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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.

First described in Euclid's *Elements* 2,300 years ago, the established definition of the golden ratio is this: two objects are in the golden ratio if their ratio is the same as the ratio of their sum to the larger of the two quantities. The value this works out to is usually written as 1.6180. The most famous application of the golden ratio is the so-called golden rectangle, which can be split into a perfect square, and a smaller rectangle that has the same aspect ratio as the rectangle it was cut away from. You can apply this theory to a larger number of objects by similarly splitting them down.

In plain English: if you have two objects, and if, after you do the math above, you get the number 1.6180, it's usually accepted that those two objects fall within the golden ratio. Except there's a problem. When you do the math, the golden ratio doesn't come out to 1.6180. It comes out to 1.6180339887... And the decimal points go on forever.

"Strictly speaking, it's impossible for anything in the real-world to fall into the golden ratio, because it's an irrational number," says Keith Devlin, a professor of mathematics at Stanford University. But the golden ratio is like pi. Just as it's impossible to find a perfect circle in the real world, the golden ratio cannot strictly be applied to any real world object. It's always going to be a little off.

It's pedantic, sure. Isn't 1.6180 close enough? Yes, it probably would be, if there were anything to scientifically support the notion that the golden ratio had any bearing on why we find certain objects like the Parthenon or the *Mona Lisa* aesthetically pleasing. But there isn't. Devlin says the idea that the golden ratio has any relationship to aesthetics at all comes primarily from two people, one of whom was misquoted, and the other of whom was just making things up.

The first guy was Luca Pacioli, a Franciscan friar who wrote a book called *De Divina Proportione* back in 1509, which was named after the golden ratio. Weirdly, in his book, Pacioli didn't argue for a golden ratio-based theory of aesthetics as it should be applied to art, architecture, and design: he instead espoused the Vitruvian system of rational proportions, after the first-century Roman architect, Vitruvius. The golden ratio view was misattributed to Pacioli in 1799, according to Mario Livio, the guy who literally wrote the book on the golden ratio. But Pacioli was close friends with Leonardo da Vinci, whose works enjoyed a huge resurgence in popularity in the 19th century. Since Da Vinci illustrated *De Divina Proportione*, it was soon being said that Da Vinci himself used the golden ratio as the secret math behind his exquisitely beautiful paintings, such as the *Mona Lisa*.

One guy who believed this was Adolf Zeising. "He's the guy you really want to burn at the stake for the reputation of the golden ratio," Devlin laughs. Zeising was a German psychologist who argued that the golden ratio was a universal law that described "beauty and completeness in the realms of both nature and art... which permeates, as a paramount spiritual ideal, all structures, forms and proportions."

The only problem with Zeising was he saw patterns where none exist. For example, Zeising argued that the golden ratio could be applied to the human body by taking the height from a person's navel to his toes, then dividing it by the person's total height. These are just arbitrary body parts, crammed into a formula, Devlin

says: "When measuring anything as complex as the human body, it's easy to come up with examples of ratios that are very near to 1.6. "

But it didn't matter if it was made up or not. Zeising's theories became extremely popular, "the 19th-century equivalent of the Mozart Effect," according to Devlin, referring to the belief that listening to classical music improves your intelligence. And it never really went away. In the 20th century, the famous Swiss-French architect Le Corbusier based his Modulor system of anthropometric proportions on the golden ratio. Dalí painted his masterpiece *The Sacrament of the Last Supper* on a canvas shaped like a golden rectangle. Meanwhile, art historians started combing back through the great designs of history, trying to retroactively apply the golden ratio to Stonehenge, Rembrandt, the Chartres Cathedral, and Seurat. The link between the golden ratio and beauty has been a canard of the world of art, architecture, and design ever since.

Q1. According to the passage, it can be inferred that the Mozart effect

- ☐ a) connects the golden ratio to composing classical music.
- ☐ b) was also advocated by Zeising.
- ☐ c) refers to Mozart using the golden ratio to compose his music.
- ☐ d) became popular even though it was not backed by scientific studies.

Q2. Which of the following arguments will Keith Devlin most probably present to counter Zeising's claim about applying the golden ratio to the human body?

- ☐ a) While we can find examples of ratios in human body which equal 1.6, we cannot find examples of ratios which will exactly equal the golden ratio.
- ☐ b) A complex system can be defined by a specific ratio which in the case of the human body is the golden ratio.
- ☐ c) Because of the complexity of the human body, we can find examples of any ratio including the golden ratio.
- ☐ d) Zeising did not evaluate the characteristics of enough number of people to validate his claim about the golden ratio in the human body.

Q3. In the second paragraph, why does the author refer to the endless decimal part of the golden ratio as "a problem"?

- ☐ a) It is difficult to measure anything in the real world so accurately in order to be able to say that it follows the golden rule.
- ☐ b) Because it has an endless decimal part, the golden ratio cannot be applied to anything in real world.
- ☐ c) The golden rectangle, which is the primary example for golden ratio, itself does not follow the golden ratio.

- ☐ d) The endless decimal part of the golden ratio makes the golden ratio difficult to use as the basis for art.

Q4. For how many of the following can it be inferred from the passage that they believed in the application of a metric to art?

(I) Pacioli

(II) Zeising

(III) Livio

(IV) Dalí

- ☐ a) 1
- ☐ b) 2
- ☐ c) 3
- ☐ d) 4

Q5. Which of the following was created with the golden ratio definitely in mind?

- ☐ a) Stonehenge
- ☐ b) *Mona Lisa*
- ☐ c) Modulor system
- ☐ d) Chartres Cathedral

Q6. Which of the following can be inferred about the author's views regarding the golden ratio?

- ☐ a) Any art created on the basis of the golden ratio is not aesthetically pleasing.
- ☐ b) The golden ratio should not be considered as the law for defining beauty in art and aesthetics.
- ☐ c) There should not be any one law which defines beauty in art and aesthetics.
- ☐ d) The golden ratio should be used in architecture but not in art.

DIRECTIONS for questions 7 to 12: The passage given below is followed by a set of six questions. Choose the best answer to each question.

In the 1830s, Charles Darwin sent a breathless letter from South America to his mentor John Henslow, of his recent **forays** in the high passes and plateaus of the Andes. (He had a longstanding love of geology – as a

budding scientist he'd spend days with hammer in hand, breaking open rock specimens and pondering the histories of peculiar landscapes.) In the letter, he describes a scene full of "wedges of variously coloured rocks ... in every possible shape and formation." Visions of this likely lodged in his mind. A few years later, in 1838, puzzling over the birth of new species, he was seized by an image different and stranger than natural selection. He wrote in his notebook of "a hundred thousand wedges trying [to] force every kind of adapted structure into the gaps in the economy of Nature, or rather forming gaps by thrusting out weaker ones." In his vision, space was tight.

Over the next 20 years, as he wrestled his theory of evolution into shape, Darwin returned to the idea of wedges regularly. In the metaphor's fullest treatment, written in an unpublished precursor to *The Origin of Species*, he describes species as "packed closely together and ... driven in by incessant blows," as though they were wedges being struck again and again by a mallet. The wedges, he wrote, were of varying shapes and the shocks from each blow traveled across the field in all directions.

The wedges-as-species comparison made it as far as Darwin's first edition of *The Origin of Species*, published in 1859. But at some point soon after Darwin abruptly removed it, and it never appeared again. Today, a century and a half later, Darwin's eerie metaphor of a vast and wedge-filled landscape, pounded by the blows of an unseen hammerer, is (almost) all but forgotten. He never explained why he dropped it, but one possible reason is that he doubted people would like it. To those with no interest in rocks, such a metaphor would have seemed bleak and alien: An invisible hammer drives one wedge down, then another, with no obvious rationale. Charles Darwin gave us both kinds of metaphors, big winners and total flops. It's nature as whack-a-mole, with humans as just another mole being whacked into – and perhaps one day out of – existence. One modern scholar describes the idea as "grotesque" and even "shockingly sadistic." To Darwin's readers, imagining the history of life in such violent and mechanical terms might have been at least unpalatable, and at most unbearable.

Whatever his reasons for abandoning the wedges, it was likely not a rash decision. Darwin did not take metaphors lightly. He honed them, defended them, and held on to them tightly, defying detractors. Several of his contemporaries, for instance, were displeased with "natural selection." His one-time rival turned comrade-in-arms, Alfred Russell Wallace, was particularly critical. In a letter to Darwin, sent after publication of the *Origin*, Wallace argued – no doubt with a wink – that the metaphor was not well "adapted" to convey his theory of evolution to the public. He was concerned that the word "selection" encouraged readers to view nature as a forward-looking, intelligent designer that was shaping the evolutionary course of life.

Wallace, it turns out, was astute in his reading of Darwin's language. According to Darwin biographer Janet Browne, Darwin often seemed to imagine nature as an "all-seeing farmer in the sky," a benevolent overseer that selects, scrutinizes, and rejects. As Wallace saw it, the problem with this rosy view is that, strictly speaking, it's wrong. There is no nice, celestial farmer – just a struggle for existence, with winners and losers.

Over the objections of Wallace and others, Darwin clung to "natural selection" even as he discarded the wedges. Perhaps he sensed the power of his "all-seeing farmer" and, in doing so, intuited something deep about human psychology. People are deeply familiar with the logic of purposeful design, and research has shown that they like to view the world through this lens. When faced with hard-to-explain phenomena, they invoke higher powers or hidden plans – concepts like God, fate, and karma all speak to this impulse. The idea of nature as a selecting agency plays to our biases to brilliant effect.

Q7. All of the following are implications of the sentence “In Darwin’s vision, space was tight.” mentioned in the last sentence of the first paragraph EXCEPT?

- ☐ a) If one species wedged its way in, another had to pop out.
- ☐ b) Those species that fit well withstood the jostling and remained in place, while those that didn’t would eventually be ejected.
- ☐ c) Nature rejected the earlier species when a new species evolved.
- ☐ d) There is limited space for various species to survive.

Q8. How was Darwin’s concept of “Natural Selection” viewed by his contemporary Alfred Wallace?

- ☐ a) Wallace viewed nature as a forward looking intelligent designer.
- ☐ b) Wallace likened nature to an all-seeing farmer in the sky – a benevolent overseer that selects and rejects.
- ☐ c) Darwin and his contemporaries including Wallace recognized natural selection as a metaphor for evolution.
- ☐ d) Wallace was of the opinion that natural selection involved trials of life with some species emerging as successful or champions and others as disadvantaged or defeated.

Q9. In *The Origin Of Species*, Charles Darwin described species as “packed closely together and driven in by incessant blows” as though they were wedges being struck again and again by a mallet. Why did Darwin drop the “wedges-as-species” metaphor from his later publications?

- ☐ a) Darwin took metaphors lightly and in a rash decision decided to eliminate the use of the metaphor in his later works.
- ☐ b) Darwin usually defended his metaphors and held on to them tightly, defying detractors but he ultimately gave in after his comrade Alfred Wallace and biographer Janet Browne displayed their criticism for the metaphor.
- ☐ c) Darwin doubted that people would favour the metaphor which sounded eerie and remote to them.
- ☐ d) Darwin thought that the metaphor was far-fetched, grotesque and shockingly sadistic.

Q10. Why do people tend to believe in Darwin’s theory of natural selection even though the idea of “nature as an all-seeing farmer in the sky” seems untenable?

- ☐ a) People consider Darwin to be a great scientist.
- ☐ b) People were not familiar with the idea of different species living together in harmony and were impressed with Darwin’s theory.

- ☐ c) People may not have liked the idea of comparing a species with wedges and believed in Darwin when he abandoned the wedges-as-species metaphor.
- ☐ d) People find it easier to associate natural selection with familiar concepts of a super-human presence and this helps them relate to difficult-to-understand phenomena.

Q11. Which of the following ideas has been described by a modern scholar as “grotesque” and even “shockingly sadistic” in the passage?

- ☐ a) Humans might one day be out of existence.
- ☐ b) “wedges of variously coloured rocks in every possible shape and formation”
- ☐ c) The history of human life is associated with a lot of violence.
- ☐ d) Nature as an “all-seeing farmer in the sky” and as a “selecting agency”.

Q12. Which of the following sentences is an “out of context” sentence in the passage?

- ☐ a) He had a longstanding love of geology – peculiar landscapes. (para 1)
- ☐ b) Charles Darwin gave us both kinds of metaphors, big winners and total flops. (para 3)
- ☐ c) Wallace, it turns out, was astute in his reading of Darwin’s language. (para 5)
- ☐ d) The idea of nature as a selecting agency plays to our biases to brilliant effect. (last sentence)

DIRECTIONS for questions 13 to 18: The passage given below is followed by a set of six questions. Choose the best answer to each question.

The 21st century will be the century of the migrant. At the turn of the century, there were more regional and international migrants than ever before in recorded history. More people migrate because of environmental, economic, and political instability. Climate change may cause international migration to double over the next forty years. Today, the figure of the migrant exposes an important truth: social expansion has always been predicated on the social expulsion of migrants. In the 21st century, all previous forms of social expulsion and migratory resistance have reemerged and become more active than ever before.

Some of the migratory phenomena are directly related to recent events, such as the impoverishment of middle classes in certain rich countries after the financial crisis of 2008, subsequent austerity cuts to social welfare programs, and rising unemployment. The subprime mortgage crisis led to the expulsion of millions of people from their homes worldwide. Foreign investors and governments have acquired 540 million acres since 2006, resulting in the eviction of millions of small farmers in poor countries, and mining practices have become increasingly destructive around the world – including hydraulic fracturing and tar sands. The general increase in human mobility and expulsion is now widely recognized as a defining feature of the 21st century. “A specter haunts the world and it is the specter of migration.”

However, not all migrants are alike in their movement. For some, movement offers opportunity and profit

with only a temporary expulsion. For others, movement is dangerous and their social expulsions are more severe and permanent. Today, most people fall somewhere on this migratory spectrum between the two poles of “inconvenience” and “incapacitation.” All migrants share the experience that their *movement* results in a certain degree of expulsion from their territorial, political, juridical, or economic status. Even if the end result of migration is a relative increase in money, power, or enjoyment, the *process of migration itself* almost always involves an insecurity of some kind and duration: the removal of territorial ownership or access, the loss of the political right to vote or to receive social welfare, the loss of legal status to work or drive, or the financial loss associated with transportation or change in residence.

There are two central problems to overcome in order to develop the theory that migration figures function as mobile social positions and not fixed identities. The first problem is that the migrant has been predominantly understood from the perspective of stasis and perceived as a secondary or derivative figure with respect to place-bound social membership. Place-bound membership in a society is assumed as primary; secondary is the movement back and forth between social points. The “emigrant” is the name given to the migrant as the former member or citizen, and the “immigrant” as the would-be member or citizen. In both cases, a static place and membership are theorized first, and the migrant is the one who lacks both. Thus, more than any other political figure (citizen, foreigner, sovereign, etc.), the migrant is the one least defined by its being and place and more by its becoming and displacement: by its *movement*.

The second problem is that the migrant has been predominantly understood from the perspective of states. Since the state has all too often written history, the migrant has been understood as a figure without its own history and social force. This is not to say that migrants are always stateless but that the history of migrant social organizations has tended to be subsumed by state histories. Often, the most dispossessed migrants have created some of the most interesting non-state social organizations.

The aim of this book is not to explain the causes of all migration but to offer better descriptions of the conditions, forces, and trajectories of its historical emergence and contemporary hybridity. The present study does not provide a history of the relative deprivations of tourists, diplomats, business travelers, explorers, and state functionaries, although such a history would also be interesting. Instead, it focuses on the more marginalized figures of historical migration (nomads, barbarians, vagabonds, and the proletariat) for three reasons. First, because it is primarily their history that has been decimated and is in the most need of recovery. Second, because it is in their history that the emergence of each new form of social expulsion (of which the tourist experiences only the smallest degree) is most sharply visible. Third, because it is their history that more closely resembles the situation of most of the people we call migrants today.

Q13. According to the first paragraph of the passage, why will the 21st century be considered the century of the migrant?

- ☐ a) Migration has become the latest fashion.
- ☐ b) The number of migrants has increased and in the next 25 years, the rate of migration is predicted to be higher than during the last 25 years.
- ☐ c) The number of migrants has increased and there has been a reemergence of social-expulsion and migratory resistance.
- ☐ d) Immigrants have played a central role in the development of nations in the 21st century.

Q14. According to the passage, what is/ are the reasons for an increase in migration in the 21st century?

Identify all that apply and enter the corresponding number(s) 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) Global warming

(2) Political instability

(3) Demographic slippage into impoverishment

(4) Subprime mortgage crisis

(5) Destructive mining practices worldwide

Q15. In para 2, the author uses the word 'specter' to describe the phenomenon of migration. Why does the author have a negative view of migration?

- ☐ a) The gains of migration are always a risk, while the process itself is always some kind of loss.
- ☐ b) People increasingly migrate by choice today – the positive benefits of migration balance the negative consequences of migration.
- ☐ c) The percentage of total migrants who are non-status or undocumented is increasing, which poses a serious challenge to democracy and political representation.
- ☐ d) We are all becoming migrants today and migration today can be either free or forced.

Q16. According to the passage, what is a problem that needs to be overcome to develop a theory on migrants?

- ☐ a) Migrants being perceived as having a rich historical past.
- ☐ b) Migration being a relatively recent phenomenon.
- ☐ c) Migrants being studied under the lens of place-bound social membership.
- ☐ d) Migrants being studied under the purview of their movements.

Q17. According to the author, what is the aim of the book discussed in the passage?

- ☐ a) To explain the reasons for the increase in migration.
- ☐ b) To explain the causes of different types of immigration.
- ☐ c) To discuss the consequences of developing a political theory of the migrant.

- ☐ d) To explain the conditions and forces of reemergence of migration and to study the historical perspectives of several important migrant social organizations that have been marginalized by states.

Q18. Which of the following is a reason that the author stresses on the migration of nomads rather than that of tourists and diplomats in the book?

- ☐ a) A study of the migration of nomads allows one to diagnose the capacity of any migrant to create an alternative to social expulsion.
- ☐ b) There are hardly any historical records of the migration of nomads and therefore this needs to be recovered or reinterpreted.
- ☐ c) The popular press often refers to all people including tourists and diplomats as nomads even though they are not literally the same as early historical nomads.
- ☐ d) Social expansion has always been predicated on the social expulsion of nomads.

DIRECTIONS for questions 19 to 21: The passage given below is followed by a set of three questions. Choose the best answer to each question.

Discourse, as defined by Foucault, refers to:

ways of constituting knowledge, together with the social practices, forms of subjectivity and power relations which inhere in such knowledges and relations between them. Discourses are more than ways of thinking and producing meaning. They constitute the 'nature' of the body, unconscious and conscious mind and emotional life of the subjects they seek to govern.

Foucault's work is imbued with an attention to history, not in the traditional sense of the word but in attending to what he has variously termed the 'archaeology' or 'genealogy' of knowledge production. That is, he looks at the continuities and discontinuities between 'epistemes' (taken by Foucault to mean the knowledge systems which primarily informed the thinking during certain periods of history: a different one being said to dominate each epistemological age), and the social context in which certain knowledges and practices emerged as permissible and desirable or changed. In his view knowledge is inextricably connected to power, such that they are often written as power/knowledge.

Foucault's conceptual analysis of a major shift in (western) cultural practices, from 'sovereign power' to 'disciplinary power', in *Discipline and Punish: The Birth of the Prison* (1979), is a good example of his method of genealogy. He charts the transition from a top-down form of social control in the form of physical coercion meted out by the sovereign to a more diffuse and insidious form of social surveillance and process of 'normalisation'. The latter, says Foucault, is encapsulated by Bentham's Panopticon; a nineteenth century prison system in which prison cells were arranged around a central watchtower from which the supervisor could watch inmates, yet the inmates could never be certain when they were being watched, therefore, over time, they began to police their own behaviour. The Panopticon has become the metaphor for the processes whereby disciplinary 'technologies', together with the emergence of a normative social science, 'police' both the mind and body of the modern individual.

Foucault's focus is upon questions of how some discourses have shaped and created meaning systems that have gained the status and currency of 'truth', and dominate how we define and organize both ourselves and our social world, whilst other alternative discourses are marginalised and subjugated, yet potentially 'offer' sites where hegemonic practices can be contested, challenged and 'resisted'. He has looked specifically at the social construction of madness, punishment and sexuality. In Foucault's view, there is no fixed and definitive structuring of either social (or personal) identity or practices, as there is in a socially determined view in which the subject is completely socialized. Rather, both the formation of identities and practices are related to, or are a function of, historically specific discourses. An understanding of how these and other discursive constructions are formed may open the way for change and contestation.

Q19. Which word is used by Foucault to describe the prevalent ideas of the time which influenced the acceptance/ validity of knowledge?

- ☐ a) zeitgeist
- ☐ b) episteme
- ☐ c) paradigm
- ☐ d) normalization

Q20. Which of the following best parallels the Panopticon analogy used in the passage?

- ☐ a) Powerful and normative knowledge systems that imprison a modern individual.
- ☐ b) Random inspection of your work by the boss
- ☐ c) Peer review.
- ☐ d) CCTV in workplace.

Q21. As can be understood from the passage, what does Foucault's work describe?

- ☐ a) Change in society's way of thinking.
- ☐ b) Ways of government oppression.
- ☐ c) How discourses generate and verify the understanding of subjects and validity of ideas
- ☐ d) How our experiences determine our personalities and how we react – i.e. how we are the product of our experiences.

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.

There is nothing else to do and really nothing else that can be done. If one distills the essence of all established approaches to realization, then in practice, this is all they boil down to. Anything else that I attempt to do would be a movement within consciousness and as long as my center is exclusively within

consciousness – that is, within a subject-object relationship – I remain vulnerable to suffering. Doing this sadhana amounts to the wiping away of all frames of reference, which is my only salvation, for every frame of reference, however elevated or exalted, brings about dualism and, therefore, strengthens the mental prison. When all frames of reference have been removed, I find myself back in a state of innocence that prevailed before the thought of a psychological “I” had occurred within me.

So, through this practice I have not only unhooked myself, but I have also brought about a condition of alert understanding in which new hooks cannot solidify, for before a thought pattern can crystallize it is seen for what it is and neutralized. In this state in infinity, all sense of doership has disappeared. Everything happens automatically and there is nothing that can fundamentally affect me, because my state of being is one of complete transparency. Whatever activities take place, they no longer hold any ultimate or absolute goals; all has become mere “entertainment” and there is no longer any dread of the outcome.

The via negativa towards self-realization and happiness is often questioned and criticized for its negativism, by which is meant it being “excessively” and even exclusively preoccupied with suffering, instead of positively pursuing happiness. The reason for this apparently lopsided approach is very simple. Man does not have to reach out, need not make efforts towards happiness because his fundamental nature is just that it is happiness itself. Were it otherwise, and man had to struggle for its attainment, it would not be true happiness because whatever is attained can be lost again. Such a contrived happiness would be conditional upon circumstances and thus even be a fragile and relative thing in which the individual would not be truly free but always tied to those circumstances.

There is a happiness which is not fragile and does not limit the individual, because it is absolute and unconditional. It arises as soon as the conflict in the mind is resolved; nothing else is required. The conflict in the mind merely obscures the state of bliss, which is perfect silence and ever there, within ourselves. Unfortunately, we do not heed it, are not even aware of its existence due to a noisy mind which is never entirely still. So there is only one thing to do, and that is to consider, with a view to its understanding, suffering. Happiness is a by-product of something else, the elimination of suffering which comes only through self-knowledge in this via negativa, and is why the deepest thinkers throughout time have never admonished, “Be happy!” but instead, “know thyself!”; never “Work diligently towards happiness!” but instead “Work diligently towards your own deliverance (i.e. from suffering!),” so emphasizing the aspect of removing the obstacles to finding oneself. But before the obstacles fall away, one must make the best of them. For, as Sri Atmananda (Krishna Menon) has pointed out, obstacles should be cherished and utilized since they too point towards the Consciousness.

Happiness is not an attribute of one’s individuality, it is one’s self. Therefore one does not have to go beyond oneself, one does not need anything external. It is enough simply to find oneself.

Q22. The passage advocates an obliteration of a frame of reference because

- ☐ a) any reference curbs the freedom of the soul.
- ☐ b) any reference involves a deliberate consciousness.
- ☐ c) any reference entails twin entities
- ☐ d) any reference, unless it is exalted, demeans the self.

Q23. Which of the following can be understood from the passage?

Identify all that apply and enter the corresponding number(s) 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) Happiness is the quality experienced by an individual.

(2) Elimination of suffering can serve as a barrier to the enjoyment of absolute happiness.

(3) One need not have any apprehension regarding the consequences of one's action, if one erases the thought of being the doer of the action.

(4) The Via Negativa towards self-realization and happiness is often questioned and criticized because sadness follows happiness.

(5) When the author refers to a happiness which is not fragile and does not limit the individual, he implies that one should thoroughly consider all the frames of references and exclusively get preoccupied with suffering.

Q24. What does the author mean when he states ““deepest thinkers throughout time have never admonished, “Be happy!” but instead, “know thyself!”” (para 4)?

- ☐ a) Happiness is not permanent and subject-object orientation would lead one to suffering.
- ☐ b) Not attempting to follow one's heart will lead to happiness.
- ☐ c) Happiness is obtained when there is nothing bothering our brain.
- ☐ d) Happiness is a byproduct of something else which will be attained when one knows what one needs to achieve.

DIRECTIONS for questions 1 to 4: 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.

Q25. (1) In his *Autobiography*, he describes his way from a poor, unknown son of a candle-maker to a very successful business man and highly acknowledged member of the American society.

(2) Despite all these similarities between Frederick Douglass' and Benjamin Franklin's concept of the self-made man, the two men differ in their emphasis on relationships to other men.

(3) Key factors in this rise from rags to riches are hard work, a solid moral foundation and an education for self-improvement.

(4) Benjamin Franklin, one of the Founding Fathers of the United States, is sometimes said to have created the concept of the self-made man.

(5) Franklin creates the archetype of someone coming from low origins, who, against all odds, breaks out of his inherited social position, climbs up the social ladder and creates a new identity for himself.

Q26. (1) Beavers work at night and are prolific builders, carrying mud and stones with their fore-paws and timber between their teeth.

(2) Beaver dams are dams built by beavers to provide ponds as protection against predators such as coyotes, wolves, and bears, and to provide easy access to food during winter.

(3) Beaver dams can be disruptive; the flooding can cause extensive property damage, and when the flooding occurs next to a railroad roadbed, it can cause derailments by washing out the tracks.

(4) These structures modify the natural environment in such a way that the overall ecosystem builds upon the change, making beavers a keystone species.

(5) Beavers can rebuild primary dams overnight, though they may not defend secondary dams as vigorously.

Q27. (1) If all goes well, by May it should be ready to fly across America, stopping in four cities before landing in New York.

(2) A revolutionary solar-powered aircraft touched down recently at Moffett Airfield, in the heart of Silicon Valley.

(3) The aircraft will be reassembled by the end of March and then begin flight tests.

(4) The Solar Impulse project is a very different beast.

(5) No champagne corks were popped, however, for it arrived disassembled in the belly of a 747 cargo jet.

Q28. (1) Against this, Mr. Kennedy argues, some reasons for the Allies' success deserve much greater emphasis.

(2) On the battlefield, writes Paul Kennedy of Yale University, Germany's soldiers earned universal respect for "their capacity to react swiftly and fiercely to an assault on any front".

(3) His superlatives continue to flow: The Wehrmacht possessed a fabulous capacity to recover and strike back; Germany's paratroopers were ultracompetent; the Reich fought with astounding tenacity.

(4) Not, of course, its evil racism but its military prowess.

(5) Nearly 70 years after the Second World War and with most of the combatants now dead, a leading historian can praise the Wehrmacht.

DIRECTIONS for questions 5 and 6: Four alternative summaries are given below the text. Choose the option that best captures the essence of the text.

Q29. Economists face two competing criticisms. Either they are lambasted for their arrogance or accused of being unwilling to draw firm conclusions (in exasperation at the hedging of his economic adviser, President Harry Truman requested a one-handed economist). Dani Rodrik of Harvard University, drawing on an idea from Isaiah Berlin, splits economists into two camps: hedgehogs and foxes. Hedgehogs take a single idea and apply it to every problem they come across. Foxes have no grand vision but lots of seemingly contradictory views, as they tailor their conclusions to the situation. More foxlike behaviour will not by itself prevent the next crisis; politicians anyway will still be making the decisions. But it could help policymakers be better prepared.

- ☐ a) The world has seen two types of economists: hedgehogs and foxes. Their hedgehog or foxlike behaviour is what they face criticism for. Because of the hedging of his economic adviser, President Harry Truman requested a one-handed economist.
- ☐ b) There are two types of economists: hedgehogs and foxes. Hedgehogs are stubborn in nature. Foxes are able to draw a firm conclusion after a lot of dillydallying.
- ☐ c) On the one hand, economists can be single-minded like hedgehogs. On the other hand, they can also be likened to foxes. While seemingly having no objective and being unable to make up their minds, this fox-like behaviour might help them to be better prepared for a crisis.
- ☐ d) Economists are of two competing types. Some of them apply a single concept to all problems because they resemble hedgehogs. Others have no vision and are not able to take a fast decision because they resemble foxes.

Q30. During the sixties, Marshall McLuhan wrote his *The Gutenberg Galaxy*, where he announced that the linear way of thinking, renewed by the invention of the press, was on the verge of being substituted by a more global way of perceiving and understanding through TV images or other kinds of electronic devices. What is curious is that the media started to celebrate the decline of literacy and the overwhelming power of images just at the moment in which, on the world scene, appeared the Computer. The computer is not just an instrument by means of which one can produce and edit images, it has become an alphabetic instrument. On its screen there run words, lines, and in order to use a computer you must be able to write and to read. In this sense one can say that the computer has made us return to a Gutenberg Galaxy. People who spend their night engaging in an unending Internet conversation are principally dealing with words. If the TV screen can be considered a sort of ideal window through which one watches the whole world in the form of images, the computer screen is an ideal book on which one linearly reads about the world in the form of words and pages.

- ☐ a) When Marshall McLuhan wrote his *The Gutenberg Galaxy*, the media needed a certain time to accept the idea that our civilization was on the verge of becoming an image oriented one – which would have involved a decline of literacy. But the appearance of the computer has made the media reinforce the belief that literacy is of paramount importance.
- ☐ b) The classical computer provides a linear sort of written communication. The screen displays written lines. It is like a fast-reading book. In this sense the computer made us to return to a Gutenberg Galaxy.

- c) The printing press has been replaced with the computer. But the media was wrong to celebrate the decline of literacy as the return of the computer has enabled a return to the Gutenberg Galaxy. The linear way of thinking and reading is here to stay.
- d) It seemed that images from television and other electronic devices would take one away from the linear way of thinking brought in by the print medium. But the computer reinforces the need for literacy or a linear manner of thinking and reading as one has to go through the lines and pages on its screen just as one would in a book.

DIRECTIONS for questions 7 and 8: Five sentences, each with a blank, are given in each question. Five words are also given below the sentences. The blank in each sentence can be filled by one or more of the four words given. Each word can go into any number of sentences. Note that the sentence can change contexts depending on the use of different words which can be appropriate. Identify the number of sentences each word can go into and enter, in the input box given below the question, the **maximum number of words that can go into any sentence**. For example, if you think that the maximum number of words that can fit any sentence is 3, then enter 3 in the input box given below the question.

Q31. (i) "I am sorry; you have got the wrong _____", she said, to my dismay.

(ii) It is high time we started to _____ our problems.

(iii) The _____ - flying aircraft started circling the field.

(iv) In his inaugural _____, the election manifesto was rarely alluded to.

(v) The cattle began to _____ anxiously and run around in circles.

- (a) number
- (b) address
- (c) low
- (d) speech
- (e) impression

Q32. (i) It is never too late to start _____ in the stock market.

(ii) If you've ever studied a foreign language, you know that _____ doesn't happen overnight.

(iii) We had been lost in the _____ for three days without food.

(iv) Before they became a _____ for losses and lawsuits, mortgages were money-spinners for America's banks.

(v) Our tour guide decided to _____ us when the avalanche hit the Mt. Everest base camp.

- (a) desert
- (b) magnet
- (c) mystery
- (d) investing
- (e) beeline

DIRECTIONS *for questions 9 to 12:* 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 of five numbers as your answer.

Q33. (1) North Korea's old nemesis, America, has tightened sanctions against it.

(2) On his birthday on January 8th, when he may have turned 33, North Korea's dictator, Kim Jong Un, could bask in the cowed admiration of his benighted people.

(3) And perhaps most galling of all, millions of people around the world have downloaded "The Interview", a satirical film in which Mr Kim is mocked, sobs pathetically on live television and suffers the indignity of his head dissolving into flames.

(4) Abroad, few were wishing him many happy returns.

(5) Even China, the Kim dynasty's longtime protector, is witnessing a public debate about whether to abandon its awkward ally.

Q34. (1) But for over four decades Andrew Marshall's judgments, emanating from a small office in the Pentagon, have guided American defence policy.

(2) A historian once asked if even his brain was classified.

(3) Most of his reports are secret.

(4) Or so, at least, his supporters say.

(5) He rarely speaks in public and almost never to the press.

Q35. (1) That pitted him against economists who argued that rising prices should mitigate the squeeze by calling forth more supply.

(2) He won, as the effects of rising prices in the 1970s showed up in energy conservation and more oil exploration.

(3) Paul Ehrlich, a biologist of Thomas Malthusian disposition, argued in "The Population Bomb", a 1968 book, that rising populations would inevitably exhaust the world's natural resources, sending prices soaring and condemning people to hunger.

(4) But when exuberance returned to commodity markets in the 2000s, so did the old arguments: Jeremy Grantham, a money manager, wrote in 2011 that “price pressure and shortages of resources will be a permanent feature of our lives.”

(5) In a famous 1980 wager Julian Simon, an economist, bet Mr Ehrlich that commodity prices would be lower a decade later.

Q36. (1) In an aside, more than one character are involved but here the speaker’s speech is audible only to the audience and the speaker himself or herself rather than to other characters on stage.

(2) Originating in Hellenic tragedy as speech of a single character addressed to the audience, the soliloquy survived through the Middle Ages as a dramatic device that bridged the gap between the play’s fiction and its audience’s reality.

(3) However, in a soliloquy only one character is present and his speech is audible to the audience as well as to him.

(4) Although close, it is different from an aside, another dramatic technique frequently applied in plays.

(5) Normally, a soliloquy is a dramatic convention of exposing to the audience, the intentions and feelings of a character who speaks aloud to himself, explaining events while no other character remains present on the stage.

DIRECTIONS for questions 13 to 16: Each of the following questions has a paragraph or two from which a sentence has been removed. From the given options below the question paragraph(s), choose the one that completes the blank in the paragraph in the most appropriate way.

Q37. Five years ago Zach Sims, a sprightly, striving 21-year-old, launched Codecademy, a startup, to offer online courses on how to write software. He remembers pitching his idea to prospective investors only to hear a “chorus of no”. At the time, the naysayers thought coding was a weird, fringe activity for computer-science geeks. They were wrong. Since 2011, more than 25 million people have signed up for Codecademy. Meanwhile, in-person crash courses that teach computer programming, called coding boot-camps, have spread worldwide, as more people aspire to tech jobs or running their own startup. This year tuition fees at these boot-camps will reach around \$200m in America alone.

“Be nice to nerds. Chances are you may end up working for them,” wrote Charles Sykes, author of the book “50 Rules Kids Won’t Learn in School”, first published in 2007. Today there are more reasons than ever to treat nerds with respect. _____

- ☐ a) Never mind the fact that every company is clamouring to hire them, geeks are starting to shape markets for new products and services.
- ☐ b) Nerds’ influence now goes well beyond technology: they hold greater cultural sway.
- ☐ c) As a result, companies had better pay attention to the rise of a “nerd economy” that stretches well beyond their direct technology needs.

- ☐ d) Incumbent businesses, too, have started to take their cue from all this nerdiness.

Q38. It is rare enough for ballet to take a true story as its subject matter, rarer still for that storyline to be overtaken by the march of science. But such is the case of “Anastasia”, a ballet inspired by the curious case of Anna Anderson, a distressed young woman admitted to a Berlin mental asylum in 1920 after jumping off a bridge. Apparently unable to recall her own name, the woman was registered by the hospital as “Fräulein Unbekannt” (“Miss Unknown”). _____

- ☐ a) But Anderson’s story didn’t end in that Berlin asylum, nor with the three-act ballet made by Kenneth MacMillan, a choreographer.
- ☐ b) In truth, the story of the improbable survival of Anastasia was just too good for most people not to want to believe it
- ☐ c) When another inmate claimed to recognise her as a Romanov princess, a fevered search for the woman’s true identity was triggered and became a decades-long cause *célèbre*.
- ☐ d) The ballet centres around Anna Anderson as she sits in her iron hospital bed; curious well-wishers prod and observe her; violent flashbacks torment her.

Q39. What do a Braille printer made out of Lego and a drone that helps farmers monitor crops have to do with chipmaking? Intel Capital, the venture capital (VC) unit of the American technology giant, is not quite sure yet but it wants to find out. It recently announced it was taking stakes in 16 startups, including the firms making these products. Intel has been in the venture-capital business for over 20 years, and has invested in more than 1300 companies in 56 countries. _____

- ☐ a) Perhaps as a result, the new generation of venture units looks better integrated with their parents: instead of chasing the next Facebook (or drone), they tend to invest in industries related to the firm’s main business.
- ☐ b) Over that time corporate enthusiasm for venture capital has waxed and waned – but has seldom been greater than it is now.
- ☐ c) These are some indications that corporate VC is working better than in the past.
- ☐ d) A bank in Silicon Valley estimated last year that corporate VC yields three times the number of patents per dollar invested than in-house R&D.

Q40. It might not rank with the Battle of the Somme, but 2016 also marks the 100th anniversary of the Treaty of the Danish West Indies, which transferred sovereignty over the Caribbean islands of St John, St Thomas and St Croix from Denmark to America, for \$25m (worth \$550m today). The deal removed trade barriers between the Virgin Islands and their region’s economic superpower, and prevented them from falling into German hands during the First World War. Now, it stands as the last time a country has directly sold control over territory to another.
_____.

America’s Louisiana Purchase from France in 1803 and Alaska Purchase from Russia in 1867 were big examples, and remain perfectly legal under international law. But in the post-colonial age, borders move

when a state breaks up, or countries settle a dispute or, occasionally, by use of force, not because two governments simply agree to trade a chunk of land. What if that changed? With a little imagination, it is possible to see a large and varied market for such trades.

- ☐ a) Even more prevalent would be militarily motivated purchases.
- ☐ b) Countries whose very existence is threatened by global warming, such as Nauru, have a powerful incentive to acquire higher-elevation islands from nearby states.
- ☐ c) Such transactions were once common.
- ☐ d) Small, rich, densely populated countries would be natural buyers from land-rich, poorer states.

DIRECTIONS for questions 17 to 20: In each question, the word in capitals is used in **five** different ways. Identify the sentences(s) in which the usage of the word is INCORRECT or INAPPROPRIATE and indicate such a sentence/ sentences with the number 0. Indicate the sentences(s) in which the usage of the word is CORRECT or APPROPRIATE with the number 1. Then enter the correct sequence of 0's and 1's, corresponding to each of the sentences, in the order in which they are given, in the input box given below the question. [For example, if you think that sentences (a), (b) and (e) have the correct usage of the word and sentences (c) and (d) have the incorrect usage of the word, then enter your answer as 11001 in the input box.]

Q41. LET

- (a) How many people in the village ever see a Minister, let alone a President?
- (b) The girls were planning to give their mother a surprise on her birthday but little Susan let the cat out of the bag.
- (c) He's been attending interviews at various places, letting on that he is an MBA from Harvard Business School.
- (d) The teacher decided to let up on the weak student and gave him easy questions to solve.
- (e) Ronald did not know what he was letting himself for when he agreed to give the strangers a lift in his car.

Q42. MAKE

- (a) Let's hope the thieves make a clean breast of their crimes to the police.
- (b) The two employees make no bones about their feelings of animosity for each other.
- (c) Established entrepreneurs make light of the difficulties they face in the initial days of their new ventures.
- (d) He intends to make good for the loss by reducing his overheads and increasing the revenues in all subsequent deals.

(e) I will not make so bold as to blame the managing director for the outcome.

Q43. GO

(a) The boss will go off the deep end if the project is not completed on time.

(b) The CEO tends to go at the jugular of anyone who opposes his strategies.

(c) During elections, political parties go out on a limb in claiming that their party is the best.

(d) She decided to go the whole and settled on a career in jewellery designing.

(e) He decided to go at the job with single-minded purpose.

Q44. BOW

(a) They bowed us out of their living room as though we were kings.

(b) The athlete bowed out of the competition when he saw his opponents.

(c) She was all bows and scrapes in front of the guests.

(d) She had manipulated the ribbons into little bows in a matter of minutes.

(e) Her skin was youthful but her body was bowed down by grief and worry.

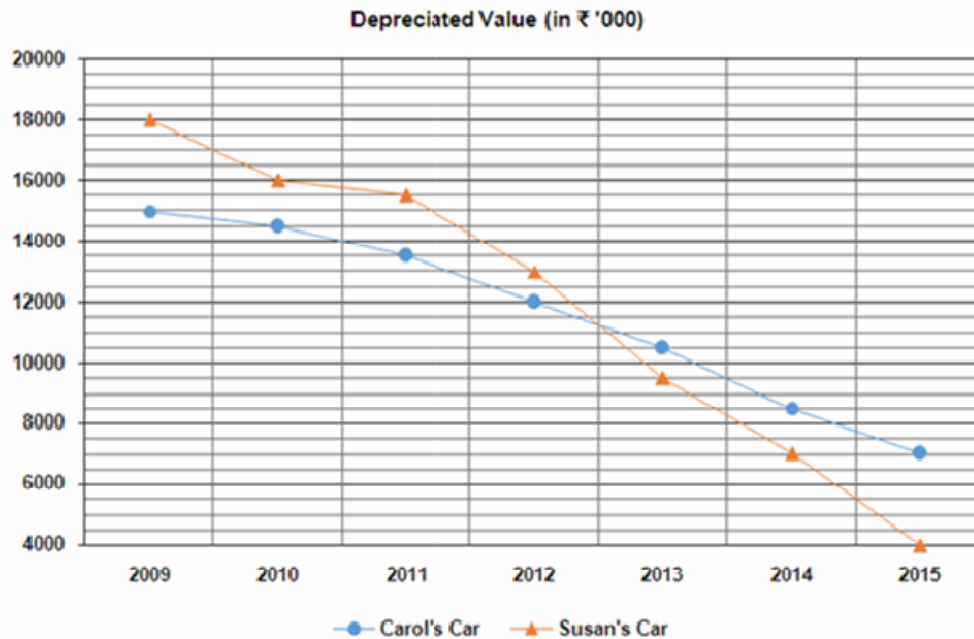
DILR

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

The insurance premium charged by a certain insurance company for a vehicle in any year is calculated on the basis of the depreciated value (in Rs.) of the vehicle at the beginning of that year and the age (in completed years) of the owner of the car at the beginning of the year using the following formula:

$$\text{Insurance Premium} = \frac{\text{Depreciated Value} + (\text{Age} \times 100000)}{250}$$

The line graph below presents the depreciated value (in Rs. '000) of the cars owned by Carol and Susan at the beginning of each year from 2009 to 2015. Carol was born on July 23rd, 1982 and Susan was born on April 15th, 1974. Both Carol and Susan paid the insurance premium every year from 2009 to 2015.



Q1. DIRECTIONS for question 1: Type in your answer in the input box provided below the question.

What is the insurance premium (in Rs.) for Carol's car in 2012?

Q2. DIRECTIONS for questions 2 and 3: Select the correct alternative from the given choices.

What is the highest insurance premium paid by either Carol or Susan in any of the given years?

- ☐ a) Rs.85600
- ☐ b) Rs.74100
- ☐ c) Rs.72000
- ☐ d) Rs.70400

Q3. DIRECTIONS for questions 2 and 3: Select the correct alternative from the given choices.

What is the approximate average annual insurance premium paid by Susan during the given period?

- ☐ a) Rs.65223
- ☐ b) Rs.63445
- ☐ c) Rs.64256
- ☐ d) Rs.62229

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

If in 2016, the insurance premium paid by Carol is the same as that paid by Susan, what is the difference (in Rs. lakhs) between the depreciated value of Carol's car in 2016 and that of Susan's car in 2016?

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

At the beginning of a day, Rajat had a total of Rs.1300 with him, in notes of exactly three denominations – Rs.10, Rs.50 and Rs.100. During the day, he made exactly eight transactions at different times, in each case using only the notes present in his wallet at the time of making the transaction. In each transaction, the notes that he received, if any, were also of the three denominations mentioned above. Further, in each transaction, Rajat always gave the notes first before receiving any notes in return. The following table provides the time at which each of the eight transactions took place, the number of notes of each denomination that he gave and the number of notes of each denomination that he received:

Time	Notes Given			Notes Received		
	Rs.10	Rs.50	Rs.100	Rs.10	Rs.50	Rs.100
10:00 AM	0	0	2	3	1	0
10:35 AM	7	2	0	2	0	0
11:35 AM	0	2	3	1	0	0
12:25 PM	0	2	3	4	0	1
1:45 PM	6	0	0	1	0	1
3:15 PM	4	0	0	1	2	2
4:50 PM	8	1	5	2	3	2
5:30 PM	0	1	0	0	0	2

Q5. DIRECTIONS for questions 5 and 6: Type in your answer in the input box provided below the question.

What is the total number of notes that he had in his wallet at the beginning of the day?

Q6. DIRECTIONS for questions 5 and 6: Type in your answer in the input box provided below the question.

What is the total number of notes in his wallet at the end of the day?

Q7. DIRECTIONS for questions 7 and 8: Select the correct alternative from the given choices.

What is the highest number of Rs.10 notes in his wallet at any point of time during the day?

- ☐ a) 21
- ☐ b) 18
- ☐ c) 15
- ☐ d) 11

Q8. DIRECTIONS for questions 7 and 8: Select the correct alternative from the given choices.

At which of the following times would he have at least six Rs.100 notes in his wallet?

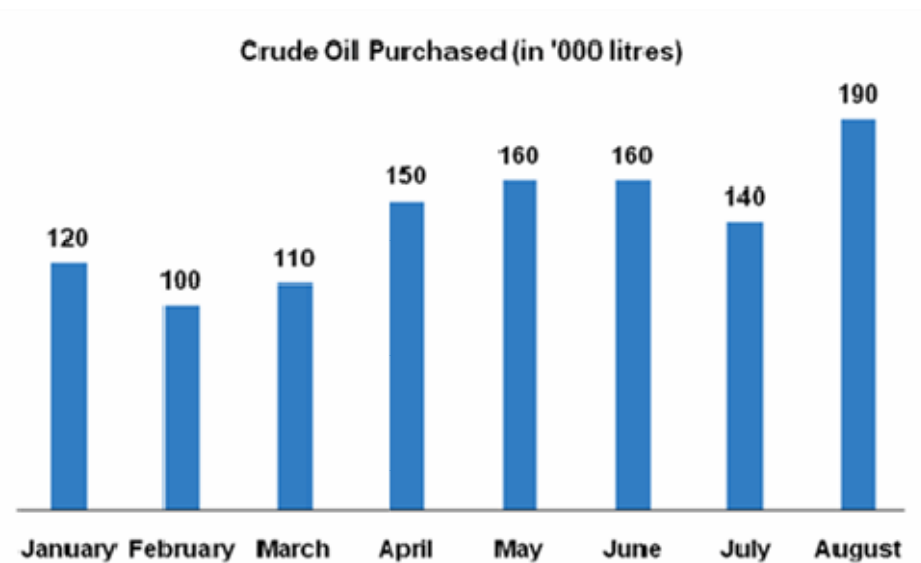
- ☒ a) 11:00 AM ✓ Your answer is correct
- ☐ b) 3:30 PM
- ☐ c) 12:00 PM
- ☐ d) More than one of the above

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

Harsha, the owner of a small oil refinery, purchases crude oil and processes it in his refinery. From one litre of crude oil, the refinery yields 500 ml of Gasoline, 200 ml of Fuel Oil, 75 ml of Jet Fuel, 150 ml of Kerosene and 125 ml of Lubricants. Because of the difference in densities, one litre of crude oil provides an output of 1.05 litres in various forms. This difference of 50 ml is called *Refinery Gain*.

Harsha always purchases the crude oil at the beginning of every month, processes the entire quantity purchased during the month and sells the entire output of the month by the end of the month. The cost of processing one litre of Crude Oil in Harsha's refinery is Rs.12. The table below provides the price per litre at which he purchased Crude oil every month and the price at which he sold Gasoline, Fuel Oil, Jet Fuel, Kerosene and Lubricants during each month from January to August. The bar-chart below the table provides the total quantity of Crude Oil purchased by Harsha in each month during the same period:

Month	Price per Liter (Rs./liter)					
	Crude Oil	Gasoline	Fuel Oil	Jet Fuel	Kerosene	Lubricants
January	26	52	110	24	32	64
February	29	51	124	20	30	60
March	31	48	125	32	32	60
April	32	46	114	16	36	64
May	29	51	113	20	40	72
June	24	53	100	24	28	64
July	21	54	120	20	32	60
August	26	50	104	24	36	56



$\text{Profit} = \text{Sum of the revenues obtained from selling the output} - \text{Cost of Crude Oil} - \text{Processing Cost}$

Q9. DIRECTIONS for questions 9 to 11: Select the correct alternative from the given choices.

In which month did Harsha make the maximum total profit?

- ☐ a) August
- ☐ b) July
- ☐ c) June
- ☐ d) May

Q10. DIRECTIONS for questions 9 to 11: Select the correct alternative from the given choices.

For how many months was the profit per liter of crude oil greater than the price of crude oil in that month?

- ☐ a) 0
- ☐ b) 1
- ☐ c) 2
- ☐ d) More than 2

Q11. DIRECTIONS for questions 9 to 11: Select the correct alternative from the given choices.

What is the total profit made by Harsha in the month of April?

- ☐ a) Rs.24.6 lakh
- ☐ b) Rs 25.83 lakh
- ☐ c) Rs 23.5 lakh
- ☐ d) Rs 26.12 lakh

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

What is the total *Refinery Gain* (in litres) of Harsha's refinery from January to August?

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

An MBA college offers ten different courses to the students in the second year. Among the ten courses, some courses can be started only after the completion of the relevant prerequisite courses. Each course is assigned a certain number of credits which are earned by a student after the completion of the course. Further, each course requires a certain time to complete. Any student can study any number of courses at the same time as long as all the relevant prerequisite courses are completed. The following table provides for each course, the name of the course, the relevant prerequisite courses to be completed, the number of credits assigned to that course and the time required (in weeks) to complete the course:

Course	Prerequisite Courses	Credits	Time Required (in weeks)
AM	SM, OD	3	3
SM	HR, OD	3	5
OM	FM, AM	4	6
IDF	IB, OB	3	1
IB	OB	3	3
OB	-	4	2
OD	IDF	2	1
HR	-	3	8
PS	OB	4	4
FM	OB, PS	5	3

Q13. DIRECTIONS for questions 13 to 16: Type in your answer in the input box provided below the question.

What is the minimum number of weeks required for a student to complete all the ten courses?

Q14. DIRECTIONS for questions 13 to 16: Type in your answer in the input box provided below the question.

What is the minimum number of weeks that will be required for a student to complete courses worth a total of at least 16 credits?

Q15. DIRECTIONS for questions 13 to 16: Type in your answer in the input box provided below the question.

What is the maximum number of credits that a student can earn in 15 weeks?

Q16. DIRECTIONS for questions 13 to 16: Type in your answer in the input box provided below the question.

If a student wants to complete FM before starting IDF, what is the minimum number of weeks required to complete all the ten courses?

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

Exactly seven persons, Anant, Imran, Rohit, Sandeep, Vikas, Yuvraj and Uday, were standing in a queue (not necessarily in the same order) at the billing counter in a supermarket for billing the items that they wanted to purchase. The number of items that each person wanted to purchase is a distinct positive integer less than eight. The following information is known about the number of items with each of them and their positions in the queue:

(i) Rohit, who was standing immediately behind Yuvraj, wanted to purchase three items more than Yuvraj.

- (ii) There were at least four persons standing in front of Uday and none of them wanted to purchase a lower number of items than him.
- (iii) The person who wanted to purchase the least number of items was standing two places away from Vikas.
- (iv) Sandeep, who was not standing at either end, was standing in front of Vikas.
- (v) The person standing immediately in front Anant wanted to purchase two items less than Uday.

Q17. DIRECTIONS *for question 1:* Select the correct alternative from the given choices.

Who had the highest number of items among the seven persons?

- ☐ a) Rohit
- ☐ b) Vikas
- ☐ c) Sandeep
- ☐ d) Anant

Q18. DIRECTIONS *for question 2:* Type in your answer in the input box provided below the question.

How many persons had a higher number of items than Anant?

Q19. DIRECTIONS *for questions 3 and 4:* Select the correct alternative from the given choices.

Who was standing immediately in front of the person with the second highest number of items?

- ☐ a) Vikas
- ☐ b) Sandeep
- ☐ c) Rohit
- ☐ d) Cannot be determined

Q20. DIRECTIONS *for questions 3 and 4:* Select the correct alternative from the given choices.

For how many persons can it be said that all the persons standing in front of them have a lower number of items than them?

- ☐ a) 0
- ☐ b) 1
- ☐ c) 2
- ☐ d) 3

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

On a particular day, six persons, Kalyan, Kumar, Kiran, Karan, Krishna and Keerthan, boarded a city bus at a bus stop. Each person wanted to get off the bus at a different stop among Brigade Road, Esplanade, Secretariat, Egmore, Saket and Dadar, not necessarily in the same order. The bus travels to each of these stops in a specific order. Further, it is also known that

- (i) Krishna got off the bus at the stop immediately after that at which Kumar got off the bus.
- (ii) Kumar, who did not get off the bus at Secretariat, was not the first person among the six to get off the bus.
- (iii) for the entire duration that Kiran was in the bus, there were at least two people among the six along with him.
- (iv) Karan, who was not the last person among the six to get off the bus, got off the bus at the stop immediately after Saket.
- (v) Brigade Road is the stop immediately after the stop at which Kalyan got off the bus.
- (vi) Kiran, who was not the first among the six persons to get off the bus, got off the bus at Egmore, while Krishna got off the bus at the stop immediately before Dadar.

Q21. DIRECTIONS for questions 5 to 8: Select the correct alternative from the given choices.

Who got off the bus at Dadar?

- ☐ a) Kalyan
- ☐ b) Karan
- ☐ c) Keerthan
- ☐ d) Kumar

Q22. DIRECTIONS for questions 5 to 8: Select the correct alternative from the given choices.

Who was the first person among the six to get off the bus?

- ☐ a) Kalyan
- ☐ b) Keerthan
- ☐ c) Kumar
- ☐ d) Cannot be determined

Q23. DIRECTIONS *for questions 5 to 8:* Select the correct alternative from the given choices.

How many of the six persons got off the bus before the bus stopped at Secretariat?

- ☐ a) 0
- ☐ b) 1
- ☐ c) 3
- ☐ d) 4

Q24. DIRECTIONS *for questions 5 to 8:* Select the correct alternative from the given choices.

Which of the following pairs of persons got off the bus at consecutive bus stops?

- ☐ a) Kalyan, Kiran
- ☐ b) Kiran, Krishna
- ☐ c) Karan, Krishna
- ☐ d) Karan, Kiran

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

Each of five cities – City A through City E – had a different monument among five monuments – Taj Tower, Eiffel Square, Tiananmen Garden, Babylonian Canal and Suez Mahal. Each monument was constructed in a different century among 14th century, 15th century, 16th century, 17th century and 18th century.

It is also known that

(i) City B has the monument which was constructed in the 17th century, while Babylonian Canal was constructed in the 16th century.

(ii) City D has neither the oldest monument nor the newest monument, while City A has Tiananmen Garden.

(iii) Suez Mahal is not in City C and neither was it constructed in the 17th century.

(iv) City E has Taj Tower, which was not constructed in the 14th century.

Q25. DIRECTIONS *for questions 9 to 12:* Select the correct alternative from the given choices.

In which city is Babylonian Canal present?

- ☐ a) City A
- ☐ b) City C
- ☐ c) City D

- ☐ d) Cannot be determined

Q26. DIRECTIONS *for questions 9 to 12:* Select the correct alternative from the given choices.

Which city has the monument constructed in the 18th century?

- ☐ a) City A
☐ b) City C
☐ c) City D
☐ d) City E

Q27. DIRECTIONS *for questions 9 to 12:* Select the correct alternative from the given choices.

Which of the following options correctly matches the city with the monument present in that city?

- ☐ a) City A, Eiffel Square
☐ b) City B, Suez Mahal
☐ c) City D, Suez Mahal
☐ d) City C, Eiffel Square

Q28. DIRECTIONS *for questions 9 to 12:* Select the correct alternative from the given choices.

Which of the following statements is false?

- ☐ a) Tiananmen Garden was not constructed in the 17th century.
☐ b) Suez Mahal is present in City D.
☐ c) Taj Towers was constructed in the 16th century.
☐ d) Babylonian Canal is not present in City B.

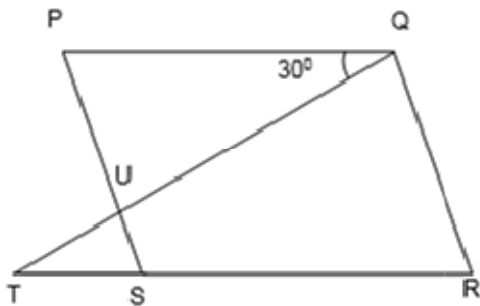
QA

Q1. The cost prices of three items, X, Y and Z, are in the ratio 2 : 3 : 4 respectively. If these three items are sold such that a profit of 20% is registered on X, a profit of 25% is registered on Y and a loss of 10% is incurred on Z, then which of the following gives the overall percentage of profit/loss made in the three transactions put together?

- ☐ a) 5% loss
- ☐ b) 5% profit
- ☐ c) $8\frac{1}{3}$ % profit
- ☐ d) $11\frac{2}{3}$ % profit

Q2. Fourteen years hence Sushma will be n times as old as she was ten years ago, and six years hence she will be m times as old as she was twelve years ago. If $m = 4$, find n .

- ☐ a) 7
- ☐ b) 4
- ☐ c) 5
- ☐ d) None of the above.



Q3.

In the figure above, PQRS is a parallelogram, in which $PQ = 36$ cm and $QR = 28$ cm. RS is extended to T, such that PS and QT meet at U. If $\angle PQU = 30^\circ$ and $ST = 6$ cm, find the measure (in cm) of PU.

- ☐ a) $24\frac{1}{2}$
- ☐ b) 15
- ☐ c) 18
- ☐ d) 24

Q4. Find the number of non-negative integer solutions for (x, y) , if $3x + 7y = 168$.

Q5. How many natural numbers less than or equal to 360 are divisible by 2 or 3 or 5?

Q6. For how many ordered pairs (a, b) will $\frac{2}{a} + \frac{3}{b} = \frac{1}{6}$, where a and b are even integers?

Q7. Ajay started a business with an investment of Rs.48000. After t months, Bimal joined him with an investment of Rs.48000, and after another t months Chanchal joined them both with an investment of Rs.24000. If at the end of the year, the profit share of Ajay was equal to the sum of the profit shares of Bimal and Chanchal, find the value of t .

- ☐ a) 2
- ☐ b) 3
- ☐ c) 4
- ☐ d) 5

Q8. Using all the letters of the word MEGHNAD, how many seven lettered words can be formed such that they begin with E or end with A?

- ☐ a) 720
- ☐ b) 1280
- ☐ c) 1440
- ☐ d) 1320

Q9. A natural number equals 75 times the average of its digits. How many three-digit numbers satisfy this condition?

Q10. If the graph of $f(x) = ax^2 + bx + c$ passes through the points $(2, 3)$ and $(1, 7)$, find the value of $(2b + 3c)$.

Q11. What is the maximum possible sum of the digits of a two-digit number, for which the square of the sum of the digits equals the difference of the squares of the individual digits?

Q12. If the sum of the reciprocals of the roots of the equation $ax^2 + bx + c = 0$ is $\frac{11}{28}$ and the product of the roots of the equation $cx^2 + bx + a = 0$ is $\frac{1}{28}$, find the sum of the roots of the equation $bx^2 + ax + c = 0$.

- ☐ a) $\frac{28}{11}$

- ☐ b) $-\frac{28}{11}$
- ☐ c) $\frac{1}{11}$
- ☐ d) $-\frac{1}{11}$

Q13. If $a = 2^{88} \times 5^{44}$, $b = 18^{40}$ and $c = 7^{63}$, which of the following is true regarding a , b and c ?

- ☐ a) $a > c > b$
- ☐ b) $a > b > c$
- ☐ c) $c > a > b$
- ☐ d) $c > b > a$

Q14. Find the minimum value of $\frac{48}{|8 - |11 - x||}$.

- ☐ a) 6
- ☐ b) 8
- ☐ c) 12
- ☐ d) 4

Q15. If the mean, median and mode of the set of values 32, 37, 40, 45, 45, 45 and a , when arranged in ascending order, form an arithmetic progression with a positive common difference, find the sum of all the possible values that a can assume.

Q16. In a class, each student opted for either dancing or singing for their extracurricular activity. 60% of the girls and 50% of the boys opted for dancing, whereas 50% of the girls and 55% of the boys opted for singing. The number of students who opted for dancing was six more than those who opted for singing. The number of girls who opted for singing was more than the number of boys who opted for singing. If the difference between the number of boys and number of girls who opted for singing and the difference between the number of boys and number of girls who opted for dancing were in the ratio 9 : 14, what is the total number of students in the class?

Q17. If the four consecutive angles of a quadrilateral are in arithmetic progression, and the largest angle measures 114° , find the measure of the smallest angle.

- ☐ a) 54°
- ☐ b) 66°

- ☐ c) 72°
- ☐ d) 74°

Q18. Find the value of $\frac{(2\sqrt{2}-6\sqrt{6})}{(\sqrt{2}-\sqrt{6})}$.

- ☐ a) $8+2\sqrt{3}$
- ☐ b) $8-2\sqrt{3}$
- ☐ c) $8-2\sqrt{6}$
- ☐ d) $8+2\sqrt{6}$

Q19. If $a_1, a_2, a_3, \dots, a_{50}$ is an arithmetic progression with a common difference of 1, find the value of $a_2 + a_4 + a_6 + \dots + a_{50}$, given $a_1 + a_2 + a_3 + \dots + a_{50} = 75$.

- ☐ a) 25
- ☐ b) 50
- ☐ c) 30
- ☐ d) 40

Q20. A square ABCD has four semicircular arcs drawn in it, with AB, BC, CD and DA as the respective diameters. If the side of the square is 28 cm, find the area (in sq.cm) of the region inside the square that belongs to not more than one of the semicircles. (Assume $\pi = \frac{22}{7}$)

Q21. If x, y and z are non-zero integers satisfying $-10 < x < y < z < 10$, and the minimum value

of $\frac{1}{xy} + \frac{1}{yz} + \frac{1}{xz}$ is $\frac{1}{m}$, find m .

Q22. If 2016 is expressed as a product of two positive integers with their difference being the minimum possible, then find the sum of those two integers.

- ☐ a) 84
- ☐ b) 90
- ☐ c) 92
- ☐ d) 97

Q23. In a country, state X has $a\%$ of the country's population and $b\%$ of its wealth, while state Y has $c\%$ of the country's population and $d\%$ of its wealth. If the total wealth of each state is shared equally by all the citizens residing in that state, find the ratio of the wealth of a citizen of state X to that of a citizen of state Y.

- ☐ a) $\frac{bc}{ad}$
- ☐ b) $\frac{ab}{cd}$
- ☐ c) $\frac{bd}{ac}$
- ☐ d) $\frac{ac}{bd}$

Q24. If the lines $x = \sqrt{3}y$, $x = -\sqrt{3}y$ and $x = 8\sqrt{3}$ are all tangents to the same circle, and the sum of the radii (in units) of all such circles possible is S , find the value of $\sqrt{3}S$.

Q25. If A starts a work, completes one-third of it and hands it over to B to complete the remaining work, it would take 40 days for the work be completed. Instead, if B first completes one-third of the work and then A takes over and completes the remaining work, it would take 35 days for the work to be completed. In how many day can A and B together complete the entire work?

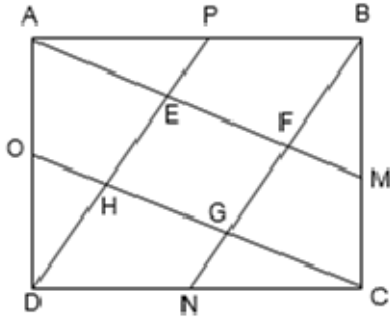
- ☐ a) 16
- ☐ b) 24
- ☐ c) 18
- ☐ d) 20

Q26. If $f\left(\frac{x}{4}\right) = x^2 + x - 4$, find the product of all the possible values of y such that $f(2y) = 8$.

- ☐ a) $-\frac{3}{16}$
- ☐ b) $-\frac{1}{2}$
- ☐ c) $\frac{3}{8}$
- ☐ d) $\frac{1}{8}$

Q27. Find the remainder when 4^{5^6} is divided by 9.

Q28. In the figure given below, ABCD is a rectangle whose length, AB, measures 20 cm and breadth, BC, measures 10 cm. If M, N, O and P are the midpoints of BC, CD, DA and AB respectively, find the ratio of the perimeter of the quadrilateral EFGH (in cm) to its area (in sq. cm).



- ☐ a) $\frac{\sqrt{17} + \sqrt{2}}{10}$
- ☐ b) $\frac{10\sqrt{2} + \sqrt{10}}{10}$
- ☐ c) $\frac{5\sqrt{2} + \sqrt{17}}{10}$
- ☐ d) $\frac{2\sqrt{2} + \sqrt{17}}{10}$