Section - 1

VERBAL COMMUNICATION

Directions: Questions 1 to 3 relate to the passage given below.

Dear Friend, your letter gently but unmistakably intimates that I am a slacker, a slacker in peace as well as in war; that when the World War was raging bitterly I dawdled my time with subjects like symbolic logic, and that now when the issues of reconstructing a bleeding world demand the efforts of all who care for the future of the human race, I am shirking my responsibility and wasting my time with Plato and Cicero. Your sweetly veiled charge is true, but I do not feel ashamed of it. On the contrary, when I look upon my professional colleagues who enlisted their philosophies in the war, who added their shrill voices to the roar of the cannons and their little drops of venom to the torrents of national hatreds, I feel that it is they who should write apologies for their course. For philosophers, I take it, are ordained as priests to keep alive the sacred fires on the altar of impartial truth, and I have been faithfully endeavored to keep my oath of office as well as the circumstances would permit. It is doubtless the height of the unheroic to worship truth in the bombproof shelter of harmless mathematics when men are giving their lives for democracy and for public order which is the soldiers, if the Sermon on the Mount were utterly erased to give place to manuals of bayonet practice or instructions on the use of poison gas. What avails it to beat the enemy if the sacred fires which we are sworn to defend meanwhile languish and die for want of attendance?

1. According to the passage, a philosopher should
    (A) always shut action and privilege speculation
    (B) at all times promote the disinterested inquiry of his discourse
    (C) stay away from ideologues
    (D) support anti-war activism

2. Which of the following is the MOST APPROPRIATE title for the passage?
    (A) Philosophy in wartime: An Apologia   (B) Philosophy versus War
    (C) In defence of Philosophy   (D) Philosophy's quarrels with War

3. Which of the following statements CANNOT be directly inferred from the passage?
    (A) The write has disagreements with his professional colleagues
    (B) The writer is aware of the sacrifices made in a war
    (C) The write consider philosophy a sacred calling
    (D) The write is a pacifist

Directions for Question 4: Sentences in the following passage have been variously combined in the options given below. Choose the MOST APPROPRIATE AND CONCISE option.

Keepers of private notebooks are a different breed altogether. They are lonely and resistant rearrangers of things. They are anxious malcontents. They are children afflicted at birth with some presentiment of loss.

4.   (A) Keepers of private notebooks are a different breed altogether, lonely and resistant rearrangers of things, anxious malcontents, children afflicted at birth with some presentiment of loss.
     (B) Keepers of private notebooks, who are lonely, resistant rearrangers and anxious malcontents, are children afflicted at birth with some presentiment of loss
     (C) Keepers of private notebooks, a different breed in being lonely, resistant rearrangers of things and anxious malcontents, are children afflicted at birth with some presentiment of loss
     (D) None of the above

Directions: In Questions 5 and 6, fill in the blanks with the option that has the MOST APPROPRIATE set of words.

5.   For years, nuclear-power advocates have claimed that nuclear power is the most _____ form of energy available; but in light of a few facts, one begins to _____ this claim.
     (A) cheap, support   (B) useful, question   (C) expensive, contest   (D) economical, doubt

6.   Children whose _____ survives parental discipline and who manage to grow up before they blow up are invited to _____ the university faculty.
     (A) inquisitiveness, visit   (B) interest, address
     (C) curiosity, join   (D) inquiry, join

Directions: In Question 7, identify the grammatically INCORRECT option.

7.   (A) The meeting has been preponed by a week
     (B) Either you or Ram is going to look after it.
     (C) The argument explains neither what went wrong nor how it should be put right
     (D) Customers want not only good service but also courtesy.

Directions: The direct speech in Question 8 is rewritten as reported speech (Indirect form) in the options below. Identify the grammatically CORRECT option.

8.   The President said to the General, " Is your army well supplied? Is it ready for battle?"
     (A) The President asked the General whether his army was well supplied and whether it was ready for battle
     (B) The President asked the General whether his army was well supplied and is it ready for battle
     (C) The President asked the General if his army is well supplied and if it is ready for battle
     (D) The President asked the General whether his army is well supplied and was it ready for battle

Directions: In Question 9, identify the option with <u>INCORRECT</u> spellings.

9. (A) On the twelfth of every month, the psychiatrist visits the organization
    (B) Entering the sanctum of South Indian temples dressed in western clothes is considered sacreligeous
    (C) We try to accommodate as many students as possible in our hostels
    (D) We received the mattress after repeated requests

Directions: Questions 10 and 11, select the pair of words from the given options that best expresses a relationship <u>SIMILAR</u> to the pair in CAPITAL letters:

10. RESTLESS : RESTIVE
    (A) flammable : inflammable   (B) imminent : eminent
    (C) haunted : hunted   (D) oculist : occultist

11. OBJURGATE : OBSECRATE
    (A) abdicate : abrogate   (B) renegade : relegate
    (C) chide : supplicate   (D) obfuscate : obligate

Directions: Read the passage carefully and answer the Questions 12 to 14 that follow.

I feel that this award was not made to me as a man, but to my work – a life's work in the agony and sweat of the human spirit, not for glory and least of all for profit, but to create out of the materials of the human spirit something which did not exist before. So this award is only mine in trust. It will not be difficult to find a dedication for the money part of it commensurate with the purpose and significance of its origin. But I would like to do the same with the acclaim too, by using this moment as a pinnacle from which I might be listened to by the young men and women already dedicated to the same anguish and travail, among whom is already that one who will some day stand here where I am standing.

Our tragedy today is a general and universal physical fear so long sustained by now that we can even bear it. There are no longer problems of the spirit. There is only the question: When will I be blown up? Because of this, the young man or woman writing today has forgotten the problems of the human heart in conflict with itself which alone can make good writing because only that is worth writing about, worth the agony and the sweat.

He must learn them again. He must teach himself that the basest of all things is to be afraid; and, teaching himself that, forget it forever, leaving no room in his workshop for anything but the old verities and truths of the heart, the old universal truths lacking which any story is ephemeral and doomed – love and honor and pity and pride and compassion and sacrifice. Until he does so, he labors under a curse. He writes not of love but of lust, of defeats in which nobody loses anything of value, of victories without hope and, worst of all, without pity or compassion. His griefs grieve on no universal bones, leaving no scars. He writes not of the heart but of the glands.

Until ****learns these things, he will write as though he stood among and watched the end of man. I decline to accept the end of man. It is easy enough to say that man is immortal simply because he will endure: that when the last ding-dong of doom has clanged and faded from the last worthless rock hanging tideless

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in the last red and dying evening, that even then there will still be one more sound: that of his puny inexhaustible voice, still talking. I refuse to accept this. I believe that man will not merely endure: he will prevail. He is immortal, not because he alone among creatures has an inexhaustible voice, but because he has a soul, a spirit capable of compassion and sacrifice and endurance. The poet's, the writer's, duty is to write about these things. It is his privilege to help man endure by lifting his spirit, by reminding him of the courage and honor and hope and pride and compassion and pity and sacrifice which have been the glory of his past. The poet's voice need not merely be the record of man, it can be one of the props, the pillars to help him endure and prevail.

12. The phrase "labors under a curse" in paragraph 3 means that the young writer
    (A) is under a curse, so to speak
    (B) continues to work though he is cursed
    (C) is condemned to be abject
    (D) is given to lusts

13. Which of the following inferences CANNOT be drawn from the passage?
    (A) Good writing is always about the conflicted human heart
    (B) A writer should overcome his fear and advocate the universal truths
    (C) A writer should not seek money or fame
    (D) A writer should espouse the immortality of the human soul

14. Which of the following is the MOST APT title for this passage?
    (A) The Tragedy of Mankind   (B) Human Heart in Conflict
    (C) The Writer's Duty   (D) The Spirit of Man

Directions: In Question 15, choose the option which DOES NOT have a similar meaning to the sentence given below:

Some of the students reflect a growing confidence in their ability to manage successfully the demands placed upon them by their own ambitions, by their ability to construct intelligent messages, and by their listeners' often irascible modes of responding.

15. (A) Listeners' response modes and their own personal ambitions place great demands on students
    (B) Students construct intelligent messages to cope with listeners' demands
    (C) Students are becoming increasingly capable of managing multiple demands placed on them
    (D) Ability to construct intelligent messages help students cope with increasing demands arising from personal ambitions and listeners' responses

Directions: Questions 16 to 19 relate to the following article:

Pick up a glossy magazine or newspaper supplement and there will almost certainly be at least one double page spread that looks like a regular editorial page but is headed up either 'promotion' or 'advertisement'. These hybrids – unattractively but aptly called advertorials – are being used with increasing frequency by a growing number of companies. Traditionally the preserve of high-technology clients with a complicated message to get across to potential customers, the use of this technique has now spread to sectors like financial services, alcohol and automobiles.

One major reason why marketing departments are becoming more receptive to ideas for advertorials is that publishers are pursuing them more aggressively at a time of shrinking ad budgets, while they are being treated far more professionally in a bid to persuade clients that this is a creative opportunity to spread their message to their target audiences. Pouring more imagination into them allied with raising production standards has also been a means whereby the commercial executives of magazines and newspapers can try to convince skeptical editors who strongly disapprove of blurring the advertising / editorial line of their worth.

What advertorials are about is control – controlling the message in an editorial format. Positive editorial coverage of a company and / or its products in credible publications is the best publicity any company can hope for, but often proves elusive. A successful advertorial can pinpoint the way the company delivers its message to the heart of its target audience.

High technology was one of the main sources of early advertorials – unsurprisingly, the products are complex and need to be explained with some technical detail to get the story across. That is not so easy with traditional advertising.

Advertorials can also to some degree circumvent journalistic indifference to what a company is doing because editorial coverage has already been so extensive. For example, in the case of a company like Compaq, whose swift growth in the computer market attracted many inches of editorial space, that very success can lead to journalists wondering how they can write something different about Compaq. There can be diminishing returns from an editorial point of view. So advertorials let the company present things editorially but with bought space. While they should be strongly labeled, information is being given to readers in a format that looks familiar.

16.   In the above passage, the phrase "blurring the advertising / editorial line of their worth" implies
       (A) diluting the perceived quality of their editorials
       (B) hiding the actual value of the paper
       (C) obscuring the actual facts in the paper
       (D) devaluing the advertising potential of the editorials

17.   In the light of your reading of the passage above, identify the option that contains the set of words
       <u>CLOSEST</u> in meaning to the set of words in CAPITALS:
       SCEPTICAL : CIRCUMVENT : ELUSIVE
       (A) incredulous : surround : baffling   (B) doubtful : avoid : evasive
       (C) thoughtful : deceit : illustrative   (D) philosophical : revolve : deceptive

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18. According to the passage,
    (A) high technology does not support traditional advertising
    (B) traditional journalists are indifferent to advertorials
    (C) advertorials facilitate advertising of complex products in a professional manner
    (D) advertorials occupy double-page spread in magazines

19. The passage DOES NOT discuss
    (A) attitude of journalists towards advertising
    (B) advertorials and the publishing industry
    (C) use of advertorials in industries
    (D) impact of new technologies on advertorials

Directions for Questions 20 to 22: Identify the grammatically UNDERLINE CORRECT AND APPROPRIATE option.

20. (A) Because we put a wire fence around the chicken yard, the chickens cannot escape
    (B) The disadvantages of credit cards can offset the advantages, which merits careful consideration
    (C) When Madhuri visited her mother, she had a cold
    (D) These sort of things happen

21. (A) The school is opposite to the township building
    (B) In chapter 1, she accepts her first job as a kitchen maid, but by chapter 3, she is cooking for an Indian prince
    (C) Hold the rifle firmly against your shoulder, and then you should take careful aim
    (D) I like an occasional cup of coffee, for they give me an added lift

23. (A) As a boys approached the swamp, frogs could be heard croaking
    (B) She put her car in the garage because she never leaves it out when it is bad weather
    (C) In early colonial villages, you had to depend on wood for fuel
    (D) Many students who major in mathematics today find employment with computer companies.

Directions: In Questions 24 to 26, choose the option that is CLOSEST in meaning to the CAPITALIZED word.

24. FIDUCIAL
    (A) Official   (B) Deceit   (C) Trustworthy   (D) Parochial

25. MIRIFIC
    (A) Marvellous   (B) Mundane   (C) Mystical   (D) Morbid

26. PLEBEIAN
    (A) Vulgar   (B) Aristocratic   (C) Prophetic   (D) Certainty

Directions: In Questions 27 and 28, select the set of words from the given options that <u>BEST</u> expresses a relationship <u>SIMILAR</u> to the set in <u>CAPITALS</u>:

27.   LIONS : PRIDE : FOREST
      (A) geese : gaggle : sky   (B) houses : colony : city
      (C) fish : shoal : ocean   (D) paper : ream : press

28.   POET : VISION : PROPHET
      (A) politician : constituency : voter   (B) killer : violence : terrorist
      (C) student : school : principal   (D) plant : herbivore : food-chain

Directions: In Questions 29 and 30, choose from the respective options the <u>CORRECT PASSIVE</u> form of the active sentence:

29.   Mr. Sullivan made a major error in the estimate.
      (A) A major error was made in the estimate by Mr. Sullivan
      (B) A major estimate was made in the error by Mr. Sullivan
      (C) A major error was being made in the estimate by Mr. Sullivan
      (D) A major error was estimated by Mr. Sullivan

30.   She resembles a Greek goddess.
      (A) A Greek goddess resembled her
      (B) A Greek goddess resembles her
      (C) She is resembled by a Greek goddess
      (D) None of the above

Directions: In Questions 31, choose the option which <u>CLOSEST</u> in meaning to the sentence given below:

He was convinced that it would take at least fifty years before a few men would understand what he had accomplished; and he feared that even then his teachings would be misinterpreted and misapplied.

31.   (A) He was convinced that his teachings would be misinterpreted and misapplied after fifty years.
      (B) He was convinced that after misinterpreting and misapplying his teachings for fifty years, they would be appreciated.
      (C) He was convinced that understanding his teachings would lead to their misinterpretation and misapplication.
      (D) He was convinced that understanding and applying his teachings would take at least fifty years.

Directions: Questions Nos. 32 to 34 relate to the passage given below.

As a memory researcher, I have long been intrigued by the phenomenon of memory failures. What are the different ways that memory can get us into trouble? Bringing together everything I knew of memory's imperfections, lapses, mistakes and distortions, I hit on a way of thinking that helped to make things fall in place. I propose that memory's malfunctions can be divided into seven fundamental transgressions or "sins", which I call *transience, absentmindedness, blocking, misattribution, suggestibility, bias, and persistence*. Just like the ancient seven deadly sins, the memory sins occur frequently in everyday life and can have serious consequences for all of us.

Transience, absent-mindedness and blocking are sins of omission: we fail to bring to mind a desired fact, event or idea. Transience refers to a weakening or loss of memory over time. It is probably not difficult for you to remember now what you have been doing for the past several hours. But if I ask you about the same activities six weeks, six months, or six years from now, chances are you will remember less and less. Transience is a basic feature of memory, and the culprit in many memory problems.

Absent-mindedness involves a breakdown at the interface between attention and memory. Absent-minded memory errors – misplacing keys or eye-glasses, or forgetting a lunch appointment – typically occur because we are preoccupied with distracting issues or concerns, and do not focus attention on what we need to remember. The desired information is not lost over time; it is either never registered in memory to begin with, or not sought after at the moment it is needed, because attention is focused elsewhere.

The third sin, blocking, entails a thwarted search for information we may be desperately trying to retrieve. We have all failed to produce a name to accompany a familiar face. This frustrating experience happens even though we are attending carefully to the task at hand, and even though the desired name has not faded from our minds – as we become acutely aware when we unexpectedly retrieve the blocked name hours or days later.

In contrast to these three sins of omission, the next four sins of misattribution, suggestibility, bias, and persistence are all sins of commission: some form of memory is present, but it is either incorrect or unwanted. The sin of misattribution involves assigning a memory to the wrong source: mistaking fantasy for reality, or incorrectly remembering that a friend told you a bit of trivia that you actually read about in a newspaper. Misattribution is far more common than people realize, and has potentially profound implications in legal settings. The related sin of suggestibility refers to memories that are implanted as a result of leading questions, comments, or suggestions when a person is trying to call up a past experience. Like misattribution, suggestibility is especially relevant to – and can sometimes create havoc within – the legal system.

The sin of bias reflects the powerful influences of our current knowledge and beliefs on how we remember our pasts. We often unknowingly or unconsciously edit or rewrite our previous experiences in light of what we now know or believe. The result can be a skewed rendering of a specific incident, or even an extended period of our lives, which says more about how we feel *now* than about what happened *then*.

The seventh sin – persistence – entails repeated recall of disturbing information or events that we would prefer to banish from our minds altogether: remembering what we cannot forget, even though we wish that

we could. Everyone is familiar with persistence to some degree: recall the last time that you suddenly awoke at 3:00 AM, unable to keep out of your mind a painful blunder on the job or a disappointing result on an important exam. In more extreme cases of serious depression or traumatic experience, persistence can be disabling and even life-threatening.

32. The above passage implies that
    (A) sins of commission are more serious memory malfunctions than sins of omission
    (B) the sin of bias arises as a result of misattribution
    (C) the sin of persistence most frequently occurs when we are asleep
    (D) sins of omission involve presence of memory in some form or other

33. In the passage, the term "transience" refers to
    (A) transference   (B) truculence   (C) ephemeral   (D) epiphanic

34. The above passage DOES NOT mention
    (A) impact of memory malfunctions on daily lives
    (B) reasons for memory malfunctions
    (C) relationship between seven memory sins and seven deadly sins
    (D) lapses and distortions of memory

Directions: In Questions 35 to 37, choose the option which is OPPOSITE in meaning to the CAPITALIZED word.

35. ANATHEMA
    (A) Salubrious   (B) Feral   (C) Benediction   (D) Curse

36. FECUND
    (A) Barren   (B) Fertile   (C) Auspicious   (D) Stolid

37. CONCINNITY
    (A) Congruity   (B) Mismatch   (C) Deceit   (D) Harmony

Directions: Question 38 consists of four groups of jumbled phrases, of which only ONE is grammatically correct. Identify the CORRECT option.

38. (A) those command of the language are poor / other thing being equal / themselves effectively are sure to succeed / more rapidly than / people in any fields who can express
    (B) for whatever effects they may create / in analyzing prose rhythms or sentence movement / length, and interrelations of rhythmical units / it is always necessary to take into account not only the number, / but also the pattern of stressed and unstressed words
    (C) credence to our own recollections of events / accompanied by vivid compelling details / readily spring to mind and is / than other's when our memories / we are likely to give more
    (D) what time is left for living / than to see peoples working from morn till night / in cafes and small - talk / and then proceed to fritter away at card-tables / certainly is common nowdays.

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Directions: Questions 39 and 40 relate to the passage given below.

With each passing day, it is getting easier to believe that the acceleration in India's economic growth from around 6% to 8% is here to stay. The hard part is trying to explain why this has happened. How this is explained is important since it has a bearing on our future policy.

As per conventional wisdom, India's growth accelerated to around 6% in the nineties from the historical rate of 3.5% because 'reforms' had unleashed the pent-up energies of Indian entrepreneurs long shackled by the socialist raj. It slowed subsequently because 'reforms' had lost momentum. The last three years' spurt in growth is the fortuitous result of a global economic boom. Once the world economy slows down, we will be back to 6% growth – unless we proceed with 'second generation' reforms.

However, each of these propositions bristles with problems. It is not true that economic growth rate accelerated to 6% in the nineties. In fact, research has shown that the 'structural break' in India's economic growth occurred not in the early nineties but in the eighties, when economic growth accelerated to close to 6%. The growth in the first decade after reforms was not significantly different from the growth rate in the eighties. The 'reforms' in the sense of market-oriented or even pro-business policies did not commence overnight in 1991, but had commenced earlier. Economic policies in the nineties merely helped consolidate an underlying trend.

Subsequently, the world economy slowed down in 2001-03, which put the brakes on Indian economy. Then came the crucial change, an acceleration to 8% in 2004-06. This cannot be ascribed to any fresh bout of 'reforms' or even to the global boom. There have been important structural changes in the economy. One is the rise in the saving rate from 23.5% in 2000-01 to 29.1% in 2004-05. Most of this increase has come from the turnaround in public savings. Thanks to the rise in the savings rate, the economy has moved on to an altogether higher investment rate. The second structural change is enhanced export competitiveness, reflected in the rising share of exports. The total exports (trade plus invisible receipts) / GDP ratio has risen sharply from 16.9% in 2000-01 to 24.6% in 2005-06. A third, less noticed change in recent years is financial deepening. The bank assets / GDP ratio rose from 48% in 2000-01 to 80% in 2005-06 on the back of a surge in bank credit.

One factor is common to these three structural changes: lower interest rate. The decline in interest rates has helped fiscal consolidation, it has boosted firms' competitiveness and it has led to a huge increase in retail credit. Lower interest rates have been made possible by the rise in inflows on both current and capital accounts. The rise in inflows, in turns, reflects growing overseas confidence in India's economic potential – confidence created by two decades of economic growth of 6%. The sharp depreciation in the rupee in the nineties undoubtedly helped but it is worth recalling that a trend towards rupee depreciation was under way in the eighties itself.

39. The passage <u>DOES NOT</u> discuss
    (A) factors contribution to lower interest rates
    (B) the importance of world economy on India's reform rates
    (C) dimensions of structural changes in India's economic reforms
    (D) the role of the public sector in India's reforms

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40. Which of the following statements is <u>INCORRECT</u> according to the passage?
     (A) Growth rate after reforms was similarly to that in the eighties
     (B) Reforms in economic policies had started prior to the nineties
     (C) Structural changes in the Indian economy have helped lower interest rates
     (D) Increase in public savings rate has contributed to higher investment rates

Section - 2

LOGICAL REASONING

Directions: Questions 41 and 42 are based on the following passage:

Gopal: My father insists that the only way to get a good rank in the JMET examinations is to work much harder that what I do not present. However, Alok and Raju, my two college seniors whom he coached for JMET last year got good ranks with less effort that what I am putting in.

41. Gopal's primary purpose for making his point is to
    (A) present the ideal method to prepare for JMET examination.
    (B) present evidence that was previously overlooked.
    (C) point out a logical flaw in his father's reasoning.
    (D) draw an analogy to justify his method of preparation.

42. Which of the following statements would be the most effective rebuttal by Gopal's father to his arguments?
    (A) Your two college seniors did not have to put in more effort as they had been preparing for this examination for a longer duration.
    (B) I have been coaching students for this examination since its inception, and hence I feel that you need to put in more effort.
    (C) You need to provide much more detailed data to support your argument.
    (D) My suggestion is not obviously wrong. There is only one way to find out if it is wrong, and that is to try it.

43. If you get a JMET rank of better than 500, then you will get an admission in your preferred institute. If the statement above is true, which of the following must also be true?
    I.   If you get an admission in your preferred institute, then you must have got a JMET ranks of better than 500.
    III. If you did not get a admission in your preferred institute, then you did not get a JMET ranks of better than 500.
    (A) II only   (B) III only   (C) I and III only   (D) I, II and III

44. The following information is given about a four sided polygon.
    I.   The polygon is a rectangle.
    II. The area of the polygon is given to be 100m^2.
    III One side of the polygon is 8.
    IV. All the adjacent sides are at right angle to each other.
    Which of the above facts are sufficient to determine the dimensions of the polygon?
    (A) II and III   (B) II, III and IV   (C) I, III and IV   (D) I and II

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45. A pair of grouping of **Symbols** is given below. Choose a pair of symbols that best expresses the relationship closest to the original pair.
LLI : UQR
(A) DEF : ABC　　　　(B) AXE : TIX　　　　(C) AEF : BGO　　　　(D) LMN : AEF

46. Four people Ahmed, Burman, Chhaya, and Deepak in that order occupy the four corners of a square of side a in clockwise order. Ahmed and Burman simultaneously start walking at the same speed towards Burman and Chhaya respectively. Both of them stop walking when Burman reaches Chhaya. What is the distance between Ahmed and Burman?

(A) α　　　　(B) 0　　　　(C) $a\left(\sqrt{2}-1\right)$　　　　(D) $> a\left(\sqrt{2}-1\right)$

47. Ravi has scored over sixty percent marks in his High School Examination. This statement can be logically deducted from which of the following statements?
    (A) The average marks for the class is 60% and his rank in the class is 46 out of 91.
    (B) He is admitted to a prestigious college where nobody with a second class is admitted.
    (C) Indira has scored less than 60% and also did not qualify for the scholarship. Ravi has been selected for the scholarship.
    (D) Every one scoring less than 60% must appear for re-examination for improving their marks. Ravi is not required to appear for re-examination.
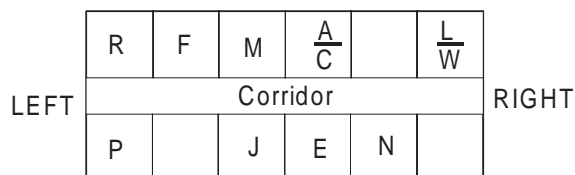
Directions for Questions 48 to 51: These questions are presented with three true statements: Fact 1, Fact 2 and Fact 3. Then, you are given three more statements (labeled I, II and III), and you must determine which of these, if any, is also a fact.

48. Fact 1: A project team consists of males and females has four members.
    Fact 2: Two of the members are proficient in mathematics and the other two are proficient in computer programming.
    Fact 3: Half the members are female.
    If the first three statements are facts, which of the following statements must also be a fact?
    I. At least one female members is proficient in mathematics.
    II. Two of the members are male.
    III. The male members are proficient in computer programming.
    (A) II only　　　　(B) I and III only　　　　(C) II and II only　　　　(D) None

49. Fact 1: Manoj said, "Anush and I both went to a movie last night."
    Fact 2: Anush said, "I was only studying last night."
    Fact 3: Manoj always tells the truth, but Anush sometimes lies.
    If the first three statements are facts, which of the following statements must also be a fact?
    I. Anush went to a movie last night.
    II. Manoj went to a movie last night.
    III. Anush was studying last night.
    (A) II only　　　　(B) I only　　　　(C) I and II only　　　　(D) I, II and III

50. Fact 1: Chairs cost between Rs. 200 to Rs. 2000.
Fact 2: Some chairs are made of minimum.
Fact 3: Some chairs are made of plastic.
If the first three statements are facts, which of the following statements must also be a fact?
I. Aluminium chairs cost than plastic chairs.
II. Expensive chairs last longer than cheap chairs.
III. Plastic chairs costs around Rs. 200 and aluminium chairs costs around Rs. 2000.
(A) I only   (B) II only   (C) I and III only   (D) None

51. Fact 1: All metros have ring roads.
Fact 2: Delhi is a metro.
Fact 3: Delhi has population of more than 5 million.
If the first three statements are facts, which of the following statements must also be a fact?
I. Delhi has a ring road.
II. All metros have a population more than 5 million.
III. All cities with a ring road are metros.
(A) I only   (B) I and II only   (C) I and III only   (D) I, II and III

Directions Questions 52 to 57 are based on the following passage:
There are six blocks of rooms along a straight corridor in a hotel with each block containing two rooms facing each other.

	R	F	M	$\frac{A}{C}$		$\frac{L}{W}$	
LEFT		Corridor					RIGHT
	P		J	E	N		

The following group of twelve people, Jitender, Lakshman, Mary, Narayan, Pankaj, William, Chandra, Ahmed, Balu, Ferosh, Esha and Rajender has occupied some of these rooms. There are a maximum of two people in a room, and some rooms may be empty.
- Lakshman and his roommate stay two blocks to the right of Ahmed and his roomate Chandra.
- Jitender stays alone, three blocks to the left of William and two blocks to the left of Esha.
- Narayan stays three blocks to the right of the block on which Balu and Ferosh have single rooms.
- Rajender and Pankaj stay in single rooms two blocks to the left of Mary.

52. Which of the following lists the [persons in the correct order, going from the most block to the right?
(A) Rajender, Balum, Mary, Ahmed, Lakshman, Narayan
(B) Rajender, Ferosh, Narayan Esha, Lakshman, Chandra
(C) Pankaj, Balu, Jitender, Chandra, ?nrayan, Lakshman
(D) Lakshamn, Esha, Ahmed, Mary Ferosh, Rajender

53. Which of the following pairs must stay on the same block?
I. Narayan and Esha
II. Jitender and Mary
III. Ahmed and Lakshamn
(A) I only   (B) III only   (C) I and II only   (D) II and III only

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54. Lakshamn's roommate, assuming that he or she is one of the persons mentioned, is
   (A) Esha   (B) William   (C) Mary   (D) Narayan

55. Rajender stays on the
   (A) first block, and to the left of Balu or Ferosh.
   (B) second block, and to the left of Jitender or Ahmed and Chandra.
   (C) third block, and to the right or Mary or Esha
   (D) fourth block as Ahmed and Chandra.

56. An empty room or empty rooms may be found in the
   (A) second block only.   (B) fourth block only.
   (C) third or sixth block, but not both.   (D) fourth or sixth block or both.

57. Jitender arranges to move into a room two blocks to the left, whose occupant moves into a room one block to the right. In turn, the occupant of this room moves into a room three blocks to the right, whose occupant takes Jitender's old room. The new occupant of Jitender's old room is
   (A) Balu or Ferosh   (B) Nrayan or Esha   (C) Mary   (D) Rajender

58. The mushrooming of business schools in the country is a cause for shortage of faculty with Ph. D qualification, the higher pay and generous fringe benefits given by industry has encouraged qualified people to not seek academic positions.
   Which of the following statements, if true, would tend to STRENGTHEN the argument?
   (A) The average salary for industry positions in Gujrat is more than the average salary of faculty positions in some business schools in Ahmedabad by around 30%.
   (B) The average salary for industry positions in Gujrat is less than the average salary for faculty positions in a top business school in Ahmedabad by around 30%.
   (C) The average salary for recent Ph. D graduates in the industry is 20% higher than that in academics.
   (D) The rate of growth of salaries for the industry positions has been higher than the rate of growth of salaries for academic positions for the past three years.

Directions for questions 59 to 61: On the basis of the given two facts, determine which of the conclusions marked A, B, C or D can be most logically drawn.

59. Fact 1: Some musicians play Tabla.
   Fact 2: All the Tabla players need to be trained for at least 10 years.
   (A) Children of Tabla players may require less than 10 years of training.
   (B) All the musicians who have trained for at least 10 years are Tabla players.
   (C) Some of the musicians may have been trained for at least 10 years.
   (D) All the musicians ate Tabla players.

60. Fact 1: Cloudy days tend to be windier than sunny days.
   Fat 2: Foggy days tend to be less windy than cloudy days.
   (A) Sunny days tend to be less windy than foggy days.
   (B) Sunny days tend to be windier than foggy days.
   (C) Foggy days and cloudy days tend to be windier than sunny days.
   (D) Foggy days and sunny days tend to be less windy cloudy days.

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61. Fact 1: At a parking lot, a car is parked to the right of a truck and to the left of a van.
    Fact 12: A jeep is parked to the right of the truck.
    (A) The car is to the left if the jeep.
    (B) The jeep is to the right of the van.
    (C) The jeep is parked between the car and the truck.
    (D) The truck is to the left of the jeep.

Directions for Questions 62 to 65 are lased on the following passage:
Amit, Balvider, Chetan and Deepak are employed in a company, where they have to share among themselves the work load that consists of six tasks A, B, C, D, E and F. The following statements identify their preferences for the different tasks.
- All those who like task B also like task E.
- All those who like task C also like task D.
- All those who like task E do not like task C, and vice - versa.
- Some of those who like task E also like task A.
- Some of those who like task D also like task E.
- All those who like task D also like task F.

62. Amit enjoys the task D. Which of the following must be true?
    (A) He many or may not like the task C.   (B) He does not like the task B.
    (C) He likes the task A.   (D) He likes the task C.

63. Balvinder likes the task B He may also like any of the following tasks, except
    (A) Task A   (B) Task C   (C) Task D   (D) Task E

64. Chetan likes the task C. Which of the following must be false?
    (A) He does not like the task A.   (B) He likes the task F.
    (C) He does not like the task B.   (D) He may like the task E.

65. Based on the information provided, which of the following statements must be true?
    (A) All those who like the task E also like the task B.
    (B) None of those who do not like the task F like the task A.
    (C) Those who like the task A may or may not like the task C.
    (D) None of those who like the task B do not like the task D.

66. Charu is a person of regular habits. One day Charu saw that her clock had stopped working. She changed the battery and set it to some arbitrary time. Immediately after that, she walked to her friend Paru's house. One entering Paru's house, she glanced at the clock that show d the correct time. Charu also noticed the time when she left Paru's place. As usual, she walked back to her house and reset her clock. If the time set by Charu is correct, which of the following assumptions have to be made?
    (A) Charu knows the exact distance to Paru's house.
    (B) Charu passed by a clock store on the way back to her house.
    (C) She walked at the same speed while going to and returning from Paru's house.
    (D) Charu knows the average time it takes to walks to Paru's house.

67. Students rank the business schools based on the following factors: Average salary of a fresh graduate, student to faculty ratio, terminal degree of faculty members, and institutional facilities. In their final ranking school A is ranked higher than school B. Which of the following will ensure that school a is ranked higher than school B?
    (A) The average salary of fresh graduates from school A is 60% less than the average salary of fresh graduates from school B.
    (B) The average salary of fresh graduates from school A is 80% more than the average salary of fresh graduates from school B.
    (C) All the faculty members in school A have a doctoral degree while in school B only 50% of the faculties have a doctoral degree.
    (D) In all the factors school A is marginally better than school B.

Directions for Questions 68 to 73: The sentences given below when properly sequenced from a coherent paragraph. Each sentence is numbered,. Select the most logical order of the sentences in each case.

68. (i) Liberalization of the aviation sector has led to the arrival of many private carries in the domestic market. (ii) The railways have introduced some very ingenious schemes to retain their customers. (iii)) The lower airfares have connibalized the first class travelers in the railways due to the parity in fares and the reduction of travel times. (iv) This situation of having choices in the mode of transportations is of delight to the customers.
    (A) (i) - (iv) - (ii) - (iii)   (B) (i) - (iii) - (ii) - (iv)
    (C) (i) - (iv) - (iii) - (ii)   (D) (i) - (iii) - (iv) - (ii)

69. (i) The ongoing war in Iraq is perceived by many as a serious threat to world peace. (ii) The real benefit of the war is yet to be realized, but the losers have been the people of ?Iraq. (iii) The supporters of the war point out that human rights violation is serious enough to have warranted the war in Iraq. In spite of the increased risk to world peace. (iv) Both who support and oppose the war have valid points to bolster their arguments.
    (A) (i) - (iii) - (iv) - (ii)   (B) (iii) - (i) - (iv) - (ii)
    (C) (ii) - (i) - (iii) - (iv)   (D) (ii) - (iii) - (i) - (iv)

70. (i) The history of civilization had to be rewritten in the 196th and the 20th century after it was established that these painting were produced by stone age dwellers. (ii) The owner of the animal rescued it, but in the process discovered those caves. (iii) Discovered in 1865, the cave painting popularly referred to as the 'Sistine chapel' of the stone age are estimated to have been created around 12000 B. C. (iv) The discovery of the stone age painting was made possible when a hunting dog got trapped in the cave.
    (A) (i) - (iii) - (iv) - (ii)   (B) (iii) - (i) - (iv) - (ii)
    (C) (iv) - (ii) - (i) (iii)   (D) (iii) - (iv) - (ii) - (i)

71. (i) Aggressive play may not be instigated in captivity because the development of hunting skills is irrelevant in captivity. (ii) However, tiger cubs born in captivity never engage in aggressive play, (iii) The cubs, presents generally instigate the aggressive play between the cubs, (iv) Young tiger cubs in the wild are often found to engage in aggressive play with their sibling.
    (A) (i) - (ii) - (iv) - (iii)   (B) (i) - (ii) - (iii) - (iv)
    (C) (iv) - (iii) - (i) - (ii)   (D) (iv) - (iii) - (ii) - (i)

72. (i) If a new list of the world's wonders was necessary, it should have been compiled by UNESCO, and not by any private organization. (ii) The electronic media had relentlessly campaigned for the cause of Taj Mahal, motivating all the Indians to vote for the monument so that it would be included in the new list of the seven wonders of the world. (iii) The Taj does not require any campaign to prove its timeless beauty.
(iv) It was a totally unnecessary campaign.

(A) (ii) - (i) - (iv) - (iii)   (B) (ii) - (i) - (iii) - (iv)
(C) (ii) - (iv) - (iii) - (i)   (D) (i) - (ii) - (iii) - (iv)

73. (i) It is more than a budgetary move for the Nepal's interim government to strip the royal family of its annual allowance. (ii) To make the monarchy irrelevant is the next logical step forward for the government. (iii) Monarchs' do not draw all their powers from their purses; though they do not like being deprived of the funds. (v) To carry the palace's expenses is a big burden for a small country.

(A) (i) - (iii) - (iv) - (ii)   (B) (iii) - (iv) - (i) - (ii)
(C) (iii) - (i) - (iv) - (ii)   (D) (i) - (iii) - (ii) - (iv)

74. Sanjay: I just heard that Sachin got out for zero (0) runs in the first innings of the second test against Bangladesh.
Rajeev: That can't be true. He had scored two centuries in the last two innings that he had played.
From the conversation above it can be inferred that
(A) Rajeev thinks that Sanjay is lying.
(B) Rajeev thinks that no one who had scored two centuries in the last two innings could possibly get out for zero runs in the next innings.
(C) Rajeev concludes that Sachin is inconsistent since he got out for zero after scoring two hundreds in the last two innings.
(D) Sanjay knows Sachin got out for zero runs.

75. You have five balls that look alike. Four of them have the same weight and are lighter than the fifth ball. What is the minimum number of times you need to weigh to identify the heavier ball with certainty?

(A) 1   (B) 2   (C) 3   (D) 4

76. He must be an IIT student: he is wearing a shirt with the IIT logo on it.
This conclusion is valid only if it is true that
(A) All IIT students wear shirts with IIT logo on it.
(B) IIT students never wear any shirt without IIT logo on it.
(C) IIT students are required to wear shirts with IIT logo on it.
(D) Only IIT students wear shirts with IIT logo on it.

Directions: Questions 77 and 78 are based on the following passage:

It is important for companies to motivate their employees to stay fit. Therefore, employees should be provided with gymnasium facilities.

77. Which of the following, if true, **most strengthens** the above argument?
    (A) Only those employees who use gymnasium facilities are fit.
    (B) The employees who use gymnasium facilities are fit.
    (C) The employees who are fit use gymnasium facilities.
    (D) Some employees who use the gymnasium facilities true fit.

78. Which of the following, if true, most weakness the above argument?
    (A) All those employees who undergo a dieting program are fit.
    (B) Not all those employees who undergo a dieting program are fit.
    (C) Not all those employees who use gymnasium facilities are fit.
    (D) All of these employees who use gymnasium facilities are fit.

79. Five people witness a thief leaving a house that was locked. Each have the following description of the thief in the court.
    Witness 1: He was short, thin, and old.
    Witness 2: He was tall, thin, and young.
    Witness 3: He was short, stout, and young.
    Witness 4: He was tall, stout, and young.
    Witness 5: He was tall, stout, and young.
    Which of the following descriptions of the thief is probably correct?
    (A) Tall, stout, and old   (B) Short, thin and old
    (C) Short, stout, and young   (D) Tall, stout, and young.

80. In recommending a salary cut of five percent to the board of directors, the CEO of a company said: "There were no worker demonstrations over the previous salary cuts of three percent last year and two percent the year before."
    If the CEO's statement is accurate, which of the following can be validly deduced from the information given?
    I.   Most workers in the previous years felt that the salary cuts were deduced because fo increased operating costs.
    II. Workers apathy was responsible fo rthe failure of the workers to protest the previously salary cuts.
    III. Workers are not likely to demonstrate over the new salary cuts.
    (A) I and III only   (B) II and III only   (C) I, II and III   (D) Neither I, II not III

Section - 3

QUANTITATIVE ABILITY

Directions: Questions 81 and 82 relate to the STATIONERY MANUFACTURING problem given below

A stationery manufacturer produces two pen varieties, standard (S) and premium (P). These are packed and sold respectively at Rs. 10 and Rs. 25. Two machines, M1 and M2, are available to produce both varieties. M1 can produce 30 and 50 pens (including refills) per minute of S and P respectively. M2 can produce 40 and 60 per minute of S and P respectively. The manufacturer runs two shifts of 8 hours each.

81. The above partial information can then be formulated mathematically as

    (A) Max Z = 10S + 25P
       subject to:
       70S ≤ 960
       110P ≤ 960
       S, P ≥ 0, and integers

    (B) Max Z = 10S + 25P
       subject to:
       S/70 ≤ 960
       P/110 ≤ 960
       S, P ≥ 0, and integers

    (C) Max Z = 10S + 25P
       subject to:
       S/30 + P/50 ≤ 960
       S/40 + P/60 ≤ 960
       S, P ≥ 0, and integers

    (D) Max Z = 10S + 25P
       subject to:
       30S + 50P ≤ 960
       40S + 60P ≤ 960
       S, P ≥ 0, and integers

82. The manufacturer also ensures that at any time at least 80 more and 50 more of refills (R) are produced for S and P respectively. The same refill is used for S and P. This constraint can be specified as
    (A) R = 130
    (B) R − (S + P) ≥ 130
    (C) R = 80 + S, R = 50 + P
    (D) R ≥ 130

Directions: Questions 83 to 85 relate to the CAMPUS PLACEMENT description given below:

Three companies, Muck-In-Sea (MIS), Cold Man's Axe (CMA), Bark Laze Bank (BLB) are scheduled, <u>in that order</u>, to interview <u>8</u> young MBA wizards at Hogwarts for offering career placements on Day minus 1 $\frac{5}{8}$. Each company can select at most 3 students. Once a student receives an offer from a company, that student is not allowed to appear in any more interviews.

83. How many possible combinations of student selections are there for MIS?
    (A) 4   (B) 93   (C) 92   (D) 3

84. What is the probability that CMA also does not select any student if MIS does not select any student?

    (A) $\dfrac{1}{4}$ (B) $\dfrac{1}{3}$ (C) $\dfrac{1}{92}$ (D) $\dfrac{1}{93}$

85. Considering all the options (0, 1, 2 or 3 students) exercised by MIS and CMA, how many options does BLB have to make its selection?
    (A) 3 (B) 4 (C) 63 (D) 64

Directions: Questions 86 and 87 relate to the PROEJECT INVESTMENT DECISIONS given below:

A project requires an initial capital investment of Rs. 2 lakhs which yields a one time benefit at the end of the second year.

86. If the cost of capital is 10%, what should be the minimum yield that would justify an investment in this project?
    (A) Rs. 2,42,000 (B) Rs. 2,40,000 (C) Rs. 2,20,000 (D) Rs. 2,22,000

87. Suppose the investment of Rs. 2 lakhs in the above project can be made in two equal installments of Rs. 1 lakh in the beginning of the project and the other Rs. 1 lakh at the beginning of the second year. From the beginning of the third year, the project will generate revenues of Rs. 1.5 lakhs every year. Using the same cost of capital of 10%, what should be the minimum life of the project inclusive of the project implementation phase? (use the 'beginning of the year' convention)
    (A) 3 years (B) 5 years (C) 4 years (D) 6 years

88. The change in sales volume 'S' of a new mobile phone following an advertisement campaign is given by $\left(\dfrac{dS}{dt}\right)$ = 0.04 (700 – S). At time t = 0, S = 0. Then S expressed as a function of t would be

    (A) $S = 700 - e^{-0.04t}$

    (B) $\dfrac{S = \left(1 - e^{-0.04t}\right)}{700}$

    (C) $\dfrac{S = e^{-0.04t}}{700}$

    (D) $S = 700\,(1 - e^{-0.04t})$

89. The buying cost of a machine is Rs. 16000. It has an estimated life of 5 years. Using the double-declining balance method of depreciation, what will its Book Value be at the end of the second year?
    (A) Rs. 9600 (B) Rs. 12600 (C) Rs. 3456 (D) Rs. 5760

Directions: Questions 90 and 91 relate to the DISTRIBUTION CHANNEL problem given below:

There are two markets for selling a product, and two channels for distribution of the product to these markets. The cost of distribution per unit of the product through Channel 1 and Channel 2 are f_1 and f_2 respectively. The total cost incurred by the seller for Market 1 and Market 2 and F_1 and F_2 respectively. Let q_1 and q_2 be the quantities of product distributed to Market 1 and Market 2 through Channel 1. Let q_3 and q_4 be the quantities of product distributed to Market 1 and Market 2 through Channel 2.

90. Which of the following linear equations in matrix form correctly represents this problem?

(A) $\begin{bmatrix} q_1 & q_2 \\ q_3 & q_4 \end{bmatrix} \begin{bmatrix} f_1 \\ f_2 \end{bmatrix} = \begin{bmatrix} F_1 \\ F_2 \end{bmatrix}$

(B) $\begin{bmatrix} q_1 & q_2 \\ q_3 & q_4 \end{bmatrix} \begin{bmatrix} f_2 \\ f_1 \end{bmatrix} = \begin{bmatrix} F_2 \\ F_1 \end{bmatrix}$

(C) $\begin{bmatrix} q_1 & q_3 \\ q_2 & q_4 \end{bmatrix} \begin{bmatrix} f_2 \\ f_1 \end{bmatrix} = \begin{bmatrix} F_1 \\ F_2 \end{bmatrix}$

(D) $\begin{bmatrix} q_3 & q_1 \\ q_4 & q_2 \end{bmatrix} \begin{bmatrix} f_2 \\ f_1 \end{bmatrix} = \begin{bmatrix} F_1 \\ F_2 \end{bmatrix}$

91. Given $q_1 = 2$, $q_2 = 4$, $q_3 = 4$, $q_4 = 8$, $F_1 = 10$ and $F_2 = 20$, which of the following is true?
    (A) $f_1 = 1$ and $f_2 = 2$ is one of the possible solutions
    (B) $f_1 = 1$ and $f_2 = 2$ and it is unique
    (C) $f_1 = 2$ and $f_2 = 1$ and it is unique
    (D) $f_1 = 2$ and $f_2 = 1$ is one of the possible solutions

Directions: Questions 92 and 93 relate to the COMPANY REVENUE MODELING problem given below:

A company's analytics team has modeled its Total Revenue (TR) as $TR = 3W^{1.2}A^{3.6}$, where W is its wage payments and A is its advertising expenditure.

92. The approximate change in TR, if wages are increased by 5% will be
    (A) 3.15%   (B) 5%   (C) 3.18%   (D) 6%

93. In addition to the said wage increase, if A is decreased by 2% the net change in TR will be
    (A) 3%   (B) – 1.2%   (C) – 0.04%   (D) – 1.4%

94. The return levels and associated probabilities of two securities are given below:

Security X	Return (%)	9	12	15
	Prob.	0.3	0.4	0.3
Security Y	Return (%)	12	15	16
	Prob.	0.7	0.2	0.1

What are their respective expected values and variances of returns?

(A) X : E(X) = 12 and V(X) = 0
    Y : E(Y) = 13 and V(Y) = 2.4

(B) X : E(X) = 12 and V(X) = 5.4
    Y : E(Y) = 13 and V(Y) = 2.4

(C) X : E(X) = 12 and V(X) = 3
    Y : E(Y) = 14.3 and V(Y) = 4.13

(D) X : E(X) = 12 and V(X) = 4.5
    Y : E(Y) = 14.3 and V(Y) = 6.19

CAREER LAUNCHER

Directions: Questions 95 and 96 relate to the data pertaining to TOURIST ARRIVALS IN KERALA given below:

The following table shows the tourist arrivals in Kerala, in three different years. Assume that fluctuations in the data are random.

Year 't'	1998	2002	2006
Tourists N(t) (Millions	4.9	7	6.5

95. Which of the following functions of time 't' will <u>best fit</u> the given data?

p. $N(t) = a_1 + b_1 t$ a_1 and $b_1 > 0$

q. $N(t) = a_2 t^2 + b_2 t + c$

r. $N(t) = d^{mt}$ d and m > 0

s. $N(t) = ke^{nt}$ k and n > 0

(A) r   (B) s   (C) q   (D) p

96. Assuming that no unusual events (bird flu, chickungunya, terrorist attacks, etc.) will occur over the next eight years, and that normal conditions for tourism exist, which one of the above four models would you choose for forecasting tourist arrivals two periods ahead?

(A) q   (B) p   (C) s   (D) none

Directions: Questions 97 and 98 relate to the BPO HR FLOWS problem described below:

Three BPOs, X, Y and Z have 500, 650 and 800 permanent employees respectively on Ist January 2006. The table below provides data on the average number of employees who quit one BPO and join another in a month.

TO → FROM ↓	X	Y	Z
X	0	5	3
Y	8	0	1
Z	10	12	0

The second table below provides data on the retirements and retrenchments from X, Y and Z (these people are not re-employee in any of the these three companies), and the additional fresh recruitments made by the three BPOs, per month.

	X	Y	Z
Retirements and Retrenchments	3	6	10
Fresh Recruits	10	12	20

All the joining or leaving events happen at the end of the each month.

97. What will be the employee strengths of the three companies on 31$_{st}$ December 2006?
    (A) X = 704; Y = 818; Z = 704   (B) = 687; Y = 804; Z = 712
    (C) X = 610; Y = 738; Z = 602   (D) X = 620; Y = 746; Z = 584

98. In which month will e sum of the absolute value of differences in employee strengths between X and Y, and Y and Z be the least?
    (A) June   (B) July   (C) August   (D) September

99. A work working under a bonus scheme saves 10 hours in a job for which the standard time is 60 hours. A bonus if 10% of the hourly rate is payable when the reaches 100% efficiency. An additional bonus of 2% of the hourly rate for each 1% in excess of 100% efficiency is given. If the normal wage is Rs. 2 per hour, find the wages payable to the worker.
    (A) Rs. 120   (B) 130   (C) Rs. 150   (D) None of the above

Directions: Questions 100 to 102 relate to the location of WAREHOUSE And SUPERMARKETS given below;

A retail major has a warehouse (W) located at (16, 10) in a town having roads laid on a square grid parallel to the X and Y axes. There are five supermarkets (M, N, O, P ad Q) located respectively at (4, 4), (6, 16), (16, 24), (20, 16) and (26, 4).

100. What is the ordering of the supermarkets from the nearest to the farthest from the warehouse?
    (A) P, M, N and Q, O   (B) P, N and Q, O, M   (C) P, O, N and Q, M   (D) P, O, M, N and Q

101. Suppose each square block in the grid has sides of length 2 km. The minimum length of a round trip starting from M and moving through N, O, P, Q and returning of M will be
    (A) 84km   (B) 42 km   (C) 80 km   (D) 40 km

102. Five trucks are used, one each to travel from the warehouse to the supermarkets M, N, O, P and Q. Suppose their average speeds are respectively 54, 50, 42, 25 and 40 kmph. Assume that the trucks are identical and their drivers have identical driving skills and styles. If five trucks start simultaneously from the warehouse, which truck will reach its destination the earliest?
    (A) W to M   (B) W to O   (C) W to P   (D) W to N

Direction: Read the BISCUIT PACKING problem below and answer Questions 103 to 109:

A biscuit company makes cream biscuits that have 5 cm diameter and 0.5 cm thickness. It markets these biscuits in cylindrical packets of 5, 10 and 20 pieces each. The gaps between biscuits as wall as between the packing and the biscuits are negligible. The ends of each packet are sealed with cardboard caps that have the company's logo printed on them. In your calculations, sue $\pi = \dfrac{22}{7}$.

103. The total surface areas of the above three types of packets will have the following proportion:
    (A) 1 : 2 : 2.5   (B) 1 : 2 : 3   (C) 1 : 1.5 : 2   (D) 1 : 1.5 : 2.5

104. The company buys printed packing sheets made of paper each having 100 × 66 cm^2 area. At full capacity, the company makes 3.5 lakh biscuits per day.
If it makes 10,000 packets each of the 5's, 10's and 20's, what is the minimum number of packing sheets required daily?
(A) 417   (B) 419   (C) 420   (D) 418

105. The cost of each biscuit is Rs. 0.40, that of each pecking sheet is Rs. 168, and that of each end-cap is Rs. 0.50. All other costs work out to Rs. 1 per packet, respective of the size of the packet. The maximum retail price of the 5's, 10's and 20's packets are Rs. 8, 14 and 23 respectively.
The profits per packet, P_5, P_{10} and P_{20}, made by the company on the 5's, 10's and 20's packets respectively will be ion the proportion:
(A) 1 : 2 : 3   (B) 1 : 1.5 : 2.5   (C) 1 : 1.75 : 2.875   (D) 1 : 2 : 4

106. Based on a study of its sales over the last three years, the company decides to produce only 5000 packets of 20's. The production capacity thus made available is used to produce additional 5's and 10's packets to meet the market demand. Let x1 and X_2 respectively represents the additional numbers of 5's packets (in thousands), and 10's packets (in thousands).
For every thousand of the additional 5's packets, the company has 15 distributors, a and for very thousands of the additional 10's packets, it has 5 distributors. The company can utilize the services of a maximum of 75 distributors for these additional packets.
Then the produce-mix problem for producing the additional packets of 5's and 10's (in thousands) can be modeled using a Linear Programming formulation. Which of the following statements this model is incorrect?
(A) Maximize $P_5 x_1 + P_{10} x_2$ can be the objective function
(B) 15x1 5x2 ≤ 75 is a constraint
(C) $5x_1 + 10x_2 = 100$ is a constraint
(D) x_1 and $x_2 \leq 0$, and integers

107. How many additional thousands packets of 5's and 10's should the company produce to maximize its profits?
(A) $x_1 = 3$; $x_2 = 7$ (B) $x_1 = 2$; $x_2 = 10$ (C) $X_1 = 2$; $x_2 = 9$ (D) Solution is infeasible

108. The 5's, 10's and 20's, biscuit packets are produced in lot sizes of 100 each. Three packets eah of 5's, 10's and 20's are inspected at random. If even one biscuit is found broken in any of the three, the respective lot is rejected. The probability that a broken biscuit will be found in a 5's, 10's or 20's packet is estimated to be 0.10, 0.20 and 0.30 respectively. If a sample of three packets each of 5's, 10's and 20's is inspected, which probability distribution should we use to estimate the probability that all nine packets will be accepted?
(A) Normal   (B) Binomial   (C) Poisson   (D) Hypergeometric

109. What is the probability that all nine packets will be accepted?
(A) 0.749   (B) 0.006   (C) 0.128   (D) 0.504

Directions: Questions 110 to 113 relate to the AIRCRAFT PURCHASE problem given below:

India's national airline 'INDIAN' is considering purchase of mew aircraft to meet an estimated demand of 4600 seats. The table below presents the relevant data.

Aircraft	Seats	Price($ millions)
B 747	400	250
B 777	300	150
B 321	200	100

It has planned to buy three B777's and five A321's for every B747.

110. How many of each aircraft should the company purchase?
   (A) B747 = 2; B777 = 6; A321 = 10
   (B) B747 = 4; B777 = 6; A321 = 6
   (C) B747 = 3; B777 = 8; A321 = 5
   (D) B747 = 1; B777 = 6; A321 = 12

111. However, INDIAN's budget is limited to $2000 million for this purchase. Given this constraint, it is willing to be flexible on the proportion of aircraft types to be purchased.

   How many aircraft should it purchase such that both budget utilization and meeting the estimated seat demand are simultaneously maximized?
   (A) B747 = 2; B777 = 4; A321 = 9
   (B) B747 = 2; B777 = 6; A321 = 6
   (C) B747 = 2; B777 = 5; A321 = 7
   (D) B747 = 1; B777 = 5; A321 = 10

112. How many different alternatives for aircraft purchase are possible for <u>full use of the budget</u>?
   (A) 5   (B) 6   (C) 3   (D) 4

113. If a deviation of at most $50 million below the budget is permitted, how many additional alternatives for aircraft purchase are possible?
   (A) 5   (B) 3   (C) 4   (D) 6

Directions: Questions 114 to 117 relate to the HOSPITAL SERVICES SURVEY given below:

You have conducted a survey among patients in a large hospital and developed a 'dissatisfaction index' (DI) for:
(a)   patients who are waiting for consultation with doctors, DI_{wc}, and
(b)   patients who are in consultation with the doctors, DI_{ic}.
Consider that there are only two patients in the system. At time t = 0, one goes in for consider, and the other begins waiting. Using the survey data, you have developed the following two mathematical models for representing the dissatisfaction among the two patients as a function of time 't' :

$DI_{wc} = (t^2/75) + 0.1t$
$DI_{ic} = 10 - 0.5t$

114.   What is the optimal time 't' (in minutes) that a doctor should spend offering consultation to the patient such that the total dissatisfaction of the two patients is minimized? The two indices are additive.
(A) 12.75 mins   (B) 0 mins   (C) 15 mins   (D) 10 mins

115.   What is the value of the total dissatisfaction index at this point?
(A) 7   (B) 7.07   (C) 10   (D) 7.33

116.   At what point of time will a patient waiting for consultation have the same DI as a patient in consul-
tation? $\left(\text{Use } 0.89^{\frac{1}{2}} = 0.94 \right)$

(A) approx. 15 mins   (B) approx. 12.75 mins (C) approx. 10 mins   (D) approx. 7.5 mins

117.   Given the following functions of time t, for any value of the parameters a and b, rank then in the ascending order of function values as $t \to \infty$?
1. $f_1(t) = a2^{bt}$
2. $f_2(t) = a + bt$
3. $f_3(t) = ac^{bt}$
4. $f_4(t) = at^2 + bt$
(A) $f_3(t), f_1(t), f_4(t), f_2(t)$
(B) $f_4(t), f_1(t), f_3(t), f_2(t)$
(C) $f_1(t), f_3(t), f_4(t), f_2(t)$
(D) $f_2(t), f_4(t), f_1(t), f_3(t)$

Directions: Questions 118 to 120 relate to the EXCHANGE RATES problem given below:

The official 'buy' and 'sell' exchange rate for the US $, UK £ and EU ε with reference to the India INR are presented in the table below:

Bank BUYs		Bank SELLs	
You sell	Bank Pays You	You Pay bank	You buy
$1	INR 40	INR 42	$1
£ 1	INR 77	INR 79	£ 1
ε 1	INR 60	INR 62	ε 1

You lockl bank agrees to sell $ 0.023 or £ 0.012 or ε 0.015 for INR 1.

118. You wish to buy foreign currency with INR 1 lakh. Based on the values of each foreign currency you will receive for the bank, arrange them in the descending order?

$$\left(\text{Please note} : \frac{1}{42} = 0.024; \frac{1}{79} = 0.013; \frac{1}{62} = 0.016 \right)$$

(A) $ > ε > £   (B) ε > £ > $ (C) £ > ε > $ (D) All are equal

119. When you buy foreign currency from your local bank, it will levy a transaction fee equivalent of INR 500 and an additional INR 500 to deliver the exchanged money to the branch of your choice. This total amount of INR 1000 will be deducted from the foreign currency payable to you. At the airport, the money changer is willing to offer $ 0.022 for INR 1.

What is the range of values of INR that can be exchanged for buying the $ which will get you a better deal at the airport than the bank?
(A) INR 0 to 1000   (B) INR 1000 to 23000 (C) INR 23000 (D) INR > 23000

120. The £ to ε 'buy' rate is £ 1 = e 1.222. Using the INR as the reference currency, determine by what percentage this 'buy' rate should change such that there is no arbitrage (or, differences among the three pairwise exchange rates) across the three currencies?
(A) Approx. 5%   (B) Approx. 36%   (C) Approx. 4.25%   (D) Approx. 35.75%

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Section– 4

Data Interpretation

Directions: Questions 121 to 126 are based on the information given below:

A company manufacturing and selling vacuum cleaners started operations with cash in hand of Rs. 5 million at beginning of 2002-03. The table below gives below gives the productions, sales, price and costs of the company over the next five years.

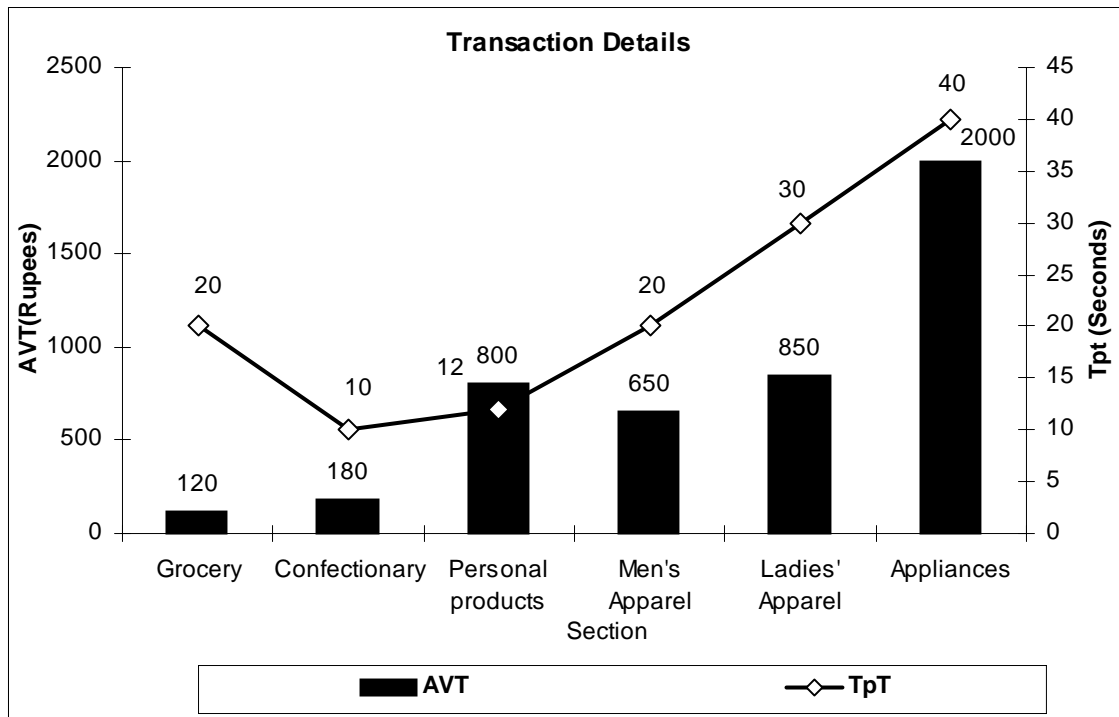| Year	2002 - 03	2003 - 04	2004 - 05	2005 - 06	2006 - 07
Production (units)	14000	18000	20000	17000	15000
Sales (units)	12000	17000	16000	19000	19000
Price (Rs./ unit)	10000	11000	11000	11000	12000
Fixed cpst (million Rs.)	18	30	30	40	40
Total Variable cost (million Rs.)	84	122	141	161	172

121. At the end of which year was the quantity of cumulative unsold stock the largest?
      (A) 2002 - 03   (B) 2003 - 04   (C) 2004 - 05   (D) None of the above

122. The percentage increase in cumulative cash in hand over the preceding year was the highest in
      (A) 2002 - 03   (B) 2003 - 04   (C) 2004 - 05   (D) 2005 - 06

123. The increase in the difference between income and costs in a year over the preceding year was the largest in
      (A) 2003 -   (B) 2004 - 05   (C) 2005 - 06   (D) 2006 - 07

124. Assuming all cash transactions, the cumulative cash in hand with the company (in million Rs.) at the end of 2006 - 07 is
      (A) 16   (B) 20   (C) 82   (D) 87

125. If the company was able to sell all the units that it produced during a year in the same year, the cash in hand (in million Rs.) at the end of 2006 - 07 would be
      (A) 87   (B) 92   (C) 102   (D) 117

126. Assuming that all variable costs incurred in a year are attributable to the units produced in that highest variable cost per unit was incurred in the year
      (A) 2002 - 03   (B) 2004 - 05   (C) 2006 - 07   (D) None of the above

Directions: Questions 127 to 132 are based on the information given below:

A departmental store reported the following sales data (in Million Rs.) for a particular week:

Day	Grocery	Confectionary	Personal Products	Men's Apparel	Ladies' Apparel	Appliances
						Section
Monday	0.18	0.12	0.61	0.42	0.72	0.86
Tuesday	0.16	0.14	0.72	0.38	0.56	0.68
Wednesday	0.22	0.21	0.86	0.46	0.68	0.76
Thursday	0.28	0.16	0.68	0.54	0.58	0.82
Friday	0.29	0.32	0.88	0.61	0.42	0.54
Saturday	0.33	0.42	1.1	0.92	0.88	0.96
Sunday	0.38	0.58	1.22	0.42	0.46	0.42

The Average Value of a Transaction (AVT) in Rs. and the Time Taken per Transaction (TpT) in seconds is given in the figure below:

Note: The store assigns one salesperson in a section for every 400 minutes of transaction time.

127. The section reporting the highest transaction time on Sunday is
     (A) Grocery   (B) Confectionery   (C) Personal Products   (D) None of the above

128. The section with the highest number of transactions on Sunday is
(A) Grocery (B) Confectionary
(C) Personal Products (D) None of the above

129. The total sales of all the sections put together is the same on
(A) Monday and Tuesday (B) Tuesday and Wednesday
(C) Wednesday and Thursday (D) Thursday and Friday

130. The ration of sales on the week-end (Saturday and Sunday) to total sales is nearly
(A) 1 : 2.34 (B) 1 : 3.43 (C) 1 : 4.48 (D) 1 : 5.51

131. The section requiring the maximum number of salespersons on Saturday is
(A) Grocery (B) Confectionary
(C) Personal Products (D) None of the above

132. The ration of salespersons required in the Appliances section on Monday to the salespersons required in the same section on Sunday is approximately
(A) 1 : 0.50 (B) 1 : 1.45 (C) 1 : 1.65 (D) 1 : 1.95

Directions: Questions 133 to 138 are based on the information given below:

Data on edible oil production and consumption for the year 2006 - 07 across six countries is tabulated below:
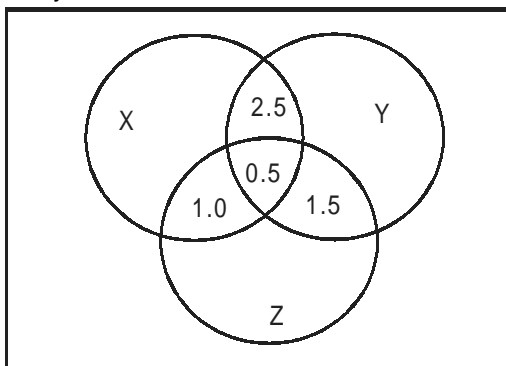
Country	Annual edible oil production (billion litres)	Approximate population (million)	Annual edible oil consumption per capita (litres)	Projected annual population growth rate %	Projected annual population growth rate %	Projected annual edible oil consumption growth rate per capit%
I	12	1000	12	10	2	5
J	7	500	13	5	5	6
K	5	300	11	5	4	7
L	10	1200	10	10	1	1
M	9	700	14	5	4	6

133. Assuming none of the above five countries export edible oil, Which country would need to import the maximum quantity of edible oil in 2007 - 08?
(A) I (B) J (C) K (D) None of the above

134. Assuming that a country imports edible oil only to meet the gap between production and consumption, if any, which country is in a position to export the maximum quantity of edible oil in 2006 - 07?
(A) I (B) J (C) K (D) None of the above

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135. Assuming none of the above five countries exported or imported edible oil, which country that had an export capacity in 2006 - 07 would need to import next year?
    (A) I   (B) J   (C) L   (D) None of the above

136. The net import requirement of edible oil (in million litres) for all the five countries put together in the year 2007 - 08 is closest to
    (A) 450   (B) 550   (C) 650   (D) 750

137. Which country would have the highest annual consumption of edible oil in litres per capita in the year 2008 - 09?
    (A) I   (B) K   (C) L   (D) M

138. What is the approximate average per capita consumption of edible oil (in litres) for all the five countries put together in the year 2008 - 09?
    (A) 11.52   (B) 12.33   (C) 13.27   (D) 14.31

Directions: Questions 139 to 144 are based on the information given below:

The Venn-diagram given below shows the estimated readership of three daily newspapers (X, Y and Z) in a city.

The total readership and advertising cost for each of these papers is as follows:

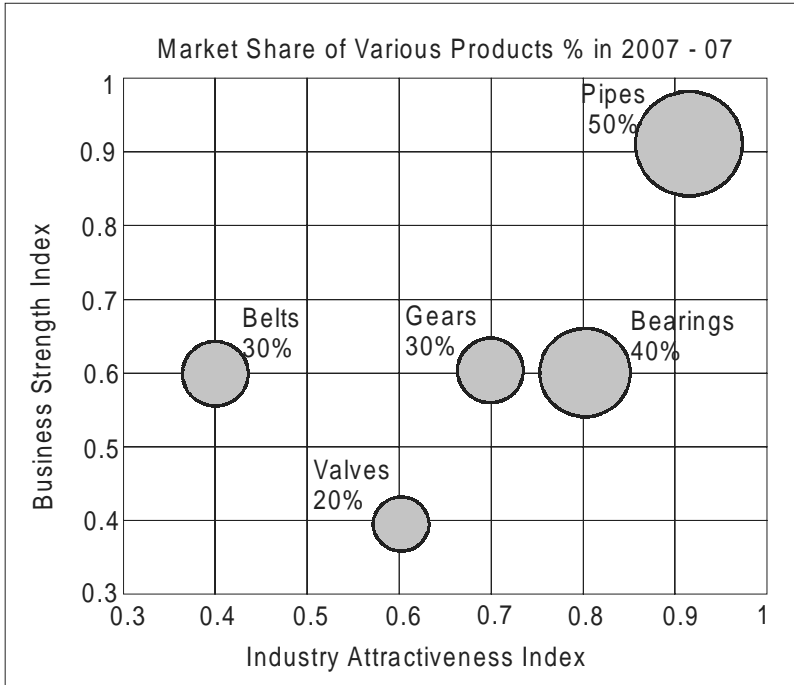| Newspaper	Readership (lakhs)	Advertising cost (Rs. Per sq. cm.)
X	8.7	6000
Y	9.1	6500
Z	5.6	5000

The total population of the city is estimated to be 14 million. The common readership (in lakhs) is indicated in the above Venn-diagram.

139. The number of people (in lakhs) who read at least one newspaper is
    (A) 4.7   (B) 11.9   (C) 17.4   (D) 23.4

140. The number of people (in lakhs) who read only one newspaper is
    (A) 4.7   (B) 11.9   (C) 17.4   (D) 23.4

141. The approximate percentage of population reading at least two newspapers is
    (A) 2.9   (B) 3.5   (C) 3.9   (D) None of the above

142. The ratio of readers reading only one newspaper to those reading only two newspapers is
    (A) 2.38 : 1   (B) 3.65 : 1   (C) 4.57 : 1   (D) None of the above

143. The combination of any two newspaper that given the minimum advertising cost (in Rs. per sq. cm.) per 1000 readers is
    (A) X and Y   (B) Y and Z   (C) X and Z   (D) None of the above

144. The minimum expenditure (in Rs. per sq. cm.) on advertising required to reach at least 12 lakh readers is
    (A) 11000   (B) 11500   (C) 12500   (D) None of the above

Directions Questions 145 to 150 are based on the information given below:

The Market Share of five types of products manufactured by a company in the year 2006-07 is plotted against their Business Strength and Industry Attractiveness Indices (read at the center of each bubble) in the graph below. Both indices rang from 0.0 (minimum) to 1.0 (maximum). The size of each bubble is representative of the Market Share of each product (printed beside the respective bubble) as a percentage of the Total Market Size in the year 2006-07.

The Total Market Size for various products in 2006-07 and their profit % are given below:

Product	Total Market Size in million Rs.	Profit %
Bearings	2200	40
Valves	1100	60
Pipes	3000	30
Belts	2500	30
Gears	5000	20

The Total Market Size of product is estimated to increase yearly at the same rate as its Industry Attractiveness Index. That is, and Industry Attractiveness Index of 0.6 would imply that Total Market Size will be 60% more than that of the previous year. A Business Strength Index of 0.4 would imply that the Market Share of the company will increase by 40% of the total Market Share held by other companies during the previous year.

145. The combined profit (in million Rs.) of the three most profitable products in the year 2006-07 is approximately
(A) 1092   (B) 1102   (C) 1233   (D) 1328

146. Which is the most profitable product in the year 2006-07?
    (A) Bearings   (B) Pipes   (C) Belts   (D) Gears

147. Which product would be least profitable in the year 2007-08?
    (A) Bearings   (B) Valves   (C) Pipes   (D) Belts

148. The Total Market Size (in million Rs.) for all products put together in the year 2007-08 is approximately
    (A) 17555   (B) 19230   (C) 21350   (D) 23420

149. The Total Market Size for gears is assumed to continue to grow every year by 70% What will be the approximate Total Market Size for gears (in million Rs.) in the year 2008-09?
    (A) 14450   (B) 15550   (C) 16550   (D) 17450

150. The company decided to discontinue the production of Valves and Belts. The Total Profit (in million Rs.) of the company from the remaining three products in 2007-08 would be approximately
    (A) 3164   (B) 3454   (C) 3844   (D) 4052

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