T.I.M.E.
Triumphant Institute of
Management Education Pvt. Ltd.

AIM CAT
(All-India Mock CAT)

(Test Ref.: AIMCAT0814)

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BASIC INSTRUCTIONS

1. Please DO NOT OPEN THE SEAL OF THIS BOOKLET TILL YOU ARE ASKED TO DO SO.
2. Fill in the TEST BOOKLET SERIAL NO. and the TEST FORM NO. given on this booklet in your ANSWER SHEET in the appropriate boxes.
3. This test booklet contains **40** pages (including the front and back covers as well as blank pages). Immediately after opening the test booklet, verify that all the pages are printed properly and are in order.
4. Read the instructions given at the beginning/end of each section or at the beginning of a group of questions very carefully.
5. This test has three sections with 123 questions. Each section carries 50 marks and is divided into two sub-sections, A and B. All questions in sub sections IIA and IIIA carry **one** mark each. All questions in sub sections IB, IIB, and IIIB carry **two** marks each. In sub section-IA, the first 10 questions carry **half** a mark each, while the remaining questions carry one mark each. The TOTAL TIME available for the paper is **2 ½ hours**. You may apportion this time over various sections as you wish. However, you are expected to show your competence in all the three sections. Wrong answers carry negative marks.
6. Do not carry calculators, slide rules or any other calculating devices. Do not carry any other papers with you except your HALL TICKET.

INSTRUCTIONS FOR ANSWERING

1. Mark your answers on the ANSWER SHEET that is provided to you separately.
2. Use an HB pencil only for marking the answers.
3. For marking the answer, darken COMPLETELY the oval corresponding to the answer choice selected by you. If the oval is filled incompletely or it is not dark enough, your answer may not be read by the computer for correction. If you want to correct an answer already marked, erase your old answer completely and darken the correct oval. If more than one oval is darkened for a question, it will be treated as a wrong answer.
4. Do not make any other markings on your answer sheet.
5. Do any rough or scratch work on the test paper itself. DO NOT use any additional paper or the Response sheet for rough work.

SECTION – I

Sub Section-IA: Number of Questions = 45

Note: Questions 1 to 10 carry half a mark each. All the other questions in Sub-section I-A carry one mark each.

DIRECTIONS *for questions 1 to 5:* Fill in the blanks in the passage below, with the most appropriate word from among the options given for each blank. The right words are the ones used by the author. Be guided by the author's overall style and meaning when you choose your answer.

Victorian Britain was **(1)** for what chroniclers of that era have described as its habit of lapsing into "periodic fits of morality" with two-faced **(2)** attacking others for behaviour they themselves quietly practised. Post-modernist Britain is refreshingly less **(3)** but if you want to know whether double standards in judging others have completely disappeared, then the answer is "no" – especially when there is money to be made. British society can still, periodically, lapse into fits of hypocritical moral **(4)** as we have seen recently in the way sections of the media have reacted to the cash-for-stories **(5)** involving former navy hostages.

1. (1) renowned (2) acclaimed (3) reputed (4) notorious

2. (1) clerics (2) puritans (3) mavericks (4) conservatives

3. (1) hypocritical (2) sophisticated (3) conformist (4) venal

4. (1) violation (2) outrage (3) rebellion (4) extremism

5. (1) scandal (2) allegation (3) aspersion (4) obloquy

DIRECTIONS *for questions 6 to 8:* Each of the sentences given below is divided into four parts. One of them has an error. Mark the number of the incorrect part as your answer.

6. While the traditional rhetoric of private enterprise / stressed non-intervention by government, /
(1) (2)
it did not exclude / governmental support in business.
(3) (4)

7. A wide tendency of recent years / have been the self conscious attempt to refashion / a sense of
(1) (2) (3)
community on some / basis other than geographical.
(4)

8. Although a bundle of compromise, / the law of 1785 laid / the foundation for / the federal land
(1) (2) (3) (4)
system.

DIRECTIONS *for questions 9 and 10:* Find the "odd man" out.

9. (1) aficionado (2) epicure (3) gourmand (4) connoisseur

10. (1) massive (2) large (3) monumental (4) astronomical

DIRECTIONS *for questions 11 to 15:* Fill in the blanks in the passage below, with the most appropriate word from among the options given for each blank. The right words are the ones used by the author. Be guided by the author's overall style and meaning when you choose your answer.

Belying hopes of a breakthrough, India and Pakistan have once again failed to reach an agreement on the withdrawal of forces from the Siachen Glacier. The eleventh round of official-level talks on the issue ended in Rawalpindi with the usual **(11)** joint statement that the two sides remain committed to the peaceful resolution of the high-altitude **(12)**. Although a ceasefire has been in force since 2003, India and Pakistan should not let Siachen fester. Soldiers may no longer be dying from firing from the other side but the weather and terrain continue to exact an unnecessary human and financial cost. **(13)** of wider strategic significance, the glacier and its surrounding heights have become a curse for the two countries. That is why both New Delhi and Islamabad have formally been committed to the region's **(14)** since 1989. That this commitment remains unimplemented nearly two decades later is testimony to the **(15)** of the military and political establishments on both sides.

11. (1) anodyne (2) evasive (3) perfunctory (4) flippant

12. (1) controversy (2) hostility (3) insurrection (4) dispute

13. (1) Divested (2) Stripped (3) Devoid (4) Bereft

14. (1) development (2) modernisation (3) demilitarisation (4) progress

15. (1) obtuseness (2) obduracy (3) imprudence (4) impudence

DIRECTIONS *for questions 16 to 20:* Each statement has a part missing. Choose the best option, from those given below the statement, to make the missing part.

16. The settings in the novels of Greene are consistently vivid and actual, _____ not an actual environment but an image of a spiritual condition.

(1) and the world created by him sordid and violent which describe
(2) and the world created by him is sordid and violent which describes
(3) and the world created by him is sordid and violent, describing
(4) and the world created by him being sordid and violent, describing

17. Parents often have a sense of inadequacy _____ a world of a complex nature which is so unfamiliar that it seems hopeless to reduce it to order.

(1) when confronted on the one hand with the eager, sensitive mind of a child and the other with
(2) while confronted on the one hand with the eager, sensitive mind of a child and on the other with
(3) when confronted on the one hand by the eager, sensitive mind of a child and on the other by
(4) when confronted on the one hand with the eager, sensitive mind of a child and on the other with

18. The fundamental but largely unacknowledged reason for the blocking of environmental education in schools _____ also responsible for many of education's current ills.

(1) arises from our view of the nature of knowledge, how we justify our claims to know, and the limits of such claims and is

(2) arises from our view of the nature of knowledge, how we justify our claims to know, and the limits of such claims which is
(3) arise from our view of the nature of knowledge, how we justify our claims to know, and the limits of such claims being
(4) arises from our view of the nature of knowledge, how we justify our claims to know, and the limits of such claims which are

19. The spate of forest fires in northern Russia _____ anthropogenic climate change has been suggested by some as a cause.

(1) have coincided with climate extremes, and unsurprisingly
(2) have coincided against climate extremes, so unsurprisingly
(3) has coincided with climate extremes, so, unsurprisingly,
(4) has coincided with climate extremes, so unsurprisingly that

20. The novel moves from exotic charm _____ the little people swept up in larger events which inevitably crush them.

(1) into darker territory depicting more horror, as lives are invaded and nightmares banish peace of mind of
(2) into a darker territory depicting more horror, as lives are invaded and nightmares banish peace of mind of
(3) into a darker territory, depicting more horror, as lives become invaded and nightmares banish peace of mind
(4) into darker territory, depicti:.g more horror, as life is invaded and nightmares banish peace of mind of

DIRECTIONS *for questions 21 to 25:* The sentences given in each of the following questions, when properly sequenced, form a coherent paragraph. Each sentence is labelled with a letter. From among the four choices given below each question, choose the most logical order of sentences that constructs a coherent paragraph.

21. A. I know that in writing English I make errors in grammar and my vocabulary is limited.
B. When asked what my mother tongue is, I reply without hesitation 'English' though my mother cannot speak a word of it.
C. Most of what I read is English and I write English better than any of the Indian languages.
D. I try to better my diction, improve my syntax and endeavour to turn out a polished sentence which is at once pregnant with meaning and pleasing to the ears.
E. I call English my mother tongue because I am more familiar with it than with any other language.
F. Most people I mix with are more at ease with English than with what they call their mother tongues.

(1) BCFEAD (2) BFDCAE (3) EFDBCA (4) BEFCAD

22. A. Their well-preserved mummies are a manifestation of this.
B. Our modern chemistry is born out of the word 'alchemy' which means 'the secret science of Egypt'.
C. It still remains a mystery to the modern chemists as to why and how they were preserved.

D. The Egyptians were deep in the alchemy of inner transformation: how to transform the inner chemistry.
E. If there had been any outer chemical process, our chemists could know it; after all we are more chemically developed than the ancient Egyptians.
F. The real thing is these bodies were preserved not by any outer chemical process, but by inner alchemy.

(1) BDACFE (2) BCDEFA (3) BDEAFC (4) BFEADC

23. A. It is humanly impossible to read the hundreds of books which come out every month.
B. By going through book covers, reviews and gossips about authors anyone can take part in any literary discussion.
C. All of us like to be, or pretend to be well read, take part in literary proceedings and pepper our conversations with quotes.
D. The trick is to understand that even a slight familiarity with books and authors is enough to put on a show of enlightenment.
E. No one is obliged to read all the books, yet we can talk and argue about them.
F. We can even have passionate literary exchanges on books we have not read at all.

(1) CDEFAB (2) CEFDBA (3) EFDCBA (4) CAEFBD

24. A. There are additional benefits in the form of reduced travel time, fuel use and pollution.
B. This is not surprising given the unsustainable levels of peak hour vehicle use particularly in big cities, and the rise in the price of fuel.
C. But with the support of the local government and the public sector it can become a part of public transport.
D. Informal car-sharing has always been popular with the middle class but a more organized and a formal system of sharing vehicles is taking shape.
E. What it can do is improve the efficiency of unavoidable car use by distributing the cost of travel and easing congestion.
F. Yet, according to many, car-sharing cannot totally replace the reliable, comfortable, safe, and affordable public transport.

(1) DEFBAC (2) DFCABE (3) DBFEAC (4) ADCBEF

25. A. Similar demands for cost efficiencies, quality and customized services are evident in the public and non-profit sectors.
B. Knowledge is increasingly recognized as a basis in many industrial sectors as competitive advantage will primarily flow from the creation, ownership and management of knowledge-based assets.
C. Most of us are fairly well versed in the changes accruing in the economic, political and social landscape.
D. Much of this competition is based on cost and quality, innovation and customization.
E. The internationalization of economy, a reduction in trade barriers between countries, the deregulation of global markets are to mention just a few.
F. These changes along with the consumer demand for more customised products with better quality has intensified competition in the public sector.

(1) CABDEF (2) CEFDAB (3) CBAEDF (4) BCFEAD

DIRECTIONS *for questions 26 to 45:* Read the passages given below and answer the questions that follow them.

PASSAGE – I

Understanding intractable conflicts starts with recognizing that sources of intractability are not the same as the original causes of the conflicts. For instance, the conflict in Kashmir is part of a larger set of bilateral conflict issues that have divided India and Pakistan since their joint emergence from the British Empire in the 1940s. Now, that agenda includes nuclear risk reduction and targeting weaponisation programmes, trade/travel issues, other border issues, regional rivalries, and above all the identity dispute between Muslim homeland Pakistan and secular India. The bilateral issue agenda has ballooned with the passage of time, so that today Kashmir is much more deeply embedded in polarized issues than it was in the late 1940s.

Geography and geopolitics may also promote intractability. Some states lie on the borderline between larger civilizations – Sudan between black and Arab Africa. In other cases, neighbouring wars may engulf a conflict, holding it captive to a resolution of the larger war, as Burundi's conflict was engulfed by the war in neighbouring Congo. And many so-called internal patterns of enmity and amity are shaped by regional power distributions and specific factors such as border disputes, ethnic diasporas, ideological alignments, and neighbouring states whose interests are served by continuing conflict.

There are several schools of thought about the many causes of contemporary civil wars. Intractable conflicts that take place within the borders of one country may be particularly resistant to settlement because of the nature of the conflict itself. These conflicts, manipulated as they may be by political agency entrepreneurs – or what Michael Brown calls "bad leaders" – often involve deep-seated identity and grievance issues as well as a considerable amount of war profiteering by representatives of one group or another. Some analysts stress the role of poverty and the denial of basic human needs as key sources of conflict. The extent to which certain groups in society are systematically discriminated against and/or have their basic needs denied by those in power can lay the seeds for conflict, especially if there is no legitimate way to channel those grievances through the political process.

In other cases, however, it is not internal instability that feeds intractability but rather a kind of stasis that develops around the fighting. For instance, a stable and tolerable stalemate makes it easy for sides to settle into comfortable accommodation with persistent warfare that sustains power bases. Continued war is a comfort zone that does not jeopardise either side's core constituency, even though those who suffer and pay the price for continued fighting – especially the civilian targets – are disenfranchised in every sense. For example, the fact that officials on both sides of the Eurasian cases benefit from the conflict raises the question of whether there is such a thing as "happy" intractability, an untidy but possibly acceptable status quo.

Intractability can also be the product of polarised, zero-sum notions of identity. Conflicts that continue over long periods lead to the accumulation of grievances incorporated into each party's version of history. Each side sees itself as a victim and creates or reinterprets key cultural and religious symbols that perpetuate both the sense of resentment and the conflict. In intractable conflicts, violence enters the everyday world of thousands of people and becomes a way of life.

Domestic politics can also promote intractability. Lack of internal coherence in the parties can augment intractability, especially in democracies, as the conflict becomes part of campaign promises and political considerations create difficulties in making concessions.

Another important factor in intractable conflict settings is the avarice of predatory warlords who profit from the political economy of violence through arms sales, smuggling, and other illicit commercial practices and transactions. As Paul Collier and others argue, it is clear that "conflict pays" in monetary as well as political terms. And the dividends are such that those who are the chief beneficiaries of the war economy may have strong economic incentives to keep the conflict boiling. Nowhere is this more evident than in Angola and Sierra Leone, where civil wars have literally been paid for by the illicit sale of smuggled "blood" diamonds that have eventually found their way into regular commercial markets.

The failure of previous efforts can have a negative impact on possibilities for peacemaking. The discrediting of an "acceptable" agreement in an earlier phase of negotiation can force a solution off the table despite the fact that may be the only 'salient' solution. A literature of accord becomes a weapon of political warfare, and agreements that are never implemented can lead to cynicism and resistance to peace initiatives.

Changes in the way the parties in a conflict pursue their objectives through political channels can also serve to promote intractability. As parties gain experience in negotiation and in dealing with third parties, they develop a tendency to manipulate talks. A single party may simultaneously pursue very contradictory policies, sowing confusion among adversaries and third parties. Intentional misunderstandings between the parties may serve the purpose of papering over internal discord and factionalism. For this reason, parties may resist any outsider effort to make them clarify their goals. In some cases of conflict, parties become more purposeful and strategic in their behaviour than the intervening third parties. In Bosnia the conflict parties viewed third-party mediation as an opportunity for a double game, seeking alliances with mediators to pursue their version of the mediator's stated norms and principles. In other cases negotiations become another means of conducting the conflict rather than a means for settling it.

26. How can the term 'intractable conflict' be defined, based on the passage?

(1) A war that cannot be resolved.
(2) A problem with no political solution.
(3) A conflict that resists any type of settlement.
(4) A war for which there is no political conviction.

27. Identify the statement that is NOT true as per the passage.

(1) Conflicts are inherently intractable.
(2) Intractable conflicts cannot be considered as unitary phenomenon.
(3) Over a period of time antagonistic or combative relationships among groups can lead to an intractable civil conflict.
(4) An autocratic government, if not careful in its deliberations, actions and reactions, can foment a volatile situation into an internal conflict.

28. The statement(s) relevant to an intractable conflict is/are

(1) the states or the parties in the conflict usually possess a grievance and aim to redress or avenge that.
(2) A grievance usually escalates into a conflict over a long period of time.
(3) the aggrieved parties possess highly polarised perceptions regarding the contentious issue.
(4) all the above three statements are relevant.

29. The results of conflict seep into various societal processes that influence every day life when

(1) war becomes a form of money spinning enterprise to avaricious middlemen.
(2) 'bad leaders' manipulate war situations in order to foment civil strife.
(3) one of the aggrieved parties believes that the other has gained political mileage at its expense.
(4) in a democratic governance there is no unity among various participants.

30. Which of the following would serve as examples of what the author sees in present-day civilian strife?

(1) One ethnic group attacks the other ethnic group in power, as in the case of Darfur conflict.
(2) A repressive regime exists, as in the case of the first phase of the Somali civil war.
(3) A desire to control areas and operations that offer possibilities of commercial gain, as in the second civil war in Sudan.
(4) All the above three cases.

PASSAGE – II

Much of what we think of as traditional, and steeped in the mists of time, is actually a product at most of the last couple of centuries, and is often much more recent than that. The case of the Scottish kilt comes from a celebrated volume by the historians Eric Hobsbawm and Terence Ranger, called The Invention of Tradition. Tradition and custom - these have been the stuff of most people's lives for most of human history. Yet it is remarkable how little interest scholars and thinkers tend to show in them. There are endless discussions of modernisation and what it means to be modern, but few indeed about traditions.

It was the 18th Century Enlightenment in Europe that gave tradition a bad name. One of its major figures, the Baron D'Holbach, put things this way. I quote: 'Instructors have long enough fixed men's eyes upon heaven, let them now turn them upon earth. Fatigued with an inconceivable theology, ridiculous fables, impenetrable mysteries, puerile ceremonies, let the human mind apply itself to the study of nature, to intelligible objects, sensible truths, and useful knowledge. Let the vain chimeras of men be removed, and reasonable opinions will soon come of themselves, into those heads which were thought to be forever destined to error'.

It might seem that the notion of tradition, unlike kilts and bagpipes, has been around for many centuries. Once more, appearances are deceptive. The term 'tradition' as it is used today is actually a product of the last 200 years in Europe. Just like the concept of risk, in mediaeval times there was no generic notion of tradition. There was no call for such a word, precisely because tradition and custom were everywhere. The idea of tradition, then, is itself a creation of modernity. That doesn't mean that one shouldn't use it in relation to pre-modern or non-Western societies, but it does imply that we should approach the discussion of tradition with some care. By identifying tradition with dogma and ignorance, the Enlightenment thinkers sought to justify their absorption with the new.

Disentangling ourselves from the prejudices of the Enlightenment, how should we understand 'tradition'? We can make a good start by going back to invented traditions. Invented traditions and customs, Hobsbawm and Ranger suggest, aren't genuine ones. They are contrived, rather than growing up spontaneously; they are used as a means of power; and they haven't existed since time immemorial. Whatever continuity they imply with the long-term past is largely false.

I would turn their argument on its head. All traditions, I would say, are invented traditions. No traditional societies were wholly traditional, and traditions and customs have been invented for a diversity of reasons. Moreover, tradition always incorporates power, whether they are constructed in a deliberate way or not. Kings, emperors, priests and others have long invented traditions to suit themselves and to legitimate their rule.

It is a myth to think of traditions as impervious to change. Traditions evolve over time, but also can be quite suddenly altered or transformed. Some traditions, of course, such as those associated with the great religions, have lasted for hundreds of years. There are core prescriptions of Islam, for instance, that nearly all Muslim believers would hold to, and which have remained recognisably the same over a very long period. Yet whatever continuity there is in such doctrines goes along with many changes, even revolutionary changes, in how they are interpreted and acted upon. There is no such thing as a completely pure tradition. Like all the other world religions, Islam drew upon a dazzling variety of cultural resources - that is, other traditions.

But it is simply wrong to suppose that for a given set of symbols or practices to be traditional, they must have existed for centuries. The Christmas address by the Queen, which is broadcast every year in Britain, has become a tradition. Yet it only started in 1932. Endurance over time is not the key defining feature of tradition, or of its more diffuse cousin, custom. The distinguishing characteristics of tradition are ritual and repetition. Traditions are always properties of groups, communities or collectivities.

What is distinctive about tradition is that it defines a kind of truth. For someone following a traditional practice, questions don't have to be asked about alternatives. However much it may change, tradition provides a framework for action that can go largely unquestioned. Traditions usually have guardians - wise men, priests, sages. Guardians are not the same as experts. They get their position and power from the fact that only they are capable of interpreting tradition's ritual truth.

The Enlightenment set out to destroy the authority of tradition. It only partially succeeded. Traditions remained strong for a long while in most of modern Europe and even more firmly entrenched across most of the rest of the world. Many traditions were reinvented and others were newly instituted. There was a concerted attempt from some sectors of society to protect or adapt the old traditions.

Two basic changes are happening today under the impact of globalisation. In the Western countries, not just public institutions but everyday life is becoming opened up from the hold of tradition. And other societies across the world that remained more traditional are becoming detraditionalised. The end of tradition doesn't mean that tradition disappears, as the Enlightenment thinkers wanted. On the contrary, in different versions, it continues to flourish everywhere. But less and less - if I can put it this fashion - is a tradition lived in the traditional way.

31. An 'invented tradition', according to the author,

(1) can take form as a response to new situation.
(2) has reference points in old situation or tradition.
(3) will have its own path of repetition.
(4) can have all the above aspects.

32. The period of Enlightment in 18th century Europe considered tradition to be

(1) a bad influence that misguided people's energy to tread on an erroneous path.
(2) the path adopted by religious charlatans where science got dominated by religion.
(3) a contrived activity that symbolized ignorance.
(4) a practice that encouraged nonconformist activities.

33. When the author says, 'appearances are deceptive', he actually means that

(1) all traditions are invented.
(2) customs and traditions actually have an ubiquitous presence.
(3) the concept of tradition is an invention of modernity.
(4) certain traditions are not as ancient as they appear to be.

34. The author quotes the examples of the prescriptions of Islam and the queen's Christmas address to bring out the point that

(1) religious traditions have long history.
(2) a tradition at a given point of time is the result of the amalgamation of practices of specific locations.
(3) long history of a ritual does not translate it automatically as a pure tradition.
(4) any tradition is responsive to change and evolutionary forces.

35. The statement which is NOT true as per the passage is:

(1) A tradition can be deliberately constructed to serve certain needs.
(2) Guardians of a tradition derive power from the fact that they are the only people capable of understanding the meaning of a communal ritual.
(3) A tradition appears to be continuous with the past.
(4) A tradition helps in arriving at legitimate power and value systems.

PASSAGE – III

There has been a great debate surrounding John Locke's state of nature as described in his Two Treatises of Government. How natural man lives, his essential character, the level of internal peace or discord in such a state, and its historical validity have all been subjects of controversy. Political theorists have demanded a coherent account of Locke's ambiguous natural state, for upon it depends his theory of rights and obligations ascribed to man in civil society.

Most modern scholars have argued that the state of nature holds no historical validity, concluding that Locke drew the state of nature to be an analytical rather than a historical abstraction. John Dunn, for example, posits that the state of nature is an 'ahistorical condition', a 'topic for theological reflection, not for anthropological research'. Dunn argues that Locke was attempting to 'devise a criterion which was outside of history, in terms of which to judge the moral status of the present political structure'. He concludes emphatically, 'it is neither a piece of philosophical anthropology nor a piece of conjectural history. Indeed it has literally no transitive empirical content whatsoever.' C. B. MacPherson comes to a similar conclusion: 'Locke, like Hobbes, introduces the "natural" condition of mankind not as on historical condition existing before the emergence of civil society but as a logical abstraction from the essential nature of man'.

Locke, however, did see his state of nature existing in a historical sense. Clearly he believed that governments exist in relation to one another as in a state of nature, but, more significantly, Locke conceived of America and its aboriginal peoples, as the English colonists of the seventeenth century found them, to be an example of man living in his most natural state.

The confusion over the historical authenticity of Locke's state of nature arises when commentators assume that the state of nature is only seen by Locke as an embryonic model of European society. Thus, those who conclude that Locke was only using the state of nature as a purely hypothetical construct reject the idea that he believed such a state existed prior to European civilization. One can reject this historical notion of a universal natural state while still recognizing that Locke believed that such natural states did exist at the time of his writing – namely, in America. While many modern scholars have overlooked the American dimension of Locke's state of nature, some, most notably James Tully, have come to recognize the importance of the new world of Locke's understanding of natural man.

While Locke believed that his state of nature helped him to draw logical conclusions about civilized man, it was by no means based upon pure hypothetical conjecture. Locke based his account of natural man on the descriptions provided by the dozens of travel books he had in his library on the Americas. Locke was not alone in his fascination with the new world. Many of his contemporaries were equally absorbed by the discoveries being made by European explorers, as evidenced by the wide circulation amongst the seventeenth-century English elite of such books as Sir Walter Raleigh's History of the World, or Samuel Purchas's Pilgrims, or Richard Hakluyt's Principle Navigations.

Locke owned all of those works and used them, along with other accounts of the new world in his library to provide concrete evidence of the character of natural man. While his choice of information was, as Richard Ashcraft put it, of 'a distinctly empirical cast', it was not 'scientific', as Locke chose only those historical examples which would support his overall theory. Locke's selective use of information from his library can be accounted for by his view that one's theoretical principles should be established before examining history for examples. Thus he writes in his journal: 'One who hath well settled in his mind the principles of morality and knows how to make a judgment on the actions of men . . . may learn great and useful instructions of prudence from a study of history. As such moral principles are primary, a 'study of history' must be reconcilable to these foundations. It is this pattern he seems to have adopted in his Two Treatises, where he uses historical examples of natural man to support his theories regarding the nature of property and civil obligation.

In the Two Treatises, Locke criticizes Sir Robert Filmer for failing to reconcile his philosophy with the facts; a point according to Richard Ashcraft, which is central to Locke's critique: "The telling argument against Filmer's theory is that for all its reliance upon "scriptural history", it cannot "be accommodated to the nature of things", nor can it " be made to agree with that constitution and order which God had settled in the world". Locke sets out, instead, to develop a theory based upon his principles governing civil society, supported by empirical examples. Locke's method, however, is problematic, for in reconciling fact with theory, when the latter is established first in order to 'make a judgment' on the former, one must necessarily fashion 'things' to elucidate the theory rather than to understand the things in themselves. As a result, Locke chose only those aspects of American life which fit his theory. While Amerindians are used by Locke to explain his principles of natural rights and civil obligation, an understanding of the 'real' natural man is partial and distorted.

36. Many researchers are of the opinion that Locke's state of nature is nothing but his abstraction because

(1) they could find no historical evidence for that concept.
(2) of their assumption regarding Locke's basis for his theory of the state of nature.
(3) very few travelogues failed to mention the primitive living conditions of the Americas.
(4) the unstable and fragile nature of the man formed the backbone for this concept.

37. Clarification regarding the state of nature theory of Locke is being sought since it

(1) reflects the prehistoric living conditions of the Americas.
(2) is necessary for the better understanding of Locke's subsequent theory regarding man's entitlements and duties.
(3) facilitates the easy deduction of man's natural character.
(4) does not clearly explain the nature of man as witnessed in pure or natural conditions.

38. The author criticises Locke's use of the Americas to strengthen the concept of the state of nature because Locke, in his opinion

(1) neglected the basic principles that rule nature.
(2) tried to arrive at the principles governing civil society without clear definition of the nature of property and civil obligation.
(3) concentrated only on justifying his theory instead of describing the basic characteristics of natural man.
(4) limits his scholarly quest to searching for those examples that support his theory instead of facilitating an universal application.

39. Of the following, who is not critical of Locke's work regarding the state of nature?

(1) John Dunn
(2) Richard Ashcraft
(3) C.B. MacPherson
(4) James Tully

40. What can you understand about 'the state of nature' from the passage?

(1) It is a view of human existence.
(2) It is a standard by which a law can be criticised.
(3) The rule that curtails or control's man's natural rights.
(4) It is the rejection of any form of government.

PASSAGE – IV

Part of modern medicine's success is built on new drugs, in which pharmaceutical companies invest billions of dollars on research. The companies can recover their expenses thanks to patents, which give them a temporary monopoly and thus allow them to charge prices well above the cost of producing the drugs. We cannot expect innovation without paying for it. But are the incentives provided by the patent system appropriate, so that all this money is well spent and contributes to treatments for diseases of the greatest concern? Sadly, the answer is a resounding "no."

The fundamental problem with the patent system is simple: it is based on restricting the use of knowledge. Because there is no extra cost associated with an additional individual enjoying the benefits of any piece of knowledge, restricting knowledge is inefficient. But the patent system not only restricts the use of knowledge; by granting (temporary) monopoly power, it often makes medications unaffordable for people who don't have insurance. In developing countries, this can be a matter of life and death for people who cannot afford new brand-name drugs but might be able to afford generics. For example, generic drugs for first-line Aids defences have brought down the cost of treatment by almost 99% since 2000 alone, from $10,000 to $130.

But, despite the high price they pay, developing countries get little in return. Drug companies spend far more money on advertising and marketing than they do on research, far more on research for lifestyle drugs (for conditions like impotence and hair loss) than for lifesaving drugs, and almost no money on diseases that afflict hundreds of millions of poor people, such as malaria. It is a matter of simple economics: companies direct their research where the money is, regardless of the relative value to society. The poor can't pay for drugs, so there is little research on their diseases, no matter what the overall costs.

A "me-too" drug, for example, which nets its manufacturer some portion of the income that otherwise accrues only to the company that dominates a niche, may be highly profitable, even if its value to society is quite limited. Similarly, companies raced to beat the human genome project in order to patent genes such as that associated with breast cancer. The value of these efforts was minimal: the knowledge was produced just a little sooner than it would have been otherwise. But the cost to society was enormous: the high price that Myriad, the patent holder, places on genetic tests (between $3,000 and $4,000) may well mean that thousands of women who would otherwise have been tested, discovered that they were at risk, and taken appropriate remediation, will die instead.

There is an alternative way of financing and incentivising research that, at least in some instances, could do a far better job than patents, both in directing innovation and ensuring that the benefits of that knowledge are enjoyed as widely as possible: a medical prize fund that would reward those who discover cures and vaccines. Since governments already pay the cost of much drug research directly or indirectly, through prescription benefits, they could finance the prize fund, which would award the biggest prizes for developers of treatments or preventions for costly diseases affecting hundreds of millions of people.

Especially when it comes to diseases in developing countries, it would make sense for some of the prize money to come from foreign assistance budgets, as few contributions could do more to improve the quality of life, and even productivity, than attacking the debilitating diseases that are so prevalent in many developing countries. A scientific panel could establish a set of priorities by assessing the number of people affected and the impact on mortality, morbidity, and productivity. Once the discovery is made, it would be licensed.

Of course, the patent system is itself a prize system, albeit a peculiar one: the prize is temporary monopoly power, implying high prices and restricted access to the benefits that can be derived from the new knowledge. By contrast, the type of prize system I have in mind would rely on competitive markets to lower prices and make the fruits of the knowledge available as widely as possible. With better-directed incentives, we could have better health at lower cost.

That said, the prize fund would not replace patents. It would be part of the portfolio of methods for encouraging and supporting research. A prize fund would work well in areas in which needs are well known - the case for many diseases afflicting the poor - allowing clear goals to be set in advance. For innovations that solve problems or meet needs that have not previously been widely recognised, the patent system would still play a role.

The market economy and the profit motive have led to extremely high living standards in many places. But the health care market is not an ordinary market. Most people do not pay for what they consume; they rely on others to judge what they should consume, and prices do not influence these judgments as they do with conventional commodities. The market is thus rife with distortions. It is accordingly not surprising that in the area of health, the patent system, with all of its distortions, has

failed in so many ways. A medical prize fund would not provide a panacea, but it would be a step in the right direction, redirecting our scarce research resources toward more efficient uses and ensuring that the benefits of that research reach many people who are currently denied them.

41. When the author says, 'But the cost to society was enormous', he means that

(1) the government had to spend a large amount of tax dollars on the research.
(2) too much money was invested in order to gain too little by way of quicker decoding of human genome.
(3) the expensive tag of certain drugs and procedures will deprive the developing countries of their benefit.
(4) the patent system, in general, seems to do more harm that good to the society.

42. According to the author, the 'prize-fund'

(1) could entice the pharma companies to find cure for widely prevalent diseases across continents.
(2) may help in bringing out the human face of the pharma sector.
(3) may indirectly facilitate better treatment facilities for the poor especially of developing countries.
(4) is expected to bring about all the above three benefits.

43. Identify the statement which is NOT true as per the passage.

(1) The prize fund and the patent system are required to meet the health care requirements of vast majority of people.
(2) The system of prize fund will encourage need-directed research.
(3) The patent system has no role to play in the prize fund system.
(4) All of the above.

44. As understood from the passage, the prices of patented drugs are usually high because

(1) the manufacturers enjoy temporary exclusivity.
(2) the profits so generated have to take care of market distortions.
(3) they do not have generic drugs.
(4) they cater to the needs of a niche segment (i.e.) life style diseases.

45. A patent

(1) is limited in duration.
(2) is perceived as the reward for the risk taken by a pharma company.
(3) generally results in limited affordability of the patented commodity.
(4) has all the above features.

Sub Section-IB: Number of Questions = 5

Note: Questions 46 to 50 carry two marks each.

DIRECTIONS *for questions 46 to 48:* Each question has a few sentences, split into four parts – A, B, C and D – each part having exactly one word or phrase that has been inappropriately used. Identify the word or phrase that is inappropriately used in each part. Of the four numbered sets of words provided in the choices, the words in three sets can be used in place of the inappropriate words or phrases in the corresponding parts, while one set contains at least one word that is not suitable. Pick the set that cannot be used in full.

46. (A) The nomination to measure crime by means of social cost factors involves a change
(B) of the basis of misdemeanour from intent to effect. This approach avoids many
(C) administrative difficulties. While the matter of intent is important in moral papers, morals and
(D) social costs are clearly different, and should be spotted as such in the statistics of crime.

A	B	C	D
(1) suggestion	liability	certificates	distinguished
(2) recommendation	violation	conclusions	named
(3) plan	offence	affairs	labelled
(4) proposal	culpability	issues	identified

47. (A) Contrology is not an instructive claim for a new discipline; it is only a plea that
(B) control might be imposed as an authentically separable topic for study, which
(C) on the part of the discussion of the institutional failings of traditional labelling and
(D) marxist theories, is conditioned as a replacement for – and not just a rejection of – Criminology.

A	B	C	D
(1) institutional	considered	in the light of	organised
(2) substantial	examined	despite	ranked
(3) regimented	deliberated	bearing in mind	schemed
(4) unimaginative	justified	in view of	foreseen

48. (A) Personal to the Victorian age was the idea that both love and permanence
(B) were the normal quirks of marriage. Perhaps moralists became so
(C) explicit on these themes because of an imperturbable apprehension that
(D) individualistic attitudes were already detaining to undermine the concept of family.

A	B	C	D
(1) general	features	noticeable	appearing
(2) peculiar	attributes	uneasy	threatening
(3) endemic	virtues	nervous	portending
(4) particular	singularities	insecure	hindering

DIRECTIONS *for questions 49 and 50:* Four alternative summaries are given below each text. Choose the option that best captures the essence of the text.

49. Crime rates seem to increase when more police force is deployed in an area. Having extra police on the streets means people tend to report crime more. Police stations now have digital screens where the public can go in, report the crime and get a reference number. It is easy; you can also do it on the internet. Hence, there is the danger of the crime figures going up. So, the average crime survey in any particular field is not just a measure of the number of offences committed. It is a randomized example of people's experiences.

(1) The deployment of policemen in many areas may seem to increase the number of offences committed. The public also become aware of this and start reporting the crimes immediately. Thus the average crime figures in any area increases.
(2) Crime is reported more easily with the deployment of extra police force. Hence an average crime survey report is just a collection of people's experiences and does not tell much about crime rates.
(3) The crime rates increase because of the deployment of extra policemen in any area. But an average survey of these offences committed show that they are not serious crimes but just randomized examples of people's experiences in life.
(4) The increase in the deployment of policemen may result in an increase in crime rates in any area. The number of offences committed may not increase in reality. With more police force everywhere, it becomes much easier to report crime and get a reference number of their report.

50. Our species has become a terrible neighbour to the thirty million and more other species on this planet. Our numbers and our technology are wreaking ecological havoc. We have become the latter-day 'death star', with the same potential for destruction as the asteroid that ended the days of the dinosaurs. We need to understand that our civilization is going out of control. It is time for us to understand that there is no 'good life' without a good environment and that it is a false prosperity that cannot be sustained over the long ecological haul. Growth must be disassociated from progress. Bigger is not better if the system is destroyed. We must emphasize wholes over parts and pursue justice at the level of the entire ecosystem.

(1) The development of technology and an increase in the human population imperil the existence of other species an earth. People should understand the difference between natural growth and technological development. This will help them to see the world as a whole and not in parts.
(2) The survival of various species on earth has been endangered due to the growing human population. Technological developments are threatening the ecosystem. It is high time that man understood the importance of the ecosystem and the need to preserve it.
(3) Human beings are threatening the survival of the other species on earth. They have not only grown technologically but also in number so that they occupy more space and use more resources. But man has to understand that he is just a part of nature and begin to work towards preserving the ecosystem.
(4) The technological developments and increase in human population has put other species on earth in peril. We can save the ecosystem only when we understand that our civilisation is going out of control. There cannot be any 'good life' once the eco system is destroyed.

SECTION – II
Sub Section-IIA: Number of Questions = 20

Note: Questions 51 to 70 carry one mark each.

DIRECTIONS *for questions 51 to 57:* Answer the questions independently of each other.

51. A ray is defined as a directed line segment (i.e., a line segment with a specified direction), while a reversal is an operation defined as reversing the direction of a ray. If there are 1001 rays in a plane and all the rays were reversed after a total of R reversals were performed, which of the following is a possible value of R?

(1) 2002 (2) 1008 (3) 1024 (4) 1007

52. A, working alone, takes m times as much time as B and C, working together, to complete a piece of work. B, working alone, takes m times as much time as A and C, working together, to complete the same piece of work and C, working alone, takes m times as much time as A and B, working together, to complete the same piece of work. Find m.

(1) 2 (2) 3 (3) 4 (4) 5

53. There are n boxes, each of which contains several coins of denominations Re.1, Rs.2, Rs.3, Rs.4 and Rs.5. If exactly 10 coins are randomly drawn from each of the boxes, then find the minimum possible value of n such that at least eight coins of the same denomination are obtained on the whole.

(1) 2 (2) 3 (3) 4 (4) 5

54. PQRST is a pentagon inscribed in a circle. U is a point outside the circle such that UP and UQ are tangents to the circle touching it at P and Q respectively. If $\angle QST = 80°$ and $\angle PQT = 10°$, then $\angle PUQ =$

(1) 30° (2) 40° (3) 50° (4) 60°

55. If the selling price of 10 oranges is equal to the cost price of 14 oranges, which, in turn, is equal to one-third of the total discount offered upon 70 oranges, then find the profit/loss percentage when the mark-up percentage is halved and the discount percentage is decreased by 5 percentage points.

(1) 12.5% profit (2) 20% profit (3) 7.5% loss (4) 10% loss

56. At how many distinct points do the two curves given below intersect above the x-axis?
$y = 2x^4 + x^3 + x$
$y = x^4 + x^3 + 5x^2 + x - 4$

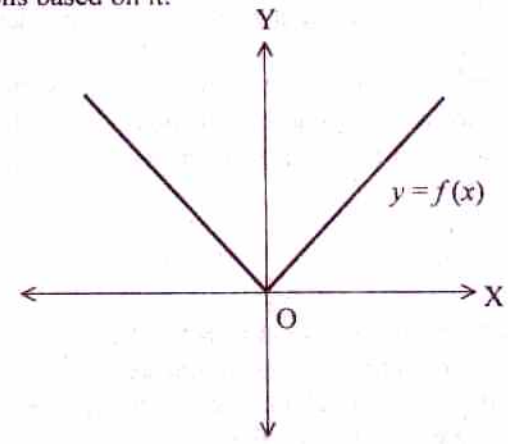
(1) One (2) Two (3) Three (4) Four

57. If fresh grapes contain 80% water and 20% pulp, by weight, and 10 kg of fresh grapes yield 2.5 kg of dry grapes, then find the percentage of pulp, by weight, in dry grapes.

(1) 20% (2) 40% (3) 50% (4) 80%

DIRECTIONS *for questions 58 and 59*: Answer the questions on the basis of the information given below.

The reflection of a graph in a line is done by treating the line as a 'mirror', exactly half way between each point on the graph and its corresponding reflection. Consider the graph of $f(x)$ given below and answer the following questions based on it.



58. The graph of $f(x)$ is reflected in the line $y - 1 = 0$, to obtain the graph of $g(x)$. In which of the following lines should the graph of $g(x)$ now be reflected to obtain the graph of $f(x)$?

(1) $y + 1 = 0$ (2) $y - 1 = 0$ (3) $y + 2 = 0$ (4) $y - 2 = 0$

59. The graph of $f(x)$ is reflected in the line $y - 1 = 0$ and then this reflection is reflected in the line $y + 1 = 0$, to obtain the graph of $g(x)$, then

(1) $f(x) = g(x) - 4$ (2) $f(x) = g(x) + 3$ (3) $f(x) = g(x) - 3$ (4) $f(x) = g(x) + 4$

DIRECTIONS *for questions 60 to 66:* Answer the questions independently of each other.

60. A function $y = f(x)$ is said to be reflexive, if $x = f(y)$. Which of the following is a reflexive function?

(1) $y = \dfrac{4x+3}{3x+4}$ (2) $y = \dfrac{4x+3}{3x-4}$ (3) $y = \dfrac{3x-5}{6x-4}$ (4) None of these

61. Which of the following lines does not pass through the point of intersection of the two lines $2\ell x + 3my + n = 0$ and $3\ell x - 4my - n = 0$?

(1) $5\ell x - my = 0$ (2) $\ell x - 7my - 2n = 0$ (3) $7\ell x - 2my + n = 0$ (4) $8\ell x - 5my - n = 0$

62. P, x and y are natural numbers. If P, when successively divided by x, x and y, gives remainders of 1, 4 and 4 respectively, which of the following statements is/are definitely true?

I. P is odd
II. P is a perfect square
III. The least possible value of P is 121
IV. The least possible value of P is 9

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

63. The decimal equivalent of $(123.21)_4$ is

(1) 27.2625 (2) 27.0625 (3) 27.5625 (4) None of these

64. If p, q and r are distinct positive integers, such that r is even, while p and q are both odd, which of the following is true?

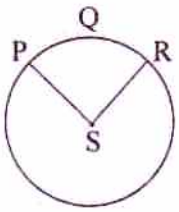
(1) $rp + pq + rq$ is even
(2) $(p + q)(p + r)(q + r)$ is odd
(3) $(p + q - r)^2 + (p + r - q) + (r + q - p)^3$ is odd
(4) $r(p + q)^2 + p(q - r)^3 + q(p - r)$ is even

65. A metallic cone is melted and recast into a cylinder of the same height. Find the approximate percentage decrease in the base radius.

(1) 42.3% (2) 41.9% (3) 43.1% (4) 44.5%

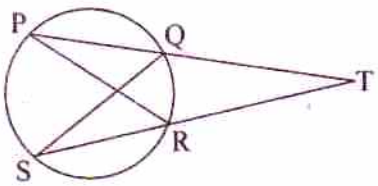
66. Which of the following statements are definitely false?

I)



In the above figure, P, Q and R are points on the circle with centre S and the quadrilateral PQRS is a cyclic quadrilateral.

II)



In the above figure, PQ and RS are two chords of a circle, which when extended, intersect each other at T, and triangles RPT and QST are similar.

(1) Only I (2) Only II (3) Both I and II (4) Neither I nor II

DIRECTIONS *for questions 67 and 68:* Answer the questions on the basis of the information given below.

Five persons A, B, C, D and E, have Rs.3500, Rs.3000, Rs.2000, Rs.3500 and Rs.2500 respectively with them. They go to a watch shop, where the shopkeeper has run out of stock and has only five watches W_1, W_2, W_3, W_4 and W_5, costing Rs.2200, Rs.3500, Rs.1800, Rs.2500 and Rs.3000 respectively. After discussing among themselves, each person decides to buy exactly one of the five watches available, using only the money available with him/her.

67. If D purchases W_2, in how many different ways can they buy the watches?

(1) 4 (2) 3 (3) 2 (4) 1

68. If A purchases W_5 and the cost of W_4 becomes Rs.2600, while the other costs remain the same, then which of the following statements is true?

(1) E must purchase W_4.
(2) B can purchase W_1.
(3) D must purchase W_2.
(4) More than one of the above.

DIRECTIONS *for questions 69 and 70:* Answer the questions on the basis of the information given below.

The first n natural numbers are written in the ascending order, one after the other, and all the numbers in the odd places are then erased to form a new sequence. This process is continued till only one number is left.

69. If $n = 4100$, the number left is

(1) 4098 (2) 4090 (3) 4096 (4) 2048

70. If the number left is 1024, find the maximum possible value of n.

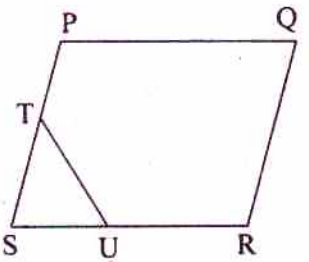
(1) 2047 (2) 2048 (3) 2049 (4) 1025

Sub Section-IIB: Number of Questions = 15

Note: Questions 71 to 85 carry two marks each.

DIRECTIONS *for questions 71 to 85:* Answer the questions independently of each other.

71. In the figure below, PQRS is a parallelogram, where SR = 2PS = 4PT and U is a point on SR. If ∠STU = ∠PRS and PT is 20 cm less than UR, find the perimeter (in cm) of PQRS.



(1) 80 (2) 96 (3) 108 (4) 72

72. What is the remainder when 2^{1000} is divided by 25?

(1) 1 (2) 24 (3) 8 (4) 17

73. If the sum to infinity of the series $2 + (2 - d)2/3 + (2 + d)\,4/9 + (2 + 3d)\,8/27 + \ldots\ldots\infty$ is 5/2, what is the value of d?

(1) 7/12 (2) –5/12 (3) –7/12 (4) 5/12

74. All reputed B-schools fleece their students and one-sixth of all B-schools that fleece their students are reputed. Also, one-fourth of all B-schools that are recognised, fleece their students. There are exactly six reputed B-schools which are also recognised, and 39 B-schools which are recognised but do not fleece their students. If there are a total of 78 B-schools which fleece their students, then how many of these are neither recognised nor reputed?

(1) 55 (2) 56 (3) 57 (4) 58

75. In a four-digit number, the sum of the first two digits is four-fifth of the sum of the last two digits, while the sum of the first and last digits equals the sum of the other two digits. If the first digit is less than the second digit, how many such four-digit numbers exist?

(1) 2 (2) 3 (3) 4 (4) 5

76. If $\log_n 54 = a$ and $\log_n 72 = b$, find $\log_n 1728$ in terms of a and b.

(1) $\frac{1}{5}(15a - 7b)$ (2) $\frac{1}{7}(15b - 3a)$ (3) $\frac{1}{5}(27a - 3b)$ (4) $\frac{1}{7}(12b - 27a)$

77. In a city, the local shuttle trains start from and arrive at the station at fixed intervals and run at a uniform speed. A boy was walking down the railway track at a certain speed. Every half an hour, a local train overtook him and every 20 minutes, a local train passed him in the opposite direction. Find the time interval between a local train passing a certain point on the railway track and the immediately next local train passing that point in the same direction.

(1) 26 minutes (2) 24 minutes (3) 27 minutes (4) 25 minutes

78. How many three-digit numbers satisfy all the following conditions?

I. When divided by 29 or 3, they leave a remainder of 2 in each case.
II. When divided by 17 and 38, they leave remainders of 6 and 24 respectively.
III. When divided by 18 and 21, they leave remainders of 14 and 8 respectively.

(1) 1 (2) 2 (3) 3 (4) More than 3

79. Balram, the local shoe shop owner, sells four types of footwear – Slippers (S), Canvas Shoes (C), Leather Shoes (L) and Joggers (J). The following information is known regarding the cost prices and selling prices of these four types of footwear:

(i) L sells for Rs.500 less than J, which costs Rs.300 more than S, which, in turn, sells for Rs.200 more than L.
(ii) L costs Rs.300 less than C, which sells for Rs.100 more than S, which, in turn, costs Rs.100 less than C.

If it is known that Balram never sells any item at a loss, then which of the following is true regarding the profit percentages earned by Balram on the items L, S, C and J represented by l, s, c and j respectively?

(1) $l \geq c \geq s \geq j$ (2) $c \geq s \geq l \geq j$ (3) $l \geq s \geq c \geq j$ (4) $s \geq l \geq j \geq c$

80. How many natural numbers less than 1000 can be expressed as the difference of two perfect squares in at least one way?

(1) 750 (2) 811 (3) 810 (4) 749

81. Ram has four children whose nicknames are Honey, Sunny, Moni and Bunny. He had a total of 12 mangoes to distribute among them such that each child got at least one mango. Find the number of ways of distributing the mangoes such that Bunny receives exactly 5 mangoes.

(1) 4 (2) 9 (3) 15 (4) 24

82. In ΔABC, D is a point on BC. P and Q are points on AB and AC respectively such that DP is perpendicular to AB and DQ is perpendicular to AC. If the altitudes from B to AC and C to AB are 30 cm and 40 cm respectively and DQ = 6, find DP.

(1) 24 cm (2) 32 cm
(3) 36 cm (4) Cannot be determined

83. P and Q are natural numbers. When P is divided by Q, the remainder left is 13. When P is divided by 9Q, the remainder left is 49. Find the remainder when P is divided by 3Q

(1) 7
(2) 13
(3) 49
(4) Cannot be determined

84. If a, b, c, d and e are distinct natural numbers such that $a + b + c + d + e = 55$, and $a^2 + b^2 + c^2 + d^2 + e^2 = S$, then

(1) $440 \leq S \leq 3025$ (2) $550 \leq S \leq 2055$ (3) $660 \leq S \leq 3025$ (4) $615 \leq S \leq 2055$

85. A cat saw a squirrel when the latter was exactly at the middle of a vertical pole. At that moment, the angle of elevation of the squirrel, as observed by the cat, was 30°. The cat then ran a certain distance towards the pole and chased the squirrel, which then ran to the top of the pole. The cat, which is now 20 m away from the foot of the pole, finds that the squirrel now has an angle of elevation of 60°. What distance did the cat run?

(1) 6 m (2) 10 m (3) $10\sqrt{3}$ m (4) $6\sqrt{3}$ m

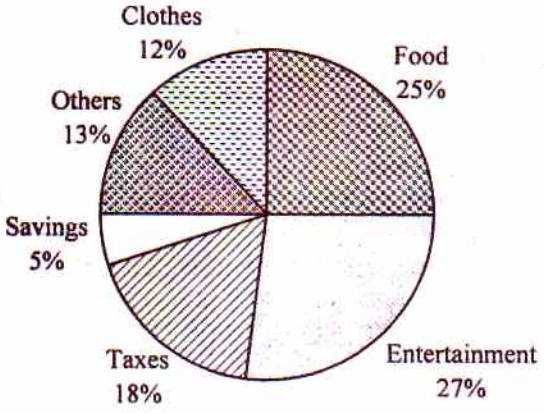
SECTION – III
Sub Section-IIIA: Number of Questions = 26

Note: Questions 86 to 111 carry one mark each.

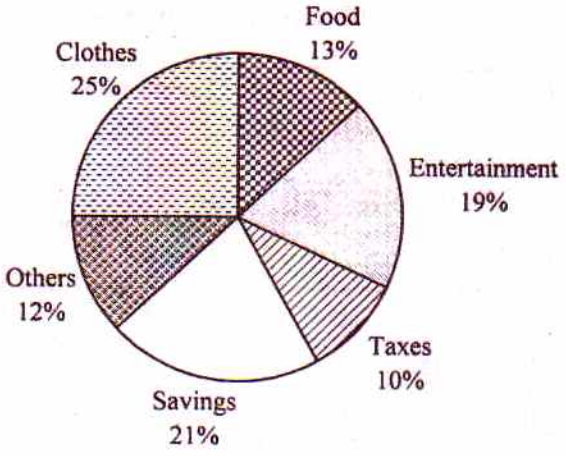
DIRECTIONS *for questions 86 to 89:* Answer the questions on the basis of the information given below.

Pie chart I and Pie chart II show the break up – according to different expenditure heads and savings – of the incomes of Mr. and Mrs. Anand respectively. Pie chart III shows the break up – according to the type of savings – of the total savings of the couple (i.e., the savings of Mr. and Mrs. Anand put together).

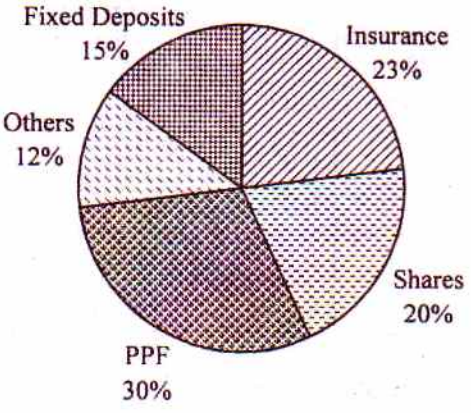
Pie chart I



Pie chart II



Pie chart III



86. If Mr. Anand's savings are twice the total savings of the couple invested in fixed deposits, what is the ratio of the income of Mr. Anand to that of Mrs. Anand?

(1) 7 : 3 (2) 3 : 7 (3) 5 : 9 (4) 9 : 5

87. If the ratio of the income of Mr. Anand to that of Mrs. Anand is 3 : 1, the total savings of the couple invested in PPF as a percentage of Mr. Ananad's savings are

(1) 50% (2) 65% (3) 72% (4) 78%

88. If for an income of upto Rs.1 lakh, no tax is charged and for any income above Rs.1 lakh, the rate of tax for males and females is 30% and 20% respectively of the income in excess of Rs.1 lakh, then what is the ratio of the income of Mr. Anand to that of Mrs. Anand?

(1) 3 : 4 (2) 5 : 4 (3) 4 : 5 (4) None of these

89. If the expenditure on clothes by Mr. Anand and that by Mrs. Anand are in the ratio 2 : 5, then what is the ratio of the income of Mrs. Anand to that of Mr. Anand?

(1) 5 : 6 (2) 4 : 5 (3) 5 : 4 (4) None of these

DIRECTION *for questions 90 to 94:* Answer the questions on the basis of the information given below.

Details pertaining to education in several countries in the year 1997

Name of the Country	Adult Literacy Rate (%)	Net Enrolment Ratio* (%)		PUBLIC EDUCATION EXPENDITURE (PEE)			
		Primary Education	Secondary Education	PEE / GNP	PEE as a Percentage of Total Government Expenditure	Percentage of PEE spent on	
						Primary & Secondary Education	Tertiary Education
Argentina	96.7	99.9	76.9	0.035	12.6	80.5	19.5
Bangladesh	40.1	75.1	21.6	0.012	5.3	88.6	7.9
Brazil	84.5	97.1	65.9	0.024	11.8	73.8	26.2
China	82.8	99.9	95.2	0.023	12.2	69.6	15.6
India	55.7	99.9	70.0	0.032	11.6	66.0	13.7
Indonesia	85.7	99.9	98.7	0.015	7.9	73.5	24.4
Korea	97.5	99.9	95.3	0.037	17.5	82.0	8.0
Malaysia	86.4	72.2	59.7	0.049	15.4	63.3	25.5
Pakistan	44.0	99.2	56.1	0.027	7.1	79.8	13.0
Sri Lanka	91.1	99.9	99.9	0.034	8.9	74.8	9.3
Thailand	95.0	99.9	64.0	0.049	15.4	63.3	23.5
Mexico	95.0	88.0	75.6	0.048	20.1	70.3	16.4

*As a percentage of the population of the relevant age group.

90. For which of the given countries is the total government expenditure as a percentage of the GNP, the least?

(1) Bangladesh (2) Korea (3) Indonesia (4) None of these

91. In the given year, if the PEE incurred by each country towards 'Primary & Secondary Education' is the same, then which of the given countries incurred the highest expenditure on tertiary education?

(1) Argentina (2) Brazil (3) Malaysia (4) None of these

92. If in the given year, in each of the given countries, the population of the relevant age group for primary education is the same as that for secondary education, then in how many countries do the net enrolments in primary education exceed that in secondary education by 30% or more?

(1) 4 (2) 5 (3) 6 (4) None of these

93. For how many countries with an adult illiteracy rate of less than 50%, but a net enrolment ratio of more than 60% in secondary education, is the PEE more than 8% of the total government expenditure in the given year?

(1) 0 (2) 1 (3) 8 (4) 9

94. In 1997, in how many of the given countries is the PEE spent on tertiary education more than 0.5% of the GNP?

(1) 3 (2) 4 (3) 5 (4) None of these

DIRECTIONS *for questions 95 to 97:* Answer the questions on the basis of the information given below.

In the following table, for each specified 'Number of years', the value mentioned against a particular 'Rate' is the total amount that can be obtained after the specified 'Number of years', if Rs.100 is invested today, at that particular rate of interest, compounded annually. In other words, the values in the table also represent the prices to be paid, after the specified 'Number of years', for an item costing Rs.100 now, considering the annual rate of inflation as 5%, 8% or 10%.

Rate	Number of years			
	5	10	15	20
5%	127.6	162.9	207.9	265.3
8%	146.9	215.9	317.2	466.1
10%	161.1	259.4	417.7	672.7

95. If a person invests Rs.5 lakh in a bank at 5% rate of interest, interest being compound annually, what is the approximate total interest that the person will obtain after 20 years?

(1) Rs.7.4 lakh (2) Rs.8.3 lakh (3) Rs.9.4 lakh (4) Rs.13.2 lakh

96. If for the next 20 years, inflation is expected to be constant at 5% per annum, while the equity markets are expected to deliver a uniform return on investment of 8% (both compounded annually), then what would be the minimum number of years it would take to get an actual growth of 50% on an amount of Rs.10 lakh invested in the equity markets? An actual growth of 50% in n years means, if one invests Rs.100 now, after n years, one should be able to purchase articles worth today's equivalent of Rs.150 with the obtained amount.

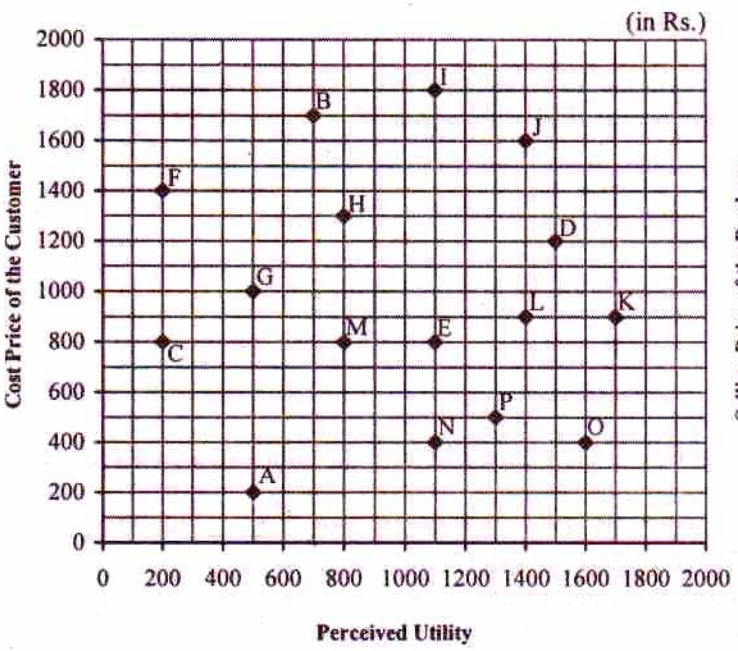
(1) 12 (2) 13 (3) 15 (4) 16

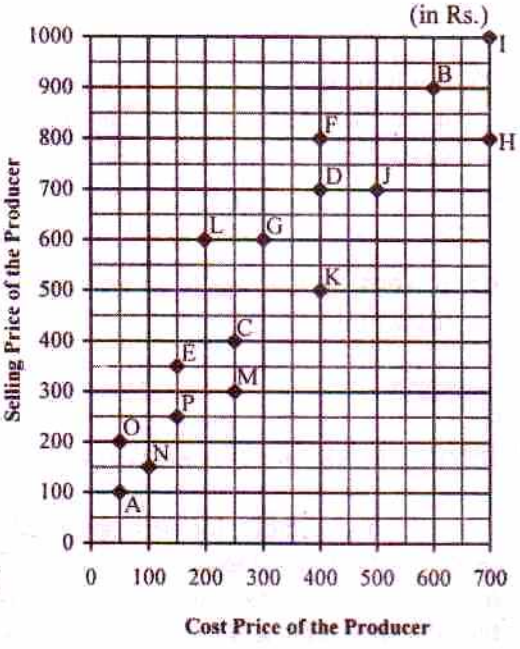
97. To obtain an amount of Rs.100 lakh at the end of 15 years, what should be the approximate amount invested now, at an interest rate of 10% per annum, compounded annually?

(1) Rs.24 lakh (2) Rs.28 lakh (3) Rs.33 lakh (4) Rs.44 lakh

DIRECTIONS *for questions 98 to 101:* Answer the questions on the basis of the information given below.

The following two scatter graphs pertain to 16 products – A through P.





Note:

1. Perceived value of a product = Perceived Utility – Cost Price of the Customer
2. Profit of the producer = Selling price of the Producer – Cost Price of the Producer
3. Profit percentage of the producer $= \dfrac{\text{Profit of Producer}}{\text{Cost Price of Producer}} \times 100\%$
4. Value Index of product (V.I.) $= \dfrac{\text{Perceived value of the product}}{\text{Profit of the producer}}$

98. For how many products is the perceived value of the product more than 25% of the cost price of the customer?

(1) 5 (2) 6 (3) 7 (4) 8

99. For how many products is the V.I. at least 0.8 and at most 1?

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

100. For how many products is the perceived value of the product more than Rs.300 but less than Rs.700?

(1) 0 (2) 1 (3) 2 (4) None of these

101. For how many products is the profit percentage of the producer more than 20% but less 50%?

(1) 0 (2) 1 (3) 2 (4) None of these

DIRECTIONS *for questions 102 to 104:* Answer the questions on the basis of the information given below.

At an International School, each of the students in Class XII has to opt for at least one of the three subjects, Physics, Chemistry or Biology. It is also known that, the number of students who opted for Physics is less than the number of students who opted for Chemistry, which, in turn, is less than the number of students who opted for Biology.

102. If 97 students opted for Physics, the total number of students is at least

(1) 99 (2) 100 (3) 101 (4) 294

103. If 45 students opted for Biology and it is known that the number of students who opted for exactly one, exactly two, and exactly three subjects are all different and also the number of students who opted for only Physics, only Chemistry and only Biology are all different, then the total number of students is at most

(1) 133 (2) 132 (3) 131 (4) 130

104. If it is now made mandatory that each student opt for at least two of the three given subjects, and 96 students opted for Chemistry, then the total number of students is at least

(1) 97 (2) 100 (3) 193 (4) None of these

DIRECTIONS *for questions 105 and 106:* Answer the questions on the basis of the information given below.

At the start of the World Cup Cricket tournament, the International Cricket Council (ICC) graded the players participating in the tournament. However, only the players who had played a total of more than 20 matches qualified for the grading. Each participating player who qualified was given a grade from among the five grades A, B, C, D and E, based on the total number of matches he had played. The grade wise distribution of the players who qualified is represented in the following table.

Start of the World Cup

Grade	A	B	C	D	E
Total number of matches played	More than 200	151 to 200	101 to 150	51 to 100	21 to 50
Number of players	11	28	31	24	26

Each player who participated in the World Cup Cricket tournament played at most 10 matches in the tournament and at the end of the tournament, the ICC once again graded the players similarly according to the same criteria and the following table gives the distribution of the players as per this grading.

End of the World Cup

Grade	A	B	C	D	E
Total number of matches played	More than 200	151 to 200	101 to 150	51 to 100	21 to 50
Number of players	21	47	22	26	34

105. Of the 120 players who had initially qualified for the grading, what is the minimum number of players who played at least one match in the World Cup?

(1) 39 (2) 52 (3) 67 (4) 81

106. What percentage of the players who were graded D at the start of the tournament, retained the same grade even at the end of the tournament?

(1) $16\frac{2}{3}\%$ (2) $33\frac{2}{3}\%$ (3) 25% (4) $66\frac{2}{3}\%$

DIRECTIONS *for questions 107 to 111:* Each question is followed by two statements, A and B. You have to decide whether the information provided in the statements is sufficient for answering the question.

Choose 1 if the question can be answered by using statement A alone, but cannot be answered by using statement B alone.
Choose 2 if the question can be answered by using statement B alone, but cannot be answered by using statement A alone.
Choose 3 if the question can be answered by using both the statements together, but cannot be answered by using either statement alone.
Choose 4 if the question cannot be answered even by using both the statements together.

107. If every Saturday and Sunday are holidays and no other day is a holiday, how many holidays are there in the year X?

A. There are a total of 53 Thursdays in the year X.
B. There are a total of 52 Fridays in the year X.

108. A game consists of throwing two dice simultaneously. There is an entry fee of Rs.10 and an additional fee of Rs.2 for every simultaneous throwing of the two dice. The game is considered to have ended normally when both the dice show the same number on their faces. In this case the player gets Rs.50 and ends the game. Alternately, a player can choose to terminate the game prematurely after any number of throws. Vishnu has incurred a loss of Rs.40 by playing this game. How many times did he throw the two dice simultaneously?

A. The total number of times that the two dice turned up showing different numbers on their faces is at least 15.
B. The game ended normally.

109. Of the four friends – P, Q, R, S – all the married persons are considered to be one group and each person of this group always lies, while all the unmarried persons are considered to be another group and each person of this group always tells the truth. Among these four, if exactly three persons are married, who is the unmarried person?

A. P said, "Q and R belong to the same group".
B. Q said, "R and S belong to two different groups".

110. Are the roots of equation $ax^2 + bx + c = 0$, reciprocals of each other?

A. $a = c$ and $b = -(a^2 + 1)$
B. $b = c$.

111. Among P, Q, and R, who completes the work the fastest?

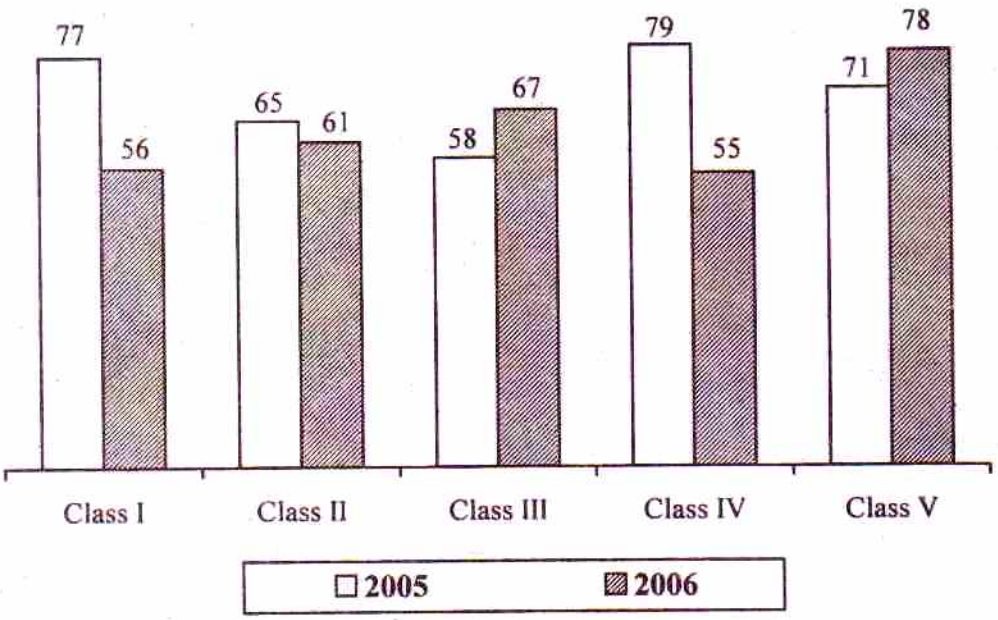
A. Time taken by P to complete the work, working individually, is twice the time taken by Q and R working together to complete the work.
B. Time taken by R to complete the work, working individually, is five times the time taken by P, Q and R working together to complete the work.

Sub Section-IIIB: Number of Questions = 12

Note: Questions 112 to 123 carry two marks each.

DIRECTIONS *for questions 112 to 115:* Answer the questions on the basis of the information given below.

The following bar graph gives the number of students in different classes of a school in 2005 and 2006. There are only classes from I to V and students are admitted only in class I and do not leave the school until they pass class V. Students in a class, who pass the final exam of a year are promoted to the next class for the next year, while students who fail have to be in the same class for the next year. In the school, for any of the classes, the pass percentage is always less than 100 but never less than 75.



112. In 2005, how many students failed in class III?

(1) 1
(2) 3
(3) 5
(4) Cannot be determined

113. The total number of students in the school who failed in the year 2005 was

(1) 30
(2) 28
(3) 23
(4) Cannot be determined

114. In the year 2005, which class had the highest pass percentage?

(1) Class III
(2) Class IV
(3) Class V
(4) Cannot be determined

115. The number of students who joined the school in 2006 was

(1) 56
(2) 48
(3) 42
(4) 37

DIRECTIONS *for questions 116 to 119:* Answer the questions on the basis of the information given below.

Among six friends – A, B, C, D, E and F – three are wearing a Blue dress, two are wearing a Red dress and one is wearing a Green dress. Three of them are employed, two are unemployed and one is a student. Also, three of them own only a Bicycle each, two of them own only a scooter each and one owns only a Mobike. Each of the three features, i.e., colour of dress, employment status and the kind of vehicle is hence forth referred to as an *attribute*. Except C and D, no two friends have more than one similar *attribute* in common. Further the following information is known:

(i) C, who does not wear a Blue dress, does not have the same kind of vehicle as A.
(ii) Each of the four persons A, B, D and E have exactly one *attribute* in common with the person who owns the kind of vehicle which no other person owns.
(iii) The student does not own a Bicycle.
(iv) For A, B and F, there is one common *attribute* and that is not the colour of dress.

116. Who owns the Mobike?

(1) C (2) F (3) D (4) Either C or F

117. What is the colour of the dress that the student wears?

(1) Blue (2) Green
(3) Red (4) Cannot be determined

118. Which of the following pairs of friends are both employed?

(1) A and D (2) F and D (3) B and E (4) F and A

119. Who wears a green dress?

(1) A (2) B (3) C (4) None of these

DIRECTIONS *for questions 120 to 123:* Answer the questions on the basis of the information given below.

Mr. Arunachalam, the BCCI statistician was a worried man. He was given a table which showed the difference between the scores at which the different players were out in India's match with Australia. The table was given in a format which was new to him and he was asked to determine the order and the scores at which the different players had got out. The only thing known was that Sehwag was the first wicket to fall.

	Sehwag	Uthappa	Munaf	Agarkar	Kumble
Zaheer	224	190	26	23	9
Dravid	69	35	181	132	164
Dhoni	159	125	91	42	74
Tendulkar	143	109	107	58	90
Yuvraj	99	65	151	102	134

In the above table, for example, the difference between the score when Sehwag was out and the score when Zaheer was out is 224 runs.

120. If it was known that Sehwag had scored 20 runs in the match, which of the following can be India's score?

(1) 224 (2) 244 (3) 267 (4) None of these

121. Who was the fifth player to be out?

(1) Dhoni (2) Dravid (3) Tendulkar (4) Yuvaraj

122. If the fourth wicket fell at the score of 137, what was India's score when the seventh batsmen was out?

(1) 197 (2) 239 (3) 262 (4) None of these

123. The highest wicket partnership in India's innings (use information from the previous questions if necessary) was between which of the following pairs of players?

(1) Dhoni and Agarkar
(2) Uthappa and Dravid
(3) Tendulkar and Dhoni
(4) Cannot be determined

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(KEY AND SOLUTIONS FOR AIMCAT0814)

Key

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

Solutions

Section – I
Sub Section – IA

Solutions for questions 1 to 5:

1. The sarcastic expression, "periodic fits of morality", implies that the British society particularly in the Victorian era was a morally depraved society which lapsed into "occasional spells of morality". This is a negative attribute. Hence the word notorious is the appropriate word here. A society is not renowned, acclaimed or reputed for being morally depraved. Choice (4)

2. The word 'puritans' is appropriate in the given blank because here the reference is to people who attack others for morally unacceptable behaviour, the word 'puritans' which means people practising extreme strictness in religion or morals is right. The words despots Mavericks (non-conformists) and conservatives are inappropriate. Between the words clerics (religious leaders) and puritans the latter is more appropriate because it means sticklers for morality. Choice (2)

3. The first sentence states that the so called adherents of moral principles in Victorian Britain had double-standards and did not practise what they preached i.e., they were hypocrites. The post-modernist British society is not as 'hypocritical' as the earlier society. In the second sentence a comparison is made between the previous and the present generations of the British society and the present society is found to be not as hypocritical as the past one. Obviously choice (1) is most appropriate. The words sophisticated, conformist (adhering), and venal (corrupt) are inappropriate. Choice (1)

4. The third sentence complements the preceding sentence which states that although the present British society is less hypocritical, the double standards are still prevalent and the society expresses its objection to or opposition for the breach of morality i.e., it expresses its 'outrage'. Thus choice (2) is the most appropriate. The words rebellion (resistance to authority), extremism and violation are inappropriate. Choice (2)

5. The last part of the passage gives an example to substantiate that the British Society expressed its outrage at the breach of morality. The example here is of a 'scandal'. The words aspersion, obloquy (abuse) and allegation are inappropriate. Choice (1)

Solutions for questions 6 to 8:

6. The error lies in the fourth part of the sentence. It should be 'support to' business and not 'in'. Choice (4)

7. Since the subject is 'tendency', the verb should be 'has been'. Choice (2)

8. It has to be 'a bundle of compromises' and not 'compromise'. Choice (1)

Solutions for questions 9 and 10:

9. An 'aficionado' is a fan or devotee whereas all the others are people who enjoy good food. Choice (1)

10. While 'large' also conveys something big it does not suggest the mammoth size suggested by the other words. Choice (2)

Solutions for questions 11 to 15:

11. The word 'committed' which follows the blank implies that both India and Pakistan are not making an evasive (ambiguous) or a perfunctory (superficial), flippant (frivolous) statement. That the two nations are committed to the peaceful resolution of the issue implies that the statement made by them is an anodyne

(unlikely to cause disagreement) statement. Further, the third statement of the passage states that a ceasefire has been in force since 2003 thus indicating that the two nations really intend to be committed to the goal and hence they make an anodyne statement.

Choice (1)

12. The expression 'peaceful resolution' which is given before the blank and the word 'ceasefire' which comes after the blank point to 'dispute' as the word in the blank. Further, the entire paragraph speaks about the dispute between India and Pakistan. The word controversy which means a public debate about a matter which arouses strong opinions is not suitable here. The word insurrection which mean a rebellion is inappropriate. Between 'hostility' and 'dispute' the latter is more appropriate because the cause for the hostility is the dispute. Choice (4)

13. 'Stripped', 'bereft' and 'divested' suggest taking away something that was there but since the place is a 'curse' it is 'devoid' of significance. Choice (3)

14. The entire passage speaks about the removal of troops from the Siachen glacier. Hence the word 'demilitarisation' is most appropriate in the given context.

Choice (3)

15. Although India and Pakistan have been committed to the peaceful resolution of the dispute the commitment has not been implemented, this is an evidence of the fact that both nations are adamant and unrelenting. Therefore the word 'obduracy (stubbornness) is appropriate. The words obtuseness (dullness), imprudence (injudiciousness) and insolence (disrespectfulness), are inappropriate in comparison. Choice (2)

Solutions for questions 16 to 20:

16. Choice (1) has 2 errors. The sentence should read, "..... the world created by him is ....." and the singular subject 'world' should take the singular verb 'describes'. In choice (2) the relative pronoun 'which' is inappropriately placed. That sentence should read '.... created by him, which is sordid and violent, describes .....'. Choice (3) is appropriate. In choice (4), 'being' leaves the sentence incomplete for want of an effect or a result. Choice (3)

17. The context of the sentence needs a clause that starts with 'when', not 'while'. 'Confronted with' is when you come up to a problem, as in this case. 'Confronted by' is when the problems come to face you. 'On, the one hand' requires the use if 'on the other'. Choice 4 is, therefore, the appropriate sentence. Choice (4)

18. In choice (3), the singular subject 'reason' does not agree with the plural verb 'arise'. Choices (2) and (4) distort the meaning by using 'which' rather than 'and is' which is the appropriate connection to the subject – 'reason'. Choice (1) is appropriate. Choice (1)

19. Choices (1) and (2) contain subject-verb disagreement. The singular subject 'spate' has to take the singular verb 'has'. Additionally, 'coincided against' is inappropriate in choice (2). Moreover, 'so unsurprisingly that' is erroneous and distorts the meaning. Choice (3)

20. Choice (1) should read ".....into a darker territory .....". The absence of the article makes it erroneous. In Choice (3), 'lives become invaded' is inappropriate. The use of 'life' is inappropriate in choice (4), for we are talking of the 'lives' of many people. Choice (2)

Solutions for questions 21 to 25:

21. Going by the choices, either B or E should be the beginning sentence. Sentence E cannot begin the para as it gives a reason for the writer's behaviour '..... because I am more .....'. Hence B is the opening sentence. E follows B more logically compared to C or F because the opening sentence talks about 'mother tongue' and the same idea is continued in E. Also A follows C as they talk about the author's efficiency in writing English. Choice (4)

22. Sentence B is the opening sentence. Sentence D links the Egyptians further with the idea of alchemy. Hence D follows B. Logically sentence E follows F as F talks about 'inner alchemy', which is further explained in sentence E Choice (1)

23. Either C or E has to be the opening sentence. Logically, sentence C would be a better opening sentence as it presents a general idea – the thing that is generally liked by everyone. Sentence E follows A as A mentions 'the hundreds of books' and E talks about 'all the books' that come out every month. F mentions 'literary exchanges' and B follows F as it shows how we can take part in these 'literary discursions'. Choice (4)

24. Sentence A cannot begin the paragraph as it talks about 'additional benefits' D is the opening sentence. Also sentence E follows F because F says that 'car-sharing cannot totally replace .....' and E says 'what it can do is .....'. Choice (3)

25. Either sentence C or sentence B can be the opening sentence. But sentence D has to immediately follow F as F mentions 'intensified competition' and D begins with 'much of this competition'. Only choice (2) has this sequence. Choice (2)

Solutions for questions 26 to 45:

Number of words and Explanatory notes for RC:

Passage – I : 915	Passage – II : 922
Passage – III : 892	Passage – IV : 923

26. Choice (1) can be ruled out based on line 2 of para 9. The passage says that attempts can be made to resolve conflicts. Whether they become successful or not is anybody's guess. In choice (2), 'political' is the key word. As per the passage, a solution need not be of only political nature. Choice (4) is not true as per the passage. Choice (3) can be inferred from the passage.

Choice (3)

27. Choice (2) can be understood from the passage. Choice (3) is from para 3. Para 3, last 2 lines yield choice (4). Choice (1) is a definite statement that generalizes all conflict. So choice (1) is not true.

Choice (1)

28. Choice (1) is from para 5, 1st line. Choice (2) can be got from para 1 (Kashmir issue). Choice (3) can be got from para 5. Hence choice (4) is correct. Choice (4)

29. Conflicts over identity issues have a very high chance of penetrating the daily life routine of the affected people. (From para 5, last line). Choices (1) and (2) do not lead to the situation mentioned in the question. Choice (4) can be ruled out. It is only choice (3) that reflects the identity crisis, zero sum position mentioned in para 5. Choice (3)

30. The question is about intractable civil wars hence the answer comes from para 3. Choice (1) supports identity issues. Choice (2) can be got from the last line of para 3 (no legitimate way to channel). Choice (3) is an example of war profiteering. Choice (4)

31. This question is from paras 5, 6, and 7. Line 1 of para 5 supports choice (1). The example of the doctrine of Islam supports choice (2) and (3) Choice (4)

32. Paras 2 and 3 form the basis for the question. Choice (1) is not true. In choice (2), the first part could be true but the second part is not correct. Choice (4) is not true. Choice (3) can be obtained from para 3, last line. Choice (3)

33. Para 3 is the key to this question. Choice (1) and (2) are not correct. Choice (4) is not correct because of the key word 'certain'. According to the author, all traditions belong to modern era. Choice (3)

34. Choice (1) is not true as per the passage since it says that none of the traditions are ancient. Choice (2) is not correct because it talks about local influence only. Choice (4) is not correct because it generalizes about 'tradition'. Choice (3) can be got from line 3-4 of para 6. (Endurance over time is not .....) Choice (3)

35. Para 5 supports choice (1) (a tradition has been invented for a variety of reasons). Para 8, last line supports choice (2). The example of Islam supports choice (3). Choice (4) is not true as per the passage. Choice (4)

36. Paras 2 to 4 provide the answer to this question. Choice (1) is not correct based on it being said in para 3 – 'the scholars have overlooked the American dimension'. They would have found historical evidence had they looked at the example of the Americas. Choice (3) is not correct. Choice (4) reflects the personal opinion of MacPherson. Choice (2) is supported by the first few lines of para 4 – most scholars have assumed that the European society formed the basis for Locke's state of nature. Choice (2)

37. Para 1 yields the answer to this question. (Political theorists have demanded a coherent account ....'. Choice (1) is not correct. Choice (3) is not true as per the last line of para 6. Choice (4) is not correct as per the passage – there is no account prior to Locke's regarding man's nature in natural surroundings. Para 1, last line supports choice (2). Choice (2)

38. Para 6 supports the question. Choice (1) is not true as per the passage. Choice (2) is not at all relevant to this question. Choice (4) is not correct because it talks about 'universal applications'. Had the words been 'universal justification' it would have been correct. Last 2 lines of para 6 support choice (3). Choice (3)

39. Direct question. (Para 4 end) Choice (4)

40. Choice (2) is not correct because it uses the word 'law' instead of 'government' or 'system' or 'state'. Choice (3) goes against the concept of state of nature. Choice (4) is not correct because 'it is not rejection' but the absence of any form of government. Line 2 of para 1 supports choice (1). Choice (1)

41. Choice (1) is not applicable in this context. Choice (2) is not correct. In choice (3), 'developing countries' is the key word since it is not mentioned. Hence it is wrong. Choice (4) reflects the author's opinion regarding the general application of the patent system. Choice (4)

42. Para 5, last line leads to choice (1). Choice (2) can be inferred from para 6. The words 'competitive markets to lower prices' (para 7, line 4) shows how it can indirectly benefit people (choice 3). Choice (4)

43. Direct question. Paras 8 and 9 support choice (1). Para 8, line 2 supports choice (2). Last line, para 6, contradicts choice (3). Choice (3)

44. Direct question from para 1. Choice (1)

45. The words 'temporary monopoly' (para 1, line 3) lead to choice (1). The words 'financing and incentivising' (para 5, line 1) lead to choice (2) and 'afford' (para 2, line 3 from the end) leads to choice (3). Choice (4)

Sub Section – IB

Solutions for questions 46 to 48:

46. In part A, 'nomination' is the wrong word. It can be replaced by any of the alternatives. In part B, 'misdemeanour' is odd – it can be replaced by 'violation', 'offense' or 'culpability' but not 'liability'. In part C, 'moral papers' is odd, it can be 'moral issues' 'affairs', 'conclusions' but not 'certificates'. In part D, it is not 'spotted' but 'labelled', 'identified' or 'named' but not 'distinguished'. Choice (1)

47. A claim cannot be 'instructive' – it can be 'institutional', 'unimaginative' or 'substantial', may even be 'regimented'. In part B, control is not 'imposed', it is 'considered' 'examined' or 'justified' – it is not 'deliberated'. In part C, 'on the part of' is a wrong phrase and can be replaced by any of the alternatives. In part D, 'conditioned' is wrong – it is 'organised', 'ranked', or 'foreseen' but not 'schemed'. Choice (3)

48. 'Personal' is something 'private' – it can't be personal to an age. It can be replaced by any of the alternatives. In part B it is not 'quirks' but 'features', 'attributes' or 'virtues' of marriage – not 'singularities'. In part C 'apprehension' cannot be 'imperturbable' (serene). It can 'noticeable', 'uneasy' or 'nervous' but not 'insecure'. In part D, it is not 'detaining' but 'appearing', 'threatening' or 'portending'. 'Hindering' cant replace the word. Choice (4)

Solutions for questions 49 and 50:

49. The main points are:

1) Deployment of more police seems to increase the number of crime.
2) People are able to report crime as policemen are available.
3) Hence these reports cannot be a measure of the number of crimes committed.

Choice (1) is incorrect. The second sentence of the summary says that the public 'become aware of this', which is not given in the passage. Choice 2 is the summary of the passage. The idea given in the first sentences in choice 3 and 4 are contradictory to what is stated in the passage. Hence they inappropriate.

Choice (2)

50. The main points are

1) The increasing human population and the development of technology threaten the existence of other species on earth.
2) We have to understand that the ecosystem is more important.
3) The technological development are not enduring or permanent.
4) Hence we have to shun our self-cantered approach and work towards the benefit of the entire ecosystem.

The idea of '..... pursue justice at the level of entire ecosystem' is not conveyed in choice (1). Hence it is not the right summary. All the important points are covered in choice (2) which can be called its summary. Choice 3 is verbose. The idea that 'civilisation is going out of control' is just one of the idea given in the passage. It is not the main idea of the passage. Choice (4) is incorrect as it does not talk about saving the environment. Choice (2)

Section – II
Sub-Section – IIA

Solutions for questions 51 to 57:

51. A minimum of 1001 reversals need to be performed to reverse all the rays. Any number of extra reversal(s) would have to be undone to again end up with a reversed ray(s).

$\therefore$ R must be of the form N + 2E where 2E denotes the number of extra reversals carried out.

$\therefore$ R must be odd and must be at least 1001.

Only Choice (4) satisfies this condition. Choice (4)

52. Let the capacities of A, B and C be denoted by a, b and c respectively.

$$a = \frac{1}{m}[b+c] \Rightarrow ma = b+c \text{ ------(1)}$$

$$b = \frac{1}{m}[a+c] \Rightarrow mb = a+c \text{ -----(2)}$$

$$c = \frac{1}{m}[a+b] \Rightarrow mc = a+b \text{ ----(3)}$$

Adding (1), (2) and (3), $m(a + b + c) = 2(a + b + c)$

$\therefore m = 2$. Choice (1)

53. The total number of coins drawn 'T' will be $10n$.

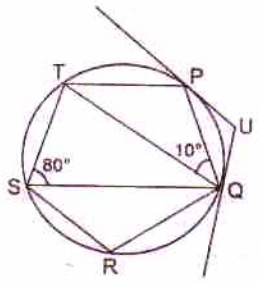
Since only 5 distinct denominations are possible, when T = 6 we will have at least two coins of the same denomination. Similarly, to get at least p coins of the same denomination we need to have at least

$5(p - 1) + 1$ coins

$\Rightarrow$ for $p = 8$, we need at least $T = 5 \times (8 - 1) + 1 = 36$ coins

$\Rightarrow 10n \geq 36 \Rightarrow n \geq 4$ Choice (3)

54.



Quadrilateral PQST is cyclic

$\therefore \angle QPT + \angle QST = 180°$

$\Rightarrow \angle QPT = 100°$

In Δ PQT, $\angle QPT + \angle PQT + \angle PTQ = 180°$

$\Rightarrow \angle PTQ = 70°$

Further, by alternate segment theorem,

$\angle PTQ = \angle PQU = 70°$

Now, in ΔPQU, UP = UQ (tangents from the same point)

$\therefore \angle UPQ = \angle PQU = 70°$

$\therefore$ In ΔPQU,

$\angle UPQ + \angle PQU + \angle PUQ = 180°$

$\Rightarrow \angle PUQ = 180° - (70° + 70°) = 40°$ Choice (2)

55. Given $10S = 14C \quad \Rightarrow S = 1.4C$

Also $14C = \frac{70}{3}(M - S)$

$\Rightarrow 42C = 70M - 98C \quad \Rightarrow 140C = 70M \quad \Rightarrow M = 2C$

$\Rightarrow$ Profit % $= \frac{0.4C}{1C} = 40\%$

discount % $= \frac{2C - 1.4C}{2C} = 30\%$

Mark up % $= \frac{2C - C}{C} = 100\%$

Now, mark up % is halved i.e., 50% and discount% is 25%.

If cost price is Rs.100 then marked up price is 150 and selling price is $150 \times 75\% = 112.5$

= Profit percentage is 12.5%. Choice (1)

56. Solving

$2x^4 + x^3 + x = x^4 + x^3 + 5x^2 + x - 4$

$x^4 - 5x^2 + 4 = 0$

$\Rightarrow (x^2 - 1)(x^2 - 4) = 0$

$\Rightarrow x = \pm 1, \pm 2$

But for $x = -1$, $y = 0$. For $x = 1, 2, -2$, $y > 0$.

$\therefore$ The curves intersect above the x-axis at three distinct points. Choice (3)

57. The pulp content by weight in fresh grapes

= 100 – 80 = 20%

$\Rightarrow$ 10 kg of fresh grapes which have 2 kg of pulp, finally yield 2.5 kg of dry grapes.

This 2 kg of pulp is $\left(\frac{2}{2.5} \times 100\right)\%$ by weight of dry grapes.

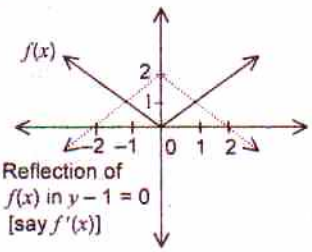
$\Rightarrow$ Dry grapes have 80% pulp by weight.

Choice (4)

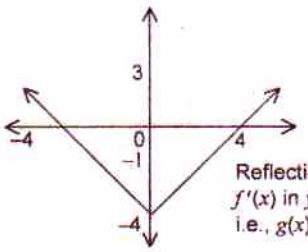
Solutions for questions 58 and 59:

58. In order to get the same graph, i.e., to nullify the effect of the first reflection, the graph should be reflected in the same mirror as in the first case. Choice (2)

59. Since the two reflections take place in parallel mirrors, the shape is retained but the graph is vertically displaced.



Reflection of $f(x)$ in $y - 1 = 0$ [say $f'(x)$]



Reflection of $f'(x)$ in $y + 1 = 0$ i.e., $g(x)$

Hence, as observed for the graphs $f(x) = g(x) + 4$.
Choice (4)

Solutions for questions 60 to 66:

60. On verification, of first three options, only option 2 is correct.

$$y = \frac{4x+3}{3x-4}$$

$3xy - 4y = 4x + 3$

$\Rightarrow x(3y - 4) = 4y + 3$

$$\Rightarrow x = \frac{4y+3}{3y-4}$$ Choice (2)

61. Given

$2\ell x + 3my + n = 0$ ——— (a)

$3\ell x - 4my - n = 0$ ——— (b)

Any line formed by a linear combination of (a) and (b) will pass through the point of intersection of (a) and (b)

Choice (1) : This can be obtained by the combination $(a) + (b)$

Choice (2) : This can be obtained by the combination $(b) - (a)$

Choice (3): This cannot be obtained by any combination of (a) and (b), as considering the coefficients of ℓx and n, $2(a) + (b)$ should give $7\ell x + 2my + n = 0$

Choice (4) : This can be obtained by the combination $2(b) + (a)$ Choice (3)

62. Divisors : $x\ x\ y$

Remainders : 1 4 4

$\therefore$ Maximum value of $P = (4x + 4)\ x + 1 = (2x + 1)^2$

Also x is at least 5 since the remainder when divided by x is given as 4.

For P to assume the least possible value x must be minimum. Here, x is at least 5.

$\therefore$ P is at least 121

P is of the form k times $[(x)\ (x)\ (y)] + 121$. Hence P need not be odd or a perfect square (though 121 is both). Only statement III is definitely true. Choice (3)

63. $123.01 = (1 \times 4^2 + 2 \times 4 + 3 \times 4^0) + \left(2 \cdot \frac{1}{4} + 1 \cdot \frac{1}{4^2}\right)$

$= (16 + 8 + 3) + \left(\frac{1}{2} + \frac{1}{16}\right) = 27 + (0.5 + 0.0625)$

$= 27 + 0.5625 = 27.5625$ Choice (3)

64. Choice (1)

$rp + pq + rq = r(p + q) + pq$.

The product of two or more integers is even when at least one of them is even. As r is even, $r(p + q)$ is even.

The product of two or more integers is odd when all of them are odd.

As both p and q are odd, pq is odd.

As the sum of a even number and a odd number is odd, $r(p + q) + pq$ is odd. Hence choice (1) is false.

Choice (2)

The sum of 2 odd numbers is always even.

As p and q are both odd, $p + q$ is even.

Hence $(p + q)\ (p + r)\ (q + r)$ is even. Hence choice (2) is false.

Choice (3)

Each of the expressions $(p + q - r)$, $(p + r - q)$ and $(r + q - p)$ is even as there are 2 odd numbers in each expression.

The cube or square of any integer has the same parity as the integer itself.

Hence $(p + q - r)^2$ is even and $(r + q - p)^3$ is even.

Hence $(p + q - r)^2 + (p + r - q) + (r + q - p)^3$ would be even. Choice (3) is false.

Choice (4) follows by elimination. Choice (4)

65. Let the height and radius of the cone be 'h' and 'r_1' respectively.

Let the radius of the cylinder be r_2

$\therefore \frac{1}{3}\pi r_1^2 h = \pi r_2^2 h$

$r_1^2 = 3r_2^2$

$\therefore r_1 = \sqrt{3}r_2$

Percentage change in its radius $= \frac{r_1 - r_2}{r_1} \times 100$

$= \frac{\sqrt{3}r_2 - r_2}{\sqrt{3}r_2} \times 100 = \left(\frac{\sqrt{3} - 1}{\sqrt{3}}\right) \times 100 = \frac{3 - \sqrt{3}}{3} \times 100$

$\cong \frac{3 - 1.73}{3} \times 100 \cong 42.3\%$ Choice (1)

66. I) $\angle PQR = \frac{360° - \angle PSR}{2}$

$2\angle PQR + \angle PSR = 360°$ --- (1)

If PQRS is a cyclic quadrilateral,

$\angle PQR + \angle PSR = 180°$ --- (2)

Subtracting (2) from (1), $\angle PQR = 180°$, which cannot be true since P, Q and R lie on a circle.

$\therefore$ I is definitely false.

Alternately: For PQRS to be cyclic the circle drawn through P, Q and R must pass through S. However, S does not lie on the circle drawn through P, Q and R.

Note: Only one circle can be drawn through any set of three (non-collinear) points on a plane.

II) Angles in the same segment are equal
$\therefore \angle RPT = \angle QST$ --- (1)
In ΔPTR and ΔQTS,
$\angle T$ is common --- (2)
From (1) and (2), ΔRPT and ΔQST are similar
$\therefore$ II is not false.
$\therefore$ Only statement I is definitely false.

Choice (1)

Solutions for questions 67 and 68:

67. C can purchase W_3 only. If D purchases W_2, the following possibilities arise.

(i)	(ii)	(iii)	(iv)
E – W_1	E – W_1	E – W_4	E – W_4
B – W_4	B – W_5	B – W_1	B – W_5
A – W_5	A – W_4	A – W_5	A – W_1

Choice (1)

68. If A purchases W_5, E can purchase W_1 or W_4. Hence, choice (1) is not true. D must purchase W_3. E can purchase W_1. Hence, B must purchase W_4. Choice (2) is not true.
If A purchases W_5, D is the only person who can afford to buy W_2. Hence, choice (3) is true. Choice (3)

Solutions for questions 69 and 70:

The given sequence is 1, 2, 3 .....
After step 1, the sequence becomes 2, 4, 6, 8.....
After step 2, it becomes 4, 8, 12, 16.....
After step 3, it becomes 8, 16, 24, 32.....
It can be verified that after the last step (say step m), the number left behind will be 2^m where, m is the largest possible for $2^m \le n$.

69. If $n = 4100$, 4096 will be left. Choice (3)

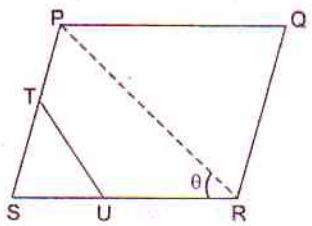
70. If 1024 is left, n can be a maximum of 2047.

Choice (1)

Sub-Section – IIB

Solutions for questions 71 to 85:

71. Since SR = 2PS = 4PT, T is midpoint of PS.



In ΔPSR and ΔSTU,
$\angle STU = \angle PRS$ and $\angle S$ is common.

$\therefore$ Both triangles PSR and STU are similar

$\therefore \frac{SU}{PS} = \frac{TS}{SR}$

Let PS = x cm
SR = $2x$ cm

$PT = TS = \frac{x}{2}$ and $UR = PT + 20 \text{ cm} = \frac{x}{2} + 20$

$SU = 2x - \left(\frac{x}{2} + 20\right) = \frac{3}{2}x - 20$

$\therefore \frac{\left(\frac{3}{2}x - 20\right)}{x} = \frac{\left(\frac{x}{2}\right)}{2x}$

$\Rightarrow x = 16$
$\therefore$ Perimeter of PQRS = 2 (PS + SR) = 96 cm.

Choice (2)

72. Look for a multiple of 25 which differs from a power of 2 by 1. We can arrive at 1025, a multiple of 25 and near to 1024, a power of 2.
Now, consider the remainder of 2^{1000} when divided by 1025.

$$\text{Rem}\left(\frac{2^{1000}}{1025}\right) = \text{Rem}\left(\frac{1024^{100}}{1025}\right) = \text{Rem}\left(\frac{1024^{100}}{1024-(-1)}\right)$$

$= (-1)^{100} = 1$ [using Remainder theorem]
So, $2^{1000} = 1025K + 1$ where K is a natural number.

$$\therefore \text{Rem}\left(\frac{2^{1000}}{25}\right) = \text{Rem}\left(\frac{1025K+1}{25}\right) = 1.$$

Choice (1)

73. Let $S = (2-d)\left(\frac{2}{3}\right) + (2+d)\left(\frac{4}{9}\right) + (2+3d)\left(\frac{8}{27}\right)$

$$\therefore S\left(\frac{2}{3}\right) = (2-d)\left(\frac{4}{9}\right) + (2+d)\left(\frac{8}{27}\right) + \ldots\ldots$$

Subtracting,

$$\frac{S}{3} = (2-d)\left(\frac{2}{3}\right) + 2d\left(\frac{4}{9}\right) + 2d\left(\frac{8}{7}\right) + \ldots\ldots$$

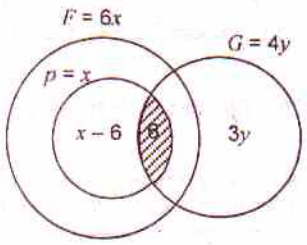
$$= (2-d)\left(\frac{2}{3}\right) + 2d\left[\frac{4}{9} + \frac{8}{27} + \ldots\ldots\right]$$

$$= (2-d)\left(\frac{2}{3}\right) + (2d)\left[\frac{4}{9}\left(\frac{3}{1}\right)\right] = \frac{4}{3} + 2d$$

$\Rightarrow S = 4 + 6d$. Given $S = \frac{5}{2} - 2 = \frac{1}{2}$ $\therefore d = \frac{-7}{12}$

Choice (3)

74.



From the given information, the above diagram can be drawn, where F is set of all B-schools which fleece their students = $6x$ B-schools.
P is the set of all B-schools which are reputed = x B-schools.
G = set of all B-schools which are recognised = $4y$ B-schools.

Now the shaded region is given as 6 B-schools
and $3y = 39 \Rightarrow y = 13$
also $6x = 78 \Rightarrow x = 13$
$\Rightarrow x - 6 = 7$ and $y - 6 = 7$
$\Rightarrow F - (P \cup G) = 78 - (7 + 6 + 7) = 58$ Choice (4)

75. Let the four-digit number be $abcd$

$a + b = \frac{4}{5}(c + d)$ ------ (1)

$a + d = b + c$ --- (2)

Also, given $a < b$ ------- (3)

(1) $\Rightarrow$ sum of the digits must be divisible by 9.

(2) $\Rightarrow$ sum of the digits must be even.

$\therefore$ (1) and (2) $\Rightarrow$ the sum of the digits must be divisible by 18 and hence must be 18 or 36.

But the sum cannot be 36 since, in that case $a = b = c = d = 9$ and condition (3) is violated. Hence the sum must be 18.

$\therefore a + b = 8$, $c + d = 10$ and $a + d = b + c = 9$

$a + d - (a + b) = 1$, i.e., $d = b + 1$

As $a < b$, $abcd$ can be

1728, 2637, 3546

$\therefore$ 3 possible numbers exist. Choice (2)

76. $a = \log_n 54 = \log_n 2 + 3\log_n 3$

$b = \log_n 72 = 3\log_n 2 + 2\log_n 3$

$\log_n 1728 = 6\log_n 2 + 3\log_n 3$

Suppose $\log_n 1728 = xa + yb$

Then $x + 3y = 6$ and $3x + 2y = 3$

Solving for x and y, $x = \frac{-3}{7}$ and $y = \frac{15}{7}$ Choice (2)

77. Let the speed of the local shuttle train be V. Let the interval between the start of the trains from their respective stops be t. Let the speed of the boy be U. So, the distance the previous train covers by the time the next train starts is Vt.

$\frac{Vt}{V - U} = 30$ minutes

$\frac{Vt}{V + U} = 20$ minutes

$\frac{V - U}{Vt} + \frac{V + U}{Vt} = \frac{1}{20} + \frac{1}{30}$

$t = 24$ minutes. Choice (2)

78. As for II the divisors are larger than those for the other conditions, we will obtain the least number of numbers satisfying II when considering the numbers satisfying any one of the conditions alone.

Let the general form of the numbers satisfying II be $17k_1 + 6$ as well as $38k_2 + 24$, where k_1 and k_2 are whole numbers.

$17k_1 + 6 = 38k_2 + 24$

$17k_1 = 38k_2 + 18$

$k_1 = 2k_2 + 1 + \frac{(4k_2 + 1)}{17}$

As k_1 is a natural number, $4k_2 + 1$ must be divisible by 17. Least value of k_2 satisfying this condition is 4.

$\therefore$ the numbers are of the form L.C.M (17, 38)k + [38 (4) + 24], where k is a whole number = $646k + 176$

If $k \geq 2$, $646k + 176 > 1000$

When $k = 0$ and $k = 1$, possible numbers satisfying II are obtained as 176 and 822 respectively. 176 satisfies the other two conditions while 822 does not satisfy the other 2 conditions. Choice (1)

79. Tabulating the given information

Cost price	item	selling price
y	S	$x - 300$
$y + 100$	C	$x - 200$
$y - 200$	L	$x - 500$
$y + 300$	J	X

To compare the profit percentages, we can compare

$\frac{SP}{CP}$

$\frac{x - 300}{y}, \frac{x - 200}{y + 100}, \frac{x - 500}{y - 200}, \frac{x}{y + 300}$

It can be observed that the above fractions can be written as $\frac{a}{b}, \frac{a + 100}{b + 100}, \frac{a - 200}{b - 200}, \frac{a + 300}{b + 300}$

where $a = x - 300$, $b = y$

Now since no item sells at a loss, and given the identity that $\frac{m}{n} > \frac{m + k}{n + k}$ whenever $\frac{m}{n} \geq 1$, and k is a +ve quantity, the above ratios can be rearranged as

$\frac{a - 200}{b - 200} \geq \frac{a}{b} \geq \frac{a + 100}{b + 100} \geq \frac{a + 300}{b + 300}$

$\Rightarrow l \geq s \geq c \geq j$. Choice (3)

80. Let p and q be two natural numbers. Then $p^2 - q^2$ is the quantity relevant to the question.

$p^2 - q^2 = (p + q)(p - q)$.

If $p + q$ and $p - q$ are odd, $(p + q)(p - q)$ is also odd. Hence any odd number can be expressed as the difference of two perfect squares.

If $(p + q)$ and $(p - q)$ are even, then $(p + q) \times (p - q)$ is a multiple of 4. Hence all multiples of 4 can be expressed as difference of two perfect squares.

If N is divisible by 2 but not by 4, then one of $(p + q)$ and $(p - q)$ is always even and the other is odd, which results in fractional values of p and q.

So, the numbers which are divisible by 2 but not by 4 cannot be written as a difference of two perfect squares.

[Eg: $38 = 19 \times 2$. Take $p + q = 19$ and $p - q = 2$, we get $p = 10.5$ and $q = 8.5$]

The number of odd natural numbers less than 1000 is 500.

The number of multiples of 4 less than 1000 = $\frac{1000}{4} - 1$

$= 249$.

$\therefore$ The required number of numbers = 500 + 249 = 749.

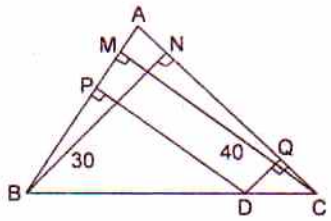
Note that remaining numbers less than 1000 are multiples of 2 not divisible by 4. Choice (4)

81. If Bunny receives exactly 5 mangoes, then 12 – 5 = 7 mangoes need to be distributed among Honey, Sunny and Moni.

The possible ways of dividing 7 mangoes in 3 parts and the corresponding number of ways of distributing the parts among the children are given below.

$7 = 1 + 1 + 5 \rightarrow 3$ ways
$7 = 1 + 2 + 4 \rightarrow 6$ ways
$7 = 1 + 3 + 3 \rightarrow 3$ ways
$7 = 2 + 2 + 3 \rightarrow 3$ ways
Hence a total of 3 + 6 + 3 + 3 = 15 ways are possible.
Choice (3)

82.



Let the altitudes from B and C be BN and CM

$$\frac{\text{Area of } \Delta ADC}{\text{Area of } \Delta ABC} = \frac{DQ}{BN} \text{ and } \frac{\text{Area of } \Delta ABD}{\text{Area of } \Delta ABC} = \frac{DP}{CM}$$

$$\frac{\text{Area of } \Delta ADC}{\text{Area of } \Delta ABC} + \frac{\text{Area of } \Delta ABD}{\text{Area of } \Delta ABC} = 1$$

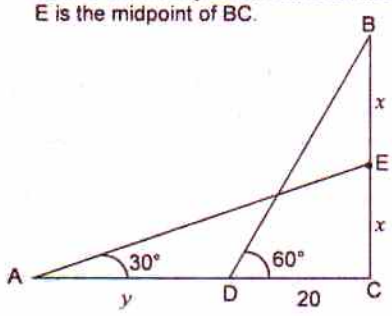
$$\frac{DP}{CM} = 1 - \frac{1}{5} = \frac{4}{5}$$

$\therefore DP = \frac{4}{5}(CM) = \frac{4}{5}(40) = 32$ Choice (2)

83. Let the quotients obtained when P is divided by Q and 9Q be K_1 and K_2 respectively.
$P = K_1Q + 13 = K_2(9Q) + 49$ ---------- (1)
$Q(K_1 - 9K_2) = 36$
$\Rightarrow$ Q must be a factor of 36. Also from (1), Q > 13.
$\therefore$ Q = 18 or 36. In either case 3Q > remainder when P is divided by 9Q (i.e., 49).
$\therefore$ required remainder = remainder when P is divided by 9Q = 49. Choice (3)

84. S will be minimum when a, b, c, d and e are as close to each other as possible. Since they are distinct natural numbers, they should be as consecutive as possible.
For $a + b + c + d + e = 55$
$a = 9$, $b = 10$, $c = 11$, $d = 12$, $e = 13$ is possible.
Hence $S \geq 9^2 + 10^2 + 11^2 + 12^2 + 13^2$
i.e., $S \geq 615$
Also, for S to be the maximum any four of a, b, c, d, e, (say a, b, c, d) should be as small as possible and the fifth (i.e., e) should be as large as possible.
i.e., $a = 1$, $b = 2$, $c = 3$, $d = 4$ and $e = 45$.
$\Rightarrow S \leq 1^2 + 2^2 + 3^2 + 4^2 + 45^2$
$\Rightarrow S \leq 2055$
Hence $615 \leq S \leq 2055$ Choice (4)

85. Let the pole be BC of height 2x m
Let the cat initially be at A and run to D.
E is the midpoint of BC.



From ΔBDC

$$\tan 60^\circ = \frac{2x}{20} = \frac{x}{10} = \sqrt{3}$$

$\Rightarrow x = 10\sqrt{3}$ m
From ΔAEC

$$\tan 30^\circ = \frac{x}{y + 20} = \frac{1}{\sqrt{3}}$$

$\Rightarrow y + 20 = 30$
$y = 10$ m Choice (2)

SECTION – III
Sub Section – IIIA

Solutions for questions 86 to 89:

86. Fixed Deposits = 15% of their total savings
As it is given that this is half of Mr. Anand's savings, Mr. Anand's savings are 30% of their combined savings and the remaining 70% must be Mrs. Anand's savings.
$\therefore$ Ratio of their savings = 3 : 7

$$\frac{5\% \text{ of income of Mr. Anand}}{21\% \text{ of income of Mrs. Anand}} = \frac{3}{7}$$

$$\therefore \frac{\text{Income of Mr. Anand}}{\text{Income of Mrs. Anand}} = \frac{63}{35} = \frac{9}{5}$$ Choice (4)

87. Given ratio of incomes is 3 : 1
$\Rightarrow$ Ratio of savings = 5 : 7
Let the total savings be Rs.12
Investments in PPF = 30% of total savings
$\Rightarrow$ 30% of 12 = 3.6

Required percentage $= \frac{3.6}{5} \times 20 = 72\%$ Choice (3)

88. Taxes constitute 18% of Mr. Anand's income and rate of tax is 30% beyond 1 lakh,
$\therefore$ 18% of income = 30% of (Income – one lakh)
$\Rightarrow$ 30000 = 12% of income
$\Rightarrow$ Income = Rs.2.5 lakh
Similarly, for Mrs. Anand
10% of income = 20% of (Income – one lakh)
$\Rightarrow$ 10% of income = 20000
$\Rightarrow$ Income = Rs.2 lakh
$\therefore$ Ratio of earnings = 5 : 4. Choice (2)

89.

$$\frac{12\% \text{ of income of Mr. Anand}}{25\% \text{ of income of Mrs. Anand}} = \frac{2}{5}$$

$$\therefore \frac{\text{Income of Mrs. Anand}}{\text{Income of Mr. Anand}} = \frac{60}{50} = \frac{6}{5}$$ Choice (4)

Solutions for questions 90 to 94:

90. We need to check the ratio of the values in the fifth and the sixth columns. By initial observation only China and Indonesia have a ratio less than $\frac{1}{5}$, and among them $\frac{23}{122} < \frac{15}{79}$. Hence China has the least value.
Choice (4)

91. We only need to find the country where $\frac{\text{PEE on Tertiary}}{\text{PEE on Primary and Secondary}}$ is the highest.
By observation, this is true for Malaysia.
Choice (3)

92. The ratio of the value in the third column to the value in the fourth should be more than 1.3. Only Bangladesh, Brazil, India, Pakistan and Thailand qualify. A total of five countries. Choice (2)

93. Argentina, Brazil, China, India, Korea, Sri Lanka, Thailand and Mexico are the eight countries fulfilling the given conditions. Choice (3)

94. We need to check if $\frac{PEE}{GNP}$ (as a percentage) multiplied by percentage of PEE spent on Tertiary education is greater than 0.5% or not. This is satisfied for Argentina, Brazil, Malaysia, Thailand and Mexico.
A total of 5 countries. Choice (3)

Solutions for questions 95 to 97:

95. The value of Rs.100 at 5% rate of interest at the end of 20 years would be Rs.265.3 the interest obtained is Rs.165.3

$5 \text{ lakh} \times \frac{165.3}{100} = 8.265 \text{ lakh}$

$\equiv 8.3$ lakh Choice (2)

96. From the tables, it can be seen that at 5% inflation the value of an article costing Rs.100 now would be 207.9 after 15 years while at 3% it would be 317.2. This signifies a growth of slightly above 50%, since 150% of 207, is slightly less than 317.
$\therefore$ After 14 years these figures would be around 198 $\left(\text{i.e., } \frac{207.9}{1.05}\right)$ and around 294 $\left(\text{i.e., } \frac{317}{1.08}\right)$ respectively, which would not give a growth of 50%. (150% of 198 is greater than 294).
$\therefore$ it would take a minimum of 15 years. Choice (3)

97. To have a corpus of Rs.100 lakh at the end of 15 years at 10% growth, the amount to be invested now

$= \frac{100 \text{ lakh}}{\left(\frac{417.7}{100}\right)} \equiv 24 \text{ lakh}$ Choice (1)

Solutions for questions 98 to 101:

98. Perceived value > 0.25 cost price of customer
$\Rightarrow$ Perceived utility > 1.25 cost price of customer
Draw a line passing through all points where
Cost Price of customer : Perceived Utility = 4 : 5.
The products to the right of this line satisfy the condition. The products are A, N, E, L, P, K and O.
Choice (3)

99. We need to check only those products whose perceived value is positive. Hence only the eight products A, D, N, E, L, P, K and O, need to be checked. Among A, N, O, P and E, all have a perceived value of 300 or more and none of them has a profit of more than 200. Hence all the five have a V.I. of more than 1. Checking for L, K and D,

V.I. of L $\rightarrow \frac{500}{400} > 1$; V.I. of K $\rightarrow \frac{800}{100} > 1$;

V.I. of D $\rightarrow \frac{300}{300} = 1$;

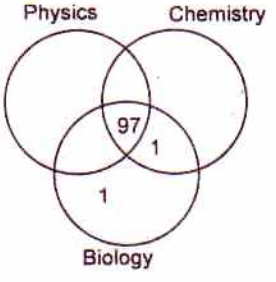
Hence only D satisfies. Choice (1)

100. L is the only product which satisfies. Choice (2)

101. Using a similar procedure as in the first problem, we can see that it satisfies for only two products i.e., J and K. Choice (3)

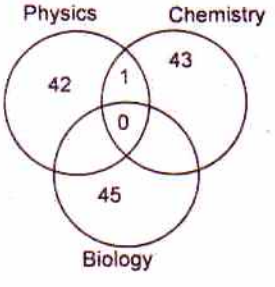
Solutions for questions 102 to 104:

102. As the number of students who study Physics is the least and it is given to be 97, the minimum total number of students is 99 as shown below.



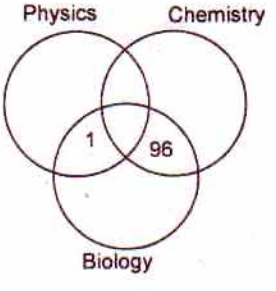
Choice (1)

103. As the maximum number of students study biology, the maximum total number of students can be 45 + 44 + 43 = 131 as shown below.



Choice (3)

104. The minimum total number of students is 97, which is as given below.



Choice (1)

Solutions for questions 105 and 106:

The number of players in the different categories before and after the world cup are as follows.

Before the world cup	After the world cup
E – 26	E – 34
D – 24	D – 26
C – 31	C – 22
B – 28	B – 47
A – 11	A – 21

The minimum number of players are

From B to A – 10 (21 – 11)
From C to B – 29 (47 – (28 – 10))
From D to C – 20 (22 – (31 – 29))
From E to D – 22 (26 – (24 – 20))
From unqualified to A – 30 (34 – (26 – 22))

105. Any player can change his grade only if he plays some more matches and move on to the next grade.
∴ At least 81 players played at least one match.
Choice (4)

106. Only 4 of 24 players retained their grade i.e.,
$\frac{4}{24} \times 100 = 16\frac{2}{3}\%$ Choice (1)

Solutions for questions 107 to 111:

107. Using A alone, as there are 53 Thursdays. The year can hence have only 52 Saturdays and 52 Sundays.
∴A alone is sufficient.

Using B alone, it is given that there are a total of 52 Fridays, hence the number of Saturdays is 52 or 53 and same is the case with Sundays.
∴B alone is not sufficient. Choice (1)

108. Given entry fee is Rs.10 and additional fee is Rs.2 for every throwing. Also given that Vishnu incurred a loss of Rs.40 by playing the game. From this we have two situations. First, Vishnu throwed the 2 dice for 15 times and both the dice did not show the same number on any occasion.
∴ He loses Rs.10 as entry fee and Rs.30 (15 × 2) as fee for the throws. Second situation is that after throwing 15 times, Vishnu may continue the game till it ends normally. In this case as he gets Rs.50, his loss can again come down to Rs.40 even he throws additional number of times. This situation will arise after 40 throws. In any case, there will be at least 15 throws. As statement A gives the same information it alone is not sufficient. Statement B alone is sufficient as the game ended normally means there will be 40 throws. Choice (2)

109. Using A alone, P can be either unmarried or married.
If P is unmarried ⇒ Q, R, and S are married persons.
If P is married, one of Q and R is married.
∴A alone is not sufficient.
Using B alone, Q must be married
⇒ R and S belong to the same group i.e., married.
⇒ P is unmarried.
∴Statement B alone is sufficient. Choice (2)

110. If roots are α and $1/\alpha$, equation is:
$x^2 - (\alpha + 1/\alpha)x + 1 = 0$
or $\alpha x^2 - (\alpha^2 + 1)x + \alpha = 0$
$\equiv ax^2 + bx + c = 0$
∴ if a = c and b = $-(a^2 + 1)$, roots are reciprocals of each other.
∴ A alone is sufficient.
If b = c, then the roots may or may not be reciprocal to each other.
∴ B alone is not sufficient. Choice (1)

111. From statement A, we have two possibilities. If P, Q and R have equal capacities, then time taken by P will be twice the time taken by Q and R together. If P, Q and R have different capacities, then we can say that P is not the person completing the work fastest. In this case, it should be either Q or R who completes it fastest.
∴We can't find who takes the least time to complete the work from statement A.

Statement B alone is not sufficient as we don't know anything about P and Q. But we can say (by similar reasoning as above) that R is not the person who takes the least time.
Using both the statements, as the time taken by R is five times the time taken P, Q and R together, we can say that they have different capacities. As they have different capacities, we can say that P and R are not the persons to complete the work in the least time.
∴Q takes the least time to complete the work.
Choice (3)

Sub Section – IIIB

Solutions for questions 112 to 115:

The number of students in the different classes during the given period are

Class	2005	2006
I	78	56
II	65	61
III	58	67
IV	79	55
V	71	78

From class I, we can see that at least 75% i.e., 58 or 59 or 60 students passed and thereby promoted to class II. (It cannot be 61 as in that case all students of class II would have passed).

Similarly, for other classes, we get the following possibilities.

Class	Number of students passed		
	Case 1	Case 2	Case 3
I	58	59	60
II	62	63	64
III	53	54	Not possible
IV	77	Not possible	
V	70		

112. We can see that the only possibility is case 1.
Choice (3)

113. Total number of students who failed was
(77 – 58) + (65 – 62) + (58 – 53) + (79 – 77) + (71 – 70)
= 30 Choice (1)

114. Class V had the highest pass percentage.
Choice (3)

115. As 58 students passed from class I, there were 19 students who failed and as there are 56 students in class I in the next year, the total number of students joined = 37. Choice (4)

Solutions for questions 116 to 119:

Form (iii) Each of the four A, B, D and E have one attribute common with the person who owns the kind of vehicle, which no other person owns.

The person who owns a Mobike, i.e., C or F, must have exactly one attribute in common with each of A, B, D and E and these attributes must be the colour of dress i.e., Blue and status of employment i.e. "Employed".

Hence, C/F must be employed – Blue – Mobike. It is given that C did not wear Blue and A, B and F have one attribute common among them but it is not the color of dress they wear.

→ F is Employed – Blue-Mobike and A is Employed and B is Employed and D and E wear Blue.

Since, C and D must have at least two attributes in common the attributes must be vehicles and status of employment. Hence, C and D are both unemployed and have either scooters or bicycles. Hence, E must be the student.
∴ We now arrive at the following table.

	Colour	Employment	Vehicle
A		Employed	
B		Employed	
C		Unemployed	
D	Blue	Unemployed	
E	Blue	Student	
F	Blue	Employed	Mobike

It is given that the student does not have a bicycle, hence, E, the student, has a scooter.

∴ Both C and D cannot have scooters and they must have bicycles and as C does not have the same kind of vehicle as A, A has a scooter and B has a bicycle. As A and B have already one common attribute, i.e., employed, and B and C have one common attribute, i.e., bicycle, B must wear a different colour from A and C i.e. Green.
∴ A and C wear Red. The final table will be as follows.

Person	Colour	Employment	Vehicle
A	Red	Employed	Scooter
B	Green	Employed	Bicycle
C	Red	Unemployed	Bicycle
D	Blue	Unemployed	Bicycle
E	Blue	Student	Scooter
F	Blue	Employed	Mobike

116. F owns a Mobike. Choice (2)

117. The student wears a Blue dress. Choice (1)

118. F and A are a pair of employed persons. Choice (4)

119. B wears a Green dress. Choice (2)

Solutions for questions 120 to 123:

It is known that Sehwag's was the first wicket to fall

∴ We have to find out the scores at which other players were out when compared to Sehwag.

Let Sehwag be out when India's score was x. The scores at which the other players were out were

Zaheer – $224 + x$
Dravid – $69 + x$
Dhoni – $159 + x$
Tendulkar – $143 + x$
Yuvraj – $99 + x$
Uthappa – $34 + x$

(for all players whose name are in the same row a Sehwag, to determine the score at which they were out we have to add or subtract the scores given as follows).

Sehwag – Zaheer = 224
Zaheer – Uthappa = 190

∴ Sehwag – Uthappa = (224 – 190) or (224 + 190)
= 34 or 414
Sehwag – Dravid = 69
Dravid – Uthappa = 35

Sehwag – Uthappa = 69 – 35 or 69 + 35
= (34 or 104)

The common value in both the cases is 34.

Similarly,
Munaf – $250 + x$
Agarkar – $201 + x$
Kumble – $233 + x$

Arranging them in the order in which the wickets fell,

Sehwag – x
Uthappa – $34 + x$
Dravid – $69 + x$
Yuvraj – $99 + x$
Tendulkar – $143 + x$
Dhoni – $159 + x$
Agarkar – $201 + x$
Zaheer – $201 + x$
Kumble – $233 + x$
Munaf – $250 + x$

120. As Sehwag himself scored 20 runs, the value of x is at least 20. India's score is at least 250 + 20 = 270. Choice (4)

121. Choice (3)

122. $99 + x = 137$
$\Rightarrow 201 + x = 239$ Choice (2)

123. The fifth wicket partnership of 44 runs was the highest in India's innings. It was between Tendulkar and say the player after him. It need not be Dhoni as it is possible that the partnership was between Tendulkar and say Munaf, while Dhoni come to bat when Tendulkar was out but was the next player to be out. Hence, the pair of players cannot be determined. Choice (4)