

VARC

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 tentative emergence of a modern or a “new” rhetoric has been characterized by the attempt both to recover and re-examine the concepts of classical rhetoric and to define itself *against* that classical tradition. The works of Richard Weaver, Richard McKeon, Albert Duhamel, and Edward P. J. Corbett helped draw attention to major tenets and values of the classical system. Daniel Fogarty’s important *Roots for a New Rhetoric* (1959) stands at a metaphorical crossroads affirming the continuing need for a viable rhetoric and sketching in the broad outlines of a “new” rhetoric that would meet that need:

[The new rhetoric] will need to broaden its aim until it no longer confines itself to teaching the art of formal persuasion but includes formation in every kind of symbol-using...; it will need to adjust itself to the recent studies in the psychology and sociology of communication; and, finally, it will need to make considerable provision for a new kind of speaker-listener situation.

The years since 1959 have witnessed numerous attempts to define modern rhetoric more fully – attempts that consistently have rested on distinctions drawn between classical rhetoric and an emerging “new” system...

Although stated in widely varying terms, the distinctions persistently drawn between classical and modern or “new” rhetoric fall under four related heads. Images of man and of society provide one area frequently cited as distinguishing the two rhetorical periods. According to many definers of new rhetoric, the classical tradition, and especially Aristotle, defined man as a “rational animal” who dealt with problems of the world primarily through logic or reason and who lived during a time characterized by stable values, social cohesion, and a unified cultural ideal. In contrast, modern rhetoric defines man as essentially a “rhetorical” or “symbol-using” or “communal” animal who constitutes the world through shared and private symbols. And this modern man is said to live not in a simple, cohesive society but in an aleatoric universe in which generally agreed upon values and unifying norms are scarce or non-existent. In such a universe, it is argued, the bases of classical rhetoric are simply inadequate.

The second distinction often drawn between classical and contemporary rhetoric – that classical rhetoric emphasizes logical proofs while modern rhetoric stresses emotional or psychological proofs – is closely related to the first. Young, Becker, and Pike argue, for example, that Aristotle’s image of man as a rational animal had a direct influence on his rhetoric: “Underlying the classical tradition is the notion that although men are often swayed by passions, their basic and distinguishing characteristic is their ability to reason ... [Thus for classical rhetoricians] logical argument... was the heart of persuasive discourse.” ...

A third often-cited distinction between the two periods concerns the rhetor-audience relationship, a relationship said to be characterized in the classical period by the manipulative, antagonistic, one-way or unidirectional communication. The new rhetoric is conversely said to posit not an antagonistic but a cooperative relationship between rhetor and audience, one based upon empathy, understanding, mutual trust, and two-way or “dialogic” communication. In *Rhetoric: Discovery and Change*, for instance, Young, Becker and Pike reject what they see as the classical model of “skilful verbal coercion” and introduce instead a “Rogerian rhetoric” of “enlightened cooperation.” In his 1967 and 1968 essays describing systems of rhetoric, Douglas Ehninger labels the new rhetoric “social” or “sociological” and argues that it is an “instrument for understanding.” The final distinction often drawn between the two periods is inextricably related to the rhetor-audience relationship just described. This distinction results from identifying the goal of classical rhetoric as persuasion, while the goal of the new rhetoric is identified as communication. In his widely influential 1936 study, *The Philosophy of Rhetoric*, I. A. Richards articulates this view:

Among the general themes of the old Rhetoric [which he associates with Aristotle] is one which is especially pertinent to our inquiry. The old Rhetoric was an offspring of dispute; it developed as the rationale of pleadings and persuadings; it was the theory of the battle of words and has always been itself dominated by the combative impulse.

Q1. The author states that “*Roots for a New Rhetoric* (1959) stands at a metaphorical crossroads” because it

- a) identifies the need for a “new” rhetoric as the classical rhetoric has become unviable.
- b) describes the outlines of the “new” rhetoric that needs to be developed.
- c) identifies the shortcomings of the classical rhetoric which paved the way for the development of “new” rhetoric.
- d) clearly enunciates the differences between the classical rhetoric and the “new” rhetoric.

Q2. Which of the following is the most appropriate example of modern rhetoric?

- a) Rhetoric that primarily appeals to the logic of the audience.

- b) Rhetoric that employs sensibility.
- c) Rhetoric that intimidates the audience so that they end up agreeing with the orator's point of view.
- d) Rhetoric in which the orator posits his opinion without listening to the audience.

Q3. Why does the author state that “The final distinction often drawn between the two periods is inextricably related to the rhetor-audience relationship.” (last para)?

- a) The third distinction mentioned in the passage and the final distinction both pertain to the roles of the rhetor and the audience in classical and modern rhetoric.
- b) The change in the rhetor-audience relationship from classical to modern rhetoric has modified the goals of the rhetoric between the two periods.
- c) The rhetor-audience relationship is based on mutual understanding and the goal of rhetoric is understanding.
- d) The goals of classical rhetoric and modern rhetoric are in accordance with the roles that the rhetor and the audience play in the two periods.

Q4. According to the passage, which of the following can be inferred to be a feature of “Rogerian rhetoric”?

- a) The rhetor considers the audience as a part of a communal society.
- b) The rhetor expresses himself so as to persuade the audience to agree with him.
- c) The rhetor not only expresses himself but also listens to the audience's perspective.
- d) The rhetor does not express views which are against the sentiments of the audience.

Q5. The excerpt provided in the last paragraph of the passage tries to answer which of the following questions?

- a) Why is mutual understanding considered a characteristic of classical rhetoric?
- b) Why is persuasion considered an integral part of classical rhetoric?
- c) What role do disputes play in classical rhetoric?
- d) Why did Aristotle advocate classical rhetoric?

Q6. Which of the following can be inferred to be true regarding modern society?

- a) The norms and rules which govern the modern society keep changing frequently.
- b) There are not many explicit norms to govern the modern society but there are tacit rules which everybody follows.
- c) The modern society is characterized by randomness without many set rules and norms to follow.
- d) The modern society is characterized by a unified cultural ideal.

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.

According to general opinion the concept of the *Kunstwollen* or “art drive” stands at the center of Riegl’s thought. What is the origin of this concept? Its starting point is the recognition of “style,” which took place during the course of the nineteenth century. If one classes them according to their purely external appearance, the diverse works of art can be divided up into differing groups and subgroups of varying size. In general, these groups of artworks form relatively closed spatial and temporal unities. They gather around certain central works which represent the “pure style.” ... There are rigorous procedures for this, and history has, as it were, experimented with them. A specific artistic “form” (a motif) can be picked out, for example, the ornamental spiral motif or the architectural form of the basilica, and one searches for the forms that have grown genetically out of it. A genetic series is thus established, in which one and the same genetically identical form (motif) undergoes metamorphoses in its artistic characteristics, its style. The same form persists, as it were, through various styles. Further, it can be shown that there is a correlation between such various genetic series, inasmuch as the same transformations occur in different places... The concept of style thus becomes initially extended through the immediate process of visual comprehension.

This concept of style as something grasped intuitively and described through highlighting individual stylistic characteristics is by its very nature extremely erratic and uncertain. “The purely empirical depiction of styles by their individual characteristics is not scientific, in the proper sense of the word. It stops with merely outward description.”

The phenomenon that has been observed is therefore the following. Forms are transformed, their “external character,” their style changes, now the simple question is raised as to what drives this formal change. What is

changing at a fundamental level, when the surface style changes? One can thus also phrase the second question as follows: We know the dependent variable factor, namely the style of works of art; what is the variable independent of all others? These two questions are not of equal importance; most immediately we shall give prominence to the second.

Various answers have been given to this question. One answer, or, more precisely, one *apparent* answer, that of Semper or, more properly, Semperians, is that purpose, material, and techniques change, and that these are the determinants of style. There is an intellectual factor in addition which can be ignored (and this is a mistake) because it is secondary. If one then asks further what these three variables depend on, one comes to the result that since blind chance is not admitted the independent variable is the material culture: crass materialism! There is no need at all to develop this point of view through to its final consequences. For it is clear that according to this answer, style means something quite different from what it meant in our question, and that our question only has the appearance of having been answered... In terms of our concept of style, forms that have been executed with different materials and techniques and for different purposes can remain unchanged. This solution is thus useless for us. Riegl comprehensively criticized this answer and one other, which no one holds to today.

Riegl himself offered an opposing answer. The independent variable is the “direction of the *Kunstwollen*” to use the rough general expression. The purpose, the material and the technique also change, but they are negative factors, mere “frictional coefficients,” which have to be subtracted in order to recognize the pure “direction of the art drive” that is the positive determining factor. In any case, two of them are partly dependent on the direction of the art drive, which also determine the choice of material and technique.

Here we have arrived at the concept and theory of the art drive on the basis of questions raised by the concrete praxis of scholarly research. The concept is introduced to clarify the quite concrete phenomenon of style. The theory of the art drive is a “new explanation of style.”

Q7. The author states at the beginning of the second paragraph, “There are rigorous procedures for this.” What does ‘this’ refer to?

- a) The meaning of *Kunstwollen*.
- b) Understanding the relation between style and form.
- c) Recognizing what style is.
- d) The role of *Kunstwollen* in Riegl’s philosophy.

Q8. Why does the author call Semperian’s answer as an “*apparent* answer” in the sixth paragraph of the passage?

- a) The Semperian’s answer erroneously assumes that style can remain unchanged with changes in purpose, material and technique.

- b) The author believes that the Semperians are mistaken in not considering intellectual factor as a determinant of style.
- c) The Semperians do not consider the influence of *Kunstwollen* on style in answering the author's question.
- d) The concept of style according to the Semperians is different from that according to the author.

Q9. According to the passage, what is the relation between 'art drive' and 'purpose, material and technique'?

- a) Material and technique partly determine the direction of the art drive, which in turn determines the purpose.
- b) The changes in purpose, material and technique indicate the direction of the art drive.
- c) The changes in purpose, material and technique interfere when trying to understand the direction of the art drive.
- d) The direction of art drive determines the changes in purpose, material and technique.

Q10. Which of the following will Reigl most probably agree with regarding *Kunstwollen*?

- a) The direction of the *Kunstwollen* changes whenever there is a change in the style of art.
- b) The direction of the *Kunstwollen* is independent of the styles of art.
- c) The direction of the *Kunstwollen* helps in identifying variations in an artistic form across temporal and spatial planes.
- d) The direction of the *Kunstwollen* explains why the changes in style are highly erratic and uncertain.

Q11. According to the author, which of the following is true regarding form?

- a) Identical artistic forms occur within the confines of a particular style.
- b) Identical artistic forms are confined neither to a particular style nor to specific purpose, material and technique.
- c) Artistic forms change with changes in purpose, material and technique.
- d) Identical artistic forms are not confined to a particular style but are confined to a specific purpose, material and technique.

Q12. Which of the following can be inferred from the fourth paragraph of the passage?

- a) Defining concept of style in a scientific manner will result in an erratic and uncertain definition of the concept of style.

- b) The concept of style should be defined independent of any external descriptions.
- c) Direction of art drive should be used for defining the concept of style.
- d) Defining the concept of style only through its visible manifestations will not be comprehensive.

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. To communicate anything reasonable on the subject of combinatorics requires raising and answering quite a number of related questions. First, what is combinatorics?

...Combinatorics is the area of mathematics that is concerned with, relates to, employs, studies combinatorial arguments. So our second question arises: what is a combinatorial argument?

Explored, known mathematical results can be pictured as a huge imaginary edifice of truths all derivable from one another and from certain original principles. Mathematicians typically try to extend this structure, or apply parts of it to the real world, or both. Such efforts consist of arguments, every argument containing two components: knowledge about the existing structure of mathematics, and *ingenuity*, including complex, devious, and perhaps very detailed and complicated reasoning.

A *combinatorial argument* is one that consists predominantly of ingenuity is detailed reasoning rather than knowledge of existing mathematics. This is in contrast to a *knowledge-based* argument, which relied heavily on piecing together known results. An argument of the following form is not combinatorial: by the theorem of X we have A; by the theorem of Y we have B; from A and B we get the desired conclusion. This kind of argument is based heavily on knowledge of the theorems of X and of Y. It could, however, be a combinatorial argument to you if you were ignorant of the theorems and recreated them yourself.

It is obvious why combinatorial arguments, and by extension, combinatorial subjects were never popular among traditional mathematicians. They spent much of their lives learning lore about their subject. Combinatorial arguments tend to ignore this knowledge. Combinatorics can be attempted by inspired amateurs and dilettantes who know little of formal mathematics, and much of it was developed by such people. One goal of formal mathematics is to systematize the structure of mathematical knowledge to abolish the need for intricate reasoning and thought. Combinatorics therefore represents the areas of mathematics that are failures in this sense, those for which systematic developments of past knowledge are relatively useless in attacking present problems. At one time combinatorics was derisively referred to as the "slums" of mathematics.

Of course, talented mathematicians in all fields routinely use and invent combinatorial arguments. They are honorary combinatorists, differing from true combinatorists mainly in that the problems they work on are far more

heavily imbedded in the structure of mathematics than are most combinatorial problems...

... When research is performed successfully in any area, results are obtained and knowledge is developed. Eventually all the relatively easy and clearly important results have been discovered, and what is left is difficult or obscure or special or, on first glance, uninteresting. The more we discover, the less is left to find. This development of knowledge is inevitable in all fields, and tends, eventually, to make subjects that have been long and heavily studied forbidding. As a subject matures in this way it becomes necessary for a newcomer in that field to learn more and more existing results to develop the ability to attack problems of less and less interest. In a combinatorial subject, the situation is worse: as it develops, knowledge of past results inevitably grows in importance, eventually becoming as important as ingenuity, and the subject ceases to be combinatorics at all, receding into just one more area of mathematics.

Q13. According to the passage, which of the following is true regarding combinatorics?

- a) Mathematicians who are associated with traditional mathematics do not use combinatorics in their research.
- b) The subject of Combinatorics utilises knowledge which is contradictory to the conventional knowledge in mathematics.
- c) Combinatorics does not use any of the existing knowledge about the structure of mathematics.
- d) Combinatorics is developed mostly by people who are not professional mathematicians.

Q14. Which of the following is true regarding combinatorial arguments and knowledge based arguments?

- a) The problems which can be solved using combinatorial arguments are different from the ones that can be solved using knowledge based arguments.
- b) All the problems that can be solved using combinatorial arguments can also be solved using knowledge based arguments.
- c) Combinatorial arguments can be used for solving those problems which cannot be solved using knowledge based arguments.
- d) Knowledge based arguments are easier for the layman to understand as compared to combinatorial arguments.

Q15. Which of the following is the primary reason that combinatorial arguments are not popular among traditional mathematicians?

- a) Combinatorics highlights the failure of traditional mathematicians in solving the problems which cannot be solved using systematic developments of past knowledge.
- b) Combinatorics does not make use of most of the systemic knowledge of mathematics which the traditional mathematicians spend most of their lives learning.
- c) Combinatorics make use of intricate reasoning and thought with which traditional mathematicians are not comfortable.
- d) Traditional mathematicians are not comfortable using the subject that amateurs and dilettantes developed.

Q16. According to the passage, which of the following is a difference between honorary combinatorists and true combinatorists?

- a) The former are talented mathematicians while the latter are amateur mathematicians.
- b) The former use combinatorics within the existing structure of mathematics while the latter solve problems relatively unconnected to the existing structure of mathematics.
- c) Even though the former use combinatorics in their research, they do not mention it anywhere in their research unlike the latter.
- d) The former use combinatorics to solve problems which are crucial to mathematics unlike the latter.

Q17. Which of the following can be inferred from the last paragraph of the passage?

- a) As more and more research happens in any subject, the less there will be to learn for a newcomer in the subject.
- b) The more important combinatorial knowledge becomes, the less extensive the combinatorial subject will be.
- c) The more research that happens in a combinatorial subject, the more interesting it will be to a newcomer.
- d) A combinatorial subject grows in importance as more research happens in the subject.

Q18. If a problem can be solved using the results of three different mathematical theorems, which of the following can be inferred about the problem?

- a) The problem may be solved using knowledge-based argument but cannot be solved using combinatorial argument.
- b) The problem may be solved using combinatorial argument but cannot be solved using knowledge-based argument.

- c) The same problem may be solved by using either knowledge-based argument or combinatorial argument.
- d) The problem can be solved only by honorary combinatorists but cannot be solved by true combinatorists.

Q19. Which of the following best summarizes the content of the first para of the passage?

- a) The neglect of the basics of good governance is not a sudden phenomenon and is primarily due to the failure of the law and order machinery in the country, leading to a gradual decline of trust in the institutions of good governance.
- b) The neglect of the rudiments of good governance is a recent phenomenon. The quintessence of the author's charge is that the Indian Civil Service officers who controlled virtually all the levers of the governance and deliberated directly at the highest level of policy formulation and decision making distanced themselves from their roles.
- c) Politicians have induced the Indian civil servants to distance themselves from the sphere of governance. The neglect of the basics of good governance is not a recent phenomenon. The gradual loss of trust in the institutions of good governance occurred pre-independence.
- d) The gravamen of the author's complaint is that the absence of the existence of the system of checks and balances among the organs of the government and the negative influence of politicians who concentrate only on "interior decoration" and not on nation building have sowed the seeds of the neglect of the basics of good governance in the country.

Q20. Which of the following is true from the lines "“Democracy in India is only a top dressing on the Indian soil.” The country is facing "Goldilocks dilemma" even after more than half a century of independence." (para 3)?

- a) People have diverse views and needs and democracy is but a superficial way of addressing them. The "Goldilocks dilemma" refers to the fact that various strategies of governance have been tried in India, without our being able to zero in on the one most applicable.
- b) Democracy is the best form of governance but the Indian constitution was faultily designed. Application of British models of governance in India without assessing their suitability is the "Goldilocks dilemma" that India now faces.
- c) Democracy is an artifact in the scheme of things. Not knowing the interrelationships between the Legislature, the Executive and the Judiciary has led to a "Goldilocks dilemma" for the nation.
- d) The "Goldilocks dilemma" refers to the fact that various systems of government have been tested in the course of India's history post

independence and one is still unable to decide which system is the best one to be implemented.

Q21. Which of the following can be understood from the passage?

- a) The governing trinity was eager to establish a model of governance, but it ended up sowing the seeds of the abandonment of the essentials of good governance.
- b) According to Lord Balfour, it is necessary for a citizen to have libertarian views and be intolerant of corruption and foul play.
- c) In Nehru's comment (last para), "a whole generation practised a certain technique of opposition to the government", "the government" refers to the Indian government.
- d) The 'orphaning of the civil services' would not have resulted in the loss of good governance of the country if the makers of the Indian constitution had assessed the suitability, acceptability and adaptability of the same with reference to the Indian context.

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. Imagination is the deftness by which an artist originates his communication as visual messages. The more refined the artist's creative impulses, the clearer are his visual messages in sharing his thoughts, feelings, perceptions and other creative faculties with his audience. Imagination is the prior cause, which precedes the expression of art as its effect. The conception of art is superior to its execution.

The magic of art does not exist in its execution, or presentation of feelings and mental imagery independently exterior to the mind of its creator. Execution of art is only the mechanical expertise; the externalization by which the art is expressed. The magic of art resides within the intellectual awareness of the mind, in conceiving and forming of ideas. The creation process is limited by the physical possibilities available with the material universe. ...

Between the artist who creates the art, and the viewer who contemplates it, lies the magic of expressive imagination. It is our own creative impulses, perceptions and recognition of the aesthetic expressions within the art that allows us to experience what is being resonating to us from the artist; and thus, becoming engaged in a dialogue and exploration with the artist through his art; the art is a spiritual connection to the artist.

Visual arts, much similar to the pleasant dialogues and conversations that we enjoy with our associates, friends and family, follow the same basic principles of verbal communication in its success or

failure. **An artist with low imagination, who does not originate verbally, does not communicate visually either.** He originates no visual messages in his art, or when he does, it is so vaguely done, that it stirs up no interaction

with his audience. This absence of expression is mainly due to the artist's heavy reliance upon the interpretation of his audience – as an external force – to bring about an interaction with his art, while his own message remains "silent." Thus, no emotional interaction takes place between the observer and the painting.

An artist, high on imagination, is more likely to enjoy the virtuosity necessary in the technical execution of his art and bring about an interaction between the audience and his painting. The visual message does not have to be the same for every viewer. The message serves only as a visual or artistic "code," to be subjectively decoded by each viewer.

Q22. Which of the following proverbs or quotes is/ are analogous to the boldfaced part of 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. Actions speak louder than words.
2. You can catch more flies with honey than with vinegar.
3. No man is an island.
4. A man is known by the company he keeps.
5. A generous friendship no cold medium knows.
6. Count your friends instead of your foes.

Q23. Consider the statements given below as true:

The field of visual arts and hence the artists follow all the principles of verbal communication. Art is a form of visual communication.

Which of the following would concur with the above statements and the passage as a whole?

- a) People with low imagination communicate mainly regarding subjects that are handed to them by external sources, they are inherently dependent upon others to give them primal reasons to engage in a conversation.
- b) People who have difficulties with initiating a conversation perform badly in originating a thought on their own, or inspired by their own imagination.
- c) When people do not originate, or do not engage imaginatively, then no emotional interaction takes place between the conversationalist and the listeners.
- d) All of the above.

Q24. How many of the following statements can be inferred to be true from the passage?

Enter the correct number in the input box given below.

1. An artist, high on imagination, creates original visual messages that can have different effects on different audiences.

2. A technically competent artist executes only in that medium in which he is comfortable and usually refrains from using any other medium.
3. The quality of the artist's visual messages that he presents to the audience determines the response of the audience i.e. whether they will engage in an interaction or not.
4. The essence of creation of a work of art resides in its conception.
5. Artistic creation is a spiritual pursuit and is limited by the physical possibilities available with the material universe.

Q25. DIRECTIONS for questions 25 and 26: Given below is a paragraph with three blanks. For each blank choose one numbered word/ phrase from the corresponding column of choices that will best complete the text. Key in the appropriate numbers of the words/ phrases for each blank, in the correct sequential order, in the input box given below the question. For example, if you think that words/ phrases labelled (1), (5) and (9) can complete the text correctly, then enter 159 as your answer in the input box. (Note: Only one word/ phrase in each column can fill the respective blank correctly.)

Joseph Schumpeter gave the name "creative destruction" to the process by which new and innovative firms displace _____(i)_____ ones, thereby driving long-run economic growth. The Schumpeterian sort of economic reinvention is out of fashion at the moment. Unhappy workers are _____(ii)_____ populist politicians, who are in turn looking to rein in the disruption caused by everyone from tech unicorns in Silicon Valley to sellers of cut-price steel in China. Economists understandably worry that this backlash will lead to sweeping new regulations, taxes and protections for firms and workers. But red tape and tax are not the only things that can _____(iii)_____ the economy's operation. Evidence increasingly suggests that some of what looks like sclerosis across rich countries is in fact rooted in the unequal distribution of gains from growth.

Blank (i)	Blank (ii)	Blank (iii)
(1) rhapsodized	(4) casting their lot with	(7) foment
(2) stodgy	(5) sidelining	(8) vituperate
(3) beleaguered	(6) throwing down the gauntlet to	(9) gum up

Q26. DIRECTIONS for questions 25 and 26: Given below is a paragraph with three blanks. For each blank choose one numbered word/ phrase from the corresponding column of choices that will best complete the text. Key in the appropriate numbers of the words/ phrases for each blank, in the correct sequential order, in the input box given below the question. For example, if

you think that words/ phrases labelled (1), (5) and (9) can complete the text correctly, then enter 159 as your answer in the input box. (Note: Only one word/ phrase in each column can fill the respective blank correctly.)

After the Second World War, the leaders of the Western world tried to build institutions to prevent the horrors of the preceding decades from recurring. They sought to foster both prosperity and interdependence, to “make war not only unthinkable but _____(i)_____”. Their work has borne fruit. There has been no armed conflict in western Europe since. Expanded global trade has raised incomes around the world. Yet, as the Brexit vote demonstrates, globalization now seems to be receding. Most economists have been _____(ii)_____ by the backlash. A few saw it coming. It is worth studying their reasoning, in order to work out whether a retrenchment is inevitable or might be avoided. Even economists realize that free trade can be a/ an _____(iii)_____ politically. The political economy of trade is treacherous: its benefits, though substantial, are diffuse, but its costs are often concentrated, giving those affected a strong incentive to push for protectionism.

Blank (i)	Blank (ii)	Blank (iii)
(1) also quixotic	(4) quelled	(7) hard sell
(2) contumacious too	(5) contravened	(8) retribution
(3) materially impossible	(6) blindsided	(9) irreproachable anachronism

Q27. DIRECTIONS for questions 27 to 31: Five sentences (labelled 1, 2, 3, 4, 5) are given in the following question. Four of them can be put together to form a meaningful and coherent short paragraph and **one sentence is the odd one out**. Decide on the proper logical order for the sentences and key in the sequence of **four** numbers as your answer, even as you **omit the contextually unrelated sentence**.

1. Yet, every so often the oath is taken amidst gathering clouds and raging storms.
2. The words have been spoken during rising tides of prosperity and the still waters of peace.
3. Less measurable but no less profound is a sapping of confidence across our land – a nagging fear that America’s decline is inevitable, that the next generation must lower its sights.
4. Forty-four Americans have now taken the presidential oath.
5. At these moments, America has carried on not simply because of the skill or vision of those in high office, but because We the People have remained faithful to the ideals of our forbearers, and true to our founding documents.

Q28. DIRECTIONS *for questions 27 to 31:* Five sentences (labelled 1, 2, 3, 4, 5) are given in the following question. Four of them can be put together to form a meaningful and coherent short paragraph and **one sentence is the odd one out**. Decide on the proper logical order for the sentences and key in the sequence of **four** numbers as your answer, even as you **omit the contextually unrelated sentence**.

1. And the tunnel must house turbines attached to electrical devices that can do double duty – as motors to turn the turbine blades when they are pushing water from the lower reservoir to the upper one, and as generators when the blades are rotated in the opposite direction by an aqueous downrush after the upper sluices are opened.

2. The easiest way to squirrel electricity away in times of plenty, for use when it is scarce, is to pump water uphill with it.

3. The two must be connected by a tunnel that lets water flow between them.

4. Such pumped storage is widely employed where local geography and hydrology permit, but it does need two basins, at different heights, to act as reservoirs, and a supply of water to fill them.

5. Where geography does not favour pumped storage, though, the search is on for alternatives.

Q29. DIRECTIONS *for questions 27 to 31:* Five sentences (labelled 1, 2, 3, 4, 5) are given in the following question. Four of them can be put together to form a meaningful and coherent short paragraph and **one sentence is the odd one out**. Decide on the proper logical order for the sentences and key in the sequence of **four** numbers as your answer, even as you **omit the contextually unrelated sentence**.

1. Most people “would give anything to trade places with you,” Dwight MacAuley, the province of Manitoba’s chief of protocol, tells his audience.

2. Some crowned with turbans, others with hijabs, they sing “O Canada” and take the oath of citizenship in English and French.

3. No one disagrees.

4. Canada’s selective but eclectic taste in immigrants goes back a fair way, too.

5. In a packed hall in Winnipeg’s century-old train station, 86 immigrants from 31 countries are becoming citizens of what Mr MacAuley characterises as one of the “greatest, freest, richest nations that has ever existed”.

Q30. DIRECTIONS *for questions 27 to 31:* Five sentences (labelled 1, 2, 3, 4, 5) are given in the following question. Four of them can be put together to form a meaningful and coherent short paragraph and **one sentence is the odd one out**. Decide on the proper logical order for the sentences and key in the sequence of **four** numbers as your answer, even as you **omit the contextually unrelated sentence**.

1. But it would have been wrong to think of the region as timeless; the restoration of Vat Phou that we witnessed belied notions of ancient ruins lost in eternal mists.

2. We faced the mountain ridge, our backs to the waters of the Mekong River, looking for the chamber. From this angle, it was hidden.

3. Through their hands flowed the tales of Hindu mythology, the millenniums-old narratives of gods in love and war that had originated on the Indian subcontinent and traveled to distant Java and to Khmer temples across Cambodia and Laos.

4. But other parts of the temple had begun revealing themselves to us; to our right, a few carvers chipped away at other blocks with small tools.

5. Deep in the folds of the hill, up steep stone stairs flanked with frangipani trees, stood the inner sanctum of the ancient Khmer temple of Vat Phou.

Q31. DIRECTIONS *for questions 27 to 31:* Five sentences (labelled 1, 2, 3, 4, 5) are given in the following question. Four of them can be put together to form a meaningful and coherent short paragraph and **one sentence is the odd one out**. Decide on the proper logical order for the sentences and key in the sequence of **four** numbers as your answer, even as you **omit the contextually unrelated sentence**.

1. If their thought is controlled, or their options narrowly restricted, then evidently they are not playing a meaningful role: only the controllers, and those they serve, are doing so.

2. A society is democratic to the extent that its citizens play a meaningful role in managing public affairs.

3. The concept of thought control in democratic societies -- or, for that matter, the structuring of options in a democratic society by hierarchic and coercive private institutions -- seems contradictory on its face.

4. It takes little imagination to picture the consequences if such expectations -- not inevitable, but also not unrealistic -- are indeed realized.

5. The rest is a sham, formal motions without meaning. So, a contradiction.

Q32. DIRECTIONS for questions 32 to 34: The following question consists of a highlighted sentence and a paragraph from which the sentence may have been taken. The paragraph has a total of three blanks numbered as (2), (3) and (4). Choose the number of the blank where the highlighted sentence can best be reinserted and key in that number in the input box provided below the question paragraph.

Further:

If you think that the highlighted sentence is contextually unrelated or does not belong to the given paragraph, then key in the number 0 as your answer in the input box.

If you think that the statement precedes the given para, then key in the number 1 as your answer in the input box.

If you think that the statement succeeds the given para, then key in the number 5 as your answer in the input box.

Business could be such a breeze – if it weren't for those pesky humans. Imagine contracts that enforce themselves and are not subject to interpretation by, for instance, rent-seeking lawyers.

_____ (2) _____ Or envisage autonomous corporations, made up of bundles of autonomous agreements, which could send their investors dividends whenever profits reach a certain, specified level and not just when the board of directors has had a good lunch. Such “smart contracts” are all the rage among futurist backers of the blockchain, the technology that underpins bitcoin, a digital currency. _____ (3) _____ In simple terms, these are pieces of software that represent a business arrangement and execute themselves automatically under pre-determined circumstances. _____ (4) _____ As well as making business more efficient, some see them as a way to bypass human decision-making altogether. Faster than you can say “techno-Utopia”, however, the idea has collided with reality.

Q33. DIRECTIONS for questions 32 to 34: The following question consists of a highlighted sentence and a paragraph from which the sentence may have been taken. The paragraph has a total of three blanks numbered as (2), (3) and (4). Choose the number of the blank where the highlighted sentence can best be reinserted and key in that number in the input box provided below the question paragraph.

Further:

If you think that the highlighted sentence is contextually unrelated or does not belong to the given paragraph, then key in the number 0 as your answer in the input box.

If you think that the statement precedes the given para, then key in the number 1 as your answer in the input box.

If you think that the statement succeeds the given para, then key in the number 5 as your answer in the input box.

Now, Russia's threat to the Baltic states is not notional.

It was a single remark in an interview with the New York Times, but it rattled the strongest military alliance the world has ever seen. On July 20th Donald Trump declared that should the Baltic states be attacked by Russia when he is president, he would come to their aid only if he felt they had met their obligations. _____(2)_____ That would contravene Article 5, the bedrock of NATO's founding treaty, which holds that an attack on one member is an attack on all. NATO's secretary general, Jens Stoltenberg, soon pushed back, saying, "solidarity among allies is a key value for NATO." _____(3)_____ Under Vladimir Putin, Russia is fast modernising its armed forces, building a hard-hitting, flexible military that can be deployed at short notice into what it calls its "near abroad". _____(4)_____ Russia's war games regularly simulate attacks on Estonia, Latvia, Lithuania and Poland. The 2009 Zapad exercises included rehearsing the use of tactical nuclear weapons.

Q34. DIRECTIONS *for questions 32 to 34:* The following question consists of a highlighted sentence and a paragraph from which the sentence may have been taken. The paragraph has a total of three blanks numbered as (2), (3) and (4). Choose the number of the blank where the highlighted sentence can best be reinserted and key in that number in the input box provided below the question paragraph.

Further:

If you think that the highlighted sentence is contextually unrelated or does not belong to the given paragraph, then key in the number 0 as your answer in the input box.

If you think that the statement precedes the given para, then key in the number 1 as your answer in the input box.

If you think that the statement succeeds the given para, then key in the number 5 as your answer in the input box.

In time, automated screening systems may go from being useful tools for human operators to outperforming them; but there will still be a need for people to check inside containers and bags with suspicious contents.

Every day more than eight thousand containers flow through the Port of Rotterdam. But only a fraction are selected to pass through a giant X-ray machine to check for illicit contents. The machine, made by Rapiscan, an American firm, can capture images as the containers move along a track at 9.3 mph. But it takes time for a human to inspect each scan for anything suspicious like weapons. _____(2)_____ To increase this inspection rate would require a small army of people.

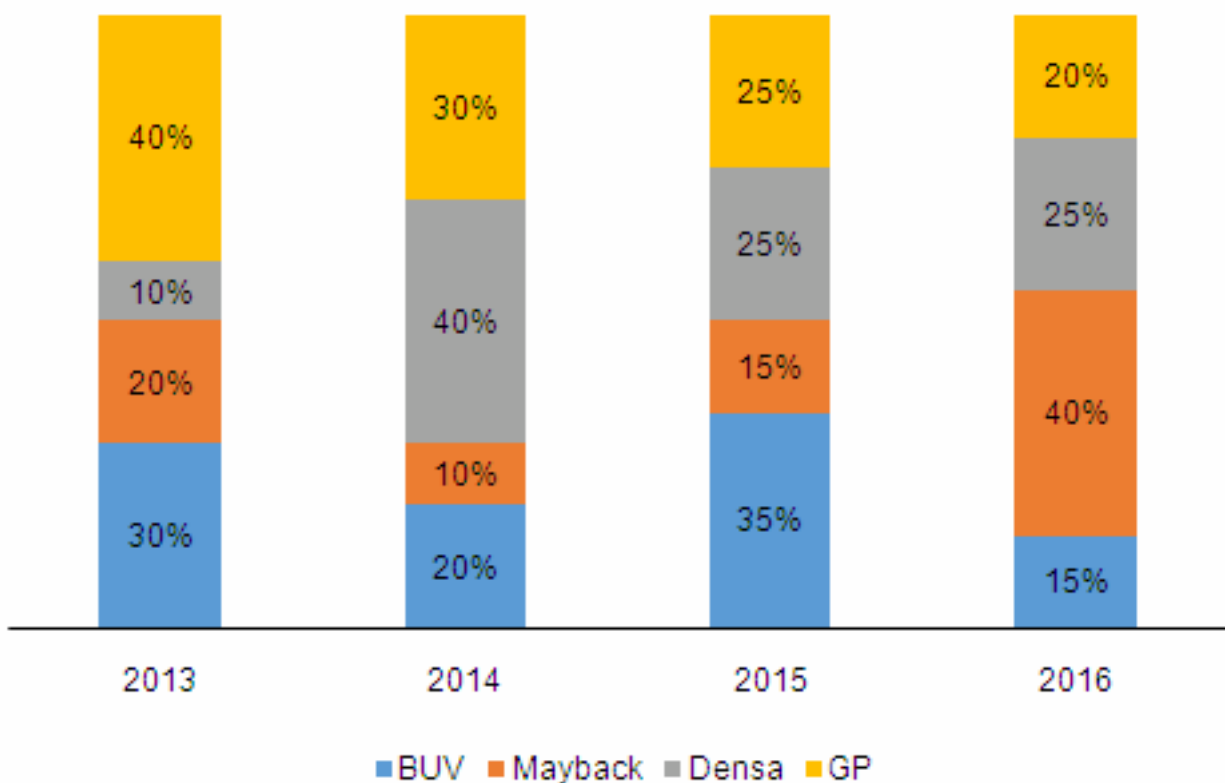
_____ (3) _____ A group of computer scientists at

University College London, may soon speed up the process by employing artificial intelligence. The scientists are being sponsored by Rapiscan to create software that uses machine-learning techniques to scan the x-ray images. _____(4)_____ It takes a human operator ten minutes to examine each X-ray. The UCL system can do it in 3.5 seconds.

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

Autorola, an automobile company, sells four different models of cars – BUV, Mayback, Densa and GP. The graph below provides, for each year from 2013 to 2016, the number of cars of each model sold by Autorola as a percentage of the total number of cars sold by it during that year. It is also known that the number of BUVs sold in the years 2013, 2014, 2015 and 2016 are in the ratio 2 : 3 : 7 : 4 respectively.



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

The total number of cars sold across the four years was the highest for which model of car?

- a) **BUV**
- b) Mayback
- c) Densa
- d) **GP**

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

What is the ratio of the number of BUVs sold in 2015 to the number of Densas sold in 2016?

- a) 21 : 20
- b) 20 : 19
- c) 17 : 15
- d) 36 : 35

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

If the number of GPs sold in 2015 is 600, what is the number of Maybacks sold in 2014?

- a) **160**
- b) 180
- c) **200**
- d) **210**

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

If the revenues of Autorola from selling these four models of cars in 2015 were greater than those in 2016 and if the price of each model of car remained the same across the two years, which of the following is definitely true?

- a) The price of a BUV is greater than the price of a Densa.
- b) The price of a Densa is greater than the price of a Mayback.
- c) The price of a BUV is greater than the price of a Mayback.
- d) The price of a BUV is greater than the price of a GP.

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

During a particular year, exactly ten persons – A through J – visited a certain city on five different days between January 1st and April 30th, in a non-leap year, such that on each of the five days, exactly two of the ten persons visited the city.

It is also known that

1. A, who did not visit the city after J, visited the city 28 days after F, who, in turn, did not visit the city with B.
2. J, who visited the city in March, visited the city at least 50 days before C visited but visited the city on the same day of the week as C.
3. D, who visited the city exactly 10 days before H, visited the city with G.
4. both E and I visited the city on February 10th, while E and H visited the city on the same day of the week.

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

On which day did B visit the city?

Enter your answer below in 'ddmm' format. For example, if you think that the answer is January 5th, enter your answer as 0501.

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

Who among the following visited the city in March?

- a) **B**
- b) **D**
- c) **H**
- d) **A**

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

How many of the ten persons visited the city after February 15th?

- a) **2**
- b) **4**
- c) **6**
- d) **8**

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

How many days after F visited the city did I visit the city?

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

Exactly eight persons – Karan, Lalit, Hugh, Pavan, Bill, Jacob, Omar and Tilak – participated in three different races – 10K Run, Half Marathon and Full Marathon – such that each person participated in exactly one race. Two of the eight persons participated in the 10K run, three participated in the Half Marathon and three participated in the Full Marathon. The eight persons started their respective races at the same time and the time taken by each person to finish his race was distinct. Further, the slowest person to finish the 10K race finished his race before the fastest person to finish the Half Marathon finished his race. Also, the slowest person to finish the Half Marathon finished his race before the fastest person to finish the Full Marathon finished his race.

It is also known that

1. at least two persons finished before Pavan did and Pavan did not finish after Omar did.
2. Jacob, who did not participate in the Full Marathon, finished immediately after Tilak did.
3. Karan was the first person to finish his race.
4. Hugh was not the last person to finish his race.
5. Lalit, who did not participate in the Full Marathon, finished his race after Omar did.

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

Who was the first person to finish the Half Marathon?

- a) Pavan
- b) Karan
- c) Omar
- d) Tilak

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

How many persons finished their respective races before Hugh finished his?

- a) 3
- b) 4
- c) 6
- d) None of the above

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

Which of the following pairs of persons participated in the same race?

- a) Jacob and Pavan
- b) Omar and Karan
- c) Hugh and Bill
- d) Tilak and Lalit

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

Who among the following was the last person to finish his race?

- a) Tilak
- b) Lalit
- c) Omar
- d) More than one of the above

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

During a particular year, exactly four movies – Snow White, Black Beauty, Red Dragon and Green Mile – were released in a city. Jack decided to collect information about the persons who watched at least one of the four movies.

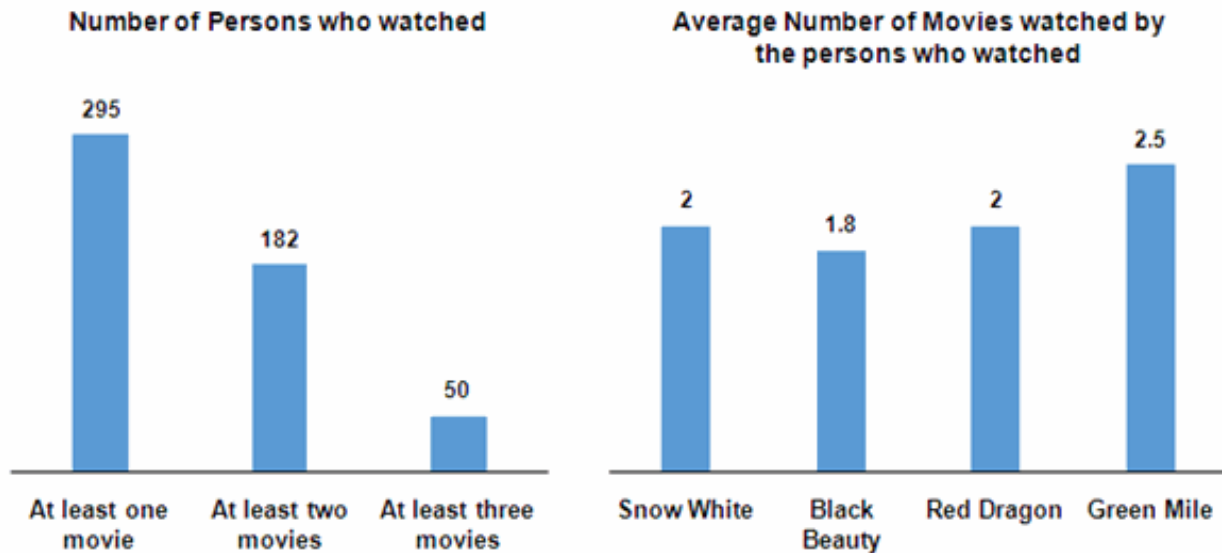
He found that

1. (i) no one watched any movie more than once.
2. (ii) no one watched both Snow White and Black Beauty.
3. (iii) the number of persons who watched both Snow White and

Red Dragon is 48 more than the number of persons who watched both Black Beauty and Red Dragon.

4. (iv) anyone who did not watch Red Dragon did not watch Green Mile.

After collecting the information, he made two charts, which are provided below. The first chart provides the number of persons who watched at least one, two and three movies. The second chart provides, for each movie, the average number of movies watched by all the persons who watched that movie.



Q13. DIRECTIONS for questions 13 to 15: Type in your answer in the input box provided below the question.

What is the number of persons who watched only Snow White?

Q14. DIRECTIONS for questions 13 to 15: Type in your answer in the input box provided below the question.

Among the persons who watched Red Dragon, how many persons also watched Black Beauty?

Q15. DIRECTIONS for questions 13 to 15: Type in your answer in the input box provided below the question.

How many persons watched exactly two movies but did not watch Snow White?

Q16. DIRECTIONS for question 16: Select the correct alternative from the given choices.

The number of persons who watched only Snow White and Red Dragon is the same as the number of persons

- a) who watched Black Beauty.
- b) who watched only Black Beauty.
- c) who watched only Snow White.
- d) who watched only Red Dragon.

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

In a hotel called Catalonia, there was only one type of room available. At the beginning of each day, the price per room for that day is determined based on the average number of persons who stayed in that hotel per day over the

previous three days. The price (in USD) per room for any day is equal to twice the average number of persons who stayed in that hotel per day over the previous three days.

On May 1st of a particular year, Hernandez, the manager of this hotel, was studying the number of persons who stayed in the hotel during the month of April. He found that the number of persons (N) who stayed in that hotel on any day in April depended on the price per room (P) on that day in the following manner:

$$N = 1000 - \frac{3P}{2}$$

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

If the number of persons who stayed in the hotel on April 1st, 2nd and 3rd are 250, 200 and 220, what is the highest price of a room on any day from April 4th to April 30th?

- a) USD 533.33
- b) USD 566.67
- c) USD 633.33
- d) USD 520

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

If the total number of persons who stayed in the hotel during the month of April is 7550, what is the maximum number of persons who could have stayed in the hotel on April 3rd?

- a) 500
- b) 450
- c) 400
- d) 550

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

If the number of persons who stayed in the hotel on April 17th, 18th and 19th are in the ratio 1:2:3 and the difference between the price of a room on April 16th and that on April 17th is more than USD 400, what is the maximum number of persons who could have stayed in the hotel on April 1st?

- a) 57
- b) 56
- c) 58
- d) 59

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

If the number of persons who stayed in the hotel on April 1st, 2nd and 3rd was 150, a and 200 respectively and there were at least two consecutive days between April 4th and April 30th on which the price of a room remained the same, how many distinct values can a assume?

- a) 1
- b) 2
- c) 4
- d) More than 4

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

Danny, a lab assistant at a zoology lab, wanted to study the behaviour of rats in a maze. He had a certain number of unit cubes, such that on the centre of each face of each unit cube there is a hole, big enough for a rat to pass through. He constructed a cubical maze for his study by arranging 125 such unit cubes in the form of a large $5 \times 5 \times 5$ cube. Any rat that Danny sends into the maze will not re-enter the maze once it comes out of the maze.

Q21. DIRECTIONS for questions 21 and 22: Type in your answer in the input box provided below the question.

If Danny sent a rat into a unit cube at the top right corner of the front face of the maze, what is the minimum number of cubes that the rat must pass through (including the first cube) to come out of the unit cube at the bottom left corner of the same face?

Q22. DIRECTIONS for questions 21 and 22: Type in your answer in the input box provided below the question.

If Danny sent a rat into a unit cube at the bottom right corner of the front face of the maze, what is the minimum number of cubes that the rat must pass through (including the first cube) to come out of the unit cube at the top left corner of the opposite face of the maze?

Q23. DIRECTIONS for questions 23 and 24: Select the correct alternative from the given choices.

If Danny sent a rat into a unit cube at the centre of one of the faces of the maze, how many cubes (including the first cube) must the rat pass through to reach the unit cube at the bottom left corner of the opposite face?

- a) 9
- b) 10
- c) 11
- d) 12

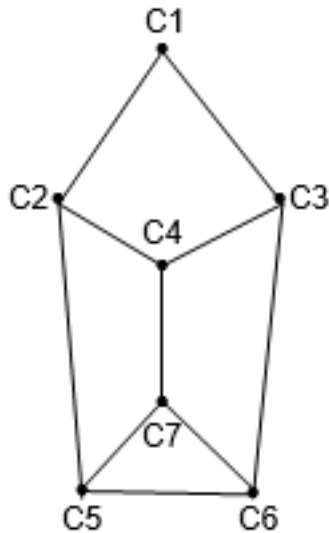
Q24. DIRECTIONS for questions 23 and 24: Select the correct alternative from the given choices.

If Danny sent a rat into a unit cube at the bottom right corner of one of the faces of the maze and the rat passed through the cubes at each of the corners, what is the minimum number of cubes (including the first and the last cubes) that the rat must have passed through?

- a) 25
- b) 30
- c) 24
- d) 29

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

Jack regularly travels between seven cities, C1 through C7, which are connected among themselves by roads, as shown in the figure given below. However, when travelling between any two cities, Jack always chooses the route which passes through the minimum possible number of cities. If two or more routes pass through the minimum number of cities, he will choose the route for which the distance is also the least. The length of the road directly connecting any two cities is a **distinct integer**. For any pair of cities, the length of a route connecting the two cities and passing through the minimum possible number of cities is called a *Possible Distance* between the two cities. The least among all the *Possible Distances* between two cities is called the *Minimum Possible Distance* (MPD) between the two cities.



The following information is known about the distances between the cities:

1. The MPD between C4 and C6 is 9 km, while the MPD between C2 and C6 is 3 km.
2. The highest *Possible Distance* between C1 and C7 is 36 km.
3. The MPD between C4 and C7 is 3 km.
4. The sum of the lengths of the road directly connecting C5 to C6 and that directly connecting C5 and C7 is 10 km.
5. The MPD between C7 and C2 is 7 km, while the MPD between C3 and C7 is 11 km.
6. The length of the road directly connecting C3 and C6 is greater than 11 km.
7. The MPD between C1 and C4 is 11 km, while the highest *Possible Distance* between C2 and C3 is 24 km.

Q25. DIRECTIONS for question 25: Type in your answer in the input box provided below the question.

If Jack travelled from C1 to C7, the distance (in km) that Jack would have covered is

Q26. DIRECTIONS for questions 26 to 28: Select the correct alternative from the given choices.

The MPD between which of the following pairs of cities is the least?

- a) C2 and C5
- b) C5 and C6
- c) C4 and C7
- d) C1 and C3

Q27. DIRECTIONS for questions 26 to 28: Select the correct alternative from the given choices.

What is the highest *Possible Distance* between C3 and C7?

- a) 15 km
- b) 19 km
- c) 33 km
- d) None of the above

Q28. DIRECTIONS for question 26 to 28: Select the correct alternative from the given choices.

Jack's friend, Bill, always travels along the shortest route when travelling from one city to another. On a particular day, both Jack and Bill started from C1 and reached X, which is one of the other six cities. If the length of the route that Jack took is greater than that of the route that Bill took, how many of the six cities can X be?

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

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

The table below provides the number of shares owned by all the shareholders of Numbers Inc. The total number of shares of Numbers Inc. is 500,000.

Shareholder	Number of Shares	Shareholder	Number of Shares
Jack Cooper (JC)	43,290	Kirk Armstrong (KA)	65,840
Sheldon Jackson (SJ)	21,570	John Wilder (JW)	57,410
Rebecca West (RW)	84,570	Paul Oldman (PO)	32,580
Irene Gaiman (IG)	124,580	Gary Jones (GJ)	70,160

All the shareholders of the company take a vote on any proposal placed before the company. Each shareholder casts either a favourable vote or an unfavourable vote for any proposal. If the shares owned by all the shareholders who vote in favour of a proposal exceed 50% of the total shares of the company, the proposal is accepted. Otherwise, the proposal is rejected.

During a particular year, the shareholders voted on ten proposals – Proposal 1 through Proposal 10. The following table provides, for each proposal, the vote cast by each shareholder, with a tick mark (✓) representing a favourable vote and a cross mark (✗) representing an unfavourable vote:

Proposal	JC	SJ	RW	IG	KA	JW	PO	GJ
Proposal 1	✓	✓	✗	✓	✗	✓	✗	✗
Proposal 2	✗	✗	✓	✗	✓	✓	✓	✓
Proposal 3	✓	✓	✗	✗	✗	✓	✓	✗
Proposal 4	✗	✓	✓	✓	✗	✗	✗	✓
Proposal 5	✓	✗	✗	✓	✓	✗	✓	✗
Proposal 6	✓	✓	✓	✗	✗	✗	✗	✓
Proposal 7	✗	✗	✗	✓	✓	✓	✓	✓
Proposal 8	✗	✓	✓	✗	✗	✓	✗	✓
Proposal 9	✓	✓	✗	✗	✗	✓	✓	✓
Proposal 10	✓	✗	✓	✗	✓	✓	✓	✓

Q29. DIRECTIONS for questions 29 to 32: Select the correct alternative from the given choices.

How many proposals were not accepted during the given year?

- a) 3
- b) 4
- c) 5
- d) 6

Q30. DIRECTIONS for questions 29 to 32: Select the correct alternative from the given choices.

How many proposals for which Irene Gaiman cast a favourable vote were rejected during the given year?

- a) 1
- b) 2
- c) 3
- d) 4

Q31. DIRECTIONS for questions 29 to 32: Select the correct alternative from the given choices.

For how many of the shareholders can it be said that all the proposals that he/she voted in favour of during the year were accepted?

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

Q32. DIRECTIONS for questions 29 to 32: Select the correct alternative from the given choices.

During the following year, the shareholders voted again on all the proposals which were not accepted during the given year. If, for each proposal, none of the shareholders who voted in favour of that proposal the previous year changed their vote but exactly one other shareholder changed his/her vote, how many of the proposals would definitely have been accepted in the following year?

- a) **2**
- b) 4
- c) **3**
- d) 1

QA

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

How many three-digit numbers are divisible by 7 or 5?

Q2. DIRECTIONS for questions 2 to 4: Select the correct alternative from the given choices.

If $x - \frac{1}{x} = 3$, find the value of $x^3 - \frac{1}{x^3}$.

- a) 36
- b) **18**
- c) **27**
- d) **35**

Q3. DIRECTIONS for questions 2 to 4: Select the correct alternative from the given choices.

A group of men, working together, can complete a job in M hours. However, if after every eight hours, half the number of men working at that point of time leave the job and, continuing this way, the job takes exactly 40 hours to be completed, what is the value of M?

- a) **15**
- b) $15\frac{1}{4}$

- c) $15\frac{3}{4}$
 d) $15\frac{1}{2}$

Q4. DIRECTIONS for questions 2 to 4: Select the correct alternative from the given choices.

Two natural numbers, a and b , are in the ratio 7 : 10 respectively. When a positive integer x is subtracted from both a and b , the new ratio is observed to be less than 5 : 9. What is the least value that x can assume?

- a) 3
 b) 4
 c) 5
 d) 6

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

$$\frac{\left(x^2 - \frac{2x}{3} + 1\right)}{\left(ax^2 + bx + 1\right)} > 0$$

If the inequality is true if and only if $x < -2$
 or $x > \frac{-1}{2}$, find $(a + b)$.

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

If the first three numbers of an arithmetic series are $3x$, $2x + 8$ and $6x - 4$, what is the sum of the first 10 numbers of that series?

- a) 320
 b) 300
 c) 270
 d) 250

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

Amar, Bhavan and Chetan bought a circular pizza. They cut it into exactly five sectors, all of distinct sizes, and distributed these five parts among themselves such that each of them got at least one part but none of them

got the parts of the pizza which were adjacent. In how many ways could they have shared the pizza?

Q8. DIRECTIONS for question 8: Select the correct alternative from the given choices.

Two pens or three erasers or four sharpeners all cost the same. If the cost of an eraser increases by 20% and that of a sharpener increases by 30%, while the cost of a pen remains unchanged, find the approximate percentage increase in the total cost of six pens, four erasers and three sharpeners.

- a) 7.67%
- b) 8.33%
- c) 9.67%
- d) 11.33%

Q9. DIRECTIONS for question 9: Type in your answer in the input box provided below the question.

What is the remainder when 15^{400} is divided by 1309?

Q10. DIRECTIONS for questions 10 and 11: Select the correct alternative from the given choices.

A circle is inscribed in an equilateral triangle, ABC, of side 6 cm. A tangent is drawn to the circle from a point D on AB such that the tangent to the circle from D meets BC perpendicularly at E. Find the area (in sq. cm) of the triangle BDE.

- a) $3\sqrt{3}(2 - \sqrt{3})$
- b) $3\sqrt{3}(2 + \sqrt{3})$
- c) $2\sqrt{3}(2 - \sqrt{3})$
- d) $2\sqrt{3}(2 + \sqrt{3})$

Q11. DIRECTIONS for questions 10 and 11: Select the correct alternative from the given choices.

Two trains T1 and T2 are travelling on parallel tracks and in opposite directions. M1 and M2 are two persons who are travelling in T1 and T2 respectively. When the two trains just start to cross each other, M1, who is at the tail end of T1, starts running towards the front end of T1, at a speed of 2 m/s, while M2, who is at the front end of T2, starts running towards the tail end of T2, at a speed of 3 m/s. If the lengths of T1 and T2 are 340 m and

500 m respectively, and the speeds of T1 and T2 are 54 km/hr and 72 km/hr respectively, in how much time (from the time T1 and T2 start to cross each other) will the two persons cross each other?

- a) 10 seconds
- b) $9\frac{4}{9}$ seconds
- c) 20 seconds
- d) 17 seconds

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

Find the sum $6 + (6 + 12) + (6 + 12 + 18) + \dots + (6 + 12 + 18 + \dots + 6n)$, if $n = 200$.

Q13. DIRECTIONS for questions 13 to 22: Select the correct alternative from the given choices.

In a network of cities, there are 20 cities, with each city being connected with every other city by a distinct road. In how many ways can one travel from city 3 to city 17, passing through exactly seven cities (not counting cities 3 and 17 themselves), including cities 5, 8 and 12 but excluding cities 7 and 9?

- a) 495
- b) 715
- c) 1716
- d) $715 \times 7!$

Q14. DIRECTIONS for questions 13 to 22: Select the correct alternative from the given choices.

Find the range of values of x for which $x^4 + x < x^3 + x^2$.

- a) $(-1, 1)$
- b) $(-\infty, 1)$

- c) $(-1, 0)$
- d) $(-1, \infty)$

Q15. DIRECTIONS for questions 13 to 22: Select the correct alternative from the given choices.

A cuboid of dimensions 50 cm × 40 cm × 30 cm is cut into k cubes. What is the least possible value of k ?

- a) 125
- b) 120
- c) 60
- d) 20

Q16. DIRECTIONS for questions 13 to 22: Select the correct alternative from the given choices.

If the equation $px^2 + qx + p = 0$, where $p > 0$, has real and positive roots, which of the following must be true?

- a) $q - 2p > 0$
- b) $2p + q \geq 0$
- c) $q - 2p < 0$
- d) $p + q \geq 0$

Q17. DIRECTIONS for questions 13 to 22: Select the correct alternative from the given choices.

Four persons need to cross a river. However, the only means available to cross the stream is a boat which can carry at most two persons at a time in it and only one of the two must drive it. The times taken to cross the river when each of the four persons drives the boat, are 3, 7, 11 and 17 minutes respectively. No person drives the boat for more than two trips in total, but any person can ride in the boat as a passenger for as many times as he wants. What is the least time required for all the four to cross the stream? (Reaching from one bank to the other bank is one trip).

- a) 23 minutes
- b) 54 minutes
- c) 31 minutes
- d) 39 minutes

Q18. DIRECTIONS for questions 13 to 22: Select the correct alternative from the given choices.

Four of the eight vertices of a regular octagon are chosen at random. What is the probability that the quadrilateral formed by the four vertices is a square?

- a) $\frac{1}{35}$
- b) $\frac{1}{70}$

- c) $\frac{3}{70}$
 d) $\frac{2}{35}$

Q19. DIRECTIONS for questions 13 to 22: Select the correct alternative from the given choices.

The number of common roots for the equations $y = x^3 + 5x^2 + 6x + 8$ and $y = x^3 + 4x^2 + 10x + 4$ is

- a) 0.
 b) 1.
 c) 2.
 d) 3.

Q20. DIRECTIONS for questions 13 to 22: Select the correct alternative from the given choices.

Paresh borrowed an amount of Rs.23170 from Munna at an interest rate of 10% p.a., compounded annually, and repayed the entire amount in three equal annual instalments. Find the value of each instalment.

- a) Rs.9317
 b) Rs.9268
 c) Rs.7896
 d) Rs.9648

Q21. DIRECTIONS for questions 13 to 22: Select the correct alternative from the given choices.

The set Y consists of the following numbers:

$$Y = \{1, 3^{\frac{1}{2}}, 3, 3^{\frac{3}{2}}, \dots, 3^9, 3^{\frac{19}{2}}, 3^{10}\}.$$

In how many ways can a pair of distinct numbers be selected from the set Y such that their product is greater than or equal to 3^{10} ?

- a) 100
 b) 210
 c) 105
 d) 110

Q22. DIRECTIONS for questions 13 to 22: Select the correct alternative from the given choices.

PQR is a triangle with $\angle P = 60^\circ$. The internal bisector of $\angle P$ meets QR at S. If PQ = 6 cm and PR = 5 cm, find the length (in cm) of PS.

- a) $\frac{3\sqrt{3}}{29\sqrt{3}}$
- b) $\frac{11}{30\sqrt{3}}$
- c) $\frac{11}{15\sqrt{3}}$
- d) $\frac{11}{11}$

Q23. DIRECTIONS for question 23: Type in your answer in the input box provided below the question.

If a two-digit number is 18 less than the square of the sum of its digits, how many such numbers exist?

Q24. DIRECTIONS for questions 24 to 28: Select the correct alternative from the given choices.

$f(x)$ and $g(x)$ are two quadratic functions such that $f(1) - g(1) = 1$, $f(2) - g(2) = 2$ and $f(3) - g(3) = 5$. Find the value of $f(4) - g(4)$?

- a) 8
- b) 9
- c) 10
- d) Cannot be determined

Q25. DIRECTIONS for questions 24 to 28: Select the correct alternative from the given choices.

A cube is cut off at each of its eight corners such that, after making the cuts, the exposed surface at each corner is an equilateral triangle. If the remaining portion of each of the six faces of the original cube is now a regular octagon, how many edges does the remaining solid have?

- a) 28
- b) 22
- c) 24
- d) 36

Q26. DIRECTIONS for questions 24 to 28: Select the correct alternative from the given choices.

A bird, when travelling at its normal speed, takes nine hours more to travel 15 km against the wind than the time it takes to travel the same distance along the direction of the wind. If it doubles its speed and travels the same distance, it takes one and a half hour less when it flies along the direction of the wind than the time it takes to fly against the wind. Find the speed of the wind.

- a) 2 kmph
- b) $2\frac{2}{9}$ kmph
- c) $2\frac{2}{3}$ kmph
- d) $3\frac{1}{9}$ kmph

Q27. DIRECTIONS for questions 24 to 28: Select the correct alternative from the given choices.

In a Chemistry lab, there are three solutions of an acid – A, B and C – of concentrations 45%, 50% and $c\%$ respectively. If 100 ml of A when mixed with V ml of C, produces a solution of 60% concentration and 100 ml of B when mixed with V ml of C, produces a solution of 62% concentration, find V .

- a) 100
- b) 120
- c) 80
- d) 150

Q28. DIRECTIONS for questions 24 to 28: Select the correct alternative from the given choices.

P is a point outside a circle, the centre of which is O. If a straight line drawn through P intersects the circle at points A and B such that $AB = 4\sqrt{6}$ cm and $90^\circ < \angle AOB < 120^\circ$, which of the following could be the radius (in cm) of the circle?

- a) 4
- b) 5
- c) 6
- d) 7

Q29. DIRECTIONS for question 29: Type in your answer in the input box provided below the question.

A relation $R(x)$ is defined on set S , where $S = \{1, 2, 3, \dots, 50\}$. How many ordered pairs $(x, R(x))$ satisfy the equation $[R(x) - (5x + 1)][R(x) - (x - 4)][R(x) - 2x] = 0$?

Q30. DIRECTIONS for questions 30 and 31: Select the correct alternative from the given choices.

If $|2x - 5| \leq 9$ and $|4y - 7| \leq 21$, what is the maximum value of $|x| - |y|$?

- a) 7
- b) 5
- c) $\frac{7}{2}$
- d) 3

Q31. DIRECTIONS for questions 30 and 31: Select the correct alternative from the given choices.

Mr. Ram sold an article at a certain profit. Had he purchased the article for 12% less than what he actually purchased it for and sold it for 24% more than what he actually sold it for, his profit percentage would have

been $2\frac{1}{2}$ times his actual profit percentage. Find his actual profit percentage.

- a) $27\frac{1}{2}\%$
- b) $28\frac{2}{7}\%$
- c) $33\frac{1}{3}\%$
- d) $37\frac{1}{2}\%$

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

If N is the product of the first hundred multiples of five starting from 5, what is the rightmost non-zero digit in the number N ?

Q33. DIRECTIONS for questions 33 and 34: Select the correct alternative from the given choices.

Find the total number of ways in which 35 identical marbles can be distributed among five boys, such that each boy gets an odd number of marbles.

- a) **39C4**
- b) **19C4**
- c) **15C4**
- d) **20C4**

Q34. DIRECTIONS *for questions 33 and 34:* Select the correct alternative from the given choices.

Which of the following triplets (a, b, c) does not satisfy the condition $a^{\log_b c} = c^{\log_a b}$?

- a) (2, 2, 1)
- b) $\left(\frac{1}{2}, 2, 2\right)$
- c) (1, 2, 2)
- d) (2, 3, 1)

