Challenger iCAT

Instructions - Please read carefully before proceeding

1. The test has four sections that examine various abilities. In all there are 64 questions. You need to demonstrate competence in all four sections. Bear this in mind while distributing your time over these sections.

2. Time duration for this test is two hours and 30 minutes.

3. Directions for answering the questions are provided before each question type. Read the directions carefully. There is only one correct answer to every question.

4. Questions have variable markings. Marks for questions are stated before the questions. Negative marking for wrong answers is 1/4th of the marks allotted to the respective question.

5. Do not use calculators, log tables, dictionaries, or any printed or online reference material while taking this test. You may use rough paper for this test.

6. In a real CAT, any time taken-off in the middle of the test is time wasted. Plan your day so that you avoid interruptions during the test. To maximize the usefulness of this test it is strongly advised that you complete it in one sitting.

7. You may take a printout of the answer sheet provided to answer the questions.

8. You can take the test **online** at **testfunda.com** after a free registration. After you submit your scores, you will have access to **detailed solutions**, and **detailed analysis reports**. You will also have access to the free **Ask-a-Doubt facility**.
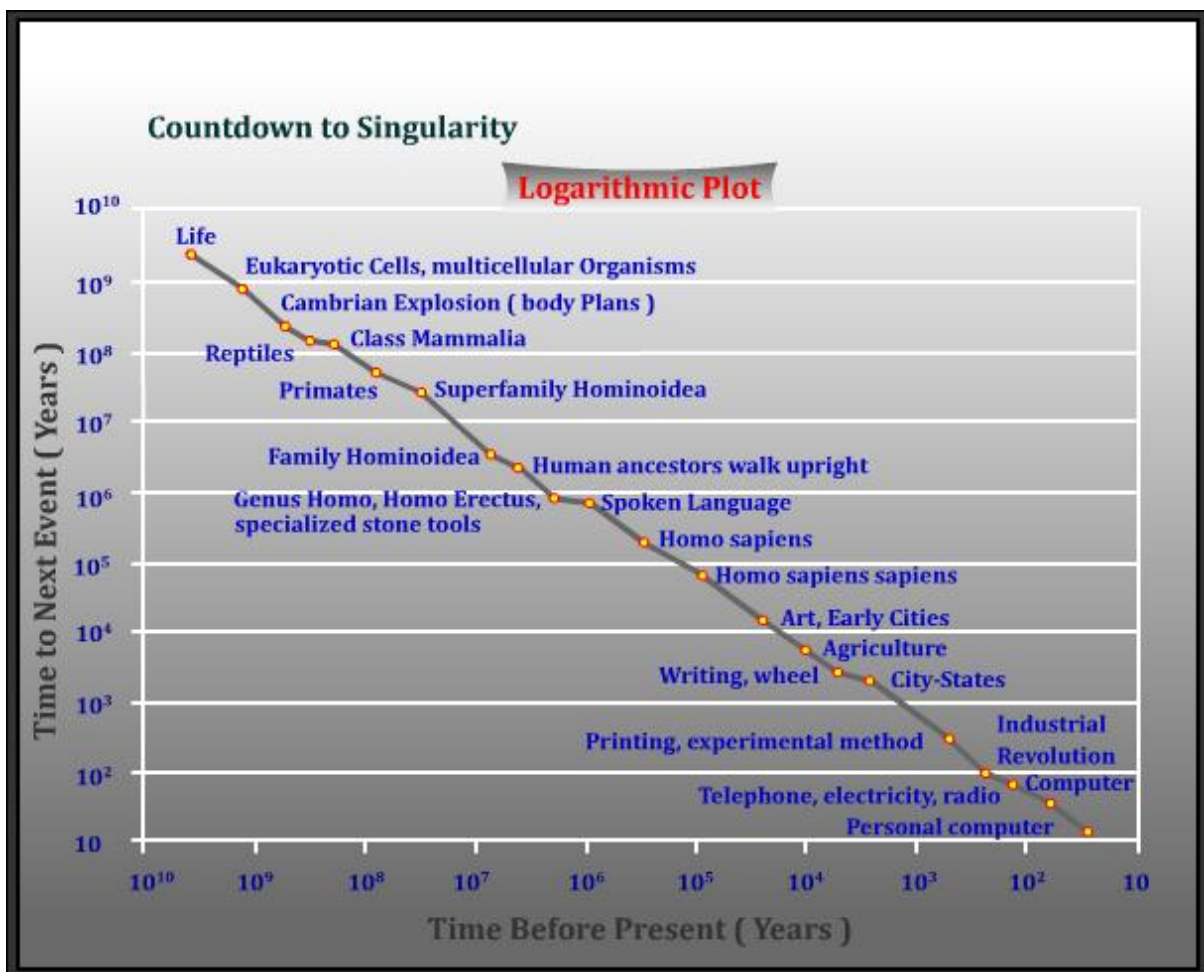
Examination duration: 2 hours 30 mins
SECTION I
Number of Questions = 16

Directions for questions 1 to 3: The passage given below is followed by a set of questions. Choose the most appropriate answer to each question.

Questions 1 to 3 carry 1 mark each.

Some of the more extreme visions of the post-industrial society are those related to the theory of the technological singularity. This theory refers to a predicted point or period in the development of a civilization at which due to the acceleration of technological progress, the societal, scientific and economic change is so rapid that nothing beyond that time can be reliably comprehended, understood or predicted by the pre-Singularity humans. Such a singularity was first discussed in the 1950s, and vastly popularized in the 1980s by Vernor Vinge. Statistician I. J. Good first wrote of an "intelligence explosion", suggesting that if machines could even slightly surpass human intellect, they could improve their own designs in ways unforeseen by their designers, and thus recursively augment themselves into far greater intelligences. The first such

improvements might be small, but as the machine became more intelligent it would become better at becoming more intelligent, which could lead to an exponential and quite sudden growth in intelligence. Mathematician and author Vernor Vinge greatly popularized Good's notion of an intelligence explosion in the 1980s, calling the creation of the first ultra intelligent machine the Singularity. Vinge predicted that superhuman intelligences, however created, will be able to enhance their own minds faster than the humans that created them. Some critics assert that no computer or machine will ever achieve human intelligence while others do not rule out the possibility. Others propose that other "singularities" can be found through analysis of trends in world population, world GDP, and other indices. Andrey Korotayev and others argue that historical hyperbolic growth curves can be attributed to feedback loops that ceased to affect global trends in the 1970s, and thus hyperbolic growth should not be expected in the future.

1. There are three statements below the main statement. Choose the best option from among the given options.

   <u>Main statement</u>: The theory refers to a predicted point or period in the development of a civilization at which due to the acceleration of technological progress, the societal, scientific and economic change is so rapid that nothing beyond that time can be reliably comprehended, understood or predicted by the pre-Singularity humans.

   A. Acceleration of technological progress acts as a catalyst in the development of a civilization.
   B. Society is fickle because it changes due to the acceleration of technological progress.
   C. Technological advancements may advance beyond the comprehension of humans.
   (1) Both statements B and C are implied.
   (2) Both statements A and C are implied.
   (3) All the statements are implied.
   (4) Only statement B is implied.
   (5) Only statement C is implied.

2. Looking at the diagrammatic representation of the theory of singularity, identify which biological/societal/scientific/economic changes occurred the quickest?
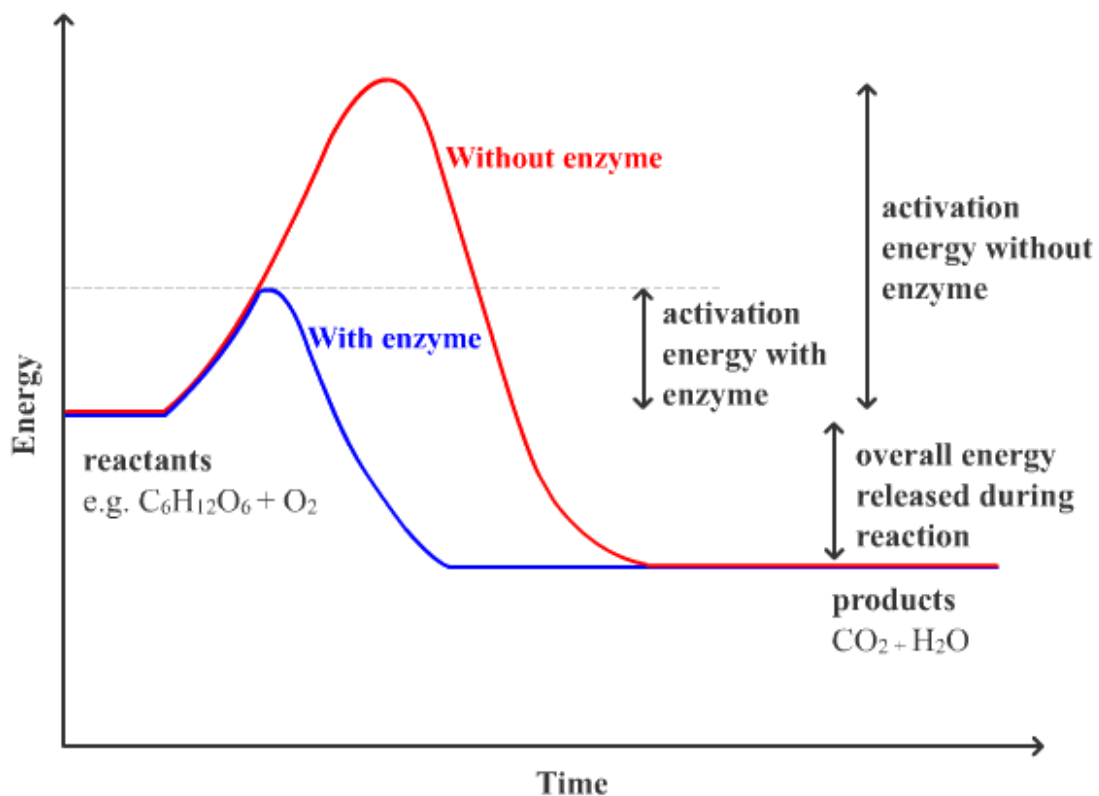   (1) From reptiles to class Mammalia.
   (2) From specialized stone tools to spoken language.
   (3) From creation of the wheel to city- states.
   (4) From the industrial revolution to invention of the radio.
   (5) From computers to personal computers.

3. Why has the term "intelligence explosion" been used in the passage?
   (1) To denote that the change is from a micro level to a macro level.
   (2) To denote that the change is extrinsic rather than intrinsic.
   (3) To denote the paradigm shift in terms of an intelligence quotient.
   (4) To denote that changes will occur in leaps and bounds from the start.
   (5) Options 1 and 2

Directions for questions 4 to 6: The passage given below is followed by a set of questions. Choose the most appropriate answer to each question.

Questions 4 to 6 carry 1 mark each.

The diagram shows the energy niveau at each stage of the reaction. The substrates need a large amount of energy to reach the transition state, which then decays into the end product. The enzyme stabilizes the transition state, reducing the energy needed to form this species and thus reducing the energy required to form products. Enzymes do not alter the position of the chemical equilibrium of the reaction. In the presence of an enzyme, the reaction runs in the same direction as it would without the enzyme, just more quickly. However, in the absence of the enzyme, other "spontaneous" reactions might lead to different products, because in those conditions this different product is formed faster. Furthermore, enzymes can couple two or more reactions, so that a thermodynamically favourable reaction can be used to "drive" a thermodynamically unfavourable one. For example, the hydrolysis of ATP (Adenosine 5'-triphosphate) is often used to drive other chemical reactions. Enzymes do not alter the equilibrium itself, but only the speed at which it is reached. Nevertheless, if the equilibrium is greatly displaced in one direction, that is, in a very exergonic reaction, the reaction is effectively irreversible. Under these conditions the enzyme will, in fact, hasten the reaction in the thermodynamically allowed direction.

Energy vs Time diagram showing reaction pathways with and without enzyme. Reactants e.g. $C_6H_{12}O_6 + O_2$ form products $CO_2 + H_2O$.

4. Evaluate the given summaries of the diagram on the basis of the following factors: clarity of exposition, conciseness, accuracy, and comprehensiveness. Then, choose the option that summarizes the diagram most appropriately considering these factors.

(1) Having an enzyme in the chemical reaction results in the formation of the products from the reactants in less time than would be required if the enzyme was absent. The overall energy released during the reaction is the same with or without the enzyme; however, the activation energy is higher without the enzyme. An example reactant is $C_6H_{12}O_6$, while example products are CO_2 and H_2O. The differentiation between the with enzyme, and the without enzyme reactions is in terms of the colour of the reaction.

(2) If an enzyme is present in the chemical reaction then it results in the formation of the products from the reactants in less time than would be required if the enzyme was absent. The overall energy required during the reaction is the same with or without the enzyme; however, the activation energy is higher without the enzyme. An example reactant is $C_6H_{12}O_6$, while example products are CO_2 and H_2O.

(3) An enzyme, if present in the chemical reaction, results in the formation of the products from the reactants in less time than would be required if the enzyme was absent. The overall energy released during the reaction is the same with or without the enzyme; however, the activation energy is higher without the enzyme. An example reactant is $C_6H_{12}O_6$, while example products are CO_2 and H_2O. The enzyme leads to a blue-coloured intermediate stage, while a reaction without the enzyme is completely red-coloured.

(4) An enzyme may be present in the chemical reaction; if so, the chemical reaction results in the formation of the products from the reactants in less time than would be required if the enzyme was absent. The overall energy released during the reaction is the same with or without the enzyme; however, the activation energy is higher without the enzyme. An example product is $C_6H_{12}O_6$, while example reactants are CO_2 and H_2O.

(5) An enzyme, if present in the chemical reaction, results in the formation of the products from the reactants in less time than would be required if the enzyme was absent. The overall energy released during the reaction is the same with or without the enzyme; however, the activation energy is higher without the enzyme. An example reactant is $C_6H_{12}O_6$, while example products are CO_2 and H_2O.

5. Replace the underlined words with a phrase of the same meaning.

If the equilibrium is greatly displaced in one direction, that is, in a very (1) exergonic reaction, the reaction is effectively irreversible.

The enzyme stabilizes the transition state, reducing the energy needed to form this (2) species and thus reducing the energy required to form products.

(1) 1. Liberating energy
2. Category

(2) 1. Seeking energy
2. Category

(3) 1. Liberating energy
2. Family

(4) 1. Diverting energy
2. Category

(5) 1. Expending energy
2. Family

6. On the basis of the text, which of the following are implied?

(1) The chemical reaction, though possible in the absence of an enzyme, is an arduous process. Hence, an enzyme must be introduced.

(2) The chemical process is possible without the presence of an enzyme. So, introducing an enzyme is a waste.

(3) Since the process is irreversible, precautions must be taken to avoid mistakes.

(4) If the introduction of an enzyme causes the process to hasten, more energy should be made available to power the process.

(5) None of these

Directions for questions 7 to 10: Read Passages I and II, and mark the most appropriate answer to the question(s).

Questions 7 to 10 carry 2 marks each.

Passage I
Environmental vegetarianism is based on the belief that the production of meat and animal products for mass consumption, especially through factory farming, is environmentally unsustainable or otherwise harmful. Recent research strongly supports these concerns. According to a 2006 United Nations initiative, the livestock industry is one of the largest contributors to environmental degradation worldwide, and modern practices of raising animals for food contributes on a "massive scale" to air and water pollution, land degradation, climate change, and loss of biodiversity. The initiative concluded that "the livestock sector emerges as one of the top two or three most significant contributors to the most serious environmental problems, at every scale from local to global." The habitat for wildlife provided by large industrial monoculture farms is very poor, and modern industrial agriculture has been considered a threat to biodiversity compared with farming practices such as organic farming, permaculture, arable, pastoral, and rainfed agriculture.

Animals fed on grain, and those that rely on grazing need far more water than grain crops. According to the USDA, growing the crops necessary to feed farmed animals requires nearly half of the United States' water supply and 80 percent of its agricultural land. Additionally, animals raised for food in the U.S. consume 90 percent of the soy crop, 80 percent of the corn crop, and a total of 70 percent of its grain. When tracking food animal production from the feed trough to consumption, the inefficiencies of meat, milk and egg production range from 4:1 up to 54:1 energy input to protein output ratio. As it was published, "U.S. could feed 800 million people with grain that livestock eat, Cornell ecologist advises animal scientists. Future water and energy shortages predicted to change face of American agriculture." To produce animal based food seems to be, according to these studies, typically much less efficient than the harvesting of grains, vegetables, legumes, seeds and fruits. Exception is made of animals that are grazed rather than fed, especially those grazed on land that could not be used for other purposes. According to the theory of trophic dynamics, it requires 10 times as many crops to feed animals being bred for meat production as it would to feed the same number of people on a vegetarian diet. Currently, 70 percent of all the wheat, corn, and other grain produced is fed to farmed animals. This has led many proponents of vegetarianism to believe that it is ecologically irresponsible to consume meat. It must also be noted that the benefits of rearing grazing animals is often beneficial, as observed Food Climate Research Network at Surrey University, which reports that 'A little bit of livestock production is probably a good thing for the environment'.

Passage II

The earliest precursor of pollution generated by life forms would have been a natural function of their existence. The attendant consequences on viability and population levels fell within the sphere of natural selection. These would have included the demise of a population locally or ultimately, species extinction. Processes that were untenable would have resulted in a new balance brought about by changes and adaptations. At the extremes, for any form of life, consideration of pollution is superseded by that of survival.

For mankind, the factor of technology is a distinguishing and critical consideration, both as an enabler and an additional source of by-products. Short of survival, human concerns include the range from quality of life to health hazards. Since science holds experimental demonstration to be definitive, modern treatment of toxicity or environmental harm involves defining a level at which an effect is observable. Common examples of fields where practical measurement is crucial include automobile emissions control, industrial exposure, toxicology, and medicine. "The solution to pollution is dilution", is a dictum which summarizes a traditional approach to pollution management whereby sufficiently diluted pollution is not harmful. It is well-suited to some other modern, locally-scoped applications such as laboratory safety procedure and hazardous material release emergency management. But it assumes that the dilatants are in virtually unlimited supply for the application or that resulting dilutions are acceptable in all cases. Such simple treatment for environmental pollution on a wider scale might have had greater merit in earlier centuries when physical survival was often the highest imperative, human population and densities were lower, technologies were simpler and their by-products more benign. But these are often no longer the case. Furthermore, advances have enabled measurement of concentrations not possible before. The use of statistical methods in evaluating outcomes has given currency to the principle of probable harm in cases where assessment is warranted but resorting to deterministic models is impractical or unfeasible. In addition, consideration of the environment beyond direct impact on human beings has gained prominence. Yet in the absence of a superseding principle, this older approach pre-dominates practices throughout the world. It is the basis by which to gauge concentrations of effluent for legal release, exceeding which penalties are assessed or restrictions applied. The regressive cases are those, where a controlled level of release is too high or, if enforceable, is neglected. Migration from pollution dilution to elimination in many cases is confronted by challenging economical and technological barriers.

7. The primary purpose of passage 1 is to:
    (1) Promote vegetarianism as a lifestyle choice.
    (2) Elaborate on the theory of trophic dynamics to promote vegetarianism.
    (3) Create awareness on the issue that production of meat and animal products is environmentally unsustainable.

(4) Show that there is a correlation between the consumption of meat and environmental pollution.

(5) Animal husbandry industry will lead to shortage in the water reserves.

8. Why is the traditional dictum, "the solution to pollution is dilution" valid today?
   (1) The world has been unable to come up with a newer dictum which is applicable to modern day life.
   (2) It is an established method so there is no need to deviate from it.
   (3) It is the basis of monitoring waste releases in order to catch violators.
   (4) It is the basis to govern the laws of environmental science in order to deal with rising pollution.
   (5) It is a simple, cost-effective treatment. It can be easily practised world-wide.

9. Which option best describes the relationship between the two passages?
   (1) Passage 2 seeks to provide solutions to the problems mentioned in passage 1.
   (2) Passage 2 supports the general premise of passage 1.
   (3) Passage 2 is in direct contradiction to passage 1.
   (4) Passage 2 has no direct relation with passage 1 as it focuses on prevention while the other passage talks about monitoring pollution.
   (5) None of the above

10. Both passages are concerned with:
    (1) Hard, factual data.
    (2) Concerns about the increase in the rate of pollution.
    (3) The effect of pollution seen on health.
    (4) Both option 1 and option 2
    (5) Both option 2 and option 3

Directions for questions 11 to 16: Read each of the passages, and mark the most appropriate answer to the question(s). The passages are independent of each other.

Questions 11 and 12 carry 2 marks each.

The utilization of ordinary experience to secure an advance into scientific material and method, while keeping the latter connected with familiar human interests, is easier to-day than it ever was before. The usual experience of all persons in civilized communities today is intimately associated with industrial processes and results. These in turn are so many cases of science in action. The stationary and traction steam engine, gasoline engine, automobile, telegraph and telephone, the electric motor enter directly into the lives of most individuals. Pupils at an early age are practically acquainted with these things. Not only does the business occupation of their parents depend upon scientific applications, but household pursuits, the maintenance of health, the sights seen upon the streets, embody scientific achievements and stimulate interest in the connected

scientific principles. The obvious pedagogical starting point of scientific instruction is not to teach things labelled science, but to utilize the familiar occupations and appliances to direct observation and experiment, until pupils have arrived at knowledge of some fundamental principles by understanding them in their familiar practical workings. The opinion sometimes advanced that it is derogation from the "purity" of science to study it in its active incarnation, instead of in theoretical abstraction, rests upon a misunderstanding. As a matter of fact, any subject is cultural in the degree in which it is apprehended in its widest possible range of meanings. Perception of meanings depends upon perception of connections, of context. To see a scientific fact or law in its human as well as in its physical and technical context is to enlarge its significance and give it increased cultural value. Its direct economic application, if by economic is meant something having money worth, is incidental and secondary, but a part of its actual connections. The important thing is that the fact be grasped in its social connections - its function in life. On the other hand, "humanism" means at bottom being imbued with an intelligent sense of human interests. The social interest, identical in its deepest meaning with a moral interest, is necessarily supreme with man. Knowledge about man, information as to his past, familiarity with his documented records of literature, may be as technical a possession as the accumulation of physical details. Men may keep busy in a variety of ways, making money, acquiring facility in laboratory manipulation, or in amassing a store of facts about linguistic matters, or the chronology of literary productions. Unless such activity reacts to enlarge the imaginative vision of life, it is on a level with the busy work of children. It has the letter without the spirit of activity. It readily degenerates itself into a miser's accumulation, and a man prides himself on what he has, and not on the meaning he finds in the affairs of life. Any study so pursued that it increases concern for the values of life, any study producing greater sensitiveness to social well-being and greater ability to promote that well-being is humane study.

11. Which of the following are in accordance with the author's point of view?

A. Contextual meaning is fundamental to grasping concepts.
B. Scientific ideas are better caught than taught.
C. Morality and society are important to man.
D. Man needs a plan of action to give meaning to his life.

(1) Statements B and D
(2) Statements A and C
(3) Statements B and C
(4) Statements B, C and D
(5) Statements A, B, C and D

The rules of equity or justice depend entirely on the particular state and condition in which men are placed, and owe their origin and existence to that utility, which results to the public from their strict and regular observance. Reverse, in any considerable circumstance, the condition of men: Produce extreme abundance or extreme necessity: Implant in the human breast perfect moderation and humanity, or perfect rapaciousness and malice. By rendering justice totally useless, you thereby totally destroy its essence, and suspend its obligation upon mankind. The common situation of society is a medium amidst all these extremes. We are naturally partial to ourselves, and to our friends; but are capable of learning the advantage resulting from a more equitable conduct. Few enjoyments are given to us from the open and liberal hand of nature; but by art, labour, and industry, we can extract them in great abundance. Hence, the ideas of property become necessary in all civil society. Hence, justice derives its usefulness to the public. And hence alone, arises its merit and moral obligation. These conclusions are so natural and obvious, that they have not escaped even the poets, in their descriptions of the felicity attending the golden age or the reign of Saturn. The seasons, in that first period of nature, were so temperate, if we credit these agreeable fictions, that there was no necessity for men to provide themselves with clothes and houses, as a security against the violence of heat and cold. The rivers flowed with wine and milk. The oaks yielded honey; and nature spontaneously produced her greatest delicacies. Nor were these the chief advantages of that happy age. Tempests were not alone removed from nature; but those more furious tempests were unknown to human breasts, which now cause such uproar, and engender such confusion. Avarice, ambition, cruelty, selfishness, were never heard of. Cordial affection, compassion, sympathy were the only movements with which the mind was yet acquainted. Even the punctilious distinction of mine and thine was banished from among the happy race of mortals, and carried with it the very notion of property and obligation, justice and injustice.

12. Why were tempests unknown to the happy race of mortals?
    (1) Because the river flowed with milk and honey and the treasures were spread lavishly by Mother Nature.
    (2) Because social justice prevailed in their time.
    (3) People were naturally affectionate, compassionate and sympathetic.
    (4) Justice worked to serve the public, through which it derived its merit and moral obligation.
    (5) Rules of justice were revered throughout the land.

Question 13 carries 1 mark.

Experiment, the great instrument for the ascertainment of truth in physical science, answers this question for us. In the head of the lobster there lies a small mass of that peculiar tissue which is known as nervous substance. Cords of similar matter connect this brain of the lobster, directly or indirectly, with the muscles. Now, if these

communicating cords are cut, the brain remaining entire, the power of exerting what we call voluntary motion in the parts below the section is destroyed; and on the other hand, if, the cords remaining entire, the brain mass be destroyed, the same voluntary mobility is equally lost. Whence the inevitable conclusion is, that the power of originating these motions resides in the brain, and is propagated along the nervous cords. In the higher animals the phenomena which attend this transmission have been investigated, and the exertion of the peculiar energy which resides in the nerves has been found to be accompanied by a disturbance of the electrical state of their molecules. If we could exactly estimate the signification of this disturbance; if we could obtain the value of a given exertion of nerve force by determining the quantity of electricity, or of heat, of which it is the equivalent; if we could ascertain upon what arrangement, or other condition of the molecules of matter, the manifestation of the nervous and muscular energies depends (and doubtless science will some day or other ascertain these points), physiologists would have attained their ultimate goal in this direction; they would have determined the relation of the motive force of animals to the other forms of force found in nature; and if the same process had been successfully performed for all the operations which are carried on in, and by, the animal frame, physiology would be perfect, and the facts of morphology and distribution would be deducible from the laws which physiologists had established, combined with those determining the condition of the surrounding universe. There is not a fragment of the organism of this humble animal whose study would not lead us into regions of thought as large as those which I have briefly opened up to you; but what I have been saying, I trust, has not only enabled you to form a conception of the scope and purport of zoology, but has given you an imperfect example of the manner in which, in my opinion, that science, or indeed any physical science, may be best taught. The great matter is, to make teaching real and practical, by fixing the attention of the student on particular facts; but at the same time it should be rendered broad and comprehensive, by constant reference to the generalizations of which all particular facts are illustrations. The lobster has served as a type of the whole animal kingdom, and its anatomy and physiology have illustrated for us some of the greatest truths of biology.

13. The author of the passage is:
    (1) A professor teaching about Zoology.
    (2) A professor teaching students about the process of dissecting a lobster.
    (3) A Zoology expert placing his findings before an audience.
    (4) A Zoology professor advising his colleagues on how to conduct a class on Zoology.
    (5) A Zoology expert conducting a dissection before an audience.

Questions 14 to 16 carry 2 marks each.

The question of the origin is not the same as that of the present justification of the existing system of private property. The institution of private property has evolved under diverse conditions. In early societies individual property rights were not very clearly marked. Every tribe asserted against other tribes, and tried to uphold by war, its claims upon its customary hunting grounds; but the claims of the individual hunters on land within the tribe did not often come into conflict. Private property at the outset was in personal possessions, ornaments, weapons, utensils, which were very meager in that primitive society in which it was the custom "to go calling with a club instead of a card-case." Only later came individual property in land. A few years ago it was generally believed that the organization of the old German tribes was politically an almost perfect democracy, and economically a communism in which all had equal claims upon the land. Today this opinion is very seriously questioned. It seems probable that there was a good measure of communism in the control and use of lands (though not in other things), but this was largely confined to an oligarchy of the favoured; whereas the masses lived in subjection, cut off from all but a meagre share in the common lands. However that may have been, strong forces within historic times have put an end to the common ownership and tillage of land as it existed among the peasants of Europe. That system was shown by experience to be wasteful. Competition tended to bring the economic agents into more efficient hands, and the movement was furthered by many acts of injustice and violence on the part of those in power. Inquiries into the origin and development of any social institution are interesting and helpful in forming an estimate of its present significance, but the problems of the past are not those of today. Whether or not the ancient beginning of property in Europe was in violence and evil has but a remote bearing on the question as to the present working of it. Social conditions and needs have not changed more than have the forms and limits of property itself. Each generation has its own problems to solve, and ignoring for the most part the evils of the distant past, each generation must test existing institutions by their present results.

14. Which of the following best captures the gist of the passage?
    (1) The question of the origin is not the same as that of the present justification of the existing system of private property. The institution of private property has evolved under diverse conditions.
    (2) The institution of private property has evolved under diverse conditions for example in early societies individual property rights were not very clearly marked.
    (3) Inquiries into the origin and development of any social institution are interesting and helpful in forming an estimate of its present significance, but the problems of the past are not those of today. The same principle applies to the institution of private property.
    (4) Each generation has its own problems to solve, and ignoring for the most part the evils of the distant past, each generation must test existing institutions by

their present results. The same principle applies to the institution of private property.

(5) Competition tends to bring the economic agents into more efficient hands, and the movement is furthered by many acts of injustice and violence on the part of those in power. The same principle applies to the institution of private property.

In what appears as yet to be the most breathtaking method to impose US copyright policy on the rest of the Southern world, the US is now putting great emphasis on free trade agreements. The pace for increasing the volume and intensity of global trade on intellectual property through the WTO is apparently slowing down due to internal differences between member countries. This has led to an increase in the number of bilateral and plurilateral preferential agreements; at the same time, the world share of such non-multilateral and preferential trade has been steadily increasing over the last 10 years. These agreements, involving two or more countries, could be regionally specific, as say within Asia, or geographically divergent, as say between Singapore and the United States. They are also referred to as regional trade agreements if geographically proximate or more generally as free trade agreements [FTA] as the idea is to free cross-border trade from the encumbrances of tariff duties or restrictive rules. The total number of free trade agreements in force in 2005 was 170 and another 90 were in the pipeline. FTA activities have recently intensified all over the world. Just how intense is revealed by the fact that all but one member of WTO, namely Mongolia, is engaged in some form of trade agreement or another. It is expected that by 2008 the number of FTAs in existence may be close to 300. There are broadly three trends apparent in these trade agreements:

1. Countries across the world, including those traditionally reliant on multilateral trade liberalization, are increasingly making FTAs the centre of their trade policy;

2. FTAs are in many cases establishing trade regimes that go beyond the scope of multilateral trade agreements;

3. Preference is being given on reciprocal trade agreements between developing and developed countries.

So, if the sluggish growth of WTO is not delivering the desired trade results, then many Southern countries, ever anxious to increase their exports, are keen to take advantage of preferential treatment of their Northern counterparts. There is also the matter of not being thought as being 'left behind' in the competitive race for limited Northern markets. In the bargain, however, the Southern states are conceding a lot more than they presently realize. The FTAs are clearly seen as opportunities by countries like the United States to raise and harmonise IP standards worldwide. Facing opposition in multilateral forums like the WTO, the US is opting instead for the free trade path to

achieve its ends. The approach is basically to use a US-oriented IP template and impose its preferred standards on others through these FTAs. The IP issues in each FTA are negotiated according to the template set by the last agreement, with the same provisions included in each, regardless of whether they address some 'problem' in the negotiating partner country. For example, the free trade agreement between the US and Jordan requires the latter country to change its domestic patent statutes so as to allow business method patents; only the most naïve could conclude that this change was made at the request of the Jordanians or that Jordanian-based companies will be the main beneficiaries of such a controversial type of patent. Now let's examine two specific elements of copyright related free trade agreements. These features cut right across many preferential agreements between the United States and other countries. The first is with respect to the introduction of the relatively new Digital Millennium Copyright Act and the second is the extension of the copyright term to life of the author plus 70 years.

The DMCA is an overly restrictive copyright law produced in response to World Intellectual Property Organization's passage of the Copyright treaty signed in 1996 by nearly one hundred and sixty countries. All signatory countries of the copyright treaty are expected to legislate such acts within their national jurisdictions. The 1998 US DMCA is a good example of a legislation many US copyright-oriented industries seek to impose on the rest of the world. The terms of DMCA go well beyond the general recommendations made by WIPO. Having failed to persuade nations worldwide to adopt US-style copyright regulations via the WIPO Copyright Treaty, the US government has included many stringent requirements of DMCA along with others in its Free Trade Agreements with Jordan, Singapore, Chile, Morocco, Australia, CAFTA, Bahrain and Oman. It is now seeking to include similar provisions in its current multilateral free trade negotiations with 33 countries in the Americas; such negotiations, it should be noted, are not going well in the rapidly changing political climate across this continent. The DMCA can prevent any copying or access to works, even copying that would be completely excused under copyright law as a 'fair use' or 'fair dealing'. DMCA is unbalanced as it basically provides considerable power to the copyright content provider at the cost of the consumers' access to information, especially with reference to their 'fair use' rights. The owners can now legally put a technological lock around a work in order to control unauthorized access, or copying, or performance or display of the work. In such a case, it is illegal both to circumvent that technological lock, for example those that exist with 'copy protected' CDs, or to supply any product, service or technology that is designed to help anyone else circumvent that lock. Any person 'privately' engaged in the development or distribution of circumvention technology for digital media, which should be allowed under copyright's 'fair use' doctrine, is at risk, however, of being held criminally or civilly liable. Further, digital or internet enabled access can be even more tightly restricted with embedded software codes and shrink-wrap and click-wrap licensing agreements.

15. Which one of the following is correct in the context of the passage?

(1) DMCA is unbalanced as it basically provides considerable power to the copyright content receiver at the cost of the consumers' access to information, especially with reference to their 'fair use' rights.

(2) The number of bilateral and plurilateral preferential agreements have increased as the volume and intensity of global trade on intellectual property through the WTO is apparently slowing down due to internal agreement between member countries.

(3) The three trends apparent in the trade agreements include establishing trade regimes that go beyond the scope of bilateral trade agreements.

(4) The DMCA is an overly restrictive copyright law produced in response to World Intellectual Property Organization's passage of the Copyright treaty signed in Nineteen Ninety Six by about 160 nations.

(5) The two specific elements of copyright related free trade agreements that cut right across many preferential agreements between the United Kingdom and other countries are introduction of the relatively new Digital Millennium Copyright Act and the extension of the copyright term to life of the author plus 70 years.

Because Hawking radiation allows black holes to lose mass, black holes which lose more matter than they gain through other means are expected to evaporate, shrink, and ultimately vanish. Smaller micro black holes (MBHs) are currently predicted by theory to be larger net emitters of radiation than larger black holes, and to shrink and evaporate faster. Hawking's analysis became the first convincing insight into a possible theory of quantum gravity. However, the existence of Hawking radiation has never been observed, nor are there currently viable experimental tests which would allow it to be observed. Hence, there is still some theoretical dispute over whether Hawking radiation actually exists. Ground based observatories, such as the Pierre Auger might also be capable of detecting evaporating MBHs that would form in the upper atmosphere by the impact of high-speed protons, also known as cosmic rays. Recent results from the Pierre Auger now suggest that the highest energy protons originate from nearby active galactic nuclei (AGN) where they are accelerated and travel to earth for hundreds of millions of years at nearly the speed of light, and upon impact might create MBHs, allowing for observation of their evaporation.

Black holes are sites of immense gravitational attraction into which surrounding matter is drawn by gravitational forces. Classically, the gravitation is so powerful that nothing, not even radiation can escape from the black hole. It is yet unknown how gravity can be incorporated into quantum mechanics, but nevertheless far from the black hole the gravitational effects can be weak enough that calculations can be reliably performed in the framework of quantum field theory in curved spacetimes. Hawking showed that quantum effects allow black holes to emit exact black body radiation, which is the

average thermal radiation emitted by an idealized thermal source known as a black body. The radiation is as if it is emitted by a black body with a temperature that is inversely proportional to the black hole's mass. A view of the process is that vacuum fluctuations cause a particle-antiparticle pair to appear close to the event horizon of a black hole. One of the pair falls into the black hole whilst the other escapes. In order to preserve total energy, the particle that fell into the black hole must have had a negative energy (with respect to an observer far away from the black hole). By this process the black hole loses mass, and to an outside observer it would appear that the black hole has just emitted a particle. In reality, the process is a quantum tunnelling effect, whereby particle-antiparticle pairs will form from the vacuum, and one will tunnel outside the event horizon. An important difference between the black hole radiation as computed by Hawking and a thermal radiation emitted from a black body is that the latter is statistical in nature, and only its average satisfies what is known as Planck's law of black body radiation, while the former satisfies this law exactly. Thus, thermal radiation contains information about the body that emitted it, while Hawking radiation seems to contain no such information, and depends only on the mass, angular momentum and charge of the black hole. However, according to the conjectured gauge-gravity duality (also known as the AdS/CFT correspondence), black holes in certain cases (and perhaps in general) are equivalent to solutions of quantum field theory at a non-zero temperature. This means that no information loss is expected in black holes (since no such loss exists in the quantum field theory), and the radiation emitted by a black hole is probably a usual thermal radiation.

16. It has been claimed in the passage that "Hawking's analysis became the first convincing insight into a possible theory of quantum gravity".
    Based on the passage, which of the statements below seem closest to the insight provided by Hawking:
   A. Black holes can sometimes, and perhaps always, be equivalent to solutions of quantum field theory at a non-zero temperature.
    B. Gravitational effects are sometimes weak enough to allow calculations that can be done in the context of quantum field theory.
    C. Black body radiation is statistical in nature and only its average satisfies Planck's law of black body radiation, while black hole radiation satisfies it exactly.
    (1) Only A
    (2) Only B
    (3) A and C
    (4) A and B
    (5) B and C

SECTION II
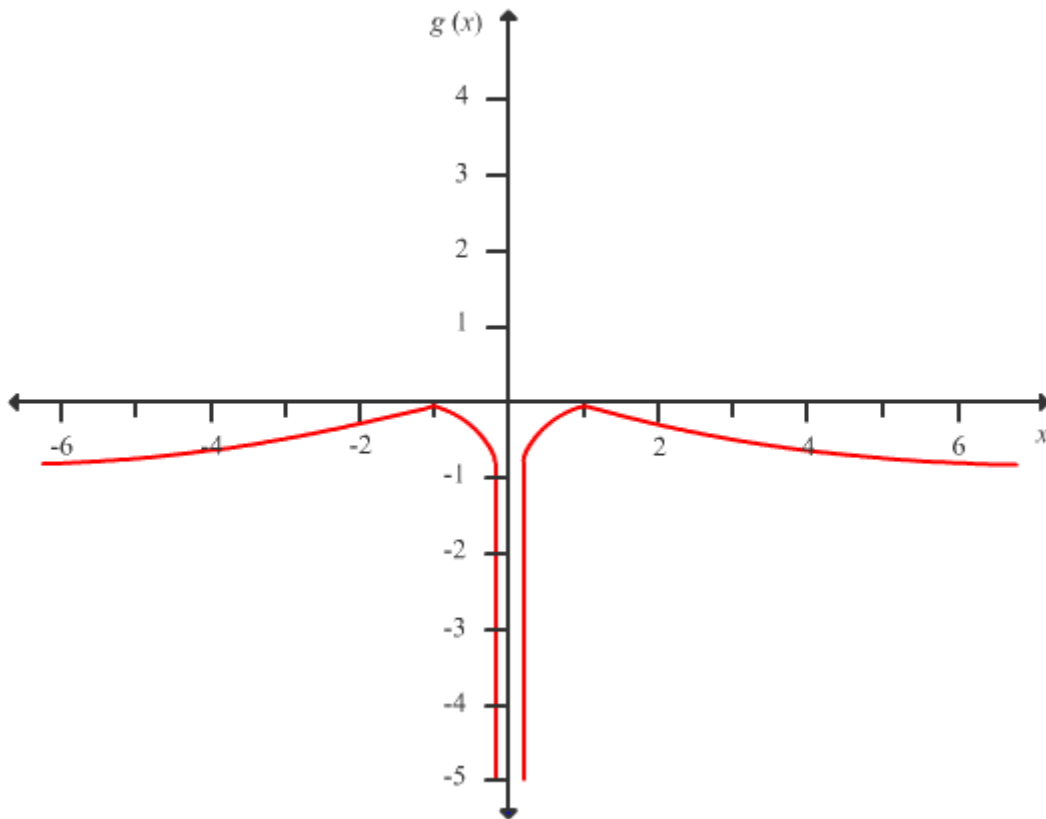**Number of Questions = 16**

Directions for Questions 17 to 18: Answer the following questions based on the information given below.

The graph of $f(x)$ vs. x is given below, where $f(x) = \log x$
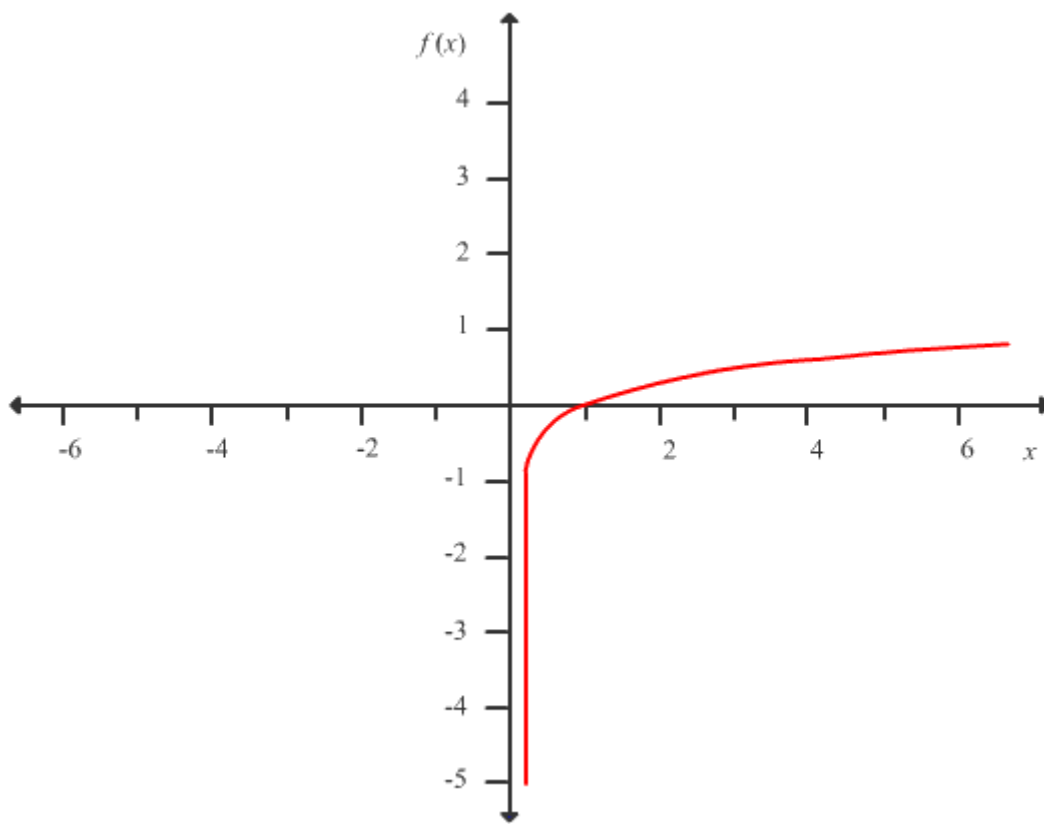
Question 17 carries 1 mark.

17. The graph of $g(x)$ vs. x is given below. What is $g(x)$?

(1) $g(x) = -\log x$
(2) $g(x) = -\log |x|$
(3) $g(x) = -|\log x|$
(4) $g(x) = |\log (-x)|$
(5) $g(x) = -|\log |x||$

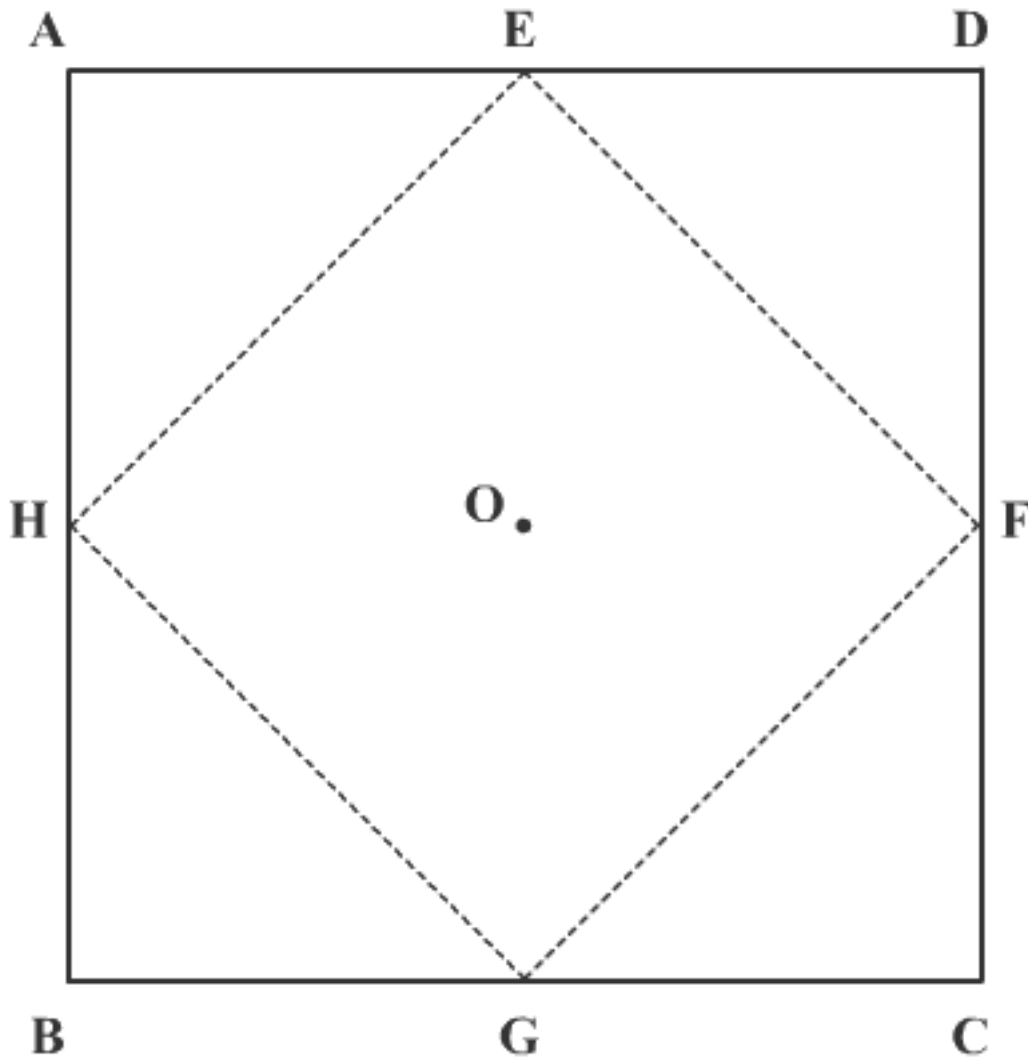**Question 18 carries 2 marks.**

18. $h(x) = f(x) \times g(x)$
$a = 7 + |5 - 4x|$ and $b = x^2 + 8x + 10$
$c = \min(a) + \min(b)$, where the function min() represents minimum value of the operand. Which of the following is true? [Take the value of $g(x)$ from the previous question.]
(1) $h(c)$ = cardinal number of a null set
(2) $h(c) = g(c)$
(3) $f(c) = g(c)$
(4) Options 2 and 3
(5) All of these

Directions for Questions 19 to 20: Answer the following questions based on the information given below.

A square sheet ABCD of side 10 m is folded along the sides EF, FG, GH and HE, where E, F, G, H are the midpoints of the sides AD, DC, CB and BA respectively.

Question 19 carries 2 marks.

   19. After folding the sheet, a circular hole is cut out such that the sides of square EFGH are tangent to the circular hole. The sheet is unfolded. What is the total perimeter (in m) of the outer boundary of the remaining sheet?
   (1) Less than 20
   (2) Less than 30
   (3) More than 30
   (4) More than 40
   (5) More than 50

Question 20 carries 1 mark.

20. After folding the sheet, a square hole is cut out such that the vertices of the cut square are the mid points of sides of square EFGH. The sheet is then unfolded. What is the total perimeter (in m) of the outer boundary of the remaining sheet?
    (1) Less than 30
    (2) More than 30
    (3) More than 40
    (4) More than 50
    (5) More than 60

Directions for Questions 21 to 22: Answer the following questions based on the information given below.

Questions 21 and 22 carry 2 marks each.

$$f_1(x) = \frac{x}{1+x}, f_2(x) = \frac{f_1(x)}{[1+f_1(x)]}, f_3(x) = \frac{f_2(x)}{[1+f_2(x)]} \text{ and so on.}$$

21. What is the value of $f_{10}(f_9(\ldots f_2(f_1(1))))$?
    (1) $\dfrac{1}{11}$
    (2) $\dfrac{1}{99}$
    (3) $\dfrac{1}{56}$
    (4) $\dfrac{1}{50}$
    (5) $\dfrac{1}{45}$

22. What is the value of $\displaystyle\sum_{n=1}^{10} [(n^2 + 1) \times f_n(n)]$?
    (1) $f_2(26) + f_3(27)$
    (2) $[f_{54}(1)]^{-1}$
    (3) $f_1(45)$
    (4) $f_{55}(55)$
    (5) $f_1(10)$

Directions for questions 23 to 24: Answer the following questions based on the information given below.

Out of 11 available balls, 5 are of type A, 2 are of type B, 2 are of type R, one is of type K and one is of type D.

Question 23 carries 2 marks.

23. In how many ways can we select 4 out of these 11 balls?
    (1) 5
    (2) 35
    (3) 330
    (4) 331
    (5) None of these

Question 24 carries 1 mark.

24. In how many ways we can arrange 4 balls out of these 11 balls in a line?
    (1) 37
    (2) 371
    (3) 4820
    (4) 5460
    (5) 7920

Directions for questions 25 to 26: Answer the following questions based on the information given below.

Questions 25 and 26 carry 1 mark each.

A line L has X-intercept and Y-intercept of 12 units each. T is a triangle formed by three lines: L, X-axis and Y-axis.

25. How many points with integral co-ordinates lie on the line L in the first quadrant?
    (1) 0
    (2) A perfect square
    (3) An odd composite number
    (4) A prime number
    (5) None of these

26. How many points with integral co-ordinates lie inside triangle T?
    (1) A prime number
    (2) A multiple of 12
    (3) Even number
    (4) More than 66
    (5) An odd multiple of 11

Directions for questions 27 to 28: Answer the following questions based on the information given below.

Questions 27 and 28 carry 2 marks each.

In a US school, a recruitment drive was conducted to hire high school teachers for Geometry. After the first round of the selection process, which was based on multiple choice questions, two Indian candidates Anuradha and Vaibhav were shortlisted for the second round. In the second round, candidates were asked to write 5 statements each related to Geometry. The selection panel awarded 1 point for a statement which is "always true" and 0 points otherwise. The cut-off for the second round was 2 points.

27. Anuradha wrote the following 5 statements. What was her total score for the second round?
   1. A quadrilateral in which diagonals bisect perpendicularly is a square.
   2. A quadrilateral in which all the four sides are equal is a trapezium.
   3. A quadrilateral in which adjacent angles are equal is a square.
   4. A quadrilateral in which diagonals are equal is a parallelogram.
   5. A parallelogram in which diagonals are equal is a square.
   (1) 1
   (2) 2
   (3) 3
   (4) 4
   (5) 5

28. Vaibhav wrote the following 5 statements. What was his score for the second round?
   1. Each interior angle of a 20 sided regular polygon is 18°.
   2. Number of diagonals of a 12 sided polygon is 66.
   3. The length of the line joining the mid points of the oblique sides of an isosceles trapezium having height 20 cm and area 300 cm^2 is 15 cm.
   4. Sum of the exterior angles of an n sided polygon is (n – 2)180°.
   5. The ratio of the sides of a square and equilateral triangle of equal perimeter is 2:3.
   (1) 1
   (2) 2
   (3) 3
   (4) 4
   (5) 5

Directions for questions 29 to 30: Answer the following questions based on the information given below.

Questions 29 and 30 carry 2 marks each.

A palindrome number is a number which remains unaltered when its digits are reversed. For example, 12321 is a palindrome number and it remains unaltered when its digits are reversed.

29. *N* is the number of 6 digit palindromes which are divisible by 3. *M* is the octal representation of *N*. If *M* is a palindrome number, then *P* is the sum of digits of *M*; otherwise *P* is the multiplication of digits of *M*. If *a*, *b*, *c* are the remainders obtained when *P* is divided by 2, 3 and 4 respectively, then what is the nature of the roots of the quadratic equation $ax^2 + bx + c = 0$?
(1) Rational, distinct with same sign
(2) Rational, distinct with different sign
(3) Rational and equal
(4) Complex conjugates
(5) Irrational and distinct

30. *N* is the number of 5 digit palindromes which are even and *M* is the number of 7 digit palindromes which are even.
If $K(x) = |x − M| + |x − N|$, then what is the minimum value of *K*?
(1) 400
(2) 3600
(3) 4000
(4) 0
(5) None of these

Directions for questions 31 to 32: Answer the following questions based on the information given below.

Questions 31 and 32 carry 1 mark each.

Suraj and Girish were going from Mumbai to Khedagoan, which is a rural area. Suraj went on his bicycle whereas Girish went by bus, but the bus dropped Girish midway. As there was no other means to reach his destination, Girish had to walk the rest of the distance. It is known that the speed of the bus was twice the speed at which Suraj travelled and the walking speed of Girish was half of the speed of Suraj. When the first person reached the destination, the distance travelled by Suraj and Girish was in the ratio *a:b*.

31. After some time, Girish decided to establish a means of transport for Khedagoan and started a bus service for Khedagoan. After one year, Suraj joined the business and the ratio of the yearly investment of Girish and Suraj was *a:b*. After six years of Suraj's joining, competition increased, and both Girish and Suraj

decided not to continue their business. During this period, Ajay, a friend of Suraj and Girish, invested some amount in a scheme having simple interest r for 2 years. The ratio of the amount received by Ajay after two years to the amount invested by Ajay is the same as the ratio of the profits earned by Girish and Suraj during their partnership. What is the value of r?

(*Note:* Assume that the ratio of the profits earned by Girish to that earned by Suraj during their partnership is the same as the ratio of their total investment.)
(1) 16.66%
(2) 8.33%
(3) 12.66%
(4) 10%
(5) None of these

32. After a few years, Suraj, Girish and Ajay started a new business of chemicals and discovered a new chemical 'Ajosugi'. The chemical 'Ajosugi' was made by mixing two solutions 'Dilo' and 'Conse' in equal quantities, which are in turn made by mixing other solutions. The first solution, 'Dilo', is made by mixing two solutions 'A' and 'B' in the ratio of a:b and these solutions contain 30% and 40% Chlorine respectively while the rest is water. The other solution, 'Conse', is made by mixing two solutions 'C' and 'D' in the ratio b:a which contain 20% and 30% of Fluorine respectively while the rest is water. The chemical 'Ajosugi' was awarded Rs. 10,000 by the Indian government. What was the amount received by Ajay if Girish, Suraj and Ajay decided to share the award in the ratio of Chlorine, Fluorine and water in the chemical 'Ajosugi'?
(1) Rs. 5300
(2) Rs. 5320
(3) Rs. 5400
(4) Rs. 7000
(5) Rs. 5420

SECTION III
Number of Questions = 16

Questions 33 to 39 carry 1 mark each.

Directions for question 33: The question below consists of a paragraph in which the first and last sentences are identified. Choose the option that has the most logical order of the intermediate sentences.

33. I. "Affirmative action" means positive steps taken to increase the representation of women and minorities in areas of employment, education, and business from which they have been historically excluded.

A. The ebb and flow of public controversy over affirmative action can be pictured as two spikes on a line, the first spike representing a period of passionate debate that began around 1972 and tapered off after 1980, and the second indicating a resurgence of debate in the 1990s leading up to the Supreme Court's decision in the summer of 2003 upholding certain kinds of affirmative action.

B. One has been legal and administrative as courts, legislatures, and executive departments of government have made and applied rules requiring affirmative action.

C. The development, defence, and contestation of preferential affirmative action have proceeded along two paths.

D. The first spike encompassed controversy about gender and racial preferences alike.

E. Often enough, the two paths have failed to make adequate contact, with the public quarrels not always very securely anchored in any existing legal basis or practice.

F. When those steps involve preferential selection- selection on the basis of race, gender, or ethnicity-affirmative action generates intense controversy.

G. The other has been the path of public debate, where the practice of preferential treatment has spawned a vast literature, pro and con.

II. This is because in the beginning affirmative action was as much about the factory, the firehouse, and the corporate suite as about the university campus.

(1) FCBGEDA
(2) ADFGCBE
(3) FCBGEAD
(4) FCBGAED
(5) ADGEFCB

Directions for question 34: The question below consists of a paragraph in which the first sentence is identified. Choose from the options the most logical order of the following sentences.

34. I. Nietzsche's thought extended a deep influence during the 20th century, especially in Continental Europe.

A. Later, during the 1930's, aspects of Nietzsche's thought were espoused by the Nazis and Italian Fascists, partly due to the encouragement of Elisabeth Förster- Nietzsche through her associations with Adolf Hitler and Benito Mussolini.

B. His tendency to seek explanations for commonly accepted values and outlooks in the less elevated realms of sheer animal instinct was also crucial to Sigmund Freud's development of psychoanalysis.

C. Here, Nietzsche's advocacy of new, healthy beginnings and of creative artistry in general stood forth.

D. In English-speaking countries, his positive reception has been less resonant.

E. Until the 1960's in France, Nietzsche appealed mainly to writers and artists, since the academic philosophical climate was dominated by G.W.F. Hegel's, Edmund Husserl's and Martin Heidegger's thought, along with the structuralist movement of the 1950's.

F. During the last decade of Nietzsche's life and the first decade of the 20th century, his thought was particularly attractive to avant-garde artists who saw themselves on the periphery of established social fashion and practice.

G. It was possible for the Nazi interpreters to assemble, quite selectively, various passages from Nietzsche's writings whose juxtaposition appeared to justify war, aggression and domination for the sake of nationalistic and racial self-glorification.

(1) DFCBAGE

(2) DFCGBAE

(3) ADGEFCB

(4) DFCBAEG

(5) AGDFCBE

Directions for Questions 35: The question below consists of a paragraph in which the last sentence is identified. Choose the option that has the most logical order of the remaining sentences.

35.

A. Few people think zombies actually exist.

B. Zombies are exactly like us in all physical respects but have no conscious experiences: by definition there is 'nothing it is like' to be a zombie.

C. Use of the zombie idea against physicalism also raises more general questions about relations between imaginability, conceivability, and possibility.

D. It is argued that if zombies are so much as a bare possibility, then physicalism is false and some kind of dualism must be accepted.

E. For many philosophers that is the chief importance of the zombie idea.

F. But many hold they are at least conceivable, and some that they are 'logically' or 'metaphysically' possible.

G. But the idea is also of interest for its presuppositions about the nature of consciousness and how the physical and the phenomenal are related.

I. Finally, zombies raise epistemological difficulties: they reinstate the 'other minds' problem.

(1) BAFDECG
(2) BAFCEDG
(3) ABEFCGD
(4) DABEFCG
(5) BAFDEGC

Directions for questions 36 to 39: Each of the following questions has a paragraph from which the first and last sentences have been deleted. From the given options, choose the set of statements that completes the paragraph in the most appropriate way.

36. _____. Western philosophy emphasizes ambition, individualism, rationality, power, and liberty, while Chinese philosophy emphasizes benevolence, harmony, wisdom, family, and honouring one's ancestors. Chinese philosophy primarily focuses more internally, while Western philosophy's focus is more external. In many ways, the Western and Chinese philosophies are the antithesis of each other. For example, Platonism stressed on the rule of law, and Confucianism preached a society ruled by ethics. While Enlightenment Thinking calls for liberty and democracy, Legalism demands unquestioned loyalty to imperial authority. While competition is essential in the ideology of Capitalism, cooperation is seen as the key for harmony in the philosophy of the East. Western philosophers primarily value reason and rationality, while the Far Eastern philosophers generally emphasize meditation and wisdom. _____

A. This is not to say that Chinese philosophy is irrational, nor to say that Western philosophy is unwise.

B. Western and Chinese philosophy have many differences, but it would be far from truth to deduce that Western and Chinese philosophy differ completely.

C. Western and Chinese philosophy explore deep into the realms of inquiry and cover similar grounds.

D. Thus, naturally, the two philosophies would have an ample number of schools that thought similarly.

E. There were philosophers in China, such as the Logicians, that made scientific rationality their chief focus, while there were philosophers in the West, such as Marcus Aurelius, that saw meditation as the path to knowledge.

F. The focuses of Western and Chinese philosophy are radically different, thus they have a considerable effect on mentalities of both societies.

G. It is just the mainstream philosophical schools that make Western and Chinese philosophy different.

(1) FD
(2) CD
(3) FE
(4) FB
(5) FA

37. _____ . The tax forces citizens to do two things that many people often choose not to do for themselves until too late: buy insurance against risks and save for retirement. The lack of insurance and retirement money would have little effect on some people, that is, relatively wealthy people, or non-wealthy people who remain non-disabled throughout their working careers, then die soon after retirement. However, the lack of insurance and retirement money would predictably lead to poverty among many other people, that is, non-wealthy people who suffer disability, or non-wealthy people who remain non-disabled throughout their working careers, then live many years after retirement. One critique of the system is that working people are forced to contribute to these services- that these services should not be mandated by law, and that the wisdom of using authority of government to force the funding of such programs is debatable. If left to their own devices, some people would fail to buy adequate insurance or save for retirement. _____

A. They argue that the government should simply supply the mandate and let commercial institutions supply the services, allowing the advantages of markets to operate.

B. Although this would lead to poverty among some faction of the population, critics argue that the ideal of individual freedom allows one to make such choices.

C. An analogy is automobile insurance; although some states mandate that drivers have automobile insurance, the state government itself is not the insurance company.

D. The Federal Insurance Contributions Act tax is considered a regressive tax on income, with no standard deduction or personal exemption deduction, and is imposed only on the first $100,000 of gross wages.

E. The Federal Insurance Contributions Act tax funds social services that are generally considered a safety net for disabled people and retired people.

F. Finally, the U.S. had no federal- government- mandated health insurance for the elderly; consequently, for many people, the end of their work careers was the end of their ability to pay for medical care.

G. A tax similar to the Federal Insurance Contributions Act tax is imposed on the earnings of self-employed individuals, such as independent contractors and members of a partnership.

  (1) EF
  (2) GF
  (3) EB
  (4) DF
  (5) GC

38. _____. Many of his lecture courses were devoted to one or other of these figures, especially in the 1930s and 1940s. The lectures on Nietzsche focused on fragments posthumously published under the title *The Will to Power*, rather than on Nietzsche's published works. Heidegger read *The Will to Power* as the culminating expression of Western metaphysics, and the lectures are a kind of dialogue between the two thinkers. This is also the case for the lecture courses devoted to the poetry of Friedrich Hölderlin, which became an increasingly central focus of Heidegger's work and thought. Heidegger grants to Hölderlin a singular place within the history of being and the history of Germany, as a herald whose thought is yet to be "heard" in Germany or the West. Many of Heidegger's works from the 1930s onwards include meditations on lines from Hölderlin's poetry. _____

A. And several of the lecture courses are devoted to the reading of a single poem.

B. Some writers on Heidegger's work see possibilities within it for dialogue with traditions of thought outside of Western philosophy, particularly East Asian thinking.

C. Heidegger was deeply influenced by Soren Kierkegaard.

D. Friedrich Hölderlin and Friedrich Nietzsche were both important influences on Heidegger.

E. It has been claimed that a number of elements within Heidegger's thought bear a close parallel to the ideas of Friedrich Hölderlin and Friedrich Nietzsche.

F. Heidegger is not the only Western Philosopher who not only intellectually understands but has intuitively grasped Hölderlin's poetry.

G. Contemporary Heideggerians regard Friedrich Hölderlin as by far the greatest philosophical contributor to Heidegger's own existentialist concepts.

(1) DA
(2) DC
(3) CB
(4) EF
(5) DG

39. _____. It seeks to discover underlying themes that are common to the myths of multiple cultures. In some cases, comparative mythologists use the similarities between different mythologies to argue that those mythologies have a common source. This common source may be a common source of inspiration for example a certain natural phenomenon that inspired similar myths in different cultures, or a common "protomythology" that diverged into the various mythologies we see today. Nineteenth-century interpretations of myth were often highly comparative, seeking a common origin for all myths. _____

   A. This theory of a "monomyth" is out of favour with the mainstream study of mythology.

   B. Myths are not the same as fables, legends, folktales, fairy tales, anecdotes or fiction, but the concepts may overlap.

   C. However, modern-day scholars tend to be more suspicious of comparative approaches, avoiding overly general or universal statements about mythology.

   D. True myth may be defined as the reduction to narrative shorthand of ritual mime performed on public festivals, and in many cases recorded pictorially.

   E. None of the scholarly definitions of "myth" imply that myths are necessarily false.

   F. Comparative mythology is the systematic comparison of myths from different cultures.

   G. Many myths, such as ritual myths, are clearly part of religion.

(1) FA
(2) AC
(3) DE
(4) FC
(5) BC

Directions for question 40: Read the passage, and mark the most appropriate answer to the question(s).

Question 40 carries 2 marks.

M. Comte claims no originality for this conception of human knowledge. He vows that it has been virtually acted on from the earliest period by all who have made any real contribution to science, and became distinctly present to the minds of speculative men from the time of Bacon, Descartes, and Galileo, whom he regards as collectively the founders of Positive Philosophy. As he says, the knowledge which mankind, even in the earliest ages, chiefly pursued, being that which they most needed, was foreknowledge: "savoir, pour prevoir". When they sought for the cause, it was mainly in order to control the effect or if it was uncontrollable, to foreknow and adapt their conduct to it. Now, all foresight of phaenomena, and power over them, depend on knowledge of their sequences, and not upon any notion we may have formed respecting their origin or inmost nature. We foresee a fact or event by means of facts which are signs of it, because experience has shown them to be its antecedents. We bring about any fact, other than our own muscular contractions, by means of some fact which experience has shown to be followed by it. All foresight, therefore, and all intelligent action, have only been possible in proportion as men have successfully attempted to ascertain the successions of phaenomena. Neither foreknowledge, nor the knowledge which is practical power, can be acquired by any other means.

The conviction, however, that knowledge of the successions and co-existences of phaenomena is the sole knowledge accessible to us, could not be arrived at in a very early stage of the progress of thought. Men have not even now left off hoping for other knowledge, nor believing that they have attained it; and that, when attained, it is, in some undefinable manner, greatly more precious than mere knowledge of sequences and co-existences. The true doctrine was not seen in its full clearness even by Bacon, though it is the result to which all his speculations tend: still less by Descartes. It was, however, correctly apprehended by Newton.

40. What was "correctly apprehended by Newton?"
   (1) There are forms of knowledge other than the studying of phaenomena.
   (2) There are forms of knowledge other than the successions and co-existences of phaenomena.
   (3) That the knowledge of the successions and co-existences of phaenomena is the sole knowledge accessible to us.
   (4) Other forms of knowledge are more precious than mere knowledge of sequences and co-existences.
   (5) The true doctrine of phaenomena was not seen in its full clarity by either Bacon or Descartes.

Directions for questions 41 and 42: Each of the questions below contains a poem followed by alternative summaries. Choose the option that best captures the essence of the poem.

Question 41 carries 2 marks.

My heart aches, and a drowsy numbness pains
My sense, as though of hemlock I had drunk,
Or emptied some dull opiate to the drains
One minute past, and Lethe-wards had sunk:
'Tis not through envy of thy happy lot,   5

But being too happy in thine happiness,
That thou, light-wingèd Dryad of the trees,
In some melodious plot
Of beechen green, and shadows numberless,
Singest of summer in full-throated ease.   10

O for a draught of vintage! that hath been
Cool'd a long age in the deep-delvèd earth,
Tasting of Flora and the country-green,
Dance, and Provençal song, and sunburnt mirth!
O for a beaker full of the warm South!   15

Full of the true, the blushful Hippocrene,
With beaded bubbles winking at the brim,
And purple-stainèd mouth;
That I might drink, and leave the world unseen,
And with thee fade away into the forest dim: 20

Fade far away, dissolve, and quite forget
What thou among the leaves hast never known,
The weariness, the fever, and the fret
Here, where men sit and hear each other groan;
Where palsy shakes a few, sad, last grey hairs,   25

Where youth grows pale, and spectre-thin, and dies;
Where but to think is to be full of sorrow
And leaden-eyed despairs;
Where beauty cannot keep her lustrous eyes,
Or new Love pine at them beyond to-morrow.   30

Away! away! for I will fly to thee,

Not charioted by Bacchus and his pards,
But on the viewless wings of Poesy,
Though the dull brain perplexes and retards:
Already with thee! tender is the night,   35

And haply the Queen-Moon is on her throne,
Cluster'd around by all her starry Fays
But here there is no light,
Save what from heaven is with the breezes blown
Through verdurous glooms and winding mossy ways.   40

I cannot see what flowers are at my feet,
Nor what soft incense hangs upon the boughs,
But, in embalmèd darkness, guess each sweet
Wherewith the seasonable month endows
The grass, the thicket, and the fruit-tree wild;   45

White hawthorn, and the pastoral eglantine;
Fast-fading violets cover'd up in leaves;
And mid-May's eldest child,
The coming musk-rose, full of dewy wine,
The murmurous haunt of flies on summer eves.   50

Darkling I listen; and, for many a time
I have been half in love with easeful Death,
Call'd him soft names in many a musèd rhyme,
To take into the air my quiet breath;
Now more than ever seems it rich to die,   55

To cease upon the midnight with no pain,
While thou art pouring forth thy soul abroad
In such an ecstasy!
Still wouldst thou sing, and I have ears in vain-
To thy high requiem become a sod.   60

Thou wast not born for death, immortal Bird!
No hungry generations tread thee down;
The voice I hear this passing night was heard
In ancient days by emperor and clown:
Perhaps the self-same song that found a path   65

Through the sad heart of Ruth, when, sick for home,
She stood in tears amid the alien corn;

The same that ofttimes hath
Charm'd magic casements, opening on the foam
Of perilous seas, in faery lands forlorn.   70

Forlorn! the very word is like a bell
To toll me back from thee to my sole self!
Adieu! the fancy cannot cheat so well
As she is famed to do, deceiving elf.
Adieu! adieu! thy plaintive anthem fades   75
Past the near meadows, over the still stream,
Up the hill-side; and now 'tis buried deep
In the next valley-glades:
Was it a vision, or a waking dream?
Fled is that music:—do I wake or sleep?

41. Which of the following options best summarizes the poem?
   (1) The poet believes that the continued singing by the bird makes it lose its charm. He goes on to describe the bird from being a dryad to a deceiving elf. His change in feeling about the bird is apparent as the poem progresses. The poet would prefer to be under the influence of hemlock induced stupor rather than listen to the bird sing.
   (2) The comparison between the mortality of man and the immortal song of the bird is made apparent by the poet's imagination. His perception of the bird changing as the poem progresses, from being a dryad to being simply a bird, shows the poet's growing irritation with the bird's eternal music.
   (3) The comparison between the immortality of man and the eternal song of the bird is made apparent by the writer's imagination. The poet's perception of the bird changing as the poem progresses, from being simply a bird to a dryad, shows the poet's growing appreciation for the bird's eternal music.
   (4) The poet believes that the continued singing by the bird makes it lose its charm. He goes on to describe the bird as being a deceiving elf. His feelings about the bird are apparent as the poem progresses. His lack of appreciation of the bird's music is evident even in his hemlock induced stupor.
   (5) The ramblings of the poet's hemlock induced stupor are accentuated by the poet's imagination. The poet is jealous of the bird and wants to join it in its flights of fancy.

Question 42 carries 2 marks.

When by my solitary hearth I sit,
And hateful thoughts enwrap my soul in gloom;
When no fair dreams before my "mind's eye" flit,
And the bare heath of life presents no bloom;

Sweet Hope, ethereal balm upon me shed,
And wave thy silver pinions o'er my head.   6

Whene'er I wander, at the fall of night,
Where woven boughs shut out the moon's bright ray,
Should sad Despondency my musings fright,
And frown, to drive fair Cheerfulness away,
Peep with the moon-beams through the leafy roof,
And keep that fiend Despondence far aloof.   12

Should Disappointment, parent of Despair,
Strive for her son to seize my careless heart;
When, like a cloud, he sits upon the air,
Preparing on his spell-bound prey to dart:
Chace him away, sweet Hope, with visage bright,
And fright him as the morning frightens night   18

Whene'er the fate of those I hold most dear
Tells to my fearful breast a tale of sorrow,
O bright-eyed Hope, my morbid fancy cheer;
Let me awhile thy sweetest comforts borrow:
Thy heaven-born radiance around me shed,
And wave thy silver pinions o'er my head!   24

Should e'er unhappy love my bosom pain,
From cruel parents, or relentless fair;
O let me think it is not quite in vain
To sigh out sonnets to the midnight air!
Sweet Hope, ethereal balm upon me shed.
And wave thy silver pinions o'er my head!   30

In the long vista of the years to roll,
Let me not see our country's honour fade:
O let me see our land retain her soul,
Her pride, her freedom; and not freedom's shade.
From thy bright eyes unusual brightness shed-
Beneath thy pinions canopy my head!   36

Let me not see the patriot's high bequest,
Great Liberty! how great in plain attire!
With the base purple of a court oppress'd
Bowing her head, and ready to expire:
But let me see thee stoop from heaven on wings

That fill the skies with silver glitterings!   42

And as, in sparkling majesty, a star
Gilds the bright summit of some gloomy cloud;
Brightening the half veil'd face of heaven afar:
So, when dark thoughts my boding spirit shroud,
Sweet Hope, celestial influence round me shed,
Waving thy silver pinions o'er my head.

42. Which of the following options best summarizes the poem?
   (1) The poet hopes that whispering sonnets will help him overcome life's tragedies.
   (2) The poet associates his feelings of despondency with evil and hopes that an angel will stoop down from Heaven on wings and vanquish his demons.
   (3) The poet believes that an ever hopeful attitude will help him deal with his problems.
   (4) The poet believes that his trust in God will help him overcome life's tragedies.
   (5) The poet is a hopeful patriot who believes in angels.

Directions for questions 43 to 45: The statement(s) below are the summary of a paragraph. Choose the option that best represents the paragraph that was summarised.

Questions 43 to 48 carry 2 marks each.

43. Holmes' deductive reasoning is based upon his mastery of a wide range of things and a knack of gathering evidence by observation. His logical conclusions were what he termed as elementary in nature.
   (1) Holmes' deductive reasoning is a common tool by which certain characters (particularly his astonished clients) are introduced by Holmes himself into the story. In some instances of Holmesian deduction, it is more difficult to model his inference as deduction using general principles, and logicians and scientists will readily recognize the method used, instead, as an "inductive". However, that Holmes should have called this "deduction" is entirely plausible. Holmes is also particularly good at gathering evidence by observation, as well locating and tracking the movements of criminals through the streets of London and its environs (in order to produce more evidence)- skills that have little to do with deduction per se, but everything to do with providing the premises for particular Holmesian deductions. In the stories by Conan Doyle, Holmes often remarked that his logical conclusions were "elementary", in that he considered them to be simple and obvious. However, the complete phrase, "Elementary, my dear Watson," does not appear in any of the sixty Holmes stories written by Conan Doyle. One of the closest examples to this phrase appears in the "The Adventure of the Crooked

Man". Upon Holmes's explanation of a deduction: "Excellent!" I cried. "Elementary," said he.

(2) Holmes' deductive reasoning is a common tool by which certain characters (particularly his astonished clients) are introduced by Holmes himself into the story. In some instances of Holmesian deduction, it is more difficult to model his inference as deduction using general principles, and logicians and scientists will readily recognize the method used, instead, as an "inductive". However, that Holmes should have called this "deduction" is entirely plausible. The instances in which Holmes uses deduction tend to be those where he has amassed a large body of evidence, produced a number of possible explanations of that evidence, and then proceeds to find one explanation that is clearly the best at explaining the evidence. Holmes' success at his brand of deduction, therefore, is due to his mastery of both a huge body of particular knowledge of things like footprints, cigar ashes, and poisons, which he uses to make relatively simple deductive inferences, and the fine art of ordering and weighing different competing explanations of a body of evidence. Holmes is also particularly good at gathering evidence by observation, as well locating and tracking the movements of criminals through the streets of London and its environs (in order to produce more evidence)- skills that have little to do with deduction per se, but everything to do with providing the premises for particular Holmesian deductions. In the stories by Conan Doyle, Holmes often remarked that his logical conclusions were "elementary", in that he considered them to be simple and obvious. However, the complete phrase, "Elementary, my dear Watson," does not appear in any of the sixty Holmes stories written by Conan Doyle. One of the closest examples to this phrase appears in the "The Adventure of the Crooked Man". Upon Holmes's explanation of a deduction: "Excellent!" I cried. "Elementary", said he.

(3) Holmes' deductive reasoning is a common tool by which certain characters are introduced by Holmes himself into the story. In some instances of Holmesian deduction, it is more difficult to model his inference as deduction using general principles, and logicians and scientists will readily recognize the method used, instead, as an "inductive". However, that Holmes should have called this "deduction" is entirely plausible. The instances in which Holmes uses deduction tend to be those where he has amassed a large body of evidence, produced a number of possible explanations of that evidence, and then proceeds to find one explanation that is clearly the best at explaining the evidence. Holmes' success at his brand of deduction, therefore, is due to his mastery of both a huge body of particular knowledge of things like footprints, cigar ashes, and poisons, which he uses to make relatively simple deductive inferences, and the fine art of ordering and weighing different competing explanations of a body of evidence." Holmes stories often begin with a bravura display of his talent for "deduction". It is of some

interest to logicians and those interested in logic to try to analyse just what Holmes is doing when he performs his deduction. Holmesian deduction appears to consist primarily of drawing inferences based on either straightforward practical principles- which are the result of careful inductive study, such as Holmes's study of different kinds of cigar ashes- or inference to the best explanation. In many cases, the deduction can be modelled either way. Holmes is also particularly good at gathering evidence by observation, as well locating and tracking the movements of criminals through the streets of London and its environs (in order to produce more evidence)- skills that have little to do with deduction per se, but everything to do with providing the premises for particular Holmesian deductions.

(4) Holmes' deductive reasoning is a common tool by which certain characters (particularly his astonished clients) are introduced by Holmes himself into the story. In some instances of Holmesian deduction, it is more difficult to model his inference as deduction using general principles, and logicians and scientists will readily recognize the method used, instead, as an "inductive". However, that Holmes should have called this "deduction" is entirely plausible. The instances in which Holmes uses deduction tend to be those where he has amassed a large body of evidence, produced a number of possible explanations of that evidence, and then proceeds to find one explanation that is clearly the best at explaining the evidence. Holmes' success at his brand of deduction, therefore, is due to his mastery of both a huge body of particular knowledge of things like footprints, cigar ashes, and poisons, which he uses to make relatively simple deductive inferences, and the fine art of ordering and weighing different competing explanations of a body of evidence. Holmes has shown himself to be a master of disguise from his earliest cases, adopting personas from all walks of life: he appears as a seaman, a stable groom and a humble clergyman, an old Italian priest, a poor bibliophile, a plumber and even as a woman in the stories. In the stories by Conan Doyle, Holmes often remarked that his logical conclusions were "elementary", in that he considered them to be simple and obvious. However, the complete phrase, "Elementary, my dear Watson," does not appear in any of the sixty Holmes stories written by Conan Doyle. One of the closest examples to this phrase appears in the "The Adventure of the Crooked Man". Upon Holmes's explanation of a deduction: "Excellent!" I cried. "Elementary", said he.

(5) Holmes' inductive reasoning is a common tool by which certain characters (particularly his astonished clients) are introduced by Holmes himself into the story. In some instances of Holmesian induction, it is more difficult to model his inference as deduction using general principles, and logicians and scientists will readily recognize the method used, instead, as an "deductive". However, that Holmes should have called this "induction" is entirely plausible. The instances in which Holmes uses induction tend to be those

where he has amassed a large body of evidence, produced a number of possible explanations of that evidence, and then proceeds to find one explanation that is clearly the best at explaining the evidence. Holmes' success at his brand of induction, therefore, is due to his mastery of both a huge body of particular knowledge of things like footprints, cigar ashes, and poisons, which he uses to make relatively simple inductive inferences, and the fine art of ordering and weighing different competing explanations of a body of evidence." Holmes is also particularly good at gathering evidence by observation, and using skills that have little to do with deduction per se, but everything to do with providing the premises for particular Holmesian deductions. In the stories by Conan Doyle, Holmes often remarked that his logical conclusions were "elementary", in that he considered them to be simple and obvious. However, the complete phrase, "Elementary, my dear Watson," does not appear in any of the sixty Holmes stories written by Conan Doyle. One of the closest examples to this phrase appears in the "The Adventure of the Crooked Man". Upon Holmes's explanation of a deduction: "Excellent!" I cried. "Elementary", said he.

44. Rodeo, the national sport of Chile, has a team with two riders trying to pin the calf, with points being awarded for correct manoeuvres and deducted for faults. In modern times the sport is strictly regulated.

   (1) Rodeo is the second most popular sport in Chile, which is strictly regulated. It was declared the national sport in 1962. Chilean rodeo is different from the rodeo found in North America. In Chilean rodeo, a team consisting of two riders and two horses rides laps around an arena trying to stop a calf, pinning it against massive cushions. Points are earned for every time the steer is properly driven around the corral, with deductions for faults. Chilean Horses are used exclusively and riders are required to wear traditional huaso garb.

   (2) Rodeo is the second most popular sport in Chile. It was declared the national sport in 1962. Chilean rodeo is different from the rodeo found in North America. In Chilean rodeo, a team consisting of two riders and two horses rides laps around an arena trying to stop a calf, pinning it against massive cushions. Points are earned for every time the steer is properly driven around the corral, with deductions for faults. The sport, in its modern form, is strictly regulated. Riders practice in the countryside throughout Chile, but rodeo is most popular in the central zone. Even so, huasos have been known to travel hundreds of miles to participate in competitions.

   (3) Rodeo is the second most popular sport in Chile. It was declared the national sport in 1962. Chilean rodeo is different from the rodeo found in North America. In Chilean rodeo, a team consisting of two riders and two horses rides laps around an arena trying to stop a calf, pinning it against massive cushions. Points are earned for every time the steer is properly driven around the corral, with deductions for faults. The sport, in its modern form, is

strictly regulated. The greatest rider in the sport's history is considered to be Ramón Cardemil, who won the national title seven times; the latest champions were Juan Carlos Loaiza and Eduardo Tamayo.

(4) Rodeo is the second most popular sport in Chile. It was declared the national sport in 1962. Chilean rodeo is different from the rodeo found in North America. In Chilean rodeo, a team consisting of two riders and two horses rides laps around an arena trying to stop a calf, pinning it against massive cushions. Points are earned for every time the steer is properly driven around the corral, with deductions for faults. The sport, in its modern form, is strictly regulated. Chilean Horses are used exclusively and riders are required to wear traditional huaso garb.

(5) Rodeo is the second most popular sport in Chile, which is strictly regulated. It was declared the national sport in 1962. Chilean rodeo is different from the rodeo found in North America. In Chilean rodeo, a team consisting of two riders and two horses rides laps around an arena trying to stop a calf, pinning it against massive cushions. Points are earned for every time the steer is properly driven around the corral, with deductions for faults. Rodeos are conducted in a crescent-shaped corral called a medialuna.

45. Nash, commissioned by Prince Regent, developed the Marylebone Park area. He also developed the Prince's Ocean Pavilion Palace in Brighton which is known today as the Royal Pavilion.

(1) Nash created a master plan for the Marylebone Park which was put into action from 1818. It stretched from St James's northwards and included Regent Street, Regent's Park. Nash was also employed by the Prince to develop his Ocean Pavilion Palace in Brighton, originally designed by Henry Holland. By the early 19th century Nash finished his work on the Ocean Pavilion, which has now been transformed into the Royal Pavilion. The Royal Pavilion still stands in Brighton today.

(2) Nash's work came to the attention of Prince Regent who, in 1811, commissioned him to develop an area then known as Marylebone Park. Further London commissions for Nash followed, including the remodelling of Buckingham House to create Buckingham Palace which stands as the pride of London and the whole of U.K today. Nash was also employed by the Prince to develop his Ocean Pavilion Palace in Brighton, originally designed by Henry Holland. By the early 19th century Nash finished his work on the Ocean Pavilion, which has now been transformed into the Royal Pavilion. The Royal Pavilion still stands in Brighton today.

(3) Nash's work came to the attention of Prince Regent who, in 1811 commissioned him to develop an area then known as Marylebone Park. With the Regent's backing, Nash created a master plan for the area and put it in action from 1818. It stretched from St. James northwards and included Regent Street, Regent's Park and its neighbouring streets, terraces and

crescents of elegant town houses and villas. Nash was also employed by the Prince to develop his Ocean Pavilion Palace in Brighton, originally designed by Henry Holland. By the early 19th century Nash finished his work on the Ocean Pavilion, which has now been transformed into the Royal Pavilion. The Royal Pavilion still stands in Brighton today.

(4) Nash's work came to the attention of Prince Regent who, in 1811, commissioned him to develop a master plan for the area, put into action 1818 onwards, which stretched from St. James northwards and included Regent Street, Regent's Park and its neighbouring streets, terraces and crescents of elegant town houses and villas. Nash was also employed by the Prince to develop his Ocean Pavilion Palace in Brighton, originally designed by Henry Holland. By the early 19th century Nash finished his work on the Ocean Pavilion, which has now been transformed into the Royal Pavilion. The Royal Pavilion still stands in Brighton today.

(5) Nash was commissioned to develop an area then known as Marylebone Park. Nash created a master plan for the area which was put into action from 1818. It stretched from St. James northwards and included Regent Street, Regent's Park and its neighbouring streets, terraces and crescents of elegant town houses and villas. Nash was also employed to develop his Ocean Pavilion Palace in Brighton, originally designed by Henry Holland. By the early 19th century Nash finished his work on the Ocean Pavilion, which has now been transformed into the Royal Pavilion. The Royal Pavilion still stands in Brighton today.

Directions for questions 46 to 48: Each of the questions below consists of a set of labelled paragraphs. These, when properly sequenced, form a coherent passage. Choose the most logical order of paragraphs from among the options.

46.

A. My friend's remark, however, set me thinking and watching what are really the languages now gaining and spreading over the civilised world; it set me speculating what will be the outcome of this gain and spread in another half century. And the results are these: vastly the most growing and absorbing of all languages at the present moment is English, which is almost everywhere swallowing up the overflow of German, Scandinavian, Dutch, and Russian. Next to it, probably, in point of vitality, comes Spanish, which is swallowing up the overflow of French, Italian, and the other Latin races. Third, perhaps, ranks Russian, destined to become in time the spoken tongue of a vast tract in Northern and Central Asia. Among non-European languages, three seem to be gaining fast: Chinese, Malay, and Arabic. Of the doomed tongues, on the other hand, the most hopeless is French, which is losing all round; while Italian, German, and Dutch are either quite at a standstill or slightly retrograding.

The world is now round. By the middle of the twentieth century, in all probability, English will be its dominant speech; and the English-speaking peoples, a heterogeneous conglomerate of all nationalities, will control between them the destinies of mankind. Spanish will be the language of half the populous southern hemisphere. Russian will spread over a moiety of Asia. Chinese, Malay, Arabic, will divide among themselves the less civilised parts of Africa and the East. But French, German, and Italian will be insignificant and dwindling European dialects, as numerically unimportant as Flemish or Danish in our own day.

B. Like influences favour Spanish in South America and elsewhere. English has annexed most of North America, Australia, South Africa, the Pacific; Spanish has annexed South America, Central America, the Philippines, Cuba, and a few other places. For the most part these areas are less suited than the English-speaking districts for colonisation by North Europeans; but they absorb a large number of Italians and other Mediterranean races, who all learn Spanish in the second generation. As to the other dominant languages, the points in their favour are different. Conquest and administrative needs are spreading Russian over the steppes of Asia; the Arab merchant and the growth of Mahommedanism are importing Arabic far into the heart of Africa; the Chinaman is carrying his own monosyllables with him to California, Australia, and Singapore. These tongues in future will divide the world between them.

C. Whenever two tongues come to be spoken in the same area, one of them is sure to be more useful in business than the other. Every French-Canadian who wishes to do things on a large scale is obliged to speak English. So is the Creole in Louisiana; so earlier were the Knickerbocker Dutch in New York. Once let English get in, and it beats all competing languages fairly out of the field in a couple of generations.

D. A distinguished Positivist friend of mine, who is in most matters a practical man of the world, astonished me greatly the other day at Venice, by the grave remark that Italian was destined to be the language of the future. I found on inquiry he had inherited the notion direct from Auguste Comte, who justified it on the purely sentimental and unpractical ground that the tongue of Dante had never yet been associated with any great national defeat or disgrace. The idea surprised me not a little; because it displays such a profound misconception of what language is, and why people use it. The speech of the world will not be decided on mere grounds of sentiment: the tongue that survives will not survive because it is so admirably adapted for the manufacture of rhymes or epigrams. Stern need compels. Frenchmen and Germans, in congress assembled, and looking about them for a means of intercommunication, might indeed agree to accept Italian then and there as an international compromise. But congresses don't make or unmake the habits of everyday life; and the growth or spread of a language is a thing as

much beyond our deliberate human control as the rise or fall of the barometer.

E. And why? Not because Shakespeare wrote in English, but because the English language has already got a firm hold of all those portions of the earth's surface which are most absorbing the overflow of European populations. Germans and Scandinavians and Russians emigrate by the thousand now to all parts of the United States and the north-west of Canada. In the first generation they may still retain their ancestral speech; but their children have all to learn English. In Australia and New Zealand the same thing is happening. In South Africa Dutch had got a footing, it is true; but it is fast losing it. The newcomers learn English, and though the elder Boers stick with Boer conservatism to their native tongue, young Piet and young Paul find it pays them better to know and speak the language of commerce- the language of Cape Town, of Kimberley, of the future. The reason is the same throughout.

(1) ECBDA
(2) ECDAB
(3) DABCE
(4) DCBAE
(5) DAECB

47.

A. But there is a difference: since a man is not simply and entirely man, and in virtue of this he is not substance. For what man is he owes to other things which are not man. But God is simply and entirely God, for He is nothing else than what He is, and therefore is, through simple existence, God. Again we apply just, a quality, as though it were that of which it is predicated; that is, if we say "a just man or just God," we assert that man or God is just. But there is a difference, for man is one thing, and a just man is another thing. But God is justice itself. So a man or God is said to be great, and it would appear that man is substantially great or that God is substantially great. But man is merely great; God is greatness.

B. It is otherwise, of course, with God. "He is everywhere" does not mean that He is in every place, for He cannot be in any place at all- but that every place is present to Him for Him to occupy, although He Himself can be received by no place, and therefore He cannot anywhere be in a place, since He is everywhere but in no place. It is the same with the category of time, as, "A man came yesterday; God is ever". Here again the predicate of "coming yesterday" denotes not something substantial, but something happening in terms of time. But the expression "God is ever" denotes a single Present, summing up His continual presence in all the past, in all the present- however that term be used- and in all the future.

C. There are in all ten categories which can be universally predicated of things, namely, Substance, Quality, Quantity, Relation, Place, Time, Condition,

Situation, Activity, and Passivity. Their meaning is determined by the contingent subject; for some of them denote substance in making predication of other things, others belong to the class of accidents. But when these categories are applied to God they change their meaning entirely. Relation, for instance, cannot be predicated at all of God; for substance in Him is not really substantial but supersubstantial. So with quality and the other possible attributes, of which we must add examples for the sake of clearness.

D. When we say God, we seem to denote a substance; but it is a substance that is supersubstantial. When we say of Him, "He is just", we mention a quality, not an accidental quality- rather a substantial and, in fact, a supersubstantial quality. For God is not one thing because He is, and another thing because He is just; with Him to be just and to be God are one and the same. So when we say, "He is great or the greatest", we seem to predicate quantity, but it is a quantity similar to this substance which we have declared to be supersubstantial; for with Him to be great and to be God are all one. Again, concerning His Form, we have already shown that He is Form, and truly One without Plurality. The categories we have mentioned are such that they give to the thing to which they are applied the character which they express; in created things they express divided being, in God, conjoined and united being- in the following manner. When we name a substance, as man or God, it seems as though that of which the predication is made were substance itself, as man or God is substance.

E. And we need to go beyond great and greatness. The remaining categories are not predicable of God nor yet of created things. For place is predicated of man or of God- a man is in the market-place; God is everywhere- but in neither case is the predicate identical with the object of predication. To say "A man is in the market" is quite a different thing from saying "he is white or long", or, so to speak, encompassed and determined by some property which enables him to be described in terms of his substance; this predicate of place simply declares how far his substance is given a particular setting amid other things.

  (1) CDAEB
  (2) CAEBD
  (3) CDBEA
  (4) ABCDE
  (5) BDACE

48.

A. If it is thus indubitable that the views of the world held in earlier times deserve to live on in the memory of man, and to live as something better than mere reminders of the past- the history of philosophy is not a cabinet of antiquities, but a museum of typical products of the mind- the value and interest of the historical study of the past in relation to the exact scientific side of philosophical inquiry is not less evident. In every science it is useful to

trace the origin and growth of problems and theories, and doubly so in philosophy. With her it is by no means the universal rule that progress shows itself by the result; the statement of the question is often more important than the answer.

B. One view underestimates the power of the logical Idea, the other overestimates it. It is not easy to support the principle that chance rules the destiny of philosophy, but it is more difficult to avoid the opposite conviction of the one-sidedness of formalistic construction, and to define the nature and limits of philosophical necessity. The development of philosophy is, perhaps, one chief aim of the world-process, but it is certainly not the only one; it is a part of the universal aim, and it is not surprising that the instruments of its realization do not work exclusively in its behalf, that their activity brings about results, which seem unessential for philosophical ends or obstacles in their way. Philosophical ideas do not think themselves, but are thought by living spirits, which are something other and better than mere thought machines- by spirits who live these thoughts, who fill them with personal warmth and passionately defend them. There is often reason, no doubt, for the complaint that the personality which has undertaken to develop some great idea is inadequate to the task, that it carries its subjective defects into the matter in hand, that it does too much or too little, or the right thing in the wrong way, so that the spirit of philosophy seems to have erred in the choice and the preparation of its instrument.

C. The problem is more sharply defined in a given direction; or it becomes more comprehensive, is analyzed and refined; or if now it threatens to break up into subtle details, some genius appears to simplify it and force our thoughts back to the fundamental question. This advance in problems, which happily is everywhere manifested by unmistakable signs, is, in the case of many of the questions which irresistibly force themselves upon the human heart, the only certain gain from centuries of endeavour. The labour here is of more value than the result. In treating the history of philosophy, two extremes must be avoided, lawless individualism and abstract logical formalism. The history of philosophy is neither a disconnected succession of arbitrary individual opinions and clever guesses, nor a mechanically developed series of typical standpoints and problems, which imply one another in just the form and order historically assumed. The former supposition does violence to the regularity of philosophical development, the latter to its vitality. In the one case, the connection is conceived too loosely, in the other, too rigidly and simply.

D. The successor often commences his support, his development, or his refutation at a point quite unwelcome to the constructive historian. At all events, if we may judge from the experience of the past, too much caution cannot be exercised in setting up formal laws for the development of thought. According to the law of contradiction and reconciliation, a Schopenhauer

must have followed directly after Leibnitz, to oppose his pessimistic ethelism to the optimistic intellectualism of the latter; when, in turn, a Schleiermacher, to give an harmonic resolution of the antithesis into a concrete doctrine of feeling, would have made a fine third. But it turned out otherwise, and we must be content.

E. But the reverse side of the picture must also be taken into account. The thinking spirit is more limited, it is true, than were desirable for the perfect execution of a definite logical task; but, on the other hand, it is far too rich as well. A soulless play of concepts would certainly not help the cause, and there is no disadvantage in the failure of the history of philosophy to proceed so directly and so scholastically, as, for instance, in the system of Hegel. A graded series of interconnected general forces mediate between the logical Idea and the individual thinker- the spirit of the people, of the age, of the thinker's vocation, of his time of life, which are felt by the individual as part of himself and whose impulses he unconsciously obeys. In this way the modifying, furthering, hindering correlation of higher and lower, of the ruler with his commands and the servant with his more or less willing obedience, is twice repeated, the situation being complicated further by the fact that the subject affected by these historical forces himself helps to make history. The most important factor in philosophical progress is, of course, the state of inquiry at the time, the achievements of the thinkers of the immediately preceding age; and in this relation of a philosopher to his predecessors, again, a distinction must be made between a logical and a psychological element.

(1) ABCDE
(2) ACBED
(3) AEDBC
(4) DEACB
(5) BCDAE

SECTION IV
Number of Questions = 16

Question 49 carries 2 marks.

49. 3 knights and 3 knaves are travelling to far and distant lands. They always travel in pairs - such that two knights form a pair, two knaves form another pair and one pair has a knight and a knave each. All knights always speak the truth and all knaves always lie. All three pairs encounter an elephant and are rather unsure about the particular beast. All of them meet in the evening and compare notes about the peculiar animal they have seen. The following are the testimonies of the various people:

Member 1 of Pair 1: It was black in colour.
Member 2 of Pair 1: It had 4 toes.

Member 1 of Pair 2: It was white in colour.
Member 2 of Pair 2: It had 5 toes.

Member 1 of Pair 3: It was black in colour.
Member 2 of Pair 3: It had 5 toes.

Which of the following conditions is sufficient to identify the description of the elephant as well as the composition of each pair?

A. Identity of at least one knight out of the 6 people.
B. The elephant was white in colour.

(1) Only statement A is sufficient.
(2) Only statement B is sufficient.
(3) Either statement A or statement B is sufficient.
(4) Neither statement A nor statement B is sufficient.
(5) Both Statement A and B are necessary.

Question 50 carries 1 mark.

50. 6 friends are celebrating Ted's birthday. There are 3 men, namely Ted, Marshal, and Barney and 3 girls, namely Lily, Stella and Robin and they go out for dinner. They have booked a table at an expensive restaurant. The table is circular with 6 chairs arranged at equal distance from each other. Given below are certain conditions which describe their seating arrangement.

Condition 1: Only in one case, are two girls sitting diametrically opposite.
Condition 2: Stella is sitting to the right of Ted and the left of Robin.
Condition 3: Every man is sitting between another man and a girl.
Condition 4: Lily is sitting between Marshal and Barney.
Condition 5: Robin is to the left of Barney.

One of the conditions is incorrect and makes any kind of arrangement impossible. From among the given options, mark the condition which, when removed, makes the seating arrangement possible and unique.

(1) Only in one case, two girls are sitting diametrically opposite.
(2) Stella is sitting to the right of Ted and the left of Robin.
(3) Every man is sitting between another man and a girl.
(4) Lily is sitting between Marshal and Barney.
(5) Robin is to the left of Barney.

Directions for questions 51 to 53: Answer the following questions based on the information given below.

Questions 51 to 53 carry 2 marks each.

'Matchbox-Magic' is a two-player game which begins with n matchsticks in a matchbox. First a coin is tossed to decide who will start the game and then each player alternately removes certain number of matchsticks from the matchbox on his/her turn. Also, a player can remove one, three or four matchsticks from the matchbox and the player who removes the last matchstick wins the game. For example, if $n = 2$, Ajay and Vijay are playing the game and after losing the toss Ajay will be starting the game, which means he can remove only 1 matchstick as he cannot remove two of them (only 1, 3 or 4 matchsticks can be removed) and this will lead to Vijay's victory. Another example is, if there are three matchsticks in the matchbox and Ajay wins the toss, then he will remove all the three matchsticks and he will win. He can also remove 1 matchstick from the box and force Vijay to remove 1 matchstick (Vijay cannot remove two of them) and then, by removing the third matchstick he will win.

51. For what value of 'n', Vijay must win the game, if it is given that Ajay has won the toss and will start the game?

(1) 12
(2) 8
(3) 9
(4) 10
(5) Ajay will always win

52. Which of the following values of '*n*' is Ajay's winning position, if it is given that he starts the game?
(1) 7
(2) 9
(3) 18
(4) 30
(5) Both option 3 and option 4

53. Which of the following statements is true?
(1) If *n* is a multiple of 5, then the second player will always lose.
(2) If *n* is a multiple of 3, then the second player will always lose.
(3) If *n* is a multiple of 9, then the second player will always win.
(4) If *n* is a multiple of 7, then the second player will always win.
(5) None of these

Questions 54 and 55 carry 1 mark each.

54. If Monica attends the wedding, then Rachel shall too. If Rachel goes for the wedding, then Ross won't. If Ross won't attend the wedding, then neither shall Joey. If Joey doesn't attend the wedding, then Phoebe shall go. If Phoebe doesn't attend, then Chandler will go for the wedding.

Phoebe didn't attend the wedding. Which of the following statements is necessarily true?
(1) Chandler didn't attend the wedding.
(2) Joey didn't attend the wedding.
(3) Ross didn't attend the wedding.
(4) Rachel didn't attend the wedding.
(5) Monica went for the wedding.

55. There are nine flats in an apartment complex. Look at the table given below to understand the arrangement. The third floor has the room numbers 1, 2 and 3, while the first floor has the room numbers 7, 8 and 9.

1	2	3
4	5	6
7	8	9

The following details are known about the owners and their apartments:

- Sharma stays on the third floor.
- Singh stays in a prime numbered room, but not on the third floor.
- Naidu stays exactly below Sharma and exactly above Reddy.
- Basu and Ghosh stay in even numbered rooms.
- Lele stays in room number 9.
- Farrukh stays in the apartment exactly above that of Sayyid.

Based on the given information, choose from among the given options, the statement which is necessarily true.
(1) Basu is in room number 6.
(2) Singh stays on the same floor as Lele.
(3) Naidu is in room number 4.
(4) Sayyid stays on the ground floor.
(5) Ghosh's neighbor is Singh.

Question 56 carries 2 marks.

56. Nine friends go on a trip in a van. The van has nine seats, three in each row. Each row has windows on either side. There are 5 girls and 4 boys. Among the group, each boy has a girlfriend, leaving one girl, who is single.

The boys being jealous have laid down certain rules. No boyfriend wants his respective girlfriend to sit next to any other boy and nor can any boy sit behind anyone else's girlfriend. Naturally, the rules do not apply to the single girl. Where is the single girl sitting?

Which of the following conditions will help answer the above question?
  I. A girl is driving the van.
  II. No two boys sit together.

(1) Only condition 1 is sufficient
(2) Only condition 2 is sufficient
(3) Either condition is sufficient but not both
(4) Both conditions are necessary
(5) Both conditions are insufficient

Directions for questions 57 to 59: Answer the following questions based on the information given below.

Questions 57 to 59 carry 1 mark each.

'The Grand Marina' is one of India's leading hotels. There are 25 suites available in it. These are numbered as shown in the figure and provided with doors. Four room service boys A, B, C and D are entering this assembly from rooms 21, 25, 5 and 1 respectively as shown in the figure.

However, as per the rules of the hotel, they have to follow a certain set of strategies while entering these rooms.

Strategy 1: If they enter a room whose number is a perfect square, then they will take a left turn, if available; otherwise they will take a right turn.

Strategy 2: If they enter a room whose number is a prime, then they take a right turn, if available; otherwise they will take a left turn.

Strategy 3: If they enter a room whose number is neither a perfect square nor a prime, then they go straight, if available; otherwise they will take a left turn if the number is an odd one or a right turn if the number is an even one.

To follow strategy 1, all of them require 2 minutes.

To follow strategy 2, all of them require 3 minutes and to follow strategy 3, all of them require 4 minutes.
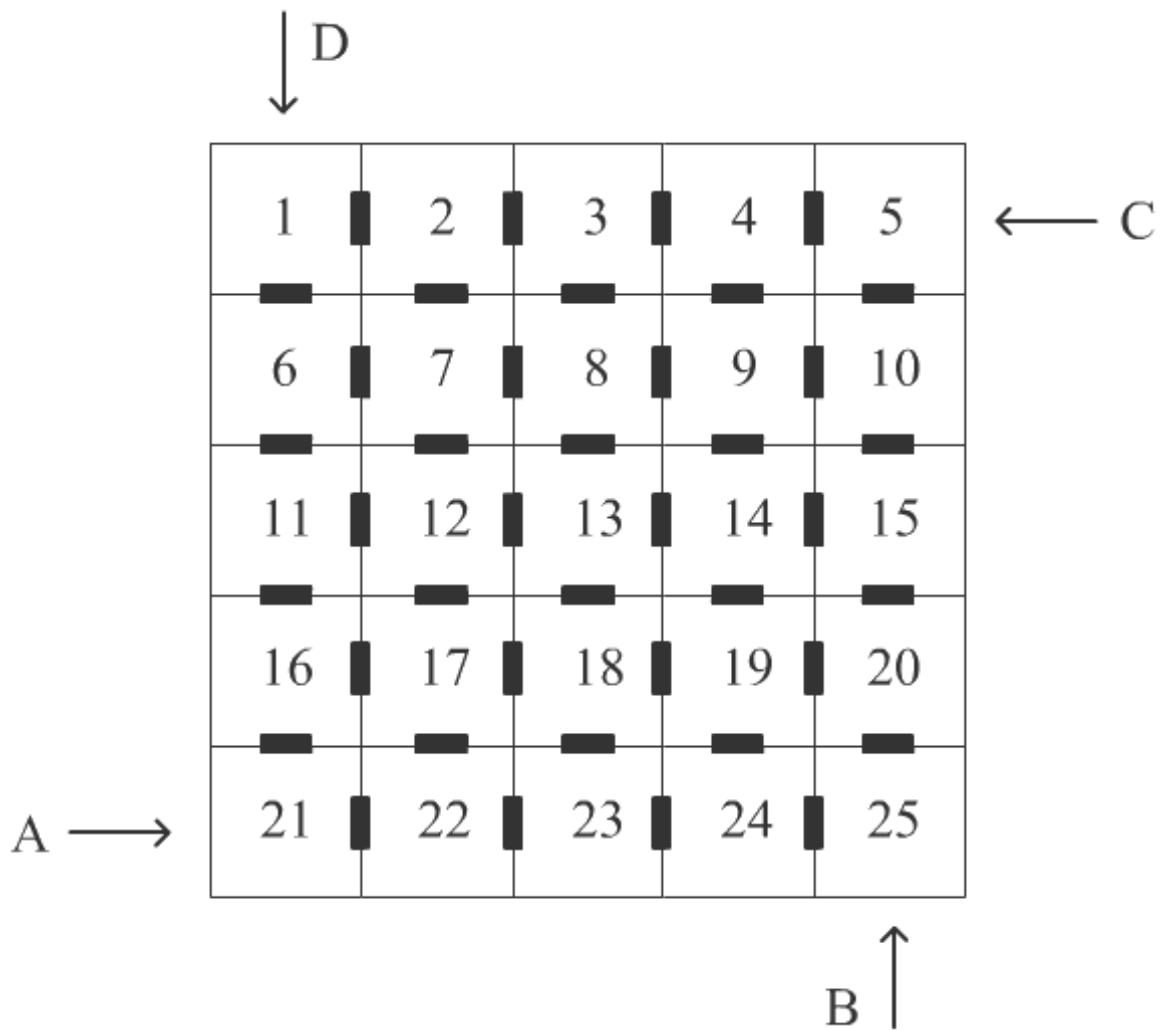
57. What is the total number of rooms in which A and C have each entered individually after half an hour? (rooms that are repeated in the path are to be counted separately).
(1) 19
(2) 24
(3) 18
(4) 22
(5) 17

58. Which of the following is true?
(1) B will take 33 minutes to enter into 12 rooms.
(2) D will take 35 minutes to enter into 12 rooms.
(3) B will take less time than D to enter into 12 rooms.
(4) The time taken by B and D to enter into 12 rooms is not equal.
(5) All the above

59. What will be the sum of the number of times the second strategy is followed by A and the number of times the third strategy is followed by D in a time slot of 30 minutes?

(1) 4

(2) 12

(3) 2

(4) 8

(5) 10

Questions 60 and 61 carry 2 marks each.

60. A shooter takes part in a unique competition. The final score is calculated as a product of the points he scores on the target. The shooter is allotted four shots. The target score-board indicates areas with different points as shown in the figure.
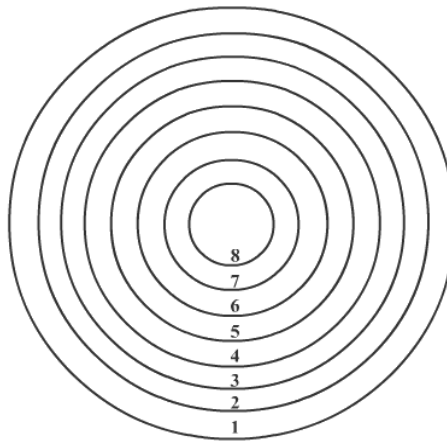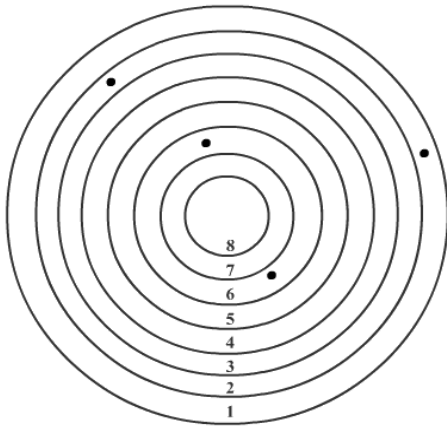

The marksman scored 72, which was just enough to win him the gold. Given below are certain conditions, using which, mark the option which best represents his performance.

1. The first shot scored very low points.
2. The sum of all his points had the highest possible value.
3. The last shot yielded more points than the first three shots.
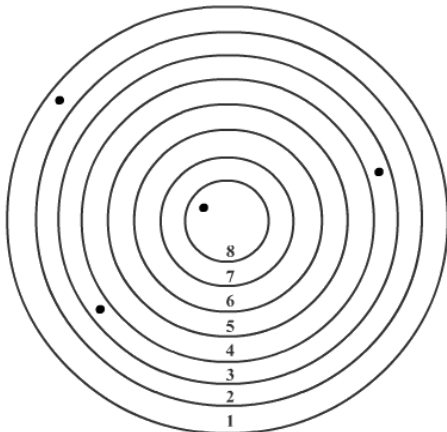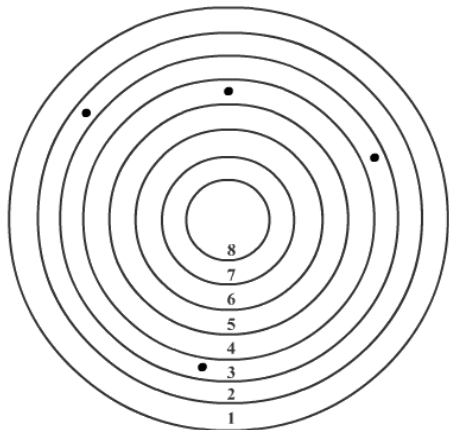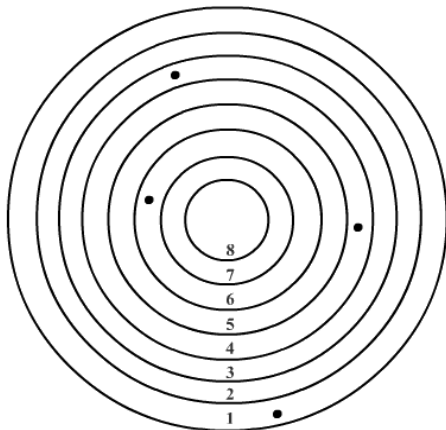
(1)
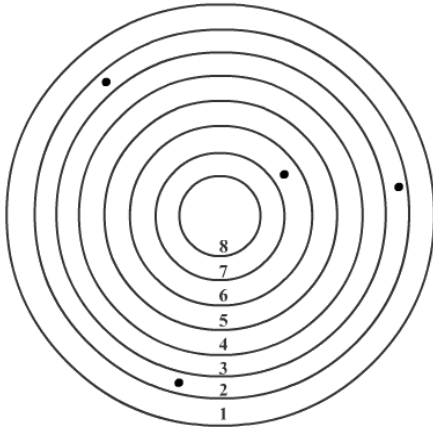
(2)

(3)

(4)

(5)

61. 3 Knights and 2 knaves are standing in a row from left to right. The knights always speak the truth and the knaves always lie. Moreover, the knaves are not standing next to each other. The following is what the five people have to say:

- The first person says that there is a knave next to me.
- The second person says that there are knaves on either side of me.
- The third person says there are knaves on my either side.
- The fourth person says there is at least one knave on one of my sides.
- The last person says that there is a knight next to me.

Which of the following is the correct standing order?
(1) Knight - Knight - Knave - Knight - Knave
(2) Knight- Knave - Knight - Knave - Knight
(3) Knight - Knave - Knight - Knight - Knave
(4) Knave - Knight - Knight - Knight - Knave
(5) Knave - Knight - Knave - Knight – Knight

Question 62 carries 1 mark.

62. Professor Erevan is forming a four member chess team comprising of two boys, from among Vikram, David and Doni and two girls from among Jaya, Nidhi and Rita. However not all of them are willing to be teamed up with each other as:
   I. David says, "I'll play only if Nidhi plays."
   II. Nidhi says, "I won't play if Doni is not in the team."
   III. Doni says, "I won't play if David or Rita are a part of the team."
   IV. Rita says, "I'll play only if David plays."
   V. Lastly Jaya and Vikram have no likes or dislikes and hence Erevan will always pick atleast one from them.

   Who among the following will not be selected?
   (1) David and Rita
   (2) Vikram and Rita
   (3) Jaya and David
   (4) Nidhi and David
   (5) Doni and David

Questions 63 and 64 carry 2 marks each.

63. A leading English daily has laid down the following procedure for their Sunday supplement which has six pages. They endorse the following eight products in the Sunday supplement- FMCG, mobile phones, mobile service providers, educational institutions, sports magazines, contraceptives, web portals and tour packages.
   However, the products would be endorsed in a specific manner so as to give maximum visibility to the advertisements and also to allow reader's discretion.

   The following are a list of constraints compiled by the newspaper to suit their requirements:

   I. The mobile phone and mobile phone service provider advertisements should be on the same page.
   II. The contraceptives advertisement and the educational institutions advertisements should be placed with the maximum gap possible and also the educational institution advertisement should be placed before the contraceptives advertisement.
   III. FMCG advertisement should be immediately followed by sports magazine advertisement.
   IV. The web portal advertisement should immediately precede the mobile phone advertisement and should have the tour package advertisement on the same page.

Which of the following assumptions, if true, would violate the above conditions?

(1) The educational institution advertisement on first page and contraceptive advertisements on last page.

(2) The FMCG advertisement on the page before contraceptive advertisement.

(3) The sports magazine advertisement on a page before contraceptive advertisement.

(4) The web portal advertisement on a page after the educational institution advertisement.

(5) The FMCG advertisement on a page after educational institution advertisement.

64. Six houses have to be constructed, three in each row, in two rows that are on opposite sides of a road. The houses are of different colours namely red, blue, black, white, yellow and orange. The following conditions were handed over to the builder to come up with a construction arrangement.

1. The blue house should be on the right of the black house and opposite to the red one.

2. The white house should be opposite to the yellow house and in the same street as that of the red one.

3. The black and white houses should neither be in the same row nor in the same column and should occupy extreme positions.

4. The orange house should be between the red and white houses.

5. The black house should be opposite the orange house and on a different street than the red one.

However, one of the conditions mentioned above was incorrect. From among the given options, mark the condition which, when removed, makes the construction arrangement possible.

(1) The blue house should be on the right of the black house and opposite to the red one.

(2) The white house should be opposite to the yellow house and in the same street as that of the red.

(3) The black and white houses should neither be in the same row nor in the same column and should occupy extreme positions.

(4) The orange house should be between the red and white houses.

(5) The black house should be opposite the orange house and on a different street than the red one.

TESTfunda.com

OMR ANSWER SHEET
(Please read the instructions given below before filling up this form)

INSTRUCTIONS

1. Use HB Pencil only on this sheet.
2. Erase completely to change responses.
3. Darken the circles fully.

4. Do not make any stray marks on this sheet
5. Please fill Side-II before you proceed to attempt to answer the questions.

1. Name of the Candidate (Write your name below, as it appears in your admit card in capital letters)

2. Test Registration No.

3. Test Form No.

4. Test Booklet Serial No.

Barcode

ANSWERS

Answer Key

iCAT 9

Section I

Q.	Ans.	Q.	Ans.	Q.	Ans.	Q.	Ans.
1	2	5	1	9	5	13	3
2	5	6	5	10	2	14	4
3	3	7	3	11	3	15	4
4	5	8	3	12	4	16	2

Section II

Q.	Ans.	Q.	Ans.	Q.	Ans.	Q.	Ans.
17	5	21	3	25	4	29	4
18	5	22	2	26	5	30	2
19	3	23	5	27	1	31	1
20	2	24	2	28	1	32	4

Section III

Q.	Ans.	Q.	Ans.	Q.	Ans.	Q.	Ans.
33	3	37	3	41	2	45	3
34	1	38	1	42	3	46	5
35	5	39	4	43	2	47	1
36	5	40	3	44	4	48	2

Section IV

Q.	Ans.	Q.	Ans.	Q.	Ans.	Q.	Ans.
49	3	53	4	57	3	61	5
50	3	54	4	58	4	62	1
51	3	55	3	59	1	63	2
52	3	56	5	60	3	64	4

Solutions

1. Statement A is implied. "...due to..." makes it clear that acceleration of technological progress acts as a catalyst which propels technological advancements far beyond the grasp of humans.
   Statement B is not implied. It is not the nature of society that is influencing rapid change. Rather it is the acceleration of technological progress. Fickleness of human society is not in question.
   Statement C is implied. As stated in the main statement, "change is so rapid that *nothing* beyond that time can be *reliably comprehended*, understood or predicted by the pre-Singularity humans".
   Hence, the correct answer is option 2.

2. Though an accurate number is not available it can be estimated that the time taken for changes is the highest for option 1. It is seen to be the lowest for option 5 than for any other option. This is denoted by the rapid fall in the logarithmic plot from computers to personal computers.
   Hence, the correct answer is option 5.

3. The passage does not say that the change would affect a smaller part of the society at first and then would later transform the society as a whole. Hence, option 1 is incorrect.
   The passage is not concerned whether the nature of the change is internal or external. Hence, option 2 is incorrect.
   Option 4 is incorrect because the passage states, "that the *first such* improvements might be *small*". This is the opposite of the option.
   Option 3 is correct because the passage states that "which could lead to an *exponential* and quite sudden *growth in intelligence*". Hence, the support for the paradigm shift.
   Hence, the correct answer is option 3.

4. The last sentence in Option 1 is incorrect. It is not stated in the diagram that the colours indicate the colours of the reaction.
   Option 2 states "The overall energy *required* during the reaction.....". This is incorrect as the diagram shows that final energy level is lower than the starting energy level. This implies that energy has been *released*.
   The last sentence in Option 3 is incorrect. It is not stated in the diagram that the colours indicate the colours of the reaction.
   Option 4 states "An example *product* is $C_6H_{12}O_6$, while example *reactants* are....". This is the reverse of the correct order.
   Option 5 is a concise summary, and does not contain any incorrect information.
   Hence, the correct answer is option 5.

5.
1. The word exergonic means to release / liberate energy.
2. Family is a collective noun for a unit or group. The word "species" means category.

Hence, the correct answer is option 1.

6. Option 1 is not implied. Nowhere in the passage does the writer talk about the chemical reaction being a difficult process.
Option 2 is not implied. The enzyme is introduced to speed up the process. So it is definitely not a waste.
Option 3 is not implied. Nowhere is the topic of safety precaution addressed in the passage.
Option 4 is not implied. If the process is hastened through the introduction of an enzyme then it causes an exergonic reaction (reaction which releases energy). If energy is being released due to the chemical process, then there is no need for extra energy to be made available to power the process.
Hence, the correct answer is option 5.

7. Though all the options have been mentioned in the first passage in one form or another, all of them cannot be said to be the primary purpose of the passage.
Option 1 is incorrect although this idea has been mentioned in the passage. The passage does not promote vegetarianism in any detail.
Option 2 is the incorrect option because the passage does not discuss the merits of the theory.
Option 4 is incorrect because although there is hard data in the passage, option 4 does not mention whether the correlation would be 'direct' or 'indirect' in nature. Option 4 is vague because its meaning cannot be accurately interpreted, due to the nature of the correlation being omitted.
Option 5 is incorrect because this is not the main idea of the passage.
Option 3 is the correct answer because the tone of the passage is instructional. It seeks to make people aware of the ground reality of the situation with hard facts and figures.
Hence, the correct answer is option 3.

8. Option 1 is incorrect. Though it is true to some extent, it is not the reason why the traditional approach to dealing with pollution is still in use. The nature of the applicability of the dictum has changed.
Option 2 is incorrect because the world did try to find a modern method to deal with the problem of pollution.
Option 4 is incorrect as there is no mention of any environmental law in the passage. So, the relationship of the dictum and any environmental law cannot be determined.

Option 5 is incorrect. Though this is true, it is not the reason why the traditional dictum is valid today.
Option 3 is correct. Today it is not possible to dilute all the pollutants. Hence, the dictum is used as a means of monitoring pollution rather than controlling it.
Hence, the correct answer is option 3.

9. Option 1 is incorrect because there are no solutions provided for the production of meat and animal products for mass consumption being a source of environmental pollution in passage 2.
Option 2 is incorrect because other than the factor of both passages talking about causes of pollution there is no other commonality. Passage 2 focuses on technology in the modern age being a major cause of pollution, while passage 1 points out how animal husbandry increases environmental pollution.
Option 3 is incorrect because both passages are concerned with the rise in environmental pollution, hence passage 2 cannot be in contradiction to passage 1.
Option 4 is incorrect because passage 2 focuses on monitoring pollution rather than on prevention.
Hence, the correct answer is option 5.

10. Option 1 is incorrect as there is no mention of any factual data in passage 2.
Option 3 is incorrect because the focus of passage 2 is on monitoring pollution rather than discussing any health concerns. Passage 1 also focuses on the economics of pollution rather than the health aspects.
Option 2 is correct because there are social and economic concerns regarding prevention and monitoring of pollution discussed in the two passages.
Hence, the correct answer is option 2.

11. Statement A is not implied. The word fundamental makes it incorrect. The word 'fundamental' means "to be necessary / a prerequisite". Learning through assigning context makes it easy to remember but is not necessarily fundamental to the learning process.
Statement B is implied. The passage states "The obvious pedagogical starting point of scientific instruction is not to teach things labelled science, but to *utilize the familiar occupations and appliances* to direct *observation and experiment*, until pupils have arrived at *knowledge of some fundamental principles* by *understanding* them in their *familiar practical workings*."
Statement C is implied. The passage states "the *social interest*, *identical* in its deepest meaning with a *moral interest*, is necessarily supreme with man".
Statement D is not implied. The passage talks about man having pride in his present day goods and not on the meaning he finds in the affairs of life. 'Plan of action' makes the statement incorrect.

Therefore, only statements B and C are in accordance with the author's point of view.

Hence, the correct answer is option 3.

12. Option 1 is an example of the poet's description of felicity. It does not answer the question.

Option 2 partially answers the question; but it leaves out the manner and cause of the way things happen.

Option 3 is incorrect. A person being affectionate, compassionate and sympathetic does not again state the lack of tempests.

Option 5 has no supporting data in the passage. The passage states that people obeyed the laws of justice. This does not necessarily mean that they held the rules of justice in reverence.

Option 4 is correct. There is a clear line of reasoning in the passage. In the passage the logic is derived from the concluding lines of the passage to those that appear before it. The author talks about how justice derives its usefulness to the public. And therefore arises its merit and moral obligation. This moral obligation helps avoid tempests caused by avarice, ambition, cruelty, selfishness. (The example of the poet's description of felicity appears within this line of logic. It serves to divert the reader's attention from what would have been a very clear line of thought.)

Hence, the correct answer is option 4.

13. Though the entire tone of the passage is instructional in nature the final lines of the passage make it clear that this is an excerpt from a speech given by an expert in the field of Zoology to an audience. The author uses sentences like: *There is not a fragment of the organism of this humble animal whose study would not lead us into regions of thought as large as those which I have briefly opened up to you; but what I have been saying, I trust, has not only enabled you to form a conception of the scope and purport of zoology, but has given you an imperfect example of the manner in which, in my opinion, that science, or indeed any physical science, may be best taught. The great matter is, to make teaching real and practical, by fixing the attention of the student on particular facts; but at the same time it should be rendered broad and comprehensive, by constant reference to the generalizations of which all particular facts are illustrations.*

The audience cannot be students so options 1 and 2 are eliminated. It is clear from the passage that the author is speaking on a way to better teach students the field of Zoology.

Option 4 is eliminated because the passage states, " *I trust, has not only enabled you to form a conception of the scope and purport of zoology".* If the audience were the author's colleagues then they would be aware of the scope and purport of Zoology. The highlighted sentence makes it clear that the listening audience, though educated are not experts in the field of Zoology.

Option 5 is eliminated because it is clear that no dissection is actually taking place at the time. There is no indication of an actual experiment taking place by words such as, 'as you can see ...'.

Hence, the correct answer is option 3.

14. The core purpose (gist) of the passage is- 'private property was held differently in the past. That understanding is helpful but should not be used to interpret private property today. Today's context is what needs to be used to understand it.'

Option 1 changes the meaning by generalizing the passage to 'property' instead of 'private property'.

Option 5 is opposite to the core purpose of the passage.

Option 2 lays emphasis on the 'evolution' part of private property. It does not indicate how private property needs to be understood today.

Option 3 states that the past cannot be used to interpret the present- partially correct answer. It stops short of stating what needs to be done to interpret private property in the present. The option states 'what should not be done' but not 'what should be done'.

Option 4 encompasses the core of the passage- stating what should be ignored, and what should be done- "each generation must test existing institutions by their present results".

Hence, the correct answer is option 4.

15. Option 1 should have been 'copyright content provider' instead of 'copyright content receiver'.

Option 2 should have been 'due to internal differences' instead of 'due to internal agreement'.

Option 3 should have been 'multilateral trade agreements' instead of 'bilateral trade agreements'.

Option 5 should have been 'United States' instead of 'United Kingdom'.

Option 4 is given verbatim in line 1 of Paragraph 3.

Hence, the correct answer is option 4.

16. Statement A relates to "conjectured gauge- gravity duality", and hence is a theory in itself, not proven, and does not provide insight for the "theory of quantum gravity".

The theory mentioned in the question relates to quantum gravity. Hence, the insight must be one that allows a mixing of quantum field theory and gravity. This is mentioned in statement B, where both gravity and quantum field theory are mixed together. As the passage states, "It is yet unknown how gravity can be incorporated into quantum mechanics" thus substantiating the "possible" in the question stem.

Statement C, while part of Hawking's analysis, is not related to the question.

Hence, the correct answer is option 2.

17. The graph is valid for negative values of x also, and the graph is only in the negative side of Y-axis.

$\therefore g(x) = -|\log |x||$

Hence, option 5.

18. $\min(a) = \min(7 + |5 - 4x|) = 7$ ... [$\because$ minimum value of $|5 - 4x| = 0$]

$\min(b) = \min(x^2 + 8x + 10) = \min\{(x + 4)^2 - 6\} = -6$

$\therefore c = \min(a) + \min(b) = 7 - 6 = 1$

Now,

$f(x) = \log x = \log 1 = 0$

Similarly, $g(x) = -|\log |x|| = -|\log |1|| = 0$

$\therefore h(c) = f(c) \times g(c) = 0 \times 0 = 0$

Option 1 is true.   ... [$\because$ cardinal number of a null set = 0]

Option 2 and option 3 are also true.   ...[$\because f(c) = g(c) = h(c) = 0$]

Hence, option 5.

19.
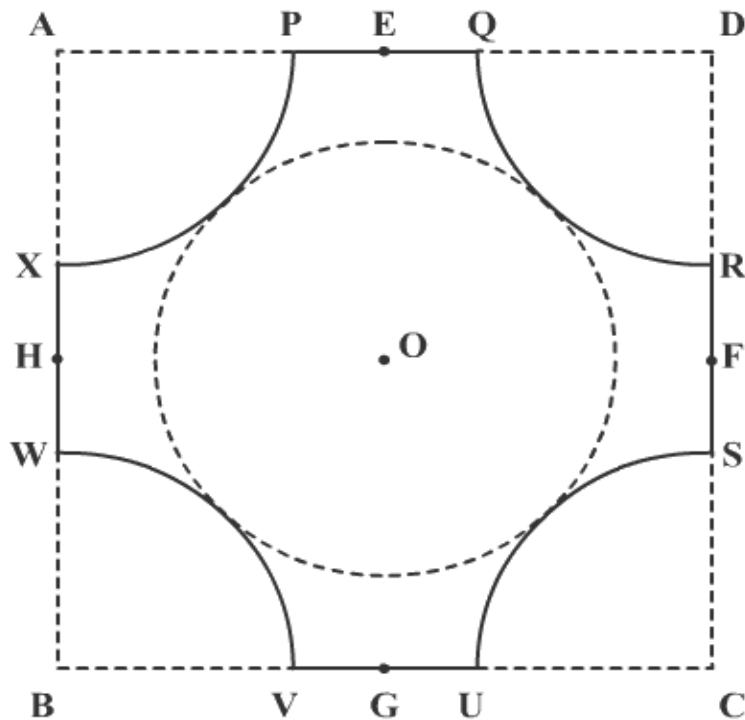
After cutting is done, PQRSUVWXP is the boundary of the remaining sheet.

Here, PQ = RS = UV = WX and length(arc QR) = length(arc SU) = length(arc VW) = length(arc XP)

Diameter of the cutting circle = side of the square EFGH

$$= \left(\frac{1}{\sqrt{2}}\right) \times \text{sides of the square ABCD}$$

$$= 5\sqrt{2} \text{ m}$$

∴ Perimeter of the remaining sheet = PQ + RS + UV + WX + length(arc QR) + length(arc SU) + length(arc VW) + length(arc XP)

$$= (4 \times PQ) + [4 \times \text{length(arc QR)}]$$
$$= [4 \times (AD - 2 \times AP)] + \left[4 \times \frac{1}{4} \times \pi(\text{Diameter})\right]$$

$$= \left[4 \times \left(10 - 5\sqrt{2}\right)\right] + \left[\pi(5\sqrt{2})\right]$$

$$= 40 - \left[(20 - 5\pi)\sqrt{2}\right]$$

$$\approx 40 - [(20 - 15.7) \times 1.41]$$

≈ 40 – 6.06

≈ 33.94 m

Hence, option 3.

20.
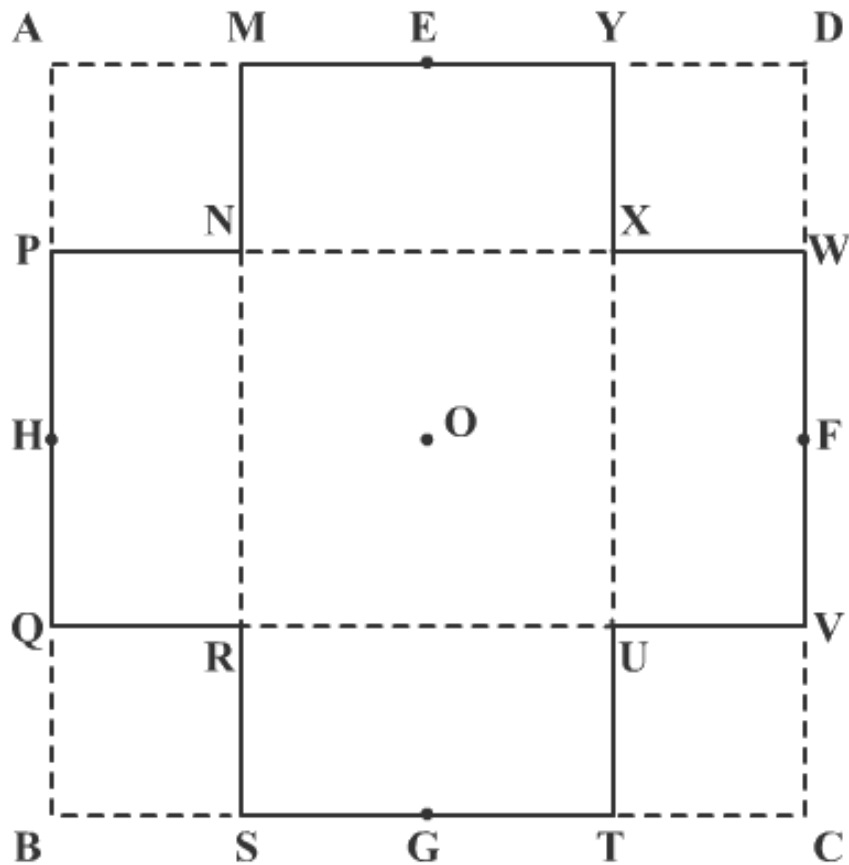
After cutting is done, MNPQRSTUVWXYM is the boundary of the remaining sheet.

Here, PQ = ST = VW = YM and QR = RS = TU = UV = WX = XY = MN = NP

Now, side of the cutting square NRUX

$$= \left(\frac{1}{2}\right) \times \text{side of the square ABCD}$$

= 5 m

$$QR = \left(\frac{1}{2}\right) \times 5 = \left(\frac{5}{2}\right) m$$

∴ Perimeter of the remaining sheet = (PQ + ST + VW + YM) + (QR + RS + TU + UV + WX + XY + MN + NP)

= (4 × PQ) + (8 × QR)

$$= (4 \times 5) + \left(8 \times \frac{5}{2}\right)$$

= 40 m

Hence, option 2.

21. We have,

$$f_1(x) = \frac{x}{1+x}$$

$$\therefore f_1(1) = \frac{1}{1+1} = \frac{1}{2}$$

Now, $f_2(x) = \frac{f_1(x)}{[1 + f_1(x)]}$

$$\therefore f_2(f_1(1)) = f_2\left(\frac{1}{2}\right)$$

$$= \frac{f_1\left(\frac{1}{2}\right)}{\left[1 + f_1\left(\frac{1}{2}\right)\right]}$$

Here, $f_1\left(\frac{1}{2}\right) = \frac{\frac{1}{2}}{1 + \frac{1}{2}} = \frac{1}{3}$

$$\therefore f_2(f_1(1)) = \frac{\frac{1}{3}}{\left(1 + \frac{1}{3}\right)}$$

$$= \frac{1}{4}$$

Now, $f_3(x) = \frac{f_2(x)}{[1 + f_2(x)]}$

$$\therefore f_3\left(f_2(f_1(1))\right) = f_3\left(\frac{1}{4}\right)$$

$$= \frac{1}{7}$$

From the observation of the value of $f_1(1)$ to $f_3(f_2(f_1(1)))$ we can see that,

$$f_n\left(\ldots f_2(f_1(1))\right) = \frac{1}{1 + \text{sum of natural numbers from 1 to } n}$$

$$\therefore f_n\left(\ldots f_2(f_1(1))\right) = \frac{1}{1 + \dfrac{n(n+1)}{2}}$$

$$\therefore f_{10}\left(f_9\left(\ldots f_2(f_1(1))\right)\right) = \frac{1}{\left[1 + \dfrac{10 \times 11}{2}\right]}$$

$$= \frac{1}{56}$$

Hence, option 3.

22. First we will calculate $f_1(1)$, $f_2(2)$, … and $f_{10}(10)$.

$$f_1(1) = \frac{1}{2}$$

$$f_2(2) = \frac{f_1(2)}{[1 + f_1(2)]}$$

But, $f_1(2) = \dfrac{2}{1+2} = \dfrac{2}{3}$

$$\therefore f_2(2) = \frac{\dfrac{2}{3}}{1 + \dfrac{2}{3}}$$

$$= \frac{2}{5}$$

Similarly, $f_3(3) = \dfrac{f_2(3)}{[1 + f_2(3)]}$

$$= \frac{3}{10}$$

$$\therefore f_n(n) = \frac{n}{n^2 + 1}$$

$$\therefore f_{10}(10) = \frac{10}{101}$$

$$\sum_{n=1}^{10} [(n^2 + 1) \times f_n(n)] = 2 \times f_1(1) + 5 \times f_2(2) + \cdots + 101 \times f_{10}(10)$$

$$= 2 \times \frac{1}{2} + 5 \times \frac{2}{5} + \ldots + 101 \times \frac{10}{101}$$

$$= 1 + 2 + \ldots + 10$$

$$= 55$$

We have, $f_1(1) = \frac{1}{2}$

Now, $f_2(1) = \dfrac{\frac{1}{2}}{1 + \frac{1}{2}} = \dfrac{1}{3}$

Similarly, $f_3(1) = \dfrac{\frac{1}{3}}{1 + \frac{1}{3}} = \dfrac{1}{4}$

$$\therefore f_{54}(1) = \frac{1}{55}$$

From the options given above, $[f_{54}(1)]^{-1} = \left[\dfrac{1}{55}\right]^{-1} = 55$

Hence, option 2.

23. There are 5 different types of balls.

Type A: 5 balls

Type B: 2 balls

Type R: 2 balls

Type K: 1 ball

Type D: 1 ball

Case 1: All 4 balls of different types

This can be done by selecting 4 different types of balls out of 5.

∴ Number of ways = $^5C_4$ = $^5C_1$ = 5

Case 2: 2 balls of one type and 2 balls of different types

This can be done by selecting one type out of 3 types (A, B and R) and then by selecting 2 types out of remaining 4 types.

∴ Number of ways = $^3C_1$ × $^4C_2$ = 3 × 6 = 18

Case 3: 2 balls of one type and 2 balls of other type

This can be done by selecting two types out of 3 types (A, B and R).

∴ Number of ways = $^3C_2$ = $^3C_1$ = 3

Case 4: 3 balls of one type, 1 ball of a different type

This can be done by selecting 3 balls of type A and then by selecting 1 type out of the remaining 4 types.

∴ Number of ways = $^1C_1$ × $^4C_1$ = 1 × 4 = 4

Case 5: All 4 balls of the same type

This can be done by selecting type A only.

∴ Number of ways = $^1C_1$ = 1

Total number of ways = 5 + 18 + 3 + 4 + 1 = 31

Hence, option 5.

24. Case 1: All 4 balls of different types

∴ Number of ways to select 4 balls = $^5C_4$ = $^5C_1$ = 5

Number of ways to arrange these 4 balls = 5 × 4! = 5! = 120

Case 2: 2 balls of the same type, 2 balls of different types

∴ Number of ways to select 4 balls = $^3C_1$ × $^4C_2$ = 3 × 6 = 18

Number of ways to arrange these 4 balls = $18 \times \dfrac{4!}{2!} = 216$

Case 3: 2 balls of the same type and 2 balls of another type

Number of ways to select 4 balls = $^3C_2$ = $^3C_1$ = 3

Number of ways to arrange these 4 balls = $3 \times \dfrac{4!}{2! \times 2!} = 18$

Case 4: 3 balls of the same type, 1 ball of a different type

Number of ways to select 4 balls = $^1C_1$ × $^4C_1$ = 1 × 4 = 4

Number of ways to arrange these 4 balls = $4 \times \dfrac{4!}{3!} = 16$

Case 5: All 4 balls of the same type

Number of ways to select 4 balls = $^1C_1$ = 1

Number of ways to arrange these 4 balls = $1 \times \dfrac{4!}{4!} = 1$

Total number of ways to arrange the 4 balls = 120 + 216 + 18 + 16 + 1 = 371

Hence, option 2.

25. Equation of the line L can be written as,

$$\frac{x}{12} + \frac{y}{12} = 1$$

or $x + y = 12$

We have to find the number of points that lie on this line with integral co-ordinates and exist in the first quadrant, i.e. number of solution sets (x, y) where x and y are natural numbers.

By substituting values of x or y, we get the following solution set:

$(1, 11), (2, 10), (3, 9) \ldots (11, 1)$

∴ Number of points = 11

Hence, option 4.

26. Equations of the three lines are as follows,

Line L: $x + y = 12$

X-axis: $y = 0$

Y-axis: $x = 0$

The solution sets (x, y) which satisfy the given condition can be found by checking for each value of x individually.

At $x = 1, y = 1, 2, 3, \ldots, 10$ … [∵ Point (1, 11) is on the line]

Similarly,

At $x = 2, y = 1, 2, 3, \ldots, 9$

At $x = 3, y = 1, 2, 3, \ldots, 8$
.
.
.
At $x = 10, y = 1$

∴ Total number of points = $10 + 9 + 8 + \ldots + 1 = 55$

Hence, option 5.

27. <u>Statement 1:</u> It is not always true, because a quadrilateral in which diagonals bisect perpendicularly is a rhombus, but not necessarily a square.

Statement 2: It is always true, because a quadrilateral in which all the four sides are equal is a rhombus, and every rhombus is a trapezium.

Statement 3: It is not always true, because a quadrilateral in which adjacent angles are equal is a rectangle, but not necessarily a square.

Statement 4: It is not always true, because a quadrilateral in which diagonals are equal is not necessarily a parallelogram. For example, diagonals are equal for an isosceles trapezium also, but trapezium is not necessarily a parallelogram.

Statement 5: It is also not always true, because a parallelogram in which diagonals are equal is a rectangle, and not necessarily a square.

∴ Total score of Anuradha for second round = 1 + 0 + 0 + 0 + 0 = 1

Hence, option 1.

28. **Statement 1:** It is not true.

Each exterior angle of a 20 sided polygon $= \dfrac{360}{20} = 18°$

∴ Each interior angle = 180° − 18° = 162°

Statement 2: It is not true.

Number of diagonals of 12 sided polygon = $^{12}C_2$ − 12 = 66 − 12 = 54

Statement 3: It is always true.

∵ Area of trapezium $= \dfrac{\text{sum of parallel sides}}{2} \times \text{height}$

Where,
$\dfrac{\text{sum of parallel sides}}{2} = \text{lenght of the line joining the mid points of the oblique sides}$

∴ Length of the line joining the mid points of the oblique sides $= \dfrac{\text{area of trapezium}}{\text{height}}$

Statement 4: It is not always true.

$(n - 2)180°$ is the sum of the interior angles of an n sided polygon. The sum of the exterior angles is always 360°.

Statement 5: It is not true.

Let the side of the square be a and that of equilateral triangle be b.

∴ Perimeter of square = $4a$

And, perimeter of equilateral triangle = $3b$

∵ The perimeter of square and triangle is equal,

∴ $4a = 3b$

∴ The ratio of sides, $a:b$ = 3:4 ≠ 2:3

∴ The total score of Vaibhav for second round = 0 + 0 + 1 + 0 + 0 = 1

Hence, option 1.

29. Let us represent the 6 digit palindrome number as *xyzzyx*.

∵ The number is 6 digit number, x can take values from 1 to 9, y and z can take values from 0 to 9.

Total 6 digit palindrome numbers = 9 × 10 × 10 = 900

For *xyzzyx* to be divisible by 3, $(2x + 2y + 2z)$ must be divisible by 3 which means $(x + y + z)$ should be divisible by 3.

Three digit number represented by *xyz* can take values from 100 to 999, which are 900 numbers.

Out of these 900 numbers, 300 numbers are divisible 3.

∴ N = 300

Now, M is the octal representation of 300 and is equal to 454 which is a palindrome number.

∴ P = 4 + 5 + 4 = 13

Now, 13 when divided by 2, 3 and 4 gives the remainder 1, 1, 1 respectively.

∴ $a = 1$, $b = 1$ and $c = 1$

The quadratic equation formed is $x^2 + x + 1 = 0$ which gives the value of $b^2 - 4ac < 0$.

∴ The roots are complex conjugates of each other.

Hence, option 4.

30. Let the 5 digit palindrome number be represented by *xyzyx*.

∵ The number is a 5 digit even number, *x* can take values 2, 4, 6 or 8, and *y* and *z* can take values from 0 to 9.

∴ Total 5 digit even palindrome numbers = 4 × 10 × 10 = 400

Similarly, let the 7 digit palindrome number be represented by *xyzwzyx*.

∵ The number is a 7 digit even number, *x* can take values 2, 4, 6 or 8, and *y*, *z* and *w* can take values from 0 to 9.

∴ Total 7 digit even palindrome numbers = 4 × 10 × 10 × 10 = 4000

Now, *K* can be written as,

$K(x) = |x - 4000| + |x - 400|$

K can take different values depending upon the value of *x*.

The minimum value of *K* is obtained for any value of *x* in the range, $400 \leq x \leq 4000$ and is 3600

Hence, option 2.

31. Let the speed at which Suraj travelled be 2*x*.

Girish travelled half the distance by bus, which he travelled at a speed of 4*x*.

∴ When Girish travels half the distance, Suraj only covers 1/4th of the distance.

∴ Suraj has to cover 3/4th of the distance and Girish has to cover half distance. Also, Girish now travels at a speed x whereas Suraj continues to travel at a speed of 2x.

∴ Suraj will reach the destination first and by that time Girish would have covered 3/8th of the remaining distance.

∴ Girish would have covered a total distance of $\dfrac{1}{2} + \dfrac{3}{8} = \dfrac{7}{8}$

∴ Girish covered 7/8 of the entire distance when Suraj travelled the entire distance.

∴ The ratio of the distance covered by Suraj and Girish is 1/(7/8) = 8:7

Hence, a:b = 8:7

∴ The yearly investment of Girish and Suraj is in the ratio 8:7.

Suraj joined after one year and invested for six years, while Girish invested for all 7 years.

∴ The ratio of the period of their investment is 7:6.

∴ The ratio of profit earned by Girish to that of Suraj is $\dfrac{8}{7} \times \dfrac{7}{6} = \dfrac{4}{3}$

Let the amount invested by Ajay be y.

∴ The amount received by Ajay after 2 years is given as,

$$s = \left(y + \dfrac{y \times 2 \times r}{100} \right)$$

$$\therefore \dfrac{\left(y + \dfrac{y \times 2 \times r}{100} \right)}{y} = \dfrac{4}{3}$$

1 + r/50 = 4/3

r/50 = 1/3

∴ r = 50/3 = 16.66

Hence, option 1.

32. The first solution 'Dilo' is made by mixing two solutions 'A' and 'B' in the ratio *a:b,* i.e. 8:7, and these solutions 'A' and 'B' contain 30% and 40% Chlorine and remaining 70% and 60% water respectively.

∴ The ratio of Chlorine and water in the first solution 'Dilo' is given as:

$$\frac{(8 \times 0.3) + (7 \times 0.4)}{(8 \times 0.7) + (7 \times 0.6)} = \frac{5.2}{9.8} = \frac{26}{49}$$

The second solution 'Conse' is made by mixing two solutions 'C' and 'D' in the ratio *b:a,* i.e. 7:8, and these solutions 'C' and 'D' contain 20% and 30% Fluorine and remaining 80% and 70% water respectively.

∴ The ratio of Fluorine and water in the second solution 'Conse' is given as:

$$\frac{(7 \times 0.2) + (8 \times 0.3)}{(7 \times 0.8) + (8 \times 0.7)} = \frac{3.8}{11.2} = \frac{19}{56}$$

The chemical 'Ajosugi' is now made by mixing these two solutions 'Dilo' and 'Conse' in equal quantities.

∴ The ratio of Chlorine, Fluorine and water is 26:19:(49 + 56) = 26:19:105

∴ The award is divided by Girish, Suraj and Ajay in the ratio 26:19:105, where the ratio of Ajay's share to total award is 105:(26 + 19 + 105) = 105:150 = 7:10

∴ The amount taken by Ajay is 7/10ᵗʰ of Rs. 10,000 = Rs. 7,000

Hence, option 4.

33. The "positive steps" in the header links to "those steps" in F.
'Controversy' in F is explained as ", defence, and contestation of preferential affirmative action" in C.
Statement C mentions 'two paths' which are then spelt out in statements in B and G respectively as 'one' and 'the other'. ".... the two paths have failed to make adequate contact" in E is logically then linked to statement G.
The issue of public debate is mentioned in G- the idea of 'public debate' continues in A as "of public controversy over affirmative action can be pictured as two spikes on a line".
The two spikes are then explained in D and the footer.

Therefore, FCBGEAD is the correct option.

Hence, the correct answer is option 3.

34. "Especially in continental Europe" in the header is better followed by the English speaking countries of Europe. Hence, there is a link between the header and D-placing D anywhere else in the paragraph is almost impossible.

There is no other sentence other than F that can be placed next. All of them seem disconnected; F however, continues the influence of Nietzsche.

The connection between F and C is easier to spot because of the 'artists'. Along the same vein his influence on psychology is placed next- as the paragraph is talking about the influence of Nietzsche.

Though there is no apparent logical link between B and A as sentences, but in the paragraph, they continue the central theme. The connection between A and G is easier to notice.

E is then placed at the end.

The correct option is DFCBAGE.

Hence, the correct answer is option 1.

35. A description of zombies is followed by what 'a few people' think about them and what 'many people' think, making the sequence BAF more coherent as compared to any other available combination.

From the 'metaphysical' possibility mentioned in F seamlessly combines with 'physicalism and dualism' in D and the interest of philosophers in E and links to the 'idea is also of interest' in G.

Statement C is 'relations between imaginability, conceivability, and possibility' and binds itself to the 'epistemological difficulties' of the footer.

Therefore, the correct option is BAFDEGC.

Hence, the correct answer is option 5.

36. First statement: The second statement highlights the difference between Western and Chinese philosophy. It is not a general statement, but emphasizes on the details as to how they are different. The statement which is general in nature will help explain these differences. The best statement which introduces this theme is F.

Last statement: The last statement of this paragraph has to be closely related to the penultimate statement, the thrust of which is- western philosophy stresses rationality and Eastern philosophy stresses wisdom. These two ideas have to be continued and closed in the last statement, without denigrating either. This is done in statement A. (Though these explanations are for the right choice, one can reach the right option sooner by looking at the options - for example if the paragraph begins with F, FA versus FE or FD is the choice.) Here, FA is the right option.

Hence, the correct answer is option 5.

37. First statement: "The tax" in the second sentence of the paragraph indicates that there should be no vagueness about what tax that is being discussed. When the options for the first sentence are evaluated from this point of view, it could be G versus E versus D. Statement E introduces it in the most suitable and general way. 'Similar to' in G eliminates G. D may be a little more difficult to eliminate- but 'imposed only on the first...' is unnecessary in the first sentence when the details of the paragraph are noticed, thus eliminating it. Statement E is then the best choice.

Last statement: "the tax forces..." in the second sentence, further "one critique of the system", "authority of government to force ... is debatable" etc., read in the context of the paragraph encapsulate the theme of the passage. All these need to be closed in the last sentence, and must be directly related to "if left to their own devices..." in the second last sentence. B versus F versus C is in the given choices. C and F get eliminated vis a vis B. '... this would lead to ...' in B helps close the paragraph smoothly. A is not incorrect, but it is merely a repetition of what is stated just above it. (Though these explanations are for the right choice, one can reach the right option sooner by looking at the options- for example if the paragraph begins with E, EB has to be the choice.)

Hence, the correct answer is option 3.

38. First statement: The paragraph traces the influence of Friedrich Holderlin and Friedrich Nietzsche on Heidegger's philosophy. The writer does this by pointing out specifically, the lecture courses of Heidegger, especially in the 1930s and 1940s. There is nothing else in the paragraph. We understand that the first sentence should ideally introduce this influence by referring to both these personalities. Also, the writer is not judgmental at all in the paragraph about either Heidegger or Holderlin, or Nietzsche. D versus B versus C versus E, is rather too many choices. B and C are quickly eliminated because of Kierkegaard who is completely out of context. E is eliminated because the paragraph is not clearly examining a 'claim'. Hence, the answer is D.

Last statement: If the first statement is fixed, one needs to examine only A, F and G for the last statement. F and G may make sense but statement A is good for the last sentence because it closes the example of Holderlin and thus the paragraph, very smoothly.

Hence, the correct answer is option 1.

39. The paragraph is about comparison of myths from different cultures, and what it seeks to discover through comparison. We have four statements to choose from. The 'it' in the second statement needs to be defined in the statement that precedes it. Statements B and A do not define this 'it'. Statements D and F seem to do this. However, the definition of 'true myth' does not fit the context, (that there are true myths and some kinds of myths) hence, D is eliminated. F becomes the

choice as 'it' refers to the 'comparative mythology' in F, an idea that is continued in the subsequent statements.

Last statement: Choices A, E and C are to be evaluated. E talks about myths not being 'necessarily false' an idea unwarranted in the context. The last statement in the paragraph mentions the nineteenth century while C talks about the approach among modern day scholars. Therefore, statement C is the right option.

Hence, the correct answer is option 4.

40. Options 1 and 2 contradict the last paragraph of the passage.

Option 4 is wishful thinking in that mankind is in search for forms of knowledge other than phenomenon which man feels would be more precious. However, other forms of knowledge have not been found as yet.

Option 5 is incorrect as it does not answer the question stem. What was not seen clearly by either Bacon or Descartes was that there is no other form of knowledge other than the successions and co- existences of phaenomena. This was seen clearly by Newton.

Option 3 is what the passage clearly states.

Hence, the correct answer is option 3.

41. Options 1 and 4 are incorrect. Though they summarize ideas mentioned in the poem, they both miss out the main idea put forth by the poet. The poet compares the mortality of man with the eternal music of the bird. The poet talks about old age creeping up on man as against the eternal beauty of the bird's music.

Option 3 is incorrect because man is not immortal. The poem time and again talks about the mortality of man and old age ("where palsy shakes a few, sad, last gray hairs, where youth grows pale, and spectre- thin, and dies").

Option 5 is incorrect because it completely ridicules the poet as being an alcoholic dreamer who is reduced to being jealous of a bird's perceived immortality.

Option 2 is the correct answer. It best encompasses the main ideas mentioned in the poem. The comparison between man's mortality and the immortality of the bird's song is best shown in option 2.

Hence, the correct answer is option 2.

42. 'Sighing out sonnets' has been mentioned in one stanza and is not the essence of the poetry. Eliminate option 1.

The poet symbolizes 'Hope' stooping down from Heavens and not 'an actual angel'. The poet wishes to remain hopeful even in the face of adversity. He believes that this will help him overcome his problems. Eliminate option 2.

The poem is silent about god- literally and metaphorically. Eliminate option 4.

Though the poet is a hopeful patriot, there is nothing in the poem to suggest that he believes in angels. Eliminate option 5.

Option 3 is the correct answer. The poet believes in hope to help dispel his troubles. In all the stanzas of the poem the poet wishes for hope to help him deal with adversity in any form.

Hence, the correct answer is option 3.

43. The summary talks about the basis of Holmes' deductive reasoning skills. The paragraph which best extrapolates this idea is option 2. Option 2 correctly adds to the ideas mentioned in the summary.

Option 1 is incorrect because it does not state anything about the wide range of things. Holmes' deductive reasoning is based upon his mastery of a wide range of things.

Option 3 is incorrect because the detail in which Holmesian deduction is addressed in the paragraph is not conveyed in the summary. It also fails to include the elementary nature of Holmesian reasoning.

Option 4 is incorrect because it talks about Holmes being a master of disguise which has not been mentioned in the summary at all.

Option 5 is incorrect because the word 'inductive' and 'deductive' have been interchanged at various places in the paragraph, changing the meaning completely.

Hence, the correct answer is option 2.

44. The summary mentions that "in modern times the sport is strictly regulated."
The idea of attributing 'strict regulation to modern times' is missing in options 1 and 5.

Options 1 and 5 are incorrect also because of the usage, '... Chile, which is strictly regulated'. This means that it is Chile which is strictly regulated and not rodeo. This is a modifying error where the incorrect placement of the modifier 'which' changes the meaning of the sentence.

Options 2 and 3 are incorrect because their concluding statements are not in accordance with the summary. Both of the concluding statements also disrupt the flow of their respective paragraphs.

Option 4 is the correct answer because its extrapolation of the ideas mentioned in the summary is accurate and it covers all the points.

Hence, the correct answer is option 4.

45. Option 1 is incorrect because the paragraph does not state anything about Nash being commissioned by Prince Regent. This and Nash's later works on the Royal Pavilion, which were also on the Prince Regent's bidding, are the key ideas of the paragraph.

Option 2 is incorrect because Buckingham Palace is mentioned in the paragraph and it is not mentioned in the summary. The summary does not fit with the paragraph.

Option 4 is incorrect because there is no mention of Marylebone Park in it. Marylebone Park should be mentioned because it was the first royal commission received by Nash.

Option 5 is incorrect because there is no mention of Prince Regent in the paragraph. The whole paragraph is incomplete without the mention of Prince Regent in whose employ Nash worked.

Option 3 is the correct option because it extrapolates all the ideas mentioned in the passage.

Hence, the correct answer is option 3.

46. 'And why?' in paragraph E answers the growing influence of English language and dwindling influence of other languages mentioned in paragraph A. The entire paragraph E explains why the influence of English is bound to grow. Therefore, AE need to be sequenced. This eliminate options 1, 2 and 3.

The passage starts by mentioning the positivist friend of the author in paragraph D. A takes the idea of 'friend' further. Hence, paragraphs DA need to be sequenced. This eliminates option 4.

Hence, the correct answer is option 5.

47. Paragraph C is a good introduction to the contents of the entire passage.

The link between Paragraphs D and A is apparent. The last sentence in D- "When we name a substance, as man or God, it seems as though that of which the predication is made were substance" connects with the first sentence in A- "But there is a difference: since a man is not simply and entirely man, and in virtue of this he is not substance." Similarly the last sentence in A- "But man is merely great; God is greatness." Connects clearly with the first sentence in E- "And we need to go beyond great and greatness."With the clear sequence in DAE, all other options except 1 are eliminated.

Hence, the correct answer is option 1.

48. The idea of history of philosophy has been introduced in A and all the other paragraphs take it forward i.e. A needs to be the introductory paragraph. This eliminates options 4 and 5.

The last sentence of paragraph C- "In the one case, the connection is conceived too loosely, in the other, too rigidly and simply," connects well with the first statement in paragraph B- "One view underestimates the power of the logical Idea, the other overestimates it." The last sentence in paragraph B, a longish one, presents one clear idea- "There is often reason, no doubt, for the complaint that the personality which has undertaken to develop some great idea is inadequate to the task, that it carries its subjective defects into the matter in hand, that it does too much or too little, or the right thing in the wrong way, so that the spirit of philosophy seems to have erred in the choice and the preparation of its instrument". This connects well with the contrary view given in E- "But the

reverse side of the picture must also be taken into account". Paragraph D will follow E since paragraph E states "predecessors" and D mentions "successors".
Only one option fits in with the sequence CBED.
Hence, the correct answer is option 2.

49. To solve this question, we need to look at the following cases.

Consider that the identity of any of the six is confirmed as a Knight.

If M_1P_1 (Member 1 of Pair 1) is a knight, then M_1P_3 is also a knight. Thus, pair 2 is both knaves, which makes M_2P_3 a knave. Likewise, we can identify that the elephant was black and four-toed.
The same situation will exist if M_2P_1 is a knight. Similarly, if M_1P_3 is a knight the equation will be the same.

Another possibility exists if M_1P_2, M_2P_2 and M_2P_3 are knights. Then we can identify the elephant to be white with 5 toes. The remaining three people would be knaves.

Now consider that the elephant is known to be white. In such a case, M_1P_2 is a knight and the elephant will be white with five toes. Also, M_2P_2 and M_2P_3 will be knights and M_1P_1, M_2P_1 and M_1P_3 will be knaves.

Thus, a unique solution can exist only if either of the two statements is true and not if both of them are true at the same time.

Hence, option 3.

50. Initially, ignore condition 1 and 3. Plotting 2, 4 and 5, we can observe this possible arrangement.
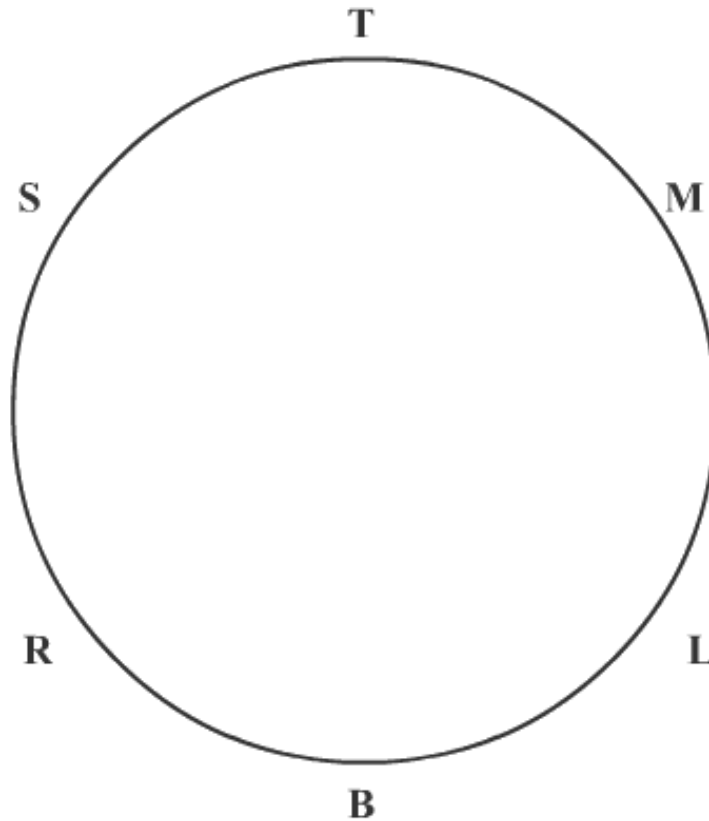
In this case, the first condition is also met. However, condition 3 is conflicting.

Hence, option 3.

Alternatively,

To solve this question, each condition has to be taken individually and plotted.

All conditions except condition 3 can be plotted. Condition 3 is logically impossible to manage with 3 men and 3 women on a circular table.

Identifying this can immediately provide the correct answer.

Hence, option 3.

51. Let us consider various values of *n*, the number of matchsticks in the matchbox.

Let F denote the first player to remove the matchsticks and S denote the second player to remove the matchsticks from the box in consecutive turns.

If *n* = 1, F wins by taking out the first matchstick.

If *n* = 2, F can take out only 1 matchstick, then S will win by taking out the remaining one.

If *n* = 3, F will win by taking out all of the matchsticks. Although, he can remove 1 matchstick and still win.

If *n* = 4, F will win by taking out all of the matchsticks.

If *n* = 5, F will take out 3 matchsticks to start. Then S is left with 2 matchsticks, and will be forced to take out one matchstick and the first player, F, will win.

If *n* = 6, F will take out 4 matchsticks, leaving two remaining in the box. So, he will again force S to pick only one matchstick and he will win.

If *n* = 7, F can take out 1, 3 or 4 matchsticks, which will leave 6, 4 or 3 matchsticks for S. As we have already seen, if *n* is 6, 4 or 3, then first player is in the winning position and here S is the first player. So, this is a losing position for F.

If *n* = 8, F can take out 1, 3 or 4 matchsticks leaving behind 7, 5 or 4. Since 5 and 4 are winning situations for the first player, had F picked 3 or 4, then S would have won. Hence, F will start with 1 matchstick, so that S would start with 7 matchsticks. Since *n* = 7 is a losing position for the first player (now S), thus S will lose and F will win.

If *n* = 9, F will leave behind 8, 6 or 5 matchsticks for S and since all these are winning positions for the first player (now S is the first player), therefore S will win.

If *n* = 10, F could leave behind 9, 7 or 6 matchsticks for S, but since 6 is a winning position for the first player (now S), F will not take out 4 matchsticks and he will win by taking out 1 or 3 matchsticks since both 9 and 7 are winning positions for the second player (here F is now acting as the second player); i.e., F will win.

A closer look at these three numbers gives us a pattern of plus two and plus five; 2 is (0 + 2), 7 is (2 + 5), 9 is (7 + 2), similarly 14 is (9 + 5), ... and so on. These constitute the values of *n* for which S will win.

Now let us check the validity of this statement by checking the next number which is 14 i.e. (9 + 5).

If n = 14, then F will leave behind 13, 11 or 10 matchsticks for S. However, since 10 is a winning position for the first player (now S), F will not take out 4 matchsticks. Now, if he leaves 13 matchsticks for S, then S will take out 4 matchsticks and put himself in a winning position as 9 matchsticks is a winning position for the second player (now F will be the first player and S will be the second player). On the other hand, if F takes out 3 matchsticks and leaves S with 11 matchsticks, then S can take out 4 matchsticks which will again put him in a winning position as 7 matchsticks is a winning position for the second player (S is the second player).

So, the above pattern is valid.

For n = 9, the second player must win and Vijay wins the game if Ajay wins the toss and starts the game.

Hence, option 3.

52. From the above analysis, a pattern is found which gives information about which player is going to win.

The second player wins only for the number of matchsticks satisfying the pattern of plus two and plus five,
i.e., for n = 2, 7, 9, 14, 16, 21, 23, 28, 30, ...

So, Ajay (described as the first player in this question) is in the winning position if n is 18.

Hence, option 3.

53. We have already seen that the second player is in the winning position for a pattern of plus 2 and plus 5, which means all the multiples of 7 are in this pattern.
i.e., 0 + 2 (= 2), 2 + 5 (= 1 × 7), 2 + 5 + 2, 2 + 5 + 2 + 5 (= 2 × 7), 2 + 5 + 2 + 5 + 2, 2 + 5 + 2 + 5 + 2 + 5 (= 3 × 7), ...

Thus, the fourth statement will always be true.

Hence, option 4.

54. This is a case of nested conditionality problems. The total conditions will be:

- If Monica, then Rachel
- If Rachel, then not Ross
- If not Ross, then not Joey
- If not Joey, then Phoebe
- If not Phoebe, then Chandler

Thus, given that Phoebe didn't attend the wedding, it means that both Chandler and Joey attended the wedding [from conditions 4 and 5].

From condition 3, if Joey attends, then it implies that Ross went for the wedding.

In such a case, Rachel did not attend [from condition 2] and hence neither did Monica [from condition 1].

Hence, option 4.

55. Based on the given data, the following possibilities exist. Singh can stay in room 5 or 7.

If he stays in 7, then Sharma, Naidu and Reddy have to (necessarily) stay in the second column.

In that case, the only places Basu and Ghosh can stay in are rooms 4 and 6 (not necessarily in that order).

This will not allow the final condition about Farrukh and Sayyid to be met, as no two apartments remain which are one above the other to accommodate them.

Thus, necessarily, Singh has to stay in room 5 and Sharma has to be in room 1, Naidu is in room 4 and Reddy is in 7. Also, it is given that Lele is in room 9.

Now, Sayyid has to be in room 6 and Farrukh in room 3. Thus, Basu and Ghosh will be in rooms 2 and 8 (not necessarily in that order).

Case I

1 - Sharma	2 - Basu	3 - Farrukh
4 - Naidu	5 - Singh	6 - Sayyid
7 - Reddy	8 - Ghosh	9 - Lele

Case II

1 - Sharma	2 - Ghosh	3 - Farrukh
4 - Naidu	5 - Singh	6 - Sayyid
7 - Reddy	8 - Basu	9 - Lele

Irrespective of the positions of Basu and Ghosh, we can ascertain that Naidu stays in room 4; i.e. option 3 will always be true.

Hence, option 3.

56. If we take the first condition by itself, then two cases arise. In the first one, the single girl may be the driver and in the second case, she can be on either of the passenger seats and one of the other girls could be in the driver's seat. Refer to the below image for examples of two such cases.

Similarly, if we consider statement two alone, ignoring the first condition, there arises more than one possible combination, as shown in the below diagram.

Now, even if we consider both the conditions together, two arrangements are possible. Hence, taking both conditions together also does not give us a unique arrangement.

Following condition 1 alone:

Case I:

G	B	X
G	B	B
G	G	B

Case II:

X	B	G
B	B	G
B	G	G

Following condition 2 alone:

Case I:

G	G	B
B	X	B
G	G	B

Case II:

G	G	B
G	G	B
B	X	B

Following condition 1 and 2 combined:

Case I:

B	G	G
B	X	B
B	G	G

Case II:

B	G	G
B	G	G
B	X	B

Driver's seat

Note: In the diagram, Boys are represented by B, Girls by G and the single girl is X.

Hence, option 5.

57.

Path followed by A
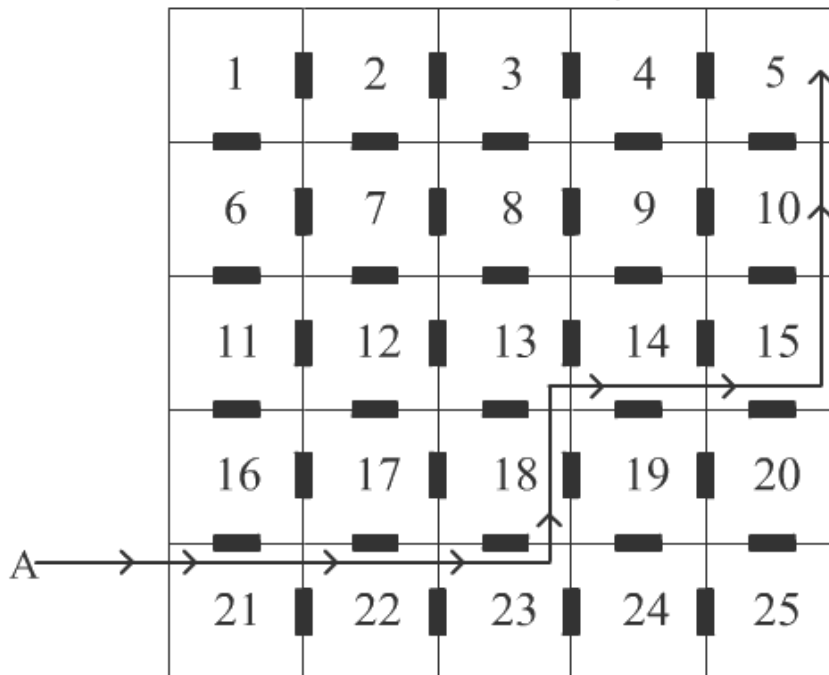
Path followed by C
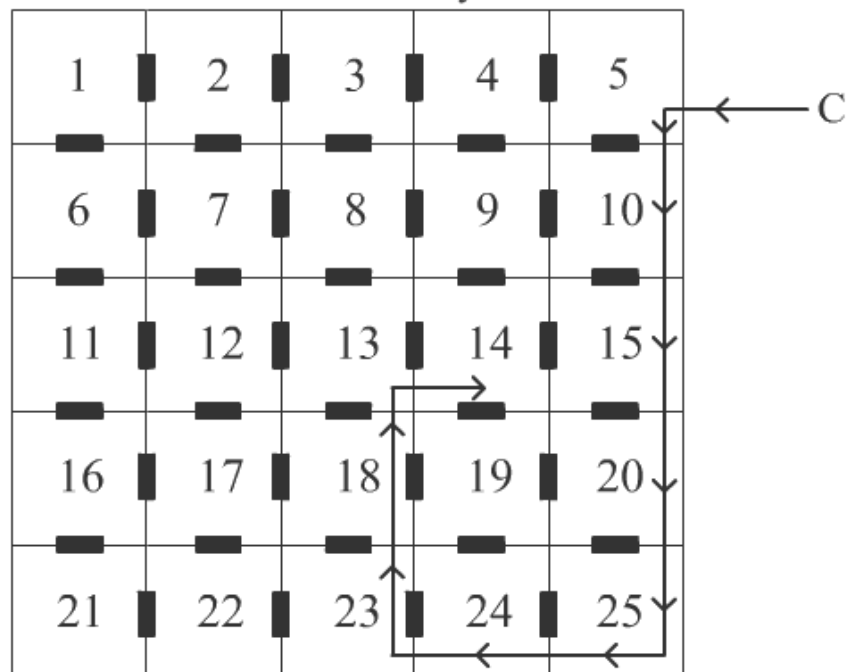
Refer to the figure.

A's path in half an hour:
21 to 22, Strategy 3, 4 min

22 to 23, Strategy 3, 4 min

23 to 18, Strategy 2, 3 min

18 to 13, Strategy 3, 4 min

13 to 14, Strategy 2, 3 min

14 to 15, Strategy 3, 4 min

15 to 10, Strategy 3, 4 min

10 to 5, Strategy 3, 4 min

Total time = 4 + 4 + 3 + 4 + 3 + 4 + 4 + 4 = 30 min = half an hour

∴ Total number of rooms travelled = 9   (∵ A has entered room 5 within 30 minutes).

Similarly, C's path travelled within half an hour
5 to 10, Strategy 2, 3 min

10 to 15, Strategy 3, 4 min

15 to 20, Strategy 3, 4 min

20 to 25, Strategy 3, 4 min

25 to 24, Strategy 1, 2 min

24 to 23, Strategy 3, 4 min

23 to 18, Strategy 2, 3 min

18 to 13, Strategy 3, 4 min

13 to 14, Strategy 2, 3 min

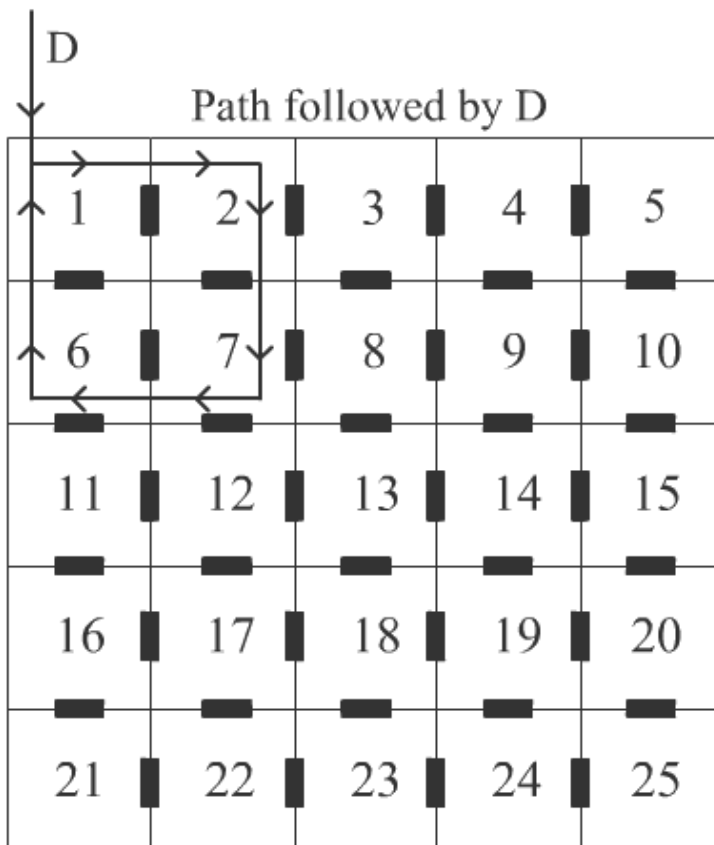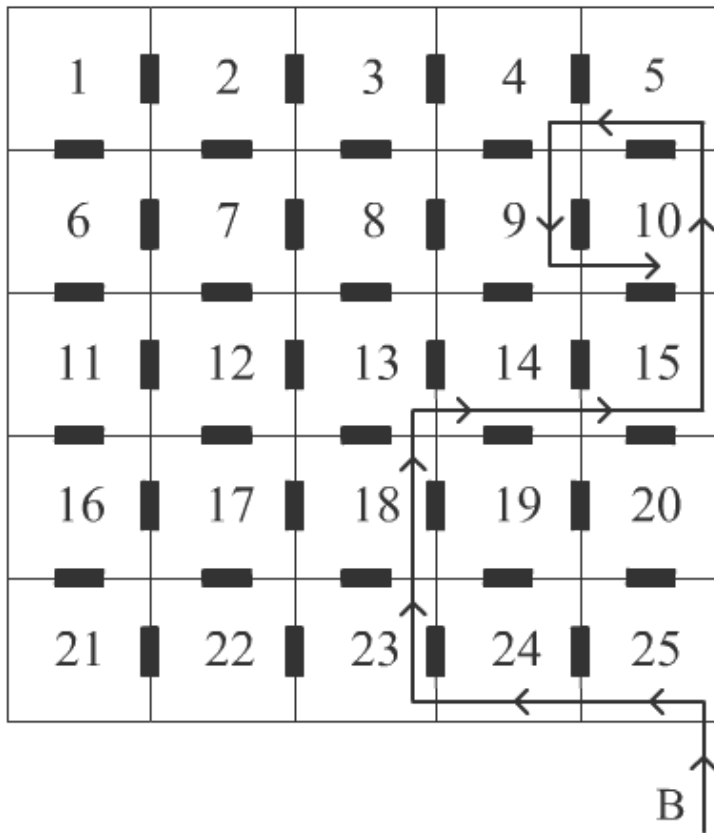Total time = 3 + 4 + 4 + 4 + 2 + 4 + 3 + 4 + 3 = 31 min = more than half an hour
∴ Total number of rooms travelled in half an hour = 10 − 1 = 9

∴ Total number of rooms travelled by both A and C = 9 + 9 = 18

Hence, option 3.

58.

Path followed by B

Path followed by D

Refer to the figure.

B's path for first 12 rooms travelled:

25 to 24, Strategy 1, 2 min

24 to 23, Strategy 3, 4 min

23 to 18, Strategy, 2, 3 min

18 to 13, Strategy 3, 4 min

13 to 14, Strategy 2, 3 min

14 to 15, Strategy 3, 4 min

15 to 10, Strategy 3, 4 min

10 to 5, Strategy 3, 4 min

5 to 4, Strategy 2, 3 min

4 to 9, Strategy 1, 2 min

9 to 10, Strategy 1, 2 min

∴ Time taken by B to enter 12 rooms = 2 + 4 + 3 + 4 + 3 + 4 + 4 + 4 + 3 + 2 + 2 = 35 minutes

D's path for first 12 rooms travelled:

1 to 2, Strategy 1, 2 min

2 to 7, Strategy 2, 3 min

7 to 6, Strategy 2, 3 min

6 to 1, Strategy 3, 4 min

1 to 2, Strategy 1, 2 min

2 to 7, Strategy 2, 3 min

7 to 6, Strategy 2, 3 min

6 to 1, Strategy 3, 4 min

1 to 2, Strategy 1, 2 min

2 to 7, Strategy 2, 3 min

7 to 6, Strategy 2, 3 min

∴ Time taken by D to enter 12 rooms = 2 + 3 + 3 + 4 + 2 + 3 + 3 + 4 + 2 + 3 + 3 = 32 minutes

The time required by both B and D to enter into 12 rooms is not equal.

Hence, option 4.

59. From the solution of the previous questions, we get,

Number of times A followed the second strategy in a time slot of 30 min = 2

Number of times D followed the third strategy in a time slot of 30 min = 2

∴ The sum of the number of times the second strategy was followed by A and numbers of times the third strategy was followed by D in a time slot of 30 min = 2 + 2 = 4

Hence, option 1.

60. The total score given is 72. The different options that could have helped him score this would be:

Option 1: 2 × 2 × 2 × 6 - This option can be eliminated because the product is only 48.

Option 2: 1 × 2 × 6 × 6

Option 3: 1 × 3 × 3 × 8

Option 4: 2 × 3 × 3 × 4

Option 5: 1 × 3 × 4 × 6

The first condition is applicable to all the options and can be ignored.

The second condition can be met by adding up all the options. That leaves us with the options 1 × 2 × 6 × 6 and 1 × 3 × 3 × 8.

To meet the final condition, one shot should give points which are more than the other shots. This eliminates 1 × 2 × 6 × 6 as two highest shots yield equal points.

Hence, option 3.

61. Considering that the two knaves cannot be placed next to each other, there are totally 6 ways to arrange the 5 people in a row. We have to choose from the above 5 ways (options).

To solve this question, work with the conditions to eliminate the options.

Consider the first condition. It can be followed only in the case of options 2, 3, 4 and 5. Thus, option 1 is eliminated.

Consider condition 2, which will be held true only in case of options 2, 3 and 5. Option 4 is thus eliminated.

To fulfill condition 3, we will have to eliminate option 3. Now, we have to choose between option 2 and 5.

Condition 4 is satisfied by both options. But, only the option 5 fulfills the last condition.

Hence, option 5.

Alternatively,

You could have used only the fifth condition to solve this question. The last person says that there is a knight next to him. If he were a knave, he would have lied, and there should be another knave next to him. However, two knaves cannot be next to each other, thus the last person should be a knight. Since a knight always tells the truth, the fourth person was also knight. Only option 5 satisfies this criteria.

62. If David is selected, then Nidhi will also be selected [from condition 1].

This means that Doni will also be selected [from condition 2].

But if we look at Doni's statement [condition 3], he cannot be selected along with David.

This leads to a contradiction, and hence David cannot be selected for the team.

If David is not in the team, then Rita will also not be in it [from condition 4].

So, neither David nor Rita can be selected for the team.

Thus, there is only one combination possible:

Doni, Vikram, Nidhi and Jaya.

Hence, option 1.

63. From condition II, it is obvious that the educational institution advertisement should be on the first page and the contraceptive advertisement on the sixth page.

The following two cases are possible after fixing the first and sixth page and accommodating the remaining conditions.

<u>CASE 1</u>

Page-1 Educational Institution

Page-2 FMCG

Page-3 Sports magazine

Page-4 Web Portal & Tour Operator

Page-5 Mobile Phone & Service Provider

Page-6 Contraceptives

<u>CASE 2</u>

Page-1 Educational Institution

Page-2 Web Portal & Tour Operator

Page-3 Mobile Phone & Service Provider

Page-4 FMCG

Page-5 Sports Magazine

Page-6 Contraceptives

From both possible arrangements, it is clear that option 2 is incorrect as it does not get satisfied in either case.

Hence, option 2.

64. From the third condition, the following four possibilities emerge:

The second and third possibilities can be eliminated because of condition 1.

Considering the first possibility, conditions 1, 2 and 5 can be plotted to get the following arrangement in the remaining cases.

Even if the other possibilities are tried out (we can also use conditions 1, 2 and 5 to complete the fourth possibility), an arrangement can be made accommodating all options except the 4th option, which contradicts the other conditions.

Hence, option 4.