. DIRECTIONS *for questions 12 to 19:* Select the correct alternative from the given choices.
If $f(x) = \dfrac{12}{|x-3|+4}$, find the maximum value of $f(x)$.

a) **2**
b) $\dfrac{3}{2}$
c) 3
d) **4**

Q20. DIRECTIONS *for question 20:* Type in your answer in the input box provided below the question.
87 men can do a certain job in 94 days. The same job is instead started by one man on the first day and then, from the second day onwards, each day some more persons join the work. If the number of persons joining on the nth day ($n \geq 2$) is twice that of those joining on the $(n-1)$th day, in how many days will the job get completed?

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

If P and S are the product and the sum of the roots of the equation $17x^2 - 12x + 36 = 0$, which of the following gives the value of $\dfrac{P}{S}$?

a) $\dfrac{5}{2}$

b) 3

c) $\dfrac{3}{17}$

d) **6**

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

How many numbers *abc* in the number system to the base 8 will satisfy both of the following conditions?

I. The number lies between $(101)_{10}$ and $(372)_{10}$.

II. $7 > b > c > 2$.

a) **30**

b) **29**

c) **28**

d) **27**

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

Which of the following gives the value of $\dfrac{3^{n+4} - 13\times3^n}{3^{n+2} + 8\times3^n}$?

a) **3n**

b) 4

c) **4(3n)**

d) **9**

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

$f(x)$ is a quadratic funciton in x which attains a maximum value of 5 at $x = -1$. If $f(0) = 2$, find the value of $f(2)$.

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

Kamran went up a hill at 7.5 km/hr and then came down covering the same distance at 5 km/hr. What is his average speed over the entire round trip (in km/hr)?

a) $5\dfrac{3}{4}$

b) 6

c) $6\dfrac{1}{3}$

d) $6\dfrac{1}{9}$

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

Find the value of b, if $a + b + ab = 124$, where a and b are integers, such that $a > b > 0$.

Enter your answer as '−1', if you think that the answer cannot be uniquely determined.

Q27. **DIRECTIONS** *for question 27:* Select the correct alternative from the given choices.

If $\log_3 45 - \log_{27} 125 = a$, which of the following gives the value of a?

a) 2

b) **3**

c) **4**

d) **6**

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

When each of 728, 842 and 937 is divided by a certain natural number, a, the remainder obtained is x, whereas when each of 257, 487 and 648 is divided by a certain natural number, b, the remainder obtained is y. If $x, y > 0$, find the value of $a + b + x + y$.

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

Nishit was walking towards the foot of a tower. He observed that the angle of elevation of the top of the tower changed from 30o to 60o as he moved $30\sqrt{3}$ m closer to the tower. Find the height (in m) of the tower.

a) 45

b) $30\sqrt{3}$

c) **60**

d) $45\sqrt{2}$

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

The difference between the total compound interest and the total simple interest for two years on a sum of Rs.9600, at a rate of interest of 15% per annum, compounded annually, is

a) Rs.288.

b) Rs.480.

c) Rs.216.

d) Rs.240.

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

In the figure below, if ABCD and EFGH are two overlapping squares, find the value of ($a + b$) (in degrees).
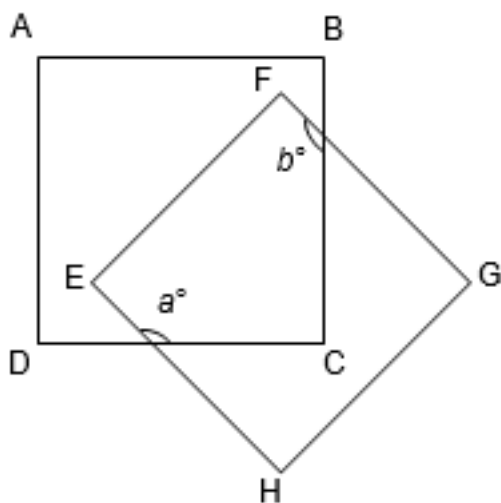
Q32. **DIRECTIONS** *for questions 32 to 34:* Select the correct alternative from the given choices.

L1, L2 and L3 are three shaving lotions, with the alcohol percentages (by volume) in them being 20%, c% and $2c$% respectively. If the alcohol percentage (by volume) in the mixture obtained by mixing 1 litre, 3 litres and 2 litres of L1, L2 and L3 respectively is 22%, find the value of c.

a) $12\dfrac{1}{2}$

b) 16

c) **20**

d) $16\dfrac{2}{3}$

Q33. DIRECTIONS *for questions 32 to 34:* Select the correct alternative from the given choices.
If $4x - 3y = 8$ and $12x - 9y = 25$, then

a) $x = 2, y = 0.$

b) $x = 0, y = \dfrac{8}{3}$

c) There is no solution possible for (x, y).

d) There are infinite number of solutions possible for (x, y).

Q34. DIRECTIONS *for questions 32 to 34:* Select the correct alternative from the given choices.
Two runners, standing a certain distance apart on a long straight road, starting simultaneously, would take 30 minutes to meet, if they ran in the same direction, but 10 minutes, if they ran in opposite directions. Find the ratio of the speed of the faster person to that of the slower person.

a) 2 : 1

b) 3 : 2

c) 3 : 1

d) 4 : 3