PINNACLE
THE MBA ENTRANCE COURSE

CAT 2002

(The actual CAT 2002 paper)

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Test Directions

About the test

1. **DO NOT OPEN THE BOOKLET UNLESS INSTRUCTED TO DO SO.**
2. This test is designed to test your competence in the test areas of a standard MBA Entrance Test.
3. Total number of questions is 150. There are 3 sections without any sectional time limits.
4. Total time allowed is 120 minutes.
5. All the scratch work has to be done on the test paper itself. Extra sheets for rough work are **NOT** allowed. Calculators are **NOT** allowed.
6. Students are expected to perform equally well in all the test areas.

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1. Mark your answers in the OMR Score Sheet provided separately. The proper way of marking the answers is by darkening the relevant ovals completely by an **HB pencil.** Proper marking is essential for your scores to be electronically evaluated.
2. If you wish to change an answer, rub off the old answer completely with the help of an eraser and then mark the next answer.

Evaluation of Scores

1. There will be a penalty for every wrong answer marked. Only one answer will be acceptable for a question. In case a student marks more than one answer for the same question, the same shall be considered a wrong answer, by the electronic OMR scanner.

Conduct of Students

1. Cheating will immediately disqualify you from this test. Calculators are not allowed.
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Test Form Number

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PT Education

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SECTION I

Number of Questions : 50

DIRECTIONS : *Read the following passages and answer the questions that follow.*

PASSAGE I

Cells are the ultimate multitaskers : they can switch on genes and carry out their orders, talk to each other, divide in two, and much more, all at the same time. But they couldn't do any of these tricks without a power source to generate movement. The inside of a cell bustles with more traffic than Delhi roads, and, like all vehicles, the cell's moving parts need engines. Physicists and biologists have looked "under the hood" of the cell - and laid out the nuts and bolts of molecular engines.

The ability of such engines to convert chemical energy into motion is the envy of nanotechnology researchers looking for ways to power molecule-sized devices. Medical researchers also want to understand how these engines work. Because these molecules are essential for cell division, scientists hope to shut down the rampant growth of cancer cells by deactivating certain motors. Improving motor-driven transport in nerve cells may also be helpful for treating diseases such as Alzheimer's, Parkinson's or ALS, also known as Lou Gehrig's disease.

We wouldn't make it far in life without motor : proteins. Our muscles wouldn't contract. We couldn't grow, because the growth process requires cells to duplicate their machinery and pull the copies apart. And our genes could be silent without the services of messenger RNA, which carries genetic instructions over to the cell's protein-making factories. The movements that make these cellular activities possible occur along a complex network of threadlike fibers, or polymers, along which bundles of molecules travel like trams. The engines that power the cell's freight are three families of proteins, called myosin, kinesin and dynein. For fuel, these proteins burn molecules of ATP, which cells make when they break down the carbohydrates and fats from the foods we eat. The energy from burning ATP causes changes in the proteins' shape that allow them to heave themselves on the polymer track. The results are impressive : In one second, these molecules can travel between 50 and 100 times their own diameter. If a car with a 5-foot-wide engine were as efficient, it would travel 170 to 340 kmph.

Ronald Vale, a researcher at the Howard Hughes Medical Institute and the University of California at San Francisco, and Ronald Milligan of the Scripps Research Institute have realized a long-awaited goal by reconstructing the process by which myosm and kinesm move, almost down to the atom. The dynein motor, on the other hand, is still poorly understood. Myosin molecules, best known for their role in muscle contraction, form chains that lie between filaments of another protein called actin. Each myosin molecule has a tiny head that pokes out from the chain like oars from a canoe. Just as rowers propel their boat by stroking their oars through the water, the myosin molecules stick their heads into the actin and hoist themselves forward along the filament. While myosin moves along in short strokes, its cousin kinesin walks steadily along a different type of filament called a microtubule. Instead of using a projecting head as a lever, kinesin walks on two "legs." Based on these differences, researchers used to think that myosin and kinesin were virtually unrelated. But newly discovered similarities in the motors' ATP-processing machinery now suggest that they share a common ancestor -molecule. At this point, scientists can only speculate as to what type of primitive cell-like structure this ancestor occupied as learned to burn ATP and use the energy to change shape. "We'll never really know, because we can't dig up the mains of ancient proteins, but that was probably a big evolutionary leap," says Vale.

On a slightly larger scale, loner cells like sperm or infectious bacteria are prime movers that resolutely push their way through to other cells. As L. Mahadevan and Paul Matsudaira of the Massachusetts Institute of Technology explain, the engines in this case are springs or ratchets that are clusters of molecules, rather than single proteins like myosin and kinesin. Researchers don't yet fully understand these engines fueling process or the details of how they move, but the result is a force to be reckoned with. For example, one such engine is a springlike stalk connecting a single-celled organism called a vorticellid to the leaf fragment it calls home. When exposed to calcium, the spring contracts, yanking the vorticellid down at speeds approaching 3 inches (8 centimeters) per second.

Springs like this are coiled bundles of filaments that expand or contract in response to chemical cues. A wave of positively charged calcium ions, for example, neutralizes the negative charges that keep the filaments extended. Some sperm use springlike engines made of actin filaments to shoot out a barb that penetrates the layers that surround an egg. And certain viruses use a similar apparatus to shoot their DNA into the host's cell. Ratchets are also useful for moving whole cells, including some other sperm and pathogens. These engines are filaments that simply grow at one end, attracting chemical building blocks from nearby. Because the other end is anchored in it place, the growing end pushes against any barrier that gets in its way.

Both springs and ratchets are made up of small units that each move just slightly, but collectively produce a powerful movement. Ultimately, Mahadevan and Matsudaira hope to better understand just how these particles create an effect that seems to be so much more than the sum of its parts. Might such an understanding provide an inspiration for ways to power artificial nano-sized devices in the future? "The short answer is absolutely," says Mahadevan. "Biology has had a lot more time to evolve enormous richness in design for different organisms; Hopefully, studying these structures will not only improve our understanding of the biological world, it will also enable us to copy them, take apart their components and re-create them for other purposes.

1. *According to the author, research on the power source of movement in cells can contribute to*
   (1) control over the movement of genes within human systems.
   (2) the understanding of nanotechnology.
   (3) arresting the growth of cancer in a human being.
   (4) the development of cures for a variety of diseases.

2. *The author has used several analogies to illustrate his arguments in the article. Which of the following pair of words are examples of the analogies used?*
   (a) Cell activity and vehicular traffic.
   (b) Polymers and tram tracks.
   (c) Genes and canoes.
   (d) Vorticellids and ratchets.
   (1) a and b (2) b and c (3) a and d (4) a and c

3. *Read the five statements below a, b, c, d and e. From the options given, select the one which includes the statement that is not representative of an argument presented in the passage.*
   (a) Sperms use springlike engines made of actin filament.
   (b) Myosin and kinesin are unrelated.
   (c) Nanotechnology researchers look for ways to power molecule-sized devices.
   (d) Motor proteins help muscle contraction.
   (e) The dynein motor is still poorly understood.
   (1) a, b and c (2) c, d and e (3) a, d and e (4) a, c and d

4. *Read the four statements below a, b, c and d. From the options given, select the one which includes all statement(s) that are representative of arguments presented in the passage.*
   (a) Protein motors help growth processes.
   (b) Improved transport in nerve cells will help arrest tuberculosis and cancer.
   (c) Cells, together, generate more power than the sum of power generated by them separately.
   (d) Vorticellid and the leaf fragment are connected by a calcium engine.
   (1) a and b but not c (2) a and c but not d (3) a and d but not b (4) c and d but not b

5. *Read the four statements below a, b, c and d. From the options given, select the one which include statement(s) that are representative of arguments presented in the passage.*
   (a) Myosin, kinesin and actin are three types of protein.
   (b) Growth processes involve a routine in a cell that duplicates their machinery and pulls the copies apart.
   (c) Myosin molecules can generate vibrations in muscles.
   (d) Ronald and Mahadevan are researchers at Massachusetts Institute of Technology.
   (1) a and b but not c and d (2) b and c but not a
   (3) b and d but not a and c (4) a, b and c but not d

PASSAGE II

There are a seemingly endless variety of laws, restrictions, customs and traditions that affect the practice of abortion around the world. Globally, abortion is probably the single most controversial issue in the whole area of women's rights and family matters. It is an issue that inflames women's right groups, religious institutions, and the self-proclaimed "guardians" of public morality. The growing worldwide belief is that the right to control one's fertility is a basic human right. This has resulted in a worldwide trend towards liberalization of abortion laws. Forty percent of the world's population live in countries where induced abortion is permitted on request. An additional 25 percent live in countries where it is allowed if the women's life would be endangered if she were to go ahead with her pregnancy. The estimate is that between 26 and 31 million legal abortions were performed in 1987. However, there were also between 10 and 22 million illegal abortions performed in that year.

Feminists have viewed the patriarchal control of women's bodies as one of the prime issues facing the contemporary women's movement. They observe that the definition and control of women's reproductive freedom have always been the province of men. Patriarchal religion, as manifest in Islamic fundamentalism, traditionalist Hindu practice, orthodox Judaism, and Roman Catholicism, has been an important historical contributory factor for this and continues to be an important presence in contemporary societies. In recent times, governments, usually controlled by men, have "given" women the right to contraceptive use and abortion access, when their countries were perceived to have an overpopulation problem. When these countries are perceived to be underpopulated, that right has been absent. Until the nineteenth century, a woman's rights to an abortion followed English common law; it could only be legally challenged if there was a "quickening", when the first movements of the foetus could be felt. In 1800, drugs to induce abortions were widely advertised in local newspapers. By 1900, abortion was banned in every state except to save the life of the mother. The change was strongly influenced by the medical profession, which focussed its campaign ostensibly on health and safety issues for pregnant women and the sanctity of life. Its position was also a means of control of non-licensed medical practitioners such as midwives and women healers who practiced abortion.

The anti-abortion campaign was also influenced by political considerations. The large influx of eastern and southern European immigrants with their large families was seen as a threat to the population balance of the future United States. Middle and Upper class Protestants were advocates of abortion as a form of birth control. By supporting abortion prohibitions the hope was that these Americans would have more children and thus prevent the tide of immigrant babies from overwhelming the demographic characteristics of Protestant America. The anti-abortion legislative position remained in effect in the United States through the first sixty-five years of the twentieth century. In the early 1960s, even when it was widely known that the drug thalidomide taken during pregnancy to alleviate anxiety was shown to contribute to the formation of deformed "flipper-like" hands or legs of children, abortion was illegal in the United States. A second health tragedy was the severe outbreak of rubet during the same time period, which also resulted in major birth defects. These tragedies combined with a change of attitude towards a woman's right to privacy lead a number of states to pass abortion-permitting legislation.

On one side of the controversy are those who call themselves "pro-life". They view the foetus as a human life rather than as an unformed complex of cells; therefore, they hold to the belief that abortion is essentially murder of an unborn child. These groups cite both legal and religious reasons for their opposition to abortion. Pro-life !! point to the rise in legalized abortion figures and see this as morally intolerable. On the other side of the issue all those who call themselves "pro-choice", they believe that women, not legislators or judges, should have the right to decide whether and under what circumstances they will bear children. Pro-choicers are of the opinion that law will not prevent women from having abortions and cite the horror stories of the past when many women died in the hands of "backroom" abortionists and in desperate attempts to self-abort. They also observe that legalising abortion is especially important for rape victims and incest victims who became pregnant. They stress physical and mental health reasons why women should not have unwanted children.

To get a better understanding of the current abortion controversy, let us examine a very important work by Krist Luker titled Abortion and the Politics of Motherhood. Luker argues that female pro-choice and pro-life activitists hold different world views regarding gender, sex, and the meaning of parenthood. Moral positions on abortion are seen to be tied intimately to views on sexual behaviour, the care of children, family life, technology, and the importance of the individual. Luker identifies "pro-choice" women, as educated, affluent, and liberal. The contrasting counterparts, "pro-life" women, support traditional concepts of women as wives and mothers. It would be instructive to sketch out the differences in the world views of these two sets of women. Luker examines California, with its liberalized abortion law, as a case history. Public documents and newspaper accounts over a twenty-year period were analyzed and over 200 interviews were held with both pro-life and pro-choice activists.

Luker found that pro-life and pro-choice activists have intrinsically different views with respect to gender. Pro-life women have a notion of public and private life. The proper place for men is in the public sphere of work; for women, it is the private sphere of the home. Men benefit through the nurturance of women; women benefit through the protection of men. Children are seen to be the ultimate beneficiaries of this arrangement by having the mother as a full-time loving parent and by having clear role models. "Pro-choice" advocates reject the view of separate spheres. They object to the notion of the home being the "women's sphere". Women's reproductive and family roles are seen as potential barriers to full equality. Motherhood is seen as a voluntary, not a mandatory of "natural" role.

In summarizing her findings, Luker believes that women become activists in either of the two movements as the end result of lives that center around different conceptualizations of motherhood. Their beliefs and values are rooted to the concrete circumstances of their lives, their educations, incomes, occupations, and the different marital and family choices that they have made. They represent two different world views of women's roles in contemporary society and as such the abortion issues represents the battleground for the justification of the respective views.

6. *According to your understanding of the author's arguments which countries are more likely to allow abortion?*
   (1) India and China.
   (2) Australia and Mongolia.
   (3) Cannot be inferred from the passage.
   (4) Both (1) and (2).

7. *Which amongst these was not a reason for banning of abortions by 1900?*
   (1) Medical professionals stressing the health and safety of women.
   (2) Influx of eastern and southern European immigrants.
   (3) Control of unlicensed medical practitioners.
   (4) A tradition of matriarchal control.

8. *A pro-life woman would advocate abortion if*
   (1) the mother of an unborn child is suicidal.
   (2) bearing a child conflicts with a woman's career prospects.
   (3) the mother becomes pregnant accidentally.
   (4) none of the above.

9. *Pro-choice women object to the notion of the home being the "women's sphere" because they believe*
   (1) that the home is a "joint sphere" shared between men and women.
   (2) that reproduction is a matter of choice for women.
   (3) that men and women are equal.
   (4) both (2) and (3).

10. *Two health tragedies affecting U.S. society in the 1960s led to*
   (1) a change in attitude to women's right to privacy.
   (2) retaining the anti-abortion laws with some exceptions.
   (3) scrapping of anti-abortion laws.
   (4) strengthening of the pro-life lobby.

11. *Historically, the pro-choice movement has got support from, among others*
   (1) major patriarchal religions.
   (2) countries with low population density.
   (3) medical profession.
   (4) None of the above.

PASSAGE III

The production of histories of India has become very frequent in recent years and may well call for some explanation. Why so many and why this one in particular? The reason is a two fold one : changes in the Indian scene requiring a re-interpretation of the facts and changes in attitudes of historians about the essential elements of Indian history. These two considerations are in addition to the normal fact of fresh information, whether in the form of archeological discoveries throwing fresh light on an obscure period or culture, or the revelations caused by the opening of achieves or the release of private papers. The changes in the Indian scene are too obvious to need emphasis. Only two generations ago British rule seemed to most Indian as well as British observers likely to extend into an indefinite future. Now there is a teenage generation which knows nothing of it. Changes in the attitudes of historians have occurred everywhere, changes in attitudes to the content of the subject as well as to particular countries, but in India there have been some special features. Prior to the British, Indian historiographers were mostly Muslims, who relied, as in the case of Sayyid Chulam Hussain, on their own recollection of events and on information from friends and men of affairs. Only a few like Abdul Fazl had access to official papers. These were personal narratives of events, varying in value with the nature of the writer. The early British writers were officials. In the eighteenth century they were concerned with some aspect of Company policy, or, like Robert Orme in his Military Transactions, gave a straight narrative in what we essentially a continuation of the Muslim tradition. In the early nineteenth century the writers were still, with two notable exceptions, officials, but they were now engaged in chronicling, in varying moods of zest, pride, and awe, the rise of the British power in India to supremacy. The two exceptions were James Mill, with his critical attitude to the Company and John Marchman, the Baptist missionary. But they, like the officials, were anglo-centric in their attitude, so that the history of modern India in their hands came to be the history of the rise of the British in India.

The official school dominated the writing of Indian history until we get the first professional historian's approach Ramsay Muir and P.E. Roberts in England and H.H. Dodwell in India. Then Indian historians trained in the English school joined in, of whom the most distinguished was Sir Jadunath Sarkar and the other notable writers Surendranath Sen, Dr. Radhakumud Mukerji, and professor Nilakanta Sastri. They it may be said, restored India to Indian history, but their bias was mainly political. Finally have come the nationalists who range from those who can find nothing good or true in the British to sophisticated historical philosophers like K.M. Panikker.

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Along with types of historians with their varying bias have gone changes in the attitude to the content of Indian history. Here Indian historian have been influenced both by their local situation and by changes of thought elsewhere. It is in this field that this work can claim some attention since it seeks to break new ground, or perhaps it deepens a freshly turned furrow in the field of Indian history. The early official historians were content with the glamour and drama of political history from Plassey to the Mutiny, from Duplex to the Sikhs. But when the Raj was settled down, glamour departed from politics, and they turned to the less glorious but more solid ground of administration. Not how India was conquered but how it was governed was the theme of this school of historians. It found its archpriest in H.H. Dodwell, its priestess in Dame Lilian Penson, and its chief shrine in the Volume V of the Cambridge History of India. Meanwhile in Britain other currents were moving, which led historical study into the economic and social fields. R.C. Dutt entered the first of these currents with his Economic History of India to be followed more recently by the whole group of Indian economic historians. W.E. Moreland extended these studies to the Mughal Period. Social history is now being increasingly studied and there is also of course school of nationalist historians who see modern Indian history in terms of the rise and the fulfillment of the national movement.

All these approaches have value, but all share in the quality of being compartmental. It is enough to remove political history from its pedestal of being the only kind of history worth having if it is merely to put other types of history in its place. Too exclusive an attention to economic, social, or administrative history can be as sterile and misleading as too much concentration on politics. A whole subject needs a whole treatment for understanding. A historian must dissect his subject into its elements and then fuse them together again into an integrated whole. The true history of a country must contain all the features just cited but must present them as parts of a single consistent theme.

12. *Which of the following may be the closest in meaning to the statement "restored India to Indian history"?*
    (1) Indian historian began writing Indian history.
    (2) Trained historians began writing Indian history.
    (3) Writing India-centric Indian history began.
    (4) Indian history began to be written in India.

13. *Which of the following is the closest implication of the statement "to break new ground, or perhaps to deepen a freshly turned furrow"?*
    (1) Dig afresh or dig deeper.
    (2) Start a new stream of thought or help establish a recently emerged perspective.
    (3) Begin or conduct further work on existing archeological sites to unearth new evidence.
    (4) Begin writing a history free of any biases.

14. *Historians moved from writing political history to writing administrative history because*
    (1) attitudes of the historian changed.
    (2) the Raj was settled down.
    (3) politics did not retain its past glamour.
    (4) administrative history was based on solid ground .

15. *According to the author, which of the following is not among the attitudes of Indian historian of India origin?*
    (1) Writing history as personal narratives.
    (2) Writing history with political bias.
    (3) Writing non-political due to lack of glamour.
    (4) Writing history by dissecting elements and integrating them again.

16. *In the table given below, match the historians to the approaches taken by them*

A	Administrative	E	Robert Orme
B	Political	F	H. H. Dowell
C	Narrative	G	Radha Kumud Mukherji
D	Economic	H	R. C. Dutt

1	
A	F
B	G
C	E
D	H

2	
A	G
B	F
C	E
D	H

3	
A	E
B	F
C	G
D	H

4	
A	F
B	H
C	E
D	G

PASSAGE IV

If translated into English, most of the ways economists talk among themselves would sound plausible enough to poets, journalists, businesspeople, and other thoughtful though noneconomical folk. Like serious talk anywhere-among boat designers and baseball fans, say -the talk is hard to follow when one has not made a habit of listening to it for a while. The culture of the conversation makes the words arcane. But the people in the unfamiliar conversation are not Martians. Underneath it all (the economist's favorite phrase) conversational habits are similar. Economics uses mathematical models and statistical tests and market arguments, all of which look alien to the literary eye. But looked at closely they are not so alien. They may be seen as figures of speech- metaphors, analogies, and appeals to authority.

Figures of speech are not mere frills. They think for us. Someone who thinks of a market as an "invisible hand" and the organization of work as a "production function" and his coefficients as being "significant," as an economist does, is giving the language a lot of responsibility. It seems a good idea to look hard at his language.

If the economic conversation were found to depend a lot on its verbal forms, this would not mean that economics would be not a science, or just a matter of opinion, or some sort of confidence game. Good poets, though not scientists, are serious thinkers about symbols; good historians, though not scientists, are serious thinkers about data. Good scientists also use language. What is more (though it remains to be shown) they use the cunning of language, without particularly meaning to. The language used is a social object, and using language is a social act. It requires cunning (or, if you prefer, consideration), attention to the other minds present when one speaks.

The paying of attention to one's audience is called "rhetoric," a word that I later exercise hard. One uses rhetoric, of course, to warn of a fire in a theatre or to arouse the xenophobia of the electorate. This sort of yelling is the vulgar meaning of the word, like the president's "heated rhetoric" in a press conference or the "mere rhetoric" to which our enemies stoop. Since the Greek flame was lit, though, the word has been used also in a broader and more amiable sense, to mean the study of all the ways of accomplishing things with language inciting a mob to lynch the accused, to be sure, but also persuading readers of a novel that its characters breathe, or bringing scholars to accept the better argument and reject the worse.

The question is whether the scholar- who usually fancies himself an announcer of "results" or a stater of "conclusions" free of rhetoric -speaks rhetorically. Does he try to persuade? It would seem so. Language, I just said, is not a solitary accomplishment. The scholar doesn't speak into the void, or to himself. He speaks to a community of voices. He desires to be heeded, praised, published, imitated, honored, en-nobeled. These are the desires. The devices of language are the means.

Rhetoric is the proportioning of means to desires in speech. Rhetoric is an economics of language, the study of how scarce means are allocated to the insatiable desires of people to be heard. It seems on the face of it, a reasonable hypothesis that economists are like other people in being talkers, who desire listeners that they go to the library or the laboratory as much as when they go to the office on the polls. The purpose here is to see if this is true, and to see if it is useful to study the rhetoric of economic scholarship.

The subject is scholarship. It is not the economy, or the adequacy of economic theory as a description of the economy, or even mainly the economist's role in the economy. The subject is the conversation economists have among themselves, for purposes of persuading each other that the interest elasticity of demand for investment is zero or that the money supply is controlled by the Federal Reserve.

Unfortunately, though, the conclusions are of more than academic interest. The conversations of classicists or of astronomers rarely affect the lives of other people. Those of economists do so on a large scale. A well known joke describes a May Day parade through Red Square with the usual mass of soldiers, guided missiles, rocket launchers. At last come rank upon rank of people in gray business suits. A bystander asks, "Who are those?" "Aha!" comes the reply, "those are economists: you have no idea what damage they can do!" Their conversations, do it.

17. *According to the passage, which of the following is the best set of reasons for which one needs to "look hard" at an economist's language?*
    (a) Economists accomplish a great deal through their language.
    (b) Economics is an opinion-based subject.
    (c) Economics has a great impact on other's lives.
    (d) Economics damaging.
    (1) a and b (2) c and d (3) a and c (4) b and d

18. *In the light of the definition of rhetoric given in the passage, which of the following will have the least element of rhetoric?*
    (1) An election speech. (2) An advertisement jingle.
    (3) Dialogues of a play. (4) Commands given by army officers.

19. *As used in the passage, which of the following is the closest meaning to the statement "The culture of the conversation makes the words arcane"?*
    (1) Economists belong to a different culture.
    (2) Only mathematicians can understand economists.
    (3) Economists tend to use terms unfamiliar to the lay person, but depend on familiar linguistic forms.
    (4) Economists use similes and adjectives in their analysis.

20. *As used in the passage, which of the following is the closest alternative to the word "arcane"?*
    (1) Mysterious (2) Secret (3) Covert (4) Perfidious

21. *Based on your understanding of the passage, which of the following conclusions would you agree with?*
    (1) The geocentric and the heliocentric views of the solar system are equally tenable.
    (2) The heliocentric view is superior because of better rhetoric.
    (3) Both views use rhetoric to persuade.
    (4) Scientists should not use rhetoric.

PASSAGE V

The conceptions of life and the world which we call 'philosophical' are a product of two factors: one, inherited religious and ethical conceptions; the other, the sort of investigation which may be called 'scientific', using this word in its broadest sense. Individual philosophers have differed widely in regard to the proportions in which these two factors entered into their systems, but it is the presence of both, in some degree, that characterizes philosophy.

Philosophy' is a word which has been used in many ways, some wider, some narrower. I propose to use it in a very wide sense, which I will now try to explain.

Philosophy, as I shall understand the word, is something intermediate between theology and science. Like theology, it consists of speculations on matters as to which definite knowledge has, so far, been unascertainable; but like science, it appeals to human reason rather than to authority, whether that of tradition or that of revelation. All definite knowledge-so I should contend-belongs to science; all dogma as to what surpasses definite knowledge belongs to theology. But between theology and science there is a 'No man's Land', exposed to attack from both sides; this 'No Man's Land' is philosophy. Almost all the questions of most interest to speculative minds are such as science cannot answer, and the confident answers of theologians no longer seem so convincing as they did in former centuries. Is the world divided into mind and matter, and if so, what is mind and what is matter? Is mind subject to matter, or is it possessed of independent powers? Has the universe any unity or purpose? Is it evolving towards some goal? Are there really laws of nature, or do we believe in them only because of our innate love of power? Is man what he seems to the astronomer, a tiny lump of carbon and water impotently crawling on a small and unimportant planet? Or is he what he appears to Hamlet? Is he perhaps both at once? Is there a way of living that is noble and another that is base, or are all ways of living merely futile? If there is a way of living that is noble, in what does it consist, and how shall we achieve it? Must the good be eternal in order to deserve to be valued, or is it worth seeking even if the universe is inexorably moving towards death? Is there such a thing as wisdom, or is what seems such merely the ultimate refinement of folly? To such questions no answer can be found in the laboratory. Theologies have professed to give answers, all to definite; but their definiteness causes "modern minds to view them with suspicion. The studying of these questions, if not the answering of them, is the business of philosophy.

Why, then, you may ask, waste time on such insoluble problems? To this one may answer as a historian, or as an individual facing the terror of cosmic loneliness.

The answer of the historian, in so far as I am capable of giving it, will appear in the course of this work. Ever since men became capable of free speculation, their actions in innumerable important respects, have depended upon their theories as to the world and human life, as to what is good and what is evil. This is as true in the present day as at any former time. To understand an age or a nation, we must understand its philosophy, and to understand its philosophy we must ourselves be in some degree philosophers. There is here a reciprocal causation: the circumstances of men's lives do much to determine their philosophy, but, conversely, their philosophy does much to determine their circumstances.

There is also, however, a more personal answer. Science tells us what we can know, but what we can know is little, and if we forget how much we cannot know we may become insensitive to many things of very great importance. Theology, on the other band, induces a dogmatic belief that we have knowledge, where in fact we have ignorance, and by doing so generates a kind of impertinent insolence towards the universe. Uncertainty, in the presence of vivid hopes and fears, is painful, but must be endured if we wish to live without the support of comforting fairy tales. It is not good either to forget the questions that philosophy asks, or to persuade ourselves that we have found indubitable answers to them. To teach how to live without certainty, and yet without being paralyzed by hesitation, is perhaps the chief thing that philosophy, in our age, can still do for those who study it.

22. *The purpose of philosophy is to*
    (1) reduce uncertainty and chaos.
    (2) help us to cope with uncertainty and ambiguity.
    (3) help us to find explanations for uncertainty.
    (4) reduce the terror of cosmic loneliness.

23. *Based on this passage what can be concluded about the relation between philosophy and science?*
    (1) The two are antagonistic.
    (2) The two are complementary.
    (3) There is no relation between the two.
    (4) Philosophy derives from science.

24. *From reading the passage, what can be concluded about the profession of the author? He is most likely not to be a*
    (1) historian (2) philosopher
    (3) scientist (4) theologian

25. *According to the author, which of the following statements about the nature of the universe must be definitely true?*
    (1) The universe has unity. (2) The universe has a purpose.
    (3) The universe is evolving towards a goal. (4) None of the above.

DIRECTIONS : *Fill the gaps in the passage below with the most appropriate word from the options given for each gap. The right words are the ones used by the author. Be guided by the author's overall style and meaning when you choose the answers.*

Von Neumann and Morgenstern assume a decision framework in which all options are thoroughly considered, each option being independent of the others, with a numerical value derived for the utility of each possible outcome (these outcomes reflecting, in turn, all possible combinations of choices). The decision is then made to maximize the expected utility.

...(26)... such a model reflects major simplifications of the way decisions are made in the real world. Humans are not to process information as quickly and effectively as the model assumes; they tend not to think ...(27)... as easily as the model calls for; they often deal with a particular option without really assessing its ...(28)... and when they do assess alternatives, they may be externally nebulous about their criteria of evaluation.

26. (1) Regrettably (2) Firstly
    (3) Obviously (4) Apparently

27. (1) quantitatively (2) systematically
    (3) scientifically (4) analytically

28. (1) implications (2) disadvantages
    (3) utility (4) alternatives

In a large company, ...(29)... people is about as common as using a gun or a switch-blade to ...(30)... an argument. As a result, most managers have little or no experience of firing people, and they find it emotionally automatic, as result, they often delay the act interminably, much as an unhappy spouse will prolong a bad marriage. And when the firing is done, it's often done clumsily, with far worse side effects than are necessary.

Do the world-class software organizations have a different way of firing people? No. But they do the deed swiftly, humanely, and professionally.

The key point here is to view the fired employee as a "failed product" and to ask how the process ...(31)... such a phenomenon in the first place.

29. (1) dismissing (2) punishing (3) firing (4) admonishing

30. (1) resolve (2) thwart (3) defeat (4) close

31. (1) derived (2) engineered (3) produced (4) allowed

DIRECTIONS : *In each of the questions given below, four different ways of writing a sentence are indicated . Choose the best way of writing the sentence.*

32. A. The main problem with the notion of price discrimination is that it is not always a bad thing, but that it is the monopolist who has the power to decide who is charged what price.
    B. The main problem with the notion of price discrimination is not that it is always a bad thing, it is the monopolist who has the power to decide who is charged what price.
    C. The main problem with the notion of price discrimination is not that it is always a bad thing, but that it is the monopolist who has the power to decide who is charged what price.
    D. The main problem with the notion of price discrimination is not it is always a bad thing, but that it is the monopolist who has the power to decide who is charged what price.
    (1) A (2) B (3) C (4) D

33. A. A symbiotic relationship develops among the contractors, bureaucracy and the politicians, and by a large number of device, costs are artificially escalated and black money is generated by underhand deals.
    B. A symbiotic relationship develops among contractors, bureaucracy and politicians, and costs are artificially escalated with a large number of devices and black money is generated through underhand deals.
    C. A symbiotic relationship develops among contractors, bureaucracy and the politicians, and by a large number of devices costs are artificially escalated and black money is generated on underhand deals.
    D. A symbiotic relationship develops among the contractors, bureaucracy and politicians, and by large number of devices costs are artificially escalated and black money is generated by underhand deals.
    (1) A (2) B (3) C (4) D

34. A. The distinctive feature of tariffs and export subsidies is that they create difference of prices at which goods are traded on the world market and their price within a local market.
    B. The distinctive feature of tariffs and export subsidies is that they create a difference of prices at which goods are traded with the world market and their prices in the local market.
    C. The distinctive feature of tariffs and export subsidies is that they create a difference between prices at which goods are traded on the world market and their prices within a local market.
    D. The distinctive feature of tariffs and export subsidies that they create a difference across prices at which goods are traded with the world market and their prices within a local market.
    (1) A (2) B (3) C (4) D

35. A. Any action of government to reduce the systemic risk inherent in financial markets will also reduce the risks that private operators perceive and thereby encourage excessive hedging.
    B. Any action by government to reduce the systemic risk inherent in financial markets will also reduce the risks that private operators perceive and thereby encourage excessive gambling.
    C. Any action by government to reduce the systemic risk inherent due to financial markets will also reduce that risks that private operators perceive and thereby encourages excessive hedging.
    D. Any action of government to reduce the systemic risk inherent to financial markets will also reduce the risks that private operators perceive and thereby encourage excessive gambling.
    (1) A (2) B (3) C (4) D

DIRECTIONS : *The sentences given in each questions, when properly sequenced, form a coherent paragraph. Each sentence is labeled with a letter. Choose the most logical order of sentences from among the given choices to construct a coherent paragraph.*

36. A. Branded disposable diapers are available at many supermarkets and drug stores.
    B. If one supermarket sets a higher price for a diaper, customers may buy that brand elsewhere.
    C. By contrast, the demand for private-label products may be less price sensitive since it is available only at our corresponding supermarket chain
    D. So, the demand for branded diapers at any particular store may be quite price sensitive.
    E. For instance, only SavOn Drugs stores sell SavOn Drugs diapers.
    F. Then, stores should set a higher incremental margin percentage for private-label diapers.
    (1) ABCDEF (2) ABCEDF (3) ADBCEF (4) AEDBCF

37. A. Having a strategy is a matter of discipline.
    B. It involves the configuration of a tailored value chain that enables a company to offer unique value.
    C. It requires a strong focus on profitability and a willingness to make tough trade-offs in choosing what not to do.
    D. Strategy goes far beyond the pursuit of best practices.
    E. A company must stay the course even during times of upheaval, while constantly improving and extending its distinctive positioning.
    F. When a company's activities fit together as a self-reinforcing system, any competitor wishing to imitate a strategy must replicate the whole system.
    (1) ACEDBF (2) ACBDEF (3) DCBEFA (4) ABCEDF

38. A. As officials, their vision of a country shouldn't run too far beyond that of the local people with whom they have to deal.
    B. Ambassadors have to choose their words.
    C. To say what they feel they have to say, they appear to be denying or ignoring part of what they know.
    D. So, with ambassadors as with other expatriates in black Africa, there appears at a first meeting a kind of ambivalence.
    E. They do a specialized job and it is necessary for them to live ceremonial lives.
    (1) BCEDA (2) BEDAC (3) BEADC (4) BCDEA

39. A. "This face off will continue for several months given the strong convictions on either side," says a senior functionary of the high-powered task force on drought.
    B. During the past week-and-half, the Central Government has sought to deny some of the earlier apprehensions over the impact of drought.
    C. The recent revival of the rains had led to the emergence of a line of divide between the two
    D. The state governments, on the other hand allege that the Centre is downplaying the crisis only to evade its full responsibility of financial assistance that is required to alleviate the damage.
    E. Shrill alarm about the economic impact of an inadequate monsoon had been sounded by the Centre as well as most of the states, in late July and early August.
    (1) EBCDA (2) DBACE (3) BDCAE (4) ECBDA

40. A. This fact was established in the 1730s by French survey expeditions to Equator near the Equator and Lapland in the Arctic, which found that around the middle of the earth the arc was about a kilometer shorter.
    B. One of the unsettled scientific questions in the late 18th century was the exact nature of the shape of the earth.
    C. The length of one-degree arc would be less near the equatorial latitudes than at the poles.
    D. One way of doing that is to determine the length of the arc along a chosen longitude or meridian at one degree latitude separation
    E. While it was generally known that the earth was not a sphere but an 'oblate spheroid' more curved at the equator and flatter at the poles, the question of 'how much more' was yet to be established.
    (1) BECAD (2) BEDCA (3) BDACB (4) EBDCA

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DIRECTIONS : *For the word given at the top of each table, match the dictionary definitions on the left (A, B, C, D) with their corresponding usage on the right (E, F, G, H). Out of the four possibilities given in the boxes below the table, select the one that has all the definitions and their usages most closely matched.*

41. **MEASURE**

Dictionary definition		***Usage***	
A	Size of quality found by measuring	E	A measure was instituted to prevent outsider from entering the campus.
B	Vessel of standard capacity	F	Sheila was asked to measure each item that was delivered.
C	Suitable action	G	The measure of the cricket pitch was 22 yards.
D	Ascertain extent or quality	H	Ratnesh used a measure to take out one litre of oil.

1	
A	H
B	F
C	E
D	G

2	
A	G
B	E
C	F
D	H

3	
A	G
B	H
C	E
D	F

4	
A	F
B	H
C	E
D	G

42. **BOUND**

Dictionary definition		***Usage***	
A	Obliged, constrained	E	Dinesh felt bound to walk out when the discussion turned to kickbacks.
B	Limiting, value	F	Bulleted by contradictory forces he was bound to lose his mind.
C	Move in a specified direction	G	Vidya's story strains the bounds of
D	Destined or certain to be	H	Bound for a career in law, Jyoti was reluctant to study Milton.

1	
A	F
B	H
C	G
D	E

2	
A	E
B	G
C	H
D	F

3	
A	E
B	H
C	F
D	G

4	
A	F
B	G
C	E
D	H

43. **CATCH**

Dictionary definition		***Usage***	
A	Capture	E	All her friends agreed that Prasad was a good catch.
B	Grasp with senses or mind	F	The proposal sounds very good but where is the catch ?
C	Deception	G	Hussain tries to catch the spirit of India in this painting.
D	Thing or person worth trapping	H	Sorry, I couldn't catch you.

1	
A	H
B	F
C	E
D	G

2	
A	F
B	G
C	E
D	H

3	
A	G
B	F
C	E
D	H

4	
A	G
B	H
C	F
D	E

44. **DEAL**

Dictionary definition		*Usage*	
A	Manage, attend to	E	Dinesh insisted on dealing the cards.
B	Stock, sell	F	This contract deals with handmade cards.
C	Give out to a number of people	G	My brother deals in cards.
D	Be concerned with	H	I decided not to deal with handmade cards.

1	
A	F
B	E
C	G
D	H

2	
A	H
B	G
C	E
D	F

3	
A	F
B	H
C	G
D	E

4	
A	H
B	E
C	G
D	F

45. **TURN**

Dictionary definition		*Usage*	
A	Change of form	E	The much hyped concert turned out to be a damp squib.
B	Change orientation or direction	F	The apprehended criminal was turned in to the corps.
C	To send or let go	G	The new school building has been turned into a museum.
D	Outcome	H	Vikas turned his face from right to left.

1	
A	G
B	H
C	F
D	E

2	
A	H
B	G
C	E
D	F

3	
A	E
B	F
C	H
D	G

4	
A	E
B	F
C	G
D	H

DIRECTIONS : *For every word a sentence is given, you have to find out the option which represents the similar meaning to the given word.*

46. **OPPROBRIUM** - The police had to bear the opprobrium generated by their blatant partisan conduct.
(1) Harsh criticism (2) Acute distrust (3) Bitter enmity (4) Stark oppressiveness

47. **PORTENDS** - It appears to many that US " war on terrorism" portends trouble in Gulf.
(1) Introduces (2) Bodes (3) Spells (4) Evokes

48. **PREVARICATE** - When her video tape recording was shown to her and asked to explain her presence, she started prevaricating.
(1) Speaking evasively (2) Speaking violently (3) Lying furiously (4) Throwing a tantrum

49. **RESTIVE** - The waiting public started getting restive when the leader got late for the speech.
(1) Angry (2) Violent (3) Restless (4) Distressed

50. **OSTENSIBLE** - The watchmen's ostensible job is to guard this building.
(1) Blatant (2) Ostentatious (3) Insidious (4) Apparent

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SECTION II

Number of Questions : 50

DIRECTIONS : *For each of the following questions, four options are given. Choose the correct option.*

51. On dividing a number by 3, 4 and 7, the remainders are 2, 1 and 4 respectively. If the same number is divided by 84 then the remainder is
(1) 80 (2) 76 (3) 53 (4) None of these

52. There are three pieces of cake weighing 9/2 lbs, 27/4 lbs and 36/5 lbs. Pieces of the cake are equally divided and distributed in such a manner that every guest in the party gets one single piece of cake. Further the weight of the pieces of the cake is as heavy as possible. What is the largest number of guest to whom we can distribute the cake?
(1) 54 (2) 72 (3) 20 (4) None of these

53. For three integers x, y and z, x + y + z = 5, and xy + yz + xz = 3. What is the largest value which x can take?
(1) $3\sqrt{13}$ (2) $\sqrt{19}$ (3) 13/3 (4) $\sqrt{15}$

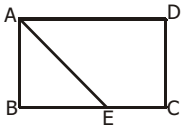
54. There are six persons sitting around a round table. Pankaj is sitting left of Dayananad who is facing Kundan. Ranjan is sitting right of Dayanand . Yash is sitting left of Pankaj and Abhishek is sitting right of Ranjan. If Pankaj and Ranjan swap their position and Yash and Abhishek also swap their position , then who will be to left of Abhishek?
(1) Kundan (2) Yash (3) Dayanand (4) Pankaj

55. A transport company charges for its vehicles in the following manner
If the driving is 5 hours or less, the company charges Rs. 60 per hour or Rs. 12 per km (which ever is larger)
If driving is more than 5 hours, the company charges Rs. 50 per hour or Rs. 7.5 per km (which ever is larger)
If Anand drove it for 30 km and paid a total of Rs. 300, then for how many hours does he drive?
(1) 4 (2) 5.5 (3) 7 (4) 6

56. Only a single rail track exists between station A and B on a railway line. One hour after the north bound superfast train N leaves station A for station B, a south passenger train S reaches station A from station B. The speed of the superfast train is twice that of a normal express train E, while the speed of a passenger train S is half that of E. On a particular day N leaves for station B from station A, 20 minutes behind the normal schedule. In order to maintain the schedule both N and S increased their speed. If the superfast train doubles its speed, what should be the ratio (approximately) of the speed of passenger train to that of the superfast train so that passenger train S reaches exactly at the scheduled time at the station A on that day.
(1) 1 : 3 (2) 1 : 4 (3) 1 : 5 (4) 1 : 6

57. If $x^2 + 5y^2 + z^2 = 2y(2x + z)$, then which of the following statements are necessarily true?
I. x = 2y II. x = 2z III. 2x = z
(1) Only I (2) Only II (3) Only III (4) Only I and II

58. In the following figure, the area of the isosceles right triangle ABE is 7 sq.cm. If EC = 3BE, then the area of rectangle ABCD is (in sq. cm.)



(1) 64 (2) 82 (3) 26 (4) 56

59. Number S is equal to the square of the sum of the digits of a 2 digit number D. If the difference between S and D is 27, then D is

(1) 32 (2) 54 (3) 64 (4) 52

60. A boy finds the average of 10 positive integers. Each integer contains two digits. By mistake, the boy interchanges the digits of one number say ba for ab. Due to this, the average becomes 1.8 less than the previous one. What was the difference of the two digits a and b?

(1) 4 (2) 2 (3) 6 (4) 8

61. A string of length 40 metres is divided into three parts of different lengths. The first part is three times the second part, and the last part is 23 metres smaller than the first part. Find the length of the largest part.

(1) 27 (2) 4 (3) 5 (4) 9

62. For all integers $n > 0$, $7^{6n} - 6^{6n}$ is divisible by

(1) 13 (2) 128 (3) 549 (4) None of these

63. $n_1, n_2, n_3 \ldots n_{10}$ are 10 numbers such that $n_1 > 0$ and the numbers are given in ascending order. How many triplets can be formed using these numbers such that in each triplet, the first number is less than the second number, and the second number is less than the third number?

(1) 109 (2) 27 (3) 36 (4) None of these

64. In order to cover less distance, a boy – rather than going along the longer and the shorter lengths of the rectangular path, goes by the diagonal. The boy finds that he saved a distance equal to half the longer side. The ratio of the length and breadth is

(1) 1/2 (2) 2/3 (3) 3/4 (4) 7/15

65. The number of roots of $\frac{A^2}{x} + \frac{B^2}{x-1} = 1$ is

(1) 1 (2) 2 (3) 3 (4) None of these

66. Mayank, Mirza, Little and Jagbir bought a motorbike for \$60. Mayank contributed half of the total amount contributed by others, Mirza contributed one-third of total amount contributed by others, and Little contributed one-fourth of the total amount contributed by others. What was the money paid by Jagbir?

(1) \$12 (2) \$13 (3) \$18 (4) \$20

67. If U, V, W and m are natural numbers such that $U^m + V^m = W^m$, then which of the following is true?

(1) m < Min (U, V, W) (2) m > Max (U, V, W) (3) m < Max (U, V, W) (4) None of these

68. If f(x) = log((1+x)/(1-x)), then f(x) + f(y) =

(1) f(x + y) (2) f(1 + xy) (3) (x + y) f(1 + xy) (4) $f\left(\frac{x+y}{1+xy}\right)$

69. On a straight road XY, 100 metres in length, 5 stones are kept beginning from the end X. The distance between two adjacent stones is 2 metres. A man is asked to collect the stones one at a time and put at the end Y. What is the distance covered by him?

(1) 460 metres (2) 540 metres (3) 860 metres (4) 920 metres

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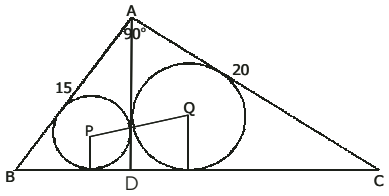
70. The internal bisector of an angle A in a triangle ABC meets the side BC at point D. AB = 4, AC = 3 and angle A = 60°. Then what is the length of the bisector AD?

(1) $\frac{12\sqrt{3}}{7}$ (2) $\frac{12\sqrt{13}}{7}$ (3) $\frac{4\sqrt{13}}{7}$ (4) $\frac{4\sqrt{3}}{7}$

71. In the figure given below, find the distance PQ.



(1) 7 m (2) 4.5 m (3) 10.5 m (4) 6 m

72. The remainder when 2^{256} is divided by 17 is

(1) 7 (2) 13 (3) 11 (4) 1

73. Let S = $2x + 5x^2 + 9x^3 + 14x^4 + 20x^5$ ... infinity. The coefficient of n^{th} term is = $\frac{n(n+3)}{2}$. The sum S is

(1) $\frac{x(2-x)}{(1-x)^3}$ (2) $\frac{(2-x)}{(1-x)^3}$ (3) $\frac{x(2-x)}{(1-x)^2}$ (4) None of these

74. There is a common chord of 2 circles with radius 15 and 20. The distance between the two centres is 25. The length of the chord is

(1) 48 (2) 24 (3) 36 (4) 28

75. A man received a cheque. The amount in Rs. has been transposed for paise and vice versa. After spending Rs. 5 and 42 paise, he discovered he now had exactly 6 times the value of the correct cheque amount. What amount he should have received?

(1) Rs. 5.30 (2) Rs. 6.44 (3) Rs. 60.44 (4) Rs. 16.44

76. For all real X, [X] represents the greatest integer. If L(X, Y) = [X] + [Y] + [X+Y] and G(X, Y) = [2X] + [2Y]. Then the ordered pair (X, Y) cannot be determined if

(1) L(X, Y) > G(X, Y) (2) L(X, Y) = G(X, Y) (3) L(X, Y) < G(X, Y) (4) None of these

77. A student finds the sum 1 + 2 + 3 + ... as his patience runs out. He found the sum as 575. When the teacher declared the result wrong, the student realized that he missed a number. What was the number the student missed?

(1) 16 (2) 18 (3) 14 (4) 20

78. A thief was stealing diamonds from a jewellery store. On his way out, he encountered three guards, each was given half of the existing diamonds and two over it by the thief. In the end, he was left with one diamond. How many did the thief steal?
(1) 40 (2) 36 (3) 42 (4) 38

79. Three friends went for a picnic. First brought five apples and the second brought three. The third friend however brought only Rs.8. What is the share of the first friend?
(1) 8 (2) 7 (3) 1 (4) None of these

80. Amar went for a holiday to his friend's place. They together either went for yoga in the morning or played tennis in the evening. However, they either went for the yoga in the morning or played tennis, but not both. 14 mornings and 24 evenings, they both stayed home and they both went out together for 22 days. How many days did Amar stay at his friend's place?
(1) 20 (2) 16 (3) 30 (4) 40

81. The area of the triangle with the vertices (a, a), (a+1, a) and (a, a+2) is
(1) a^3 (2) 1 (3) 0 (4) None of these

82. On a 20km tunnel connecting two cities A and B there are three gutters. The distance between gutter 1 and 2 is half the distance between gutter 2 and 3. The distance from city A to its nearest gutter, gutter 1 is equal to the distance of city B from gutter 3. On a particular day the hospital in city A receives information that an accident has happened at the third gutter. The victim can be saved only if an operation is started within 40 minutes. An ambulance started from city A at 30 km/hr and crossed the first gutter after 5 minutes. If the driver had doubled the speed after that, what is the maximum amount of time the doctor would get to attend the patient at the hospital? Assume 1 minute is elapsed for taking the patient into and out of the ambulance.
(1) 4 minutes (2) 2.5 minutes
(3) 1.5 minutes (4) Patient died before reaching the hospital

83. Neeraj has a rectangular field of size 20 x 40 sq.mt. He has to mow the field with a mowing machine of width 1 mt. If he mows the field from the extremes to the centre, then the number of rounds taken by him to mow half of the field will be
(1) 3.5 (2) 3.8 (3) 3 (4) 4

84. On the corners of a square field of side 14 metres, 4 horses are tethered in such a way the adjacent horses just reach to each other. There is a circular pond of area 20 sq.mt. in the centre of the square. What is the area left ungrazed?
(1) 154 sq. m (2) 22 sq. m (3) 120 sq. m (4) None of these

85. How many numbers between 0 and one million can be formed using 0, 7 and 8?
(1) 486 (2) 1086 (3) 728 (4) None of these

86. In how many ways, we can choose a black and a white square on a chess board such that the two are not in the same row or column?
(1) 32 (2) 96 (3) 24 (4) None of these

87. A rich merchant had collected many gold coins. He did not want anybody to know about them. One day, his wife asked. "How many gold coins do we have?" After pausing a moment, he replied, "Well! If I divide the coins into two unequal numbers, then 48 times the difference of the numbers is equal to the difference of their squares. The wife looked puzzled. Can you help the merchant's wife by finding out how many gold coins the merchant has?
(1) 48 (2) 96 (3) 32 (4) 36

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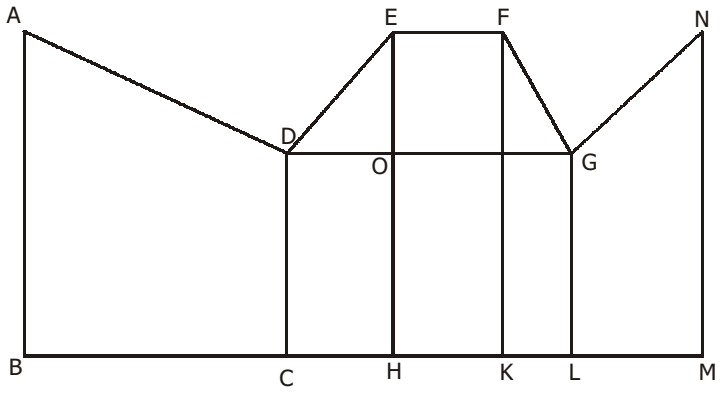
DIRECTIONS : *Answer these questions based on the following diagram.*

In the diagram below Angle ABC = 90° = Angle DCH = Angle DOE = Angle EHK = Angle FKL = Angle GLM = Angle LMN, AB = BC = 2CH = 2CD = EH = FK = 2HK = 4KL = 2LM = MN



88. The magnitude of Angle FGO =
(1) 30° (2) 45° (3) 60° (4) None of these

89. The ratio of the areas of the two quadrangles ABCD and DEFG is
(1) 1 : 2 (2) 2 : 1 (3) 12 : 7 (4) None of these

90. If $X_n = (-1)^n x_{n-1}$ & $X_0 = x$, then
(1) X_n is positive for n = even (2) X_n is negative for n = even
(3) X_n is positive for n = odd (4) None of these

DIRECTIONS : *There are 11 alphabets A, H, I, M, O, T, U, V, W, X, Y. They are called symmetrical alphabets. The remaining alphabets are known as asymmetrical alphabets.*

91. How many four-lettered passwords can be formed by using symmetrical letters only? (repetitions not allowed)
(1) 1086 (2) 255 (3) 7920 (4) None of these

92. How many three-lettered words can be formed such that at least one symmetrical letter is there?
(1) 12870 (2) 18330 (3) 16420 (4) None of these

93. It takes 6 technicians a total of 10 hours to build a new server from Direct Computer, with each working at the same rate. If six technicians start to build the server at 11 am and one technician per hour is added beginning at 5 pm, at what time will the server be complete?
(1) 6:40 pm (2) 7:00 pm (3) 7:20 pm (4) 8:00 pm

94. Davji shop sells samosas in boxes of different sizes. The samosas are priced at Rs.2 per samosa upto 200 samosas. For every additional 20 samosas, the price of the whole lot goes down by 10 paisa per samosa. What should be the maximum size of the box that would maximize the revenue?
(1) 240 (2) 300 (3) 400 (4) None of these

95. Three small pumps and one large pump are filling a tank. Each of the three small pumps works at 2/3rd the rate of the large pump. If all 4 pumps work at the same time, then they should fill the tank in what fraction of time that it would have taken the large pump alone?
(1) 4/7 (2) 1/3 (3) 2/3 (4) 3/4

96. If pqr = 1 then $\frac{1}{1+p+q^{-1}}+\frac{1}{1+q+r^{-1}}+\frac{1}{1+r+p^{-1}}$ is equivalent to
(1) p + q + r (2) $\frac{1}{p+q+r}$ (3) 1 (4) $p^{-1}+q^{-1}+r^{-1}$

97. There is a tunnel connecting city A & B. There is a CAT which is standing at $\frac{3}{8}$ the length of the tunnel from A. It listens a whistle of the train and starts running towards the entrance where, the train and the CAT meet. In another case, the CAT started running towards the exit and the train again met the CAT at the exit. What is the ratio of their speeds?
(1) 4:1 (2) 1:2 (3) 8:1 (4) None of these

98. In a book store, each of the word of the glowsign board ***"MODERN BOOK STORES"*** is visible after 5/2, 17/4 and 41/8 seconds respectively. Each of them is put off for 1 second. Find the time after which one person can see a completely visible glowsign board.
(1) 73.5 seconds (2) 79.4 seconds (3) 68.2 seconds (4) None of these

DIRECTIONS : *A boy is supposed to put a mango into a basket if ordered 1, an orange if ordered 2 and an apple if ordered 3. He took out 1 mango and 1 orange if ordered 4. He was given the following sequence of orders.*

12332142314223314113234

99. At the end of the sequence, what will be the number of oranges in the basket?
(1) 2 (2) 3 (3) 4 (4) 6

100. At the end of the sequence, what will be the total number of fruits in the basket?
(1) 10 (2) 11 (3) 13 (4) 17

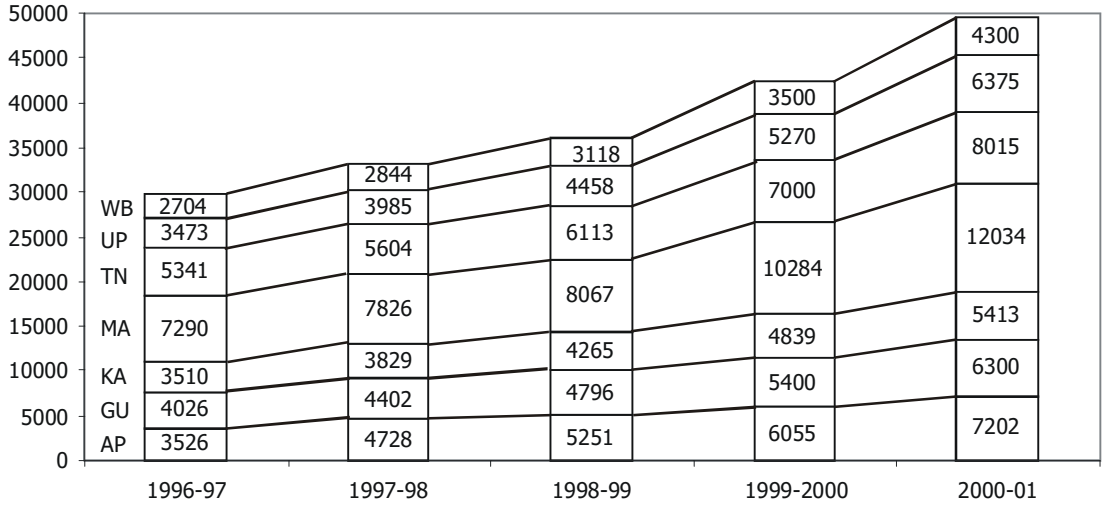
CAT 2002

SECTION III

Number of Questions : 50

DIRECTIONS : *Answer these questions based on the chart given below.*

The chart given below indicates the annual sales tax revenue collections (in crores of rupees) of seven states from 1996 to 2001.



101. If for each year, the states are ranked in terms of the descending order of sales tax collections, then how many states don't change the ranking more than once over the five years?
(1) 1 (2) 5 (3) 3 (4) 4

102. Which of the following states has changed its relative ranking most number of times when you rank the states in terms of the descending volume of sales tax collections each year?
(1) Andhra Pradesh (2) Uttar Pradesh (3) Karnataka (4) Tamilnadu

103. The percentage share of sales tax revenue of which state has increased from 1997 to 2001?
(1) Tamilnadu (2) Karnataka (3) Gujarat (4) Andhra Pradesh

104. Which pair of successive years shows the maximum growth rate of tax revenue in Maharashtra?
(1) 1997 to 1998 (2) 1998 to 1999 (3) 1999 to 2000 (4) 2000 to 2001

105. Identify the state whose tax revenue increased exactly by the same amount in two successive pair of years?
(1) Karnataka (2) West Bengal (3) Uttar Pradesh (4) Tamilnadu

106. Which state below has been maintaining a constant rank over the years in terms of its contribution to the total tax collections?
(1) Andhra Pradesh (2) Karnataka (3) Tamilnadu (4) Uttar Pradesh

DIRECTIONS : *Answer these questions based on the table given below.*

The table below gives information about four different crops, their different quality categories and the regions where they are cultivated. Based on the information given in the table answer the questions given below

Type of Crops	Quality	Region
Crop-1	High	R1, R2, R3, R4, R5
	Medium	R6, R7, R8
	Low	R9, R10, R11
Crop-2	High	R5, R8, R12
	Medium	R9, R13
	Low	R6
Crop-3	High	R2, R6, R7, R13
	Medium	R3, R9, R11
	Low	R1, R4
Crop-4	High	R3, R10, R11
	Medium	R1, R2, R4
	Low	R5, R9

107. How many regions produce medium qualities of Crop-1 or Crop-2 and also produce low quality of Crop-3 or Crop-4?
(1) Zero (2) One (3) Two (4) Three

108. Which of the following statements is true?
(1) All medium quality Crop-2 producing regions are also high quality Crop-3 producing regions.
(2) All high quality Crop-1 producing regions are also medium and low Crop-4 producing regions.
(3) There are exactly five Crop-3 producing regions, which also produce Crop-4 but not Crop-2.
(4) Some Crop-3, producing regions produce Crop-1, and high quality Crop-2.

109. How many low quality Crop-1 producing regions are either high quality Crop-4 producing regions or medium quality Crop-3 producing regions?
(1) One (2) Two (3) Three (4) Zero

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DIRECTIONS : *Answer these questions based on the table given below.*

S. No.	Country	Capitals	Latitude	Longitude
1	Argentina	Buenos Aires	34.30 S	58.20 E
2	Australia	Canberra	35.15 S	149.08 E
3	Austria	Vienna	48.12 N	16.22 E
4	Bulgaria	Sofia	42.45 N	23.20 E
5	Brazil	Brasilia	15.47 S	47.55 E
6	Canada	Ottawa	45.72 N	75.42 E
7	Cambodia	Phnom Penh	11.33 N	104.55 E
8	Eqaudor	Malabo	0.15 S	78.35 E
9	Ghana	Accra	1.35 N	0.6 E
10	Iran	Tehran	35.44 N	51.30 E
11	Ireland	Dublin	53.20 N	6.18 E
12	Libya	Tripoli	32.49 N	13.07 E
13	Malaysia	Kuala Lumpur	3.9 N	101.41 E
14	Peru	Lima	12.05 S	77.0 E
15	Poland	Warsaw	52.13 N	21.0 E
16	New Zealand	Wellington	41.17 S	174.47 E
17	Saudi Arabia	Riyadh	24.41 N	46.42 E
18	Spain	Madrid	10.25 N	3.45 W
19	Sri Lanka	Colombo	6.56 N	79.58 E
20	Zambia	Lusaka	15.28 S	28.16 E

110. What percentage of cities located within 10° E and 40° E (10° east and 40° east) lie in the Southern Hemisphere?
(1) 15% (2) 20% (3) 25% (4) 30%

111. The number of cities whose name begin with a consonant and are in the Northern Hemisphere in the table
(1) exceed the cities whose names begin with a consonant of Southern Hemisphere by 4.
(2) exceed the cities whose names begin with a consonant of Southern Hemisphere by 6.
(3) is less than the number of cities whose name begin with a consonant of east of the meridian by 1.
(4) is less than the number of cities whose name begin with a consonant of east of the meridian by 2.

112. The ratio of the number of countries whose name starts with vowel and located in the Southern Hemisphere, to the number of countries, the name of whose capital cities starts with a vowel in the table above is
(1) 3 : 2 (2) 3 : 3 (3) 3 : 1 (4) 4 : 3

DIRECTIONS : *The following table shows the earnings of employees in the month of June 2002. They generally worked 25 days in the month.*

	Total Earning				Total Days			
Employment No.	**Complex**	**Medium**	**Simple**	**Total**	**Complex**	**Medium**	**Simple**	**Total**
2001147	82.98		636.53	719.51	3	0	23	26
2001148	51.53		3	513.26	3.33	1.67	16	21
2001151	171.71		79.1	282.81	5.5	4	8.5	18
2001155	100.47		497.47	517.85	6	4.67	7.33	18
2001159	594.43	159.64		754.06	9.67	13.33	0	23
2001161	83.7			89.7	8	0	1	9
2001162	472.51	109.73		582.04	1.29	9.61	0	11
2001165	402.25	735.72	213.67	1351.14	5.27	12.07	0.67	18
2001167	576.57			576.57	21	0	0	21
2001169	288.48	6.1		292.57	8.38	4.25	0.38	13
2001170	812.1	117.46		629.56	10	8.5	3.5	22
2001171	1203.88			1303.88	28.8	0	0.5	26
2001174	1017.94			1017.94	26	0	0	23
2001177	46.56	726.19		822.75	2	19	0	21
2001180	116.4	1262.79		1379.19	5	19	0	33

113. The number of employees who have earned more than Rs. 50 per day in complex operation is
(1) 4 (2) 3 (3) 6 (4) 7

114. The number of employees who have earned more than Rs. 600 and having more than 80% attendance (there are 25 regular working days in June 2002; some might be coming on overtime too) is
(1) 4 (2) 5 (3) 6 (4) 7

115. The employee number of the person who has earned the maximum earnings per day in medium operations is
(1) 2001180 (2) 2001164 (3) 2001172 (4) 2001179

116. Among the employees who were, engaged in complex and medium operations, the number of employees whose average earning per day in complex operations is more than average earning per day in medium operations is
(1) 2 (2) 3 (3) 5 (4) 7

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DIRECTIONS : *Following table shows the REPSOL YPF's Operations of oil and gas producing activities.*

REPSOL YPF's Operations of oil and gas producing activities										
S.No.	**Item**	**Year**	**Total World**	**Spain**	**North Africa and Middle East**	**Argentina**	**Rest of Latin America**	**Far East**	**Northern Sea**	**Rest of the World**
1	Revenue	1998	916	70	366	281	34	82	78	5
		1999	3374	55	666	2006	115	301	140	31
		2000	5328	394	1290	5539	482	603	0	20
2	Expenses	1998	668	39	255	187	57	63	52	15
		1999	1999	48	325	1168	131	244	65	58
		2000	3709	43	530	2840	252	311	0	33
3	Income before Taxes and Charges (Revenue - Expenses) (2 - 1)	1998	248	31	111	94	-23	19	26	-10
		1999	1375	7	341	838	16	97	75	33
		2000	4619	351	760	2999	230	292	0	-13
4	Taxes and charges	1998	152	6	104	33	-3	9	6	-3
		1999	561	3	169	338	-6	39	24	-3
		2000	1845	126	404	1150	61	103	0	1
5	Net Income after Taxes and charges (3-4)	1998	96	25	7	61	-20	10	24	-7
		1999	814	4	172	5000	-10	58	54	36
		2000	2774	225	356	1849	169	189	0	-14

117. How many operations (Spain, North Africa and Middle East, …….) of the company account for less than 5% of the total revenue earned in the year 1999?
(1) 2 (2) 3 (3) 4 (4) None of the above

118. How many operations (Spain, North Africa and Middle East, …….) of the company account for less than 5% of the total revenue earned in the year 1999 to 2000?
(1) 1 (2) 2 (3) 3 (4) None of the above

119. How many operations registered a sustained yearly increase in income before taxes and charges from 1998 to 2000?
(1) 3 (2) 4 (3) 5 (4) None of the above

120. Ignoring the loss making operations of the company in 1998, for how many operations was the percentage increase in net income before taxes and charges higher than the average from 1998 to 1999?
(1) 0 (2) 1 (3) 2 (4) None of the above

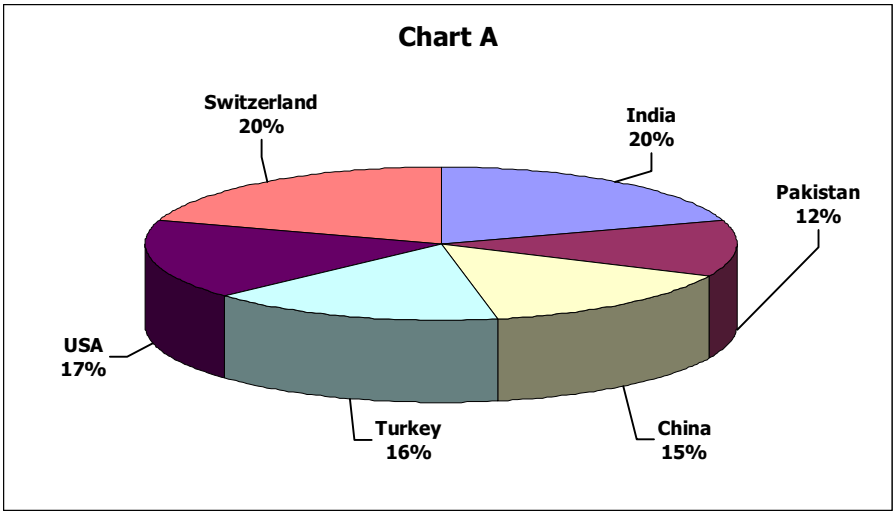
121. If profitability is defined as the ratio of net income after taxes and charges to expenses, then what is the profitability of Argentina in the year 1999?
(1) 7.2 (2) 4.3 (3) 2.7 (4) 3.4

122. In the year 2000, which among the following countries had the best profitability?
(1) North Africa and Middle East (2) Spain
(3) Rest of Latin America (4) Far East

123. If efficiency is defined as the ratio of revenue to expenses, then which operation was the least efficient in the year 2000?
(1) Spain (2) Argentina (3) Far East (4) None of the above

124. Of the following statements which is not true?
(1) The operations in Spain had the best efficiency in 2000.
(2) The Far East is 3rd in rule in terms of revenues in year 1998.
(3) In the year 2000 expenses and charges are proportional to expenditure.
(4) None of the above.

DIRECTIONS : *Study the following pie charts carefully and answer the questions that follow.*



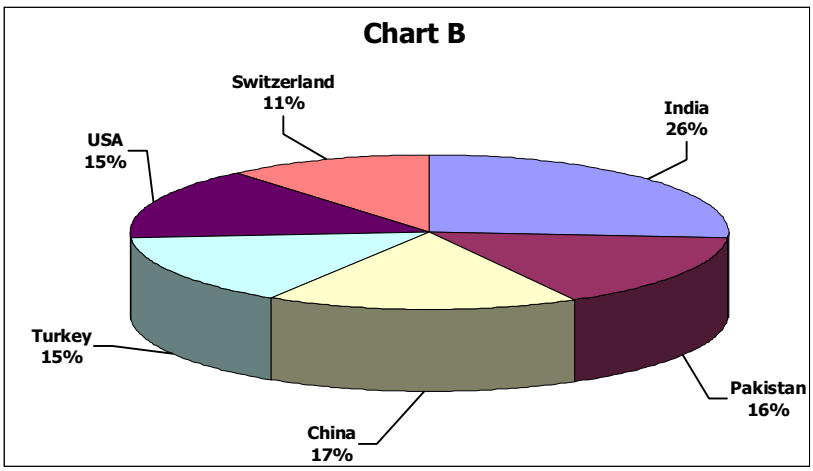


Chart A represents the distribution by value of top 6 suppliers of MFA Textiles in 1995. The total value of Chart A is 5760 million Euro.

Chart B represents the distribution by quantity of top 6 suppliers of MFA Textiles in 1995. The total value of Chart B is 1.05 million tons.

125. The country, which has the highest average price is
(1) USA (2) Switzerland (3) Turkey (4) India

126. The average price (Euro per kg) in Turkey is roughly
(1) 6.20 (2) 5.80 (3) 4.20 (4) 4.80

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DIRECTIONS : *Study the following tables carefully and answer the questions that follow.*

There are 6 refineries, 7 depots, 9 districts. The refineries are BB, BC, BD, BE, BF, BG. The depots are AA, AB, AC, AD, AE, AF and AG and the districts are AAA, AAB, AAC, AAD, AAE, AAF, AAG, AAH, AAI.

Table A shows the cost of transporting one unit from refinery to depot.

Table B shows the cost of transporting one unit from depot to districts.

Table A

	BB	BC	BD	BE	BF	BG
AA	928.2	537.2	567.8	589.9	800.1	323.4
AB	311.8	595.7	885.7	759.9	793.1	420.1
AC	451.1	0	320.1	720.1	1000.1	404.5
AD	371.1	50.1	350.1	650.4	980.1	525.3
AE	1137.3	314.5	0	1157.7	406.3	617.5
AF	617.1	516.8	756.5	1065.9	623.9	509.4
AG	644.3	299.2	537.2	1093.1	725.8	827.4

Table B

	AA	AB	AC	AD	AE	AF	AG
AAA	571.1	205	352	159	434.5	178	337
AAB	200	337.5	291	201	0	980.7	434
AAC	100	0	275	277	850	770.5	835
AAD	0	415.7	350	760	300	560	444.7
AAE	223.5	300	440	1033	880	325	526.5
AAF	577.5	725	443.5	560	1035.3	570	530
AAG	340	410.6	886.7	0	800.7	680.5	800
AAH	627	556.5	1023	1024	759	1025.7	300
AAI	439	738	980	1031.7	1024	900	757

127. The minimum cost of sending one unit from any refinery to any district is
(1) Rs.0 (2) Rs.350 (3) Rs.320 (4) Rs.50

128. How many possible ways are there for sending one unit from any refinery to any district?
(1) 63 (2) 42 (3) 54 (4) 378

129. The largest cost of sending one unit from any refinery to district is
(1) Rs.2172.60 (2) Rs.2193.0 (3) Rs.2091.0 (4) None of the above

130. The minimum cost of transportation of one unit from refinery BD to any district is
(1) Rs.125 (2) Rs.0 (3) Rs.375 (4) None of the above

131. The minimum cost of transportation from any refinery to AAG district is
(1) Rs.0 (2) Rs.137 (3) Rs.140 (4) None of the above

132. The minimum cost of transportation from refinery BE to district AAA is
(1) Rs.1257 (2) Rs.1161 (3) Rs.1231 (4) None of the above

DIRECTIONS :

Answer (1) if the statement can be solved by any one of the statements but not the other one.

Answer (2) If question can be solved by using either of the two statements.

Answer (3) If the question can be solved by using both the statements together and not by any one of them.

Answer (4) if the question cannot be solved with the help of given data and more data is required.

133. In a hockey match, the Indian team was behind by 2 goals with 5 minutes remaining. Did they win the match?
   (A) Deepak Thakur, the Indian striker scored 3 goals in the last 5 minutes of the match.
   (B) Korea scored a total of 3 goals in the match.

134. Four students were added to a dance class. Would the teacher be able to divide her students evenly into a dance team (or teams) of 8?
   (A) If 12 students were added, then the teacher could put everyone in teams of 8 without any leftovers.
   (B) The number of students in the class is currently not divisible by 8.

135. Is x = y?
   (A) $(x+y)\left(\frac{1}{x}+\frac{1}{y}\right)=4$
   (B) $(x-50)^2 = (y-50)^2$

136. A dress was initially listed at a price that would have fetched the store a profit of 20 % on the wholesale cost. What was the wholesale cost of the dress?
   (A) After reducing the listed price by 10% the dress was sold for a net profit of 10 dollars.
   (B) The dress was sold for 50 dollars.

137. Is 500 the average (arithmetic mean) score of the GMAT?
   (A) Half of the people who take GMAT score above 500 and half of the people score below 500.
   (B) The highest GMAT score is 800 and the lowest score is 200.

138. Is $|x-2| < 1$?
   (A) $|x| > 1$
   (B) $|x-1|<2$

139. Members in a club either speak French or Russian or both. Find the number of members in a club who speak only French.
   (A) There are 300 members in the club and the number of members who speak both French and Russian is 196.
   (B) The number of members who speak only Russian is 58.

140. A sum of Rs. 38,500 was divided among Jagdish, Punit and Girish. Who received the minimum amount?
   (A) Jagdish received 2/9 of what Punit and Girish together received.
   (B) Punit received 3/11 of what Jagdish and Girish together received.

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DIRECTIONS : *Read the data given below and answer the questions that follow.*

In a country, the following signals are applicable

3 Red Lights	Stop
2 Red Lights	Turn Left
1 Red Light	Turn Right
3 Green Lights	Go @ 100 kmph
2 Green Lights	Go @ 40 kmph
1 Green Light	Go @ 20 kmph

A man headed towards north and follows the given signals as

Starting point	1 Green Light
After half-an-hour, 1st Signal	2 Red and 2 Green Lights
After 15 minutes, 2nd Signal	1 Red Light
After half-an-hour, 3rd Signal	1 Red and 3 Green Lights
After 24 minutes, 4th Signal	2 Red and 2 Green Lights
After 15 minutes, 5th & Last Signal	3 Red Lights

141. What is the total distance covered by the man till the last signal?
(1) 90 km (2) 120 km (3) 110 km (4) 84 km

142. What is his net displacement with respect to the starting point?
(1) 40 km towards South West (2) 50 km towards North East
(3) 40 km towards North East (4) 60 km towards South West

143. If the first signal after the starting point, is 1 Red and 2 Green lights, then what is the total distance covered by the man till the last signal?
(1) 90 km (2) 50 km (3) 40 km (4) 80 km

144. Instead of heading North, if the man was heading South, then by the end of the journey, he was
(1) 50 km towards South, 50 km towards West from his starting point.
(2) 50 km towards North, 50 km towards West from his starting point.
(3) 60 km towards North, 40 km towards West from his starting point.
(4) 40 km towards South, 30 km towards West from his starting point.

DIRECTIONS : *Each question given below is followed by five statements numbered I, II, III, IV and V. The answer choice given below each question consists of one or more statements. You have to choose the choice which gives more relevant / useful information in answering the question correctly. Read all the statements together with the question and choose your answer.*

145. For what reason Purohit did not get the offer of employment?

Statement :

I. Purohit passed in the interview.
II. Purohit's friend passed the medical test who passed the interview along with Purohit.
III. Purohit's father did not want him to take the job.
IV. Purohit has another employment offer from another company.
V. Purohit did not clear the mandatory medical test.

(1) III and IV only (2) III, IV and V only (3) I, III and IV only (4) V only

146. What were the possible reasons for incurring losses by DESCO for the last two years?

Statement :

I. The company's shares are not registered in the stock exchange.
II. The company does not export its products.
III. The company has inefficient labour force.
IV. The price of its product has fallen in the last two years due to competitive market.
V. Entry of similar foreign goods at a cheaper rate.

(1) Only III, IV and V (2) Only II, III and IV (3) Only IV and V (4) Only I and II

147. On which day of the week did Sunil get his letter of promotion?

Statement :

I. Sunil purchased a new shirt on Friday
II. Sunil was given a party that Saturday.
III. Sunil was given the letter of promotion on the day before he purchased the shirt.
IV. Tuesday being his birthday, Sunil gave a party to all his friends.
V. Sunil's friend was promoted on Friday.

(1) I and II only (2) II, III and IV only (3) I and III only (4) II, III and V only

148. Who among A, B, C, D and E is the heaviest?

Statement :

I. B and C are heavier than A and D.
II. C is heavier than D.
III. C is heavier than A and lighter than B.
IV. E is heavier than B
V. D is lighter than E.

(1) I, III and IV only (2) II, III and V only (3) III and IV only (4) I, III and V only

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DIRECTIONS : *Read the information given below and answer the questions that follow.*

- **A causes B or C, but not both.**
- **D occurs if B or C occurs.**
- **J occurs only if E or F occurs.**
- **H occurs if E occurs.**
- **F occurs only if B occurs.**
- **E occurs only if C occurs.**
- **D causes G or H or both.**
- **G occurs if F occurs.**

149. If A occurs, which may occur?

I. F and G II. E and H III. D

(1) I only (2) II only

(3) III only (4) Either I and III or II and III, but not both.

150. Which may occur as a result of a cause not mentioned?

(1) E (2) Both E and F (3) Either B or C (4) G

SOLUTIONS

CAT-2002

DETAILED SOLUTIONS

1. In para 2, the author not only talks of reducing or shutting down the rampant growth of cancer cells but also talks of finding cures of diseases like Alzheimer's, ALS. etc. **Ans.(4)**
2. a and b are stated in paragraphs 1 and 3 respectively. Therefore the answer is (1). **Ans.(1)**
3. a, d and e are indicated in paras 6, 3 and 4 respectively. However, statement b has not been mentioned in the passage. Hence, option (1) includes the statement that is not representative of the arguments present in the passage and is the correct answer. **Ans.(1)**
4. Statements a and b are mentioned in paras 3 and 2 respectively. Hence, answer is (1). **Ans.(1)**
5. a and b are mentioned in para 3. However, c and d do not find any mention in the passage. Therefore, answer is (1). **Ans.(1)**
6. It has been mentioned in the 2nd para that in recent times governments of countries where there is over population may allow abortion. By that logic, since, India and China both are over populated they are more likely to allow abortion. Answer, therefore is (1). **Ans.(1)**
7. Rest three are clearly mentioned as the reasons. **Ans.(4)**
8. Pro-life women would not advocate abortion under any circumstances. **Ans.(4)**
9. It has been mentioned in para 6 that pro-choice members consider the notion of women's sphere as barrier to full equality. **Ans.(3)**
10. It has been mentioned in para 3 that two tragedies led to 'number of states to pass abortion permitting legislation'. **Ans.(3)**
11. None of the mentioned groups supported pro-choice movements. **Ans.(4)**
12. The answer is (3) and is explicitly mentioned in para 2. **Ans.(3)**
13. The answer is indicated in paragraph 3 with reference to the emergence of administration as the focus in Indian annals. **Ans.(2)**
14. The answer is explicitly mentioned in para 3. **Ans.(3)**
15. Options (1), (2) and (3) find explicit mentions in paragraphs (1), (2) and (3) respectively. However, exactly the opposite of what is mentioned is option (4) has been talked of in paragraph 4. **Ans.(4)**
16. The answer is (1). The clues are D -> H and A -> F. **Ans.(1)**
17. Statements a and c are indicated in the first and the last paragraphs of the passage. **Ans.(3)**
18. As defined in paragraph 3 the options (1), (2) and (3) all indicate varying degrees of rhetoric. However, the commands given by an army officer are independent of the rhetoric, as explained in paragraph 3. **Ans.(4)**
19. The answer is explicitly mentioned in paragraph 1. **Ans.(3)**
20. Option (1) gives the closest meaning of the word 'arcane' **Ans.(1)**
21. Para 5 indicates the scientists and scholars fancy themselves as announcer of results or staters of conclusions free of rhetoric. **Ans.(4)**
22. The correct answer is (2) and can be deduced from the last statement of the passage. **Ans.(2)**
23. Working by elimination method, (1), (3) and (4) cannot be correct in context to the passage. (2) happens to be the most appropriate answer. **Ans.(2)**
24. The author can be a 'historian', 'philosopher' and to some extent a 'theologian' but he is definitely not a 'scientist'. **Ans.(3)**
25. (4) is the correct answer as the question cannot be inferred from the passage. **Ans.(4)**
26. In the first blank, answer has to be 'apparently' because in the 2nd half of the sentence, author talks of major simplifications and therefore, option (1) regrettably would be incorrect. **Ans.(4)**
27. The process of thinking involves analysis and hence, the correct answer will be 'analytically'. **Ans.(4)**
28. 'Alternatives' is the most appropriate answer as, it can be strongly deduced from the 2nd half of the same sentence (and when they do assess....). **Ans.(4)**
29. 'Firing' is the correct option because the latter half of the passage talks about managers and firing of the workers. **Ans.(3)**
30. 'Resolve' is the best answer as you always resolve an argument. **Ans.(1)**
31. Option (4) 'allowed' is the only logical answer (as per the requirements of the context). **Ans.(4)**
32. The most clear & concise usage is that of statement C. **Ans.(3)**
33. The most clear & concise usage is given in statement B. **Ans.(2)**
34. The most precise & concise usage is given in statement C. **Ans.(3)**
35. Most correct usage grammatically is statement B. **Ans.(2)**
36. AB and CE gives the strongest clues. **Ans.(2)**
37. The key to this question is DC. Statement D is a very general statement and therefore can be an opening statement. The next statement, C continues well with the introductory statement and thus strengthens the meaning of the para. **Ans.(3)**
38. CD and EA are the strongest links. **Ans.(4)**
39. E introduces the concept and therefore has to be the opening statement. EC is the link as E talks of inadequate monsoons had been sent by state and central governments and C continues the theme stating that revival of rains had led to the emergence of a line of divide between the two. **Ans.(4)**
40. B is the opening statement. ED is a strong links as the statement E asks a question (how much more ...) and D provides a solution that, one way of determining that is ... . **Ans.(2)**
41. The key to this question is

    D -> F

    B -> H

    Since statement H talks of 1 litre of oil and B talks of vessel of standard capacity. Therefore, the meaning given in H fits with the usage given in B. Similarly statement F talks about ascertaining quality of each item that was delivered and hence it fits in the usage given in D. **Ans.(3)**
42. The key to this question is

    D -> H

    B -> G **Ans.(4)**
43. The key to this question is

    B -> H

    C -> F

    Statement H says - I could not grasp what you said, so the dictionary meaning given in B matches with H. In statement F, a deception of proposal is being talked about which goes well with C. **Ans.(4)**
44. The key to this question is

    C -> E

    D -> F **Ans.(2)**
45. The key to this question is A -> G **Ans.(1)**
46. Exact meaning of the word "opprobrium" is harsh criticism and therefore option (1) is the correct answer. **Ans.(1)**
47. Option (2) gives the closest meaning of "portends" which is bodes. **Ans.(2)**
48. The word "prevaricate" means speaking round about and hence option (1) speaking evasively is the only possible answer. **Ans.(1)**
49. Option (3), restless gives the correct meaning of the given word 'restive' and is the best solution. **Ans.(3)**
50. The contextual meaning of the word 'ostensible' best gels with option (4) apparent. **Ans.(4)**
51. Let us begin with the last divisor. If we get a quotient x when we divided the number by 7, then we can write the original dividend as 7x + 4. Proceeding similarly, the original number can be written as [3{4(7x + 4) + 1} + 2]. Expanding this number we get 84x + 53. Thus when this number is divided by 84, the remainder is 53. **Ans.(3)**

SOLUTIONS

52. This is a simple question based on GCD. On solving, we get the answer as 41. **Ans.(4)**

53. Given $x + y + z = 5$ .....(1)

$xy + yz + zx = 3$ .....(2)

from equation (1) and (2)

$(x + y + z)^2 = x^2 + y^2 + z^2 + 2(xy + yz + zx)$

or $x^2 + y^2 + z^2 = 19$

x^2 is maximum when $y^2 + z^2$ is minimum hence we can say that

$y^2 + z^2 \geq 0$. If $y^2 + z^2 = 0$ then $y = z = 0$, which will not satisfy condition (2)

Hence, $y \neq 0$ and $z \neq 0$

The minimum possible value of $y^2 + z^2$ is obtained when $y = z$. Which satisfies all the equations (1) and (2)

$\therefore y = z$ .....(3)

Substituting (3) in (1)

$x = 5 - 2y$ .....(4)

substituting (3) in (2)

$xy + y^2 + xy = 3$

$\Rightarrow y^2 + 2xy = 3$ .....(5)

substituting (4) in (5)

$\Rightarrow y^2 + 2(5 - 2)y = 3$

$\Rightarrow y^2 + 10y - 4y^2 = 3$

$\Rightarrow -3y^2 + 10y - 3 = 0$

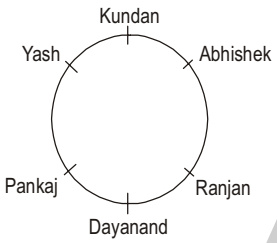
$y = 3, 1/3$

If Y = 3, corresponding values of the variables are $x = -1$ and $z = 3$

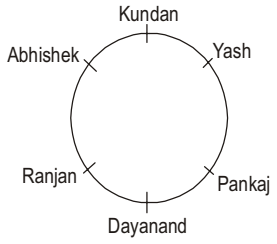
if $y = 1/3$, corresponding values of the variables are $x = 13/3$ and $z = 1/3$.

Hence, maximum values of $x = 13/3$. **Ans.(3)**

54. From the given information, the arrangement is as follows

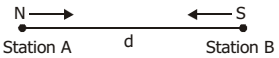


According to the conditions given in the question, the new arrangement is as follows:



Clearly, Kundan is sitting at the left of Abhishek. **Ans.(1)**

55. **Ans.(4)**

56. 

Let the speed of E be 2x kmph

$\Rightarrow$ speed of N = 4x kmph and

speed of S = x kmph

According to the problem,

Time taken by N to cover AB + Time taken by S to cover BA = 1 hour

$$\Rightarrow \frac{d}{4x} + \frac{d}{x} = 1 \Rightarrow 5d = 4x \text{ or } d = \frac{4x}{5}$$

Again, to maintain the schedule (gap of 20 min), N doubles its speed of S becomes S_1

$$\text{now } \frac{d}{8x} + \frac{d}{S_1} = \frac{20}{60} \Rightarrow \frac{4x/5}{8x} + \frac{4x/5}{S_1} = \frac{1}{3}$$

$$\Rightarrow \frac{1}{10} + \frac{4x}{5S_1} = \frac{1}{3} \Rightarrow \frac{4x}{5S_1} = \frac{17}{30} \Rightarrow \frac{4x}{S_1} = \frac{17}{6}$$

$$\Rightarrow \frac{8x}{S_1} = \frac{17}{3} \text{ or } \frac{S_1}{8x} = \frac{3}{17} = \frac{1}{6}(\text{approx.})$$

$$\therefore \frac{\text{Speed of passenger train}}{\text{Speed of superfast train}} = \frac{1}{6}(\text{approx.})$$. **Ans.(4)**

57. $x^2 + 5y^2 + z^2 = 4xy + 2yz$

$\Rightarrow x^2 + 4y^2 + y^2 + z^2 - 4xy - 2yz = 0$

$\Rightarrow (x^2 + 4y^2 - 4xy) + (y^2 - 2yz + z^2) = 0$

$\Rightarrow (x - 2y)^2 + (y - z)^2 = 0$

Since the above expression is equal to zero

$\therefore (x - 2y)^2 = 0$ is $(y - z)^2 = 0$ or $x = 2y$ & $y = z$. **Ans.(4)**

58. Given, the area of the triangle ABE = 7 cm^2

$\therefore$ BE × AB = 14

the area of the rectangle ABCD = AB × BC

$\Rightarrow$ (BE + EC) × AB = 4BE × AB = 56. **Ans.(4)**

59. Let S be the square the of the sum of the digits. Directly from the options $(5 + 4)^2 - 54 = 27$, D = 54. **Ans.(2)**

60. Let the original number be ab (10a + b), after interchanging the digits, the new number becomes ba (10b + a).

Now according the question,

$10b + a = 10a + b + 18$, $9b - 9a = 18 \Rightarrow b - a = 2$. **Ans.(2)**

61. Let the 3 parts of the string be x, y, z, now $x + y + z = 40$, $x = 3y$ and $x - z = 23$ solving, we get $z = 4$. **Ans.(1)**

62. We can start factorizing the given expression :

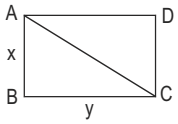
$(7^{3n} - 6^{3n})(7^{3n} + 6^{3n})$. This can be further factorized as

$(7^n - 6^n)(7^{2n} + 6^{2n} + 7^n 6^n)(7^{3n} + 6^{3n})$

Putting the value of n as 1, we can see that the second bracket gives us a value 127 and third bracket gives us a value 559. Also, 559 is divisible by 13. **Ans.(1)**

63. Let us assume that the 10 numbers are 1 – 10. If we choose the first number as 1 and the next number as 2, then the last number can be chosen in 8 different ways. Similarly by choosing the first two numbers as 1 & 3, the last number can be chosen in 7 different ways, and so on. Thus by choosing 1, we see the number of pairs formed are 8 + 7 + 6 .... + 1 = 36.

Similarly for the next triplet let us begin with 2, Then the number of triplets formed will be 7 + 6 .... + 1 = 28. And so on we can add all to get the answer as : 109. **Ans.(1)**

64. 

Let the breadth of the rectangular field be "x" and its length be "y"

$\Rightarrow$ The length that the boy forwarded $= \sqrt{x^2 + y^2}$

$\Rightarrow$ If he had moved along the edge, he would have moved through a distance of x + y.

$$\therefore x + \frac{y}{2} = \sqrt{x^2 + y^2} \Rightarrow x^2 + \frac{y^2}{4} + xy = x^2 + y^2 \Rightarrow \frac{x}{y} = \frac{3}{4}$$. **Ans.(3)**

65. By simplification, we get a quadratic equation. Hence the number of roots will be 2. **Ans.(2)**

66. Let the money contributed by Mayank, Mirza, Little and Jagbir be A, B, C and D respectively.

$$A=\frac{1}{2}(B+C+D)\Rightarrow 2A=B+C+D\Rightarrow 2A=60-A\Rightarrow A=20$$

$$B=\frac{1}{3}(A+C+D)\Rightarrow 3B=A+C+D\Rightarrow 3B=60-B\Rightarrow B=15$$

$$C=\frac{1}{4}(A+B+D)\Rightarrow 4C=A+B+D\Rightarrow 4C=60-C\Rightarrow C=12$$

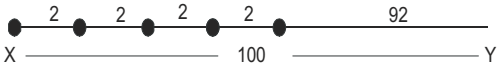
Money contributed by Jagbir 60 – 20 – 15 – 12 = \$13. **Ans.(2)**

67. Check the options by putting U = 3, V = 4, W = 5 and m = 2. **Ans.(1)**

68. $f(x)+f(y)=\log\left(\frac{1+x}{1-x}\right)+\log\left(\frac{1+y}{1-y}\right)$

$$=\log\frac{(1+x)(1+y)}{(1-x)(1-y)}=\log\frac{1+xy+x+y}{1+xy-(x+y)}$$

$$=\log\frac{1+\frac{x+y}{1+xy}}{1-\frac{x+y}{1+xy}}=f\left(\frac{x+y}{1+xy}\right).$$ **Ans.(4)**

69. 

The first stone is kept at 'X' and the subsequent stones are equidistant from each other, i.e., 2 mtrs. The total distance covered by the boy to keep all the stones at Y is :

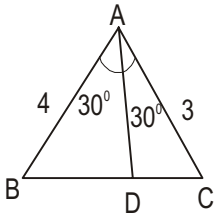
= 100 + 2(98 + 96 + 94 + 92) = 100 + 2(380) = 860 meters. **Ans.(3)**

70. $\cos A=\frac{\left(b^2+c^2-a^2\right)}{2bc}$

$$\cos 60°=\frac{\left(16+9-a^2\right)}{24}$$

$$\frac{1}{2}=\frac{\left(25-a^2\right)}{24}$$

$a^2 = 13$, $a = \sqrt{13} = BC$.



From the property of angle bisector

$$\frac{AB}{AC}=\frac{BD}{DC}$$

$$\frac{4}{3}=\frac{BD}{DC}$$

$$BD=\frac{4\sqrt{13}}{7},DC=\frac{3\sqrt{13}}{7}$$

From the property of angle bisector $(AB \times AC) - (BD \times DC) = AD^2$

$$4\times 3-\frac{4\sqrt{13}}{7}\times\frac{3\sqrt{13}}{7}=AD^2$$

$$12\left(1-\frac{13}{49}\right)=AD^2$$

$$AD^2=\frac{(36\times 12)}{49}$$

$$AD=\frac{12\sqrt{3}}{7}$$

Ans.(1)

71. $BC^2 = AB^2 + AC^2 = 15^2 + 20^2 = 625$

BC = 25. Let BD = X

DC = 25 – X.

Consider, ΔABD

$BD^2 + AD^2 = AB^2 \Rightarrow X^2 + AD^2 = 225$ .... (1)

Consider, ΔADC

$AD^2 + (25 - X)^2 = 400$

$$\Rightarrow AD^2+625-50X+X^2=400$$

$\Rightarrow (AD^2 + X^2) + 625 - 50X = 400$ .... (2)

Substituting (1) in (2)

225 + 625 – 50X = 400

$$\therefore X=9$$

BD = 9; DC = 16.

Calculating the radius using the formula.

A = rS.

The radius of the circle inscribed in ABD = 3m

The radius of the circle inscribed in ADC = 4m

$$\therefore PQ=r\,ABC+r\,ADC=7.$$ **Ans.(1)**

72. $2^4=-1(\text{mod}17)$

$$\therefore\left(2^4\right)^{64}=\left[1-(\text{mod}17)^{64}\right]=\left(-1\right)^{64}=1.$$ **Ans.(4)**

73. $S = 2x + 5x^2 + 9x^3 + 14x^4 + 20x^5$ ... infinity.

$xS = 2x^2 + 5x^3 + 9x^4$ ....(1)

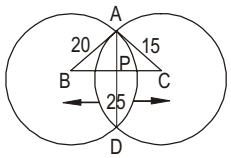
$\Rightarrow (1 - x)S = 2x + 3x^2 + 4x^3$ ....(2)

$\Rightarrow x(1 - x)S = 2x^2 + 3x^3 + 4x^4$ ....(3)

$\Rightarrow (1 - x)^2S = 2x + x^2 + x^3$ from (2) and (3) {(2)-(3)}

$$\Rightarrow(1-x)^2S=x+\frac{x}{1-x}(x<1)$$

$$\Rightarrow S=\frac{x(2-x)}{(1-x)^3}.$$ **Ans.(1)**

74. 

$AB^2 + AC^2 = BC^2$ in triangle ABP.

$$\therefore\angle BAC=90^0\Rightarrow \text{let } BP=x$$

$$\therefore PC=25-x$$

$$20^2=x^2+AP^2.....(1)$$

In triangle APC

$225 = AP^2 + (25 - x)^2$

$225 = AP^2 + 625 + x^2 - 50x$. ... (2)

Substitute (2) in (1).

225 = 625 + 400 – 50 x

50x = 800 therefore x = 16, hence $AP^2 = 20^2 - 16^2 = 12^2$

Therefore AP = 12

Hence length of the chord = 2 × AP = 24. **Ans.(2)**

75. Let's assume that he received a cheque of x rupees and y paise i.e. (100x + y). The amount received by him = 100y + x.

After spending Rs. 5 and 42 paise, the remaining amount is (100y + x – 542), which is 6 times the original amount.

(100y + x – 542) = 6 x (100 x + y)

Working backward from the options x = 6 and y = 44. **Ans.(2)**

SOLUTIONS

76. Check the options for values. Options (1) and (2) follow in all the cases. For option (3), no set of values satisfies the inequality. **Ans.(3)**

77. Sum to n numbers.

Sum given by student = 575

$$E10 = \frac{10 \times 11}{2} = 55$$

$$E20 = \frac{20 \times 21}{2} = 210$$

$$E30 = \frac{30 \times 31}{2} = 405$$

$$E40 = \frac{40 \times 41}{2} = 820$$

This means that the student stopped counting somewhere between 30 and 35.

Let us consider $E35 = \frac{36 \times 35}{2} = 630.$

Hence the student stopped some where between 30 and 35.

E31 = 491; E32 = 528, E33 = 501 and E34 = 595

Hence, the student missed on the number 20. **Ans.(4)**

78. Working backwards from options. **Ans.(2)**

79. The number of apples = 8, so the amount eaten by each of the three is $\frac{8}{3}$ apples therefore first friend should be paid for $\left(3-\frac{8}{3}\right)$ and second friend should be paid for $\left(5-\frac{8}{3}\right)$ apples. They should distribute the sum of Rs 8 in ratio $\frac{1}{3}$: , i.e., 1 : 7. **Ans.(2)**

80. **Ans.(3)**

81. There are two approaches to this question.

$$\text{area of } \Delta = \frac{1}{2}\begin{vmatrix} x_1 & y_1 & 1 \\ x_2 & y_2 & 1 \\ x_3 & y_3 & 1 \end{vmatrix}$$

here $x_1 = y_1 = a$; $x_2 = a + 1$; $y_2 = a$, $x_3 = a$ and $y_3 = a + 2$

$$\therefore \text{area} = \frac{1}{2}\begin{vmatrix} a & a & 1 \\ a+1 & a & 1 \\ a & a+2 & 1 \end{vmatrix}$$

$$\text{area} = \frac{1}{2}\left\{a\left[a(1)-(a+2)(1)\right]-a\left[a(a+1)^1-a(1)\right]+1\left[(a+1)(a+2)-a^2\right]\right\}$$

$$= \frac{1}{2}\left\{-2a-a+3a+2\right\} = 1.$$

II We can use Hero's formula after calculating individual sides of the triangle

$$l_1 = \sqrt{(a+1-a)^2+(a-a)^2} = 1$$

$$l_2 = \sqrt{(a+1-a)^2+(a-\overline{a+2})^2} = \sqrt{5}$$

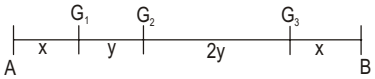
$$l_3 = \sqrt{(a+a)^2+(a-\overline{a+2})^2} = 2$$

$$\therefore s = \frac{l_1+l_2+l_3}{2} = \frac{3+\sqrt{5}}{2}$$

$$\therefore \text{area} = \sqrt{s(s-l_1)(s-l_2)(s-l_3)}$$

which on calculation yields answer as 1. **Ans.(2)**

82. Given:



AB = 20 km

$AG_1 = BG_3$

$2G_1G_2 = G_2G_3$

Also: $\frac{x}{30} = \frac{1}{12}\text{hr} \Rightarrow x = 2.5\text{km}$

y + 2y = 20 –2x

$\Rightarrow$ y = 5 km.

Now time to cover A to G_3 = $\frac{1}{12}+\frac{15}{60} = 20\,\text{min.}$

while coming back his speed is 60 kmph

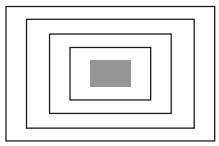
so time taken to cover the distance from G_3 to A (i.e. 17.5 km)

= 17.5 mins.

$\therefore$ required time = 20 + 17.5 + 1 = 38.5 min.

Hence, the doctor will have 1.5 min to attend the patient. **Ans.(3)**

83.



The movement of the mower is as given In the figure.

Total area of the plot is 20 x 40 = 800

After first mowing area left to be

mowed =(20–2) × (40–2) = 684

After second mowing area left to be

mowed =(20 – 4) × (40–4) = 576

After third mowing area left to be

mowed =(20–6) × (40 – 6) = 476

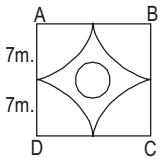
After fourth mowing area left to be

mowed =(20–8) × (40–8) = 384

The area now left is less than half the area of the plot. Therefore the answer should lie between 3 and 4. Since (476–384) = 92 and

$$3+\left[\frac{(476-400)}{92}\right] = 3+\left(\frac{76}{92}\right) = 3.8\ .$$ **Ans.(2)**

84.



$$\text{area grazed} = 4 \times \frac{90^o}{360^o} \times \pi \times 7^2$$

= 22 × 7 = 154 sq.mts.

Area capable of being grazed = 196 – 20 = 176 sq.mts.

Area left ungrazed = (176 – 154) sq.mts.

= 22 sq.mts. **Ans.(2)**

85. Number formed with 0, 7, 8:

The largest number less than million is 9,99,999.

total no. of such numbers = 3^6 = 729.

However, this includes the number formed by six zeros.

Ans = 729 – 1 = 728. **Ans.(3)**

86. Since for every black square (or white square), there are 32 – 8 = 24 white squares (or black squares) on the board, which satisfy the given condition. Hence the required number of ways = 32 × 24 = 768 (as there are 32 black / white squares on the chess board). **Ans.(4)**

87. Let the two unequal numbers be x and y. By the given condition
$48(x - y) = x^2 - y^2$ therefore $(x + y) = 48$. **Ans.(1)**

88. Given condition AB = BC = 2CH = 2CD = EH = EK = 2HK = 4KL = 2LM = MN.
EO = FP.
As per the condition.
2CD = EH.
EO = FP = CD.

$4KL = 2HK \Rightarrow KL = \frac{HK}{2}$ {HK = CH = CD}

or $\therefore KL = PG = \frac{CD}{2}$

FP = CD ; PG $\frac{CD}{2}$; $\angle FPG = 90^o$

Since the angle are proportionate to the sides opposite to the angles.
Angle FGO = Angle FGP = $\tan^{-1} 2$. **Ans.(4)**

89. Area of trapezium ABCD.

$\Rightarrow \frac{1}{2}BC$ (CD + AB), now BC = 2CD, AB = BC = 2CD

$\Rightarrow$ Area of trapezium $= \frac{1}{2} \times 2CD(CD + 2CD)$

$\Rightarrow 3CD^2$ .... (1)
Area of trapezium DEFG.

$\Rightarrow \frac{1}{2}EO(EF + DG)$

EO = CD
EF = CD
DG = CH + HK + KL

$= CD + CD + \frac{CD}{2} \Rightarrow \frac{5}{2}CD$
$\Rightarrow \frac{1}{2} \times CD\left(CD + \frac{5}{2}CD\right)$
$\Rightarrow \frac{1}{2}CD\left(\frac{7CD}{2}\right)$
$\Rightarrow \frac{7CD^2}{4}$.....(2)
$(1) \div (2) \Rightarrow 12:7$

Ans.(3)

90. It is given to us that $X_0 = x$. Then
$X_1 = -x$
$X_2 = -x$
$X_3 = +x$
$X_4 = +x$
Thus no concrete statement can be made. **Ans.(4)**

91. Here the total number of such passwords will be $^{11}P_4$ since p is password, the order of the characters is important therefore total different password possible = $^{11}P_4$ = 7920. **Ans.(3)**

92. Required no. of words = total no. of words – no. of words with no asymmetrical letter.
= $^{26}P_3 - {}^{15}P_3$ = 26 × 25 × 24 – 15 × 14 × 13 = 15600 – 2730 = 12870. **Ans.(1)**

93. 6 technicians take 10 hrs to do the job.
1 technician will take 60 hrs to do the same job.

So in 6 hrs (11am – 5pm) 6 technicians will do $\frac{3}{5}$th of the work.

In the hr. after 5pm.

7 technicians will perform $\frac{7}{60}$ of the job

next hr 8 technicians will perform of the $\frac{8}{60}$ of the job.

next the 9 technicians will perform of the $\frac{9}{60}$ of the job.

$\Rightarrow \frac{24}{60} = \frac{2}{5}$th of the job.

In the next 3hrs the work will be completed.
11am – 5 pm + 3hrs = 8:00 pm. **Ans.(4)**

94. Check the option :
1. 240 = 240 × 1.80 = Rs. 432
2. 300 = 300 × 1.50 = Rs. 450
3. 400 = 400 × 1 = Rs. 400. **Ans.(2)**

95. Let the efficiency of the larger pump be efficiency of 3 small pumps = 2 each.
When all of them work together, the total efficiency is
2 + 2 + 2 + 3 = 9.
When only large pump works the efficiency is 3.

Also given, efficiency $\propto \frac{1}{\text{Time}}$

All the pumps take time $t_1 = \frac{k}{9}$, large pump alone takes time $t_2 = \frac{k}{9}$. Clearly

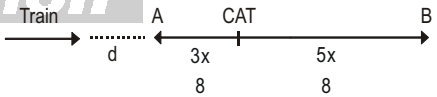
$t_1 = \frac{1}{3}t_2$ **Ans.(2)**

96. From the given condition pqr = 1

Substitute the values of p, q, r at random such as $p = \frac{2}{3}, q = \frac{3}{2}, r = 1$

Ans.(3)

97.



Let the speed of the train be S1 and the speed of the CAT be S2.
Case I – The CAT coming towards the train.

$\frac{d}{S_1} = \frac{3x}{8S_2} \Rightarrow \frac{3x}{8} \times \frac{S_1}{S_2} = d$ .... (1)

Case II – The CAT is moving away from the train.

$\frac{d + x}{S_1} = \frac{5x}{8S_2} \Rightarrow d = \frac{5x}{8} \times \frac{S_1}{S_2} - x$ .... (2)

From (1) and (2),

$\frac{3x}{8} \times \frac{S_1}{S_2} = \frac{5x}{8} \times \frac{S_1}{S_2} - x \Rightarrow \frac{3}{8}x \times \frac{S_1}{S_2} = \frac{5x}{8} \times \frac{S_1}{S_2} - x$

$\Rightarrow 3S_1 = 5S_1 - 8S_2$
$\Rightarrow S_1 : S_2 = 4:1$

Ans.(1)

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98. Since the three words appear for $\frac{5}{2};\frac{17}{4}$ and $\frac{41}{8}$ seconds and stay off for the next 1 second, the effective cycle will be the LCM of all the three durations,

i.e $\left(\frac{5}{2}+1\right),\left(\frac{17}{4}+1\right)$ and $\left(\frac{41}{8}+1\right)$ seconds $=\frac{147}{2}=73.5$ second **Ans.(1)**

99. 1 2 3 3 2 1 4 2 3 1 4 2 2 3 3 1 4 1 1 3 2 3 4

Number of oranges put in = Number of times for orders 2 = 6

Number of oranges taken out = Number of times for 4 = 4

Required answer = 6 – 4 = 2. **Ans.(1)**

100. Number of fruits put in = Number of times for orders 1, 2 or 3 = 19

Number of fruits taken out = 2 × 4 = 8

Required answer = 19 – 8 = 11. **Ans.(2)**

101. The table given below indicates the ranks according the annual sales-tax revenue collections of seven states from 1997 to 2001.

Year	AP	GU	KA	MA	TN	UP	WB
1996-97	4	3	5	1	2	6	7
1997-98	3	4	6	1	2	5	7
1998-99	3	4	6	1	2	5	7
1999-00	3	4	6	1	2	5	7
2000-01	3	5	6	1	2	4	7

Ans.(2)

102. Uttar Pradesh has changed it twice. **Ans.(2)**

103. Directly from the graph given. **Ans.(4)**

104. **Ans.(3)**

105. **Ans.(1)**

106. Directly from the table Tamilnadu. **Ans.(3)**

107. **Ans.(2)**

108. **Ans.(3)**

109. **Ans.(3)**

110. Total Number of cities lying within 10°E and 40°E are 7, out of which only one lies in southern hemisphere. So the required percentage is:

$\frac{1}{7}\times 100 = 15\%$ approx. **Ans.(1)**

111. **Ans.(1)**

112. Argentina, Australia and Equador are the three countries whose name starts with a vowel and are in the southern hemisphere, and there are two countries Canada and Ghana, whose name of capitals starts with a vowel. Hence the required ratio is 3 : 2. **Ans.(1)**

113. Number of employees = 4, directly from the table

$\left[\frac{\text{earning for complex work}}{\text{No. of days for complex work}} > 50\right]$. **Ans.(1)**

114. 80% of 25 = 20, i.e., total attendance should be more than 20 and there are 7 employees who have worked for more than 20 days and whose earning more than Rs.600. **Ans.(4)**

115. Directly from table maximum earning for medium operations is for employee number 2001180. **Ans.(1)**

116. Directly from the table. **Ans.(3)**

117. Total revenues in 1999 is 3374, 5% of which is 169 (approx). In 1999 there are four operations whose revenues in is less than this value. **Ans.(3)**

118. Total revenues earned in 1999-2000 is 8702, 5% which is 435.1. There are only two operation-Northern sea and Rest of the world, whose gross revenues for these two years is less than this. **Ans.(2)**

119. Directly from table there are 4 operation which registered a sustain yearly increase between 1998-2000. **Ans.(2)**

120. **Ans.(4)**

121. $\frac{5000}{1168}=4.3$. **Ans.(2)**

122. Clearly Spain has the best profitability. **Ans.(2)**

123. Clearly efficiency for the rest of the world was least (less than one). **Ans.(4)**

124. **Ans.(3)**

125. Average price = $\frac{\text{distribution value}}{\text{distribution quantity}}$ clearly, Switzerland has the highest average price. **Ans.(2)**

126. Distribution value of Turkey = 16% of 5760 million Euro.

Distribution quantity of Turkey = 15% of 1.05 MT

Hence, average price is close to 5.60 • /Kg. **Ans.(2)**

127. The cost of transporting one unit from BD to AE is Rs.0. Similarly the cost of transporting one unit from AE to AAB is also Rs.0. So the total cost is nil. **Ans.(1)**

128. **Ans.(4)**

129. The highest cost of transportation from a refinery to the depot is Rs. 1157.70 (BE to AE). Likewise transportation from AE to AAF takes up the highest charge i.e. Rs. 1035.30. So the total cost is Rs. 1157.70 + Rs. 1035.30 = Rs. 2193. **Ans.(2)**

130. From refinery BD, to AE the cost involved is nil, also the cost involved in transportation from AE to AAB is also nil. **Ans.(2)**

131. **Ans.(4)**

132. From refinery BE, the minimum possible transportation cost will be to depot AA, and from AA to AAA the cost is Rs. 571.10. So total cost of transportation is Rs. 571.10 + Rs.589.90 = Rs. 1161. **Ans.(2)**

133. From statement (A), it is not clear whether Korea too scored in the last 5 minute or not from statement (B), also it is not clear whether Korea score in the last 5 min. **Ans.(4)**

134. From statement (A) alone - if x + 12 is divisible by 8, then x +4 too is divisible by 8. From statement (B) alone we cannot get anything. **Ans.(1)**

135. From statement (A), on solving the equation we directly get that x = y. From statement (B), along we do not get a unique answer. **Ans.(1)**

136. From statement (A), alone, we can get the wholesale price. From statement (B) alone, it is not clear alone whether 50 dollar is the prize after discount or before discount. Hence it does not give a unique answer. **Ans.(1)**

137. Statement (A) and (B) alone and after combining do not give a unique answer. **Ans.(4)**

138. We do not get the solution even after combining (A) and (B). **Ans.(4)**

139. By combining (A) and (B) we get the answer. **Ans.(3)**

140. By combining (A) and (B) we get the answer. **Ans.(3)**

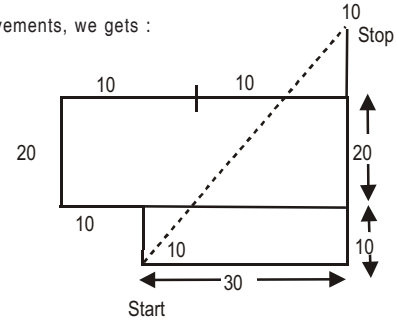
141.

Distance	Direction	Speed	Time to next Signal
10	N	20	30 min.
10	W	40	15 min.
20	N	40	30 min.
40	E	100	24 min.
10	N	40	15 min.
Stop			

Total distance moved = 10 + 10 + 20 + 40 + 10 = 90 km.

Ans.(1)

142. Drawing the map of his movements, we gets :



his displacement $=\sqrt{30^2+40^2}=50$km towards North East.

Ans.(2)

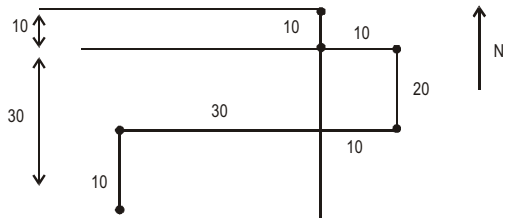
SOLUTIONS

143. The new map of his movement is :

Distance	Direction	Speed	Time to next Signal
10	N	20	30 min.
10	E	40	15 min.
20	S	40	30 min.
40	W	150	24 min.
10	S	40	15 min.

total distance = 10 + 10 + 20 + 40 + 10 = 90 km. **Ans.(1)**

144. If instead of North, the man headed for South, we can map his motion as :



He ends up at 30 km West and 40 km South of his starting point. **Ans.(4)**

145. Non-clearance of mandatory medical test is the reason for not getting the offer of employment. **Ans.(4)**

146. Inefficient labour forces, fall in product price and entry of similar foreign goods at lower rate are the possible reasons for incurring losses by DESCO. **Ans.(1)**

147. Sunil purchased a new shirt on Friday and he got the letter of promotion one day before. **Ans.(3)**

148. B and C > A and D .... (i), B > C > A .... (iii)

E > B ....(iv). Hence, E is the heaviest. **Ans.(1)**

For Q.149 & Q.150 :

A point to bear in mind is that you must avoid unsupported assumption; for example, statement (2) doesn't mean that F always occur if B occurs - just that if never occurs without B having occurred. Similarly, statement (1) doesn't mean that B or C can not occur without A - just that if A occurs, one of these (but not both) will occur. Finally, statement (3) doesn't mean that D occurs only this way - it may occur on its own, without B or C, but if will certainly occur if B or C occurs. Unless you're clear on this, you'll probably miss some questions.

149. A causes B or C, but not both. In either case, D occurs (III). F and E can occur only if B or C occurs, respectively, so they cannot both occur if, A occurs. **Ans.(4)**

150. If J occurs, E or F must have occurred -- statement (5);

Thus either B or C must have occurred -- statement (2), (4)

Since E or F, but not both, is required for J, choices A and B are wrong. If E occur (choice D). B and C can both occur (if one not caused by A) but both aren't necessary for J; they can lead to E and F, but one of these is all that is required for J. **Ans.(3)**

Objective Key

1.(4)	2.(1)	3.(1)	4.(1)	5.(1)	6.(1)	7.(4)	8.(4)	9.(3)	10.(3)
11.(4)	12.(3)	13.(2)	14.(3)	15.(4)	16.(1)	17.(3)	18.(4)	19.(3)	20.(1)
21.(4)	22.(2)	23.(2)	24.(3)	25.(4)	26.(4)	27.(4)	28.(4)	29.(3)	30.(1)
31.(4)	32.(3)	33.(2)	34.(3)	35.(2)	36.(2)	37.(3)	38.(4)	39.(4)	40.(2)
41.(3)	42.(4)	43.(4)	44.(2)	45.(1)	46.(1)	47.(2)	48.(1)	49.(3)	50.(4)
51.(3)	52.(4)	53.(3)	54.(1)	55.(4)	56.(4)	57.(4)	58.(4)	59.(2)	60.(2)
61.(1)	62.(1)	63.(1)	64.(3)	65.(2)	66.(2)	67.(1)	68.(4)	69.(3)	70.(1)
71.(1)	72.(4)	73.(1)	74.(2)	75.(2)	76.(3)	77.(4)	78.(2)	79.(2)	80.(3)
81.(2)	82.(3)	83.(2)	84.(2)	85.(3)	86.(4)	87.(1)	88.(4)	89.(3)	90.(4)
91.(3)	92.(1)	93.(4)	94.(2)	95.(2)	96.(3)	97.(1)	98.(1)	99.(1)	100.(2)
101.(2)	102.(2)	103.(4)	104.(3)	105.(1)	106.(3)	107.(2)	108.(3)	109.(3)	110.(1)
111.(1)	112.(1)	113.(1)	114.(4)	115.(1)	116.(3)	117.(3)	118.(2)	119.(2)	120.(4)
121.(2)	122.(2)	123.(4)	124.(3)	125.(2)	126.(2)	127.(1)	128.(4)	129.(2)	130.(2)
131.(4)	132.(2)	133.(4)	134.(1)	135.(1)	136.(1)	137.(4)	138.(4)	139.(3)	140.(3)
141.(1)	142.(2)	143.(1)	144.(4)	145.(4)	146.(1)	147.(3)	148.(1)	149.(4)	150.(3)