THE PRINCETON REVIEW FMS SAMPLE PAPER

INSTRUCTIONS – Please read these carefully before attempting the test

1. This test is based on pattern of previous years' FMS papers.

2. There are three sections.
    Section 1-Reading Comprehension & English Usage (65 questions)
    Section 2- Data Interpretation & Logical Reasoning (35 questions)
    Section 3- Data Interpretation & Data Sufficiency (65 questions)

3. ***The total time allotted is 2 hours exactly.*** Please note your start time and end time on the answer sheet. Do not take more than 2 hours, or you will get a wrong assessment.

4. Please fill all the details, as asked on top of the answer sheet.

5. Please try to maximize your attempt overall, ***but you need to do well in all sections.***

6. ***There are 4 marks for every right answer and 1 negative mark for every wrong one.***

7. There is no sectional time limit.

8. Since it is a time constrained test and you have 2 hours, and all questions carry equal marks, please do not get stuck on any question, move fast to try and do easier ones.

9. ***Please do all scratch work on paper only, no extra sheets to be used.*** Put all your answers on the answer sheet.

Relax. You are competing against yourself.

SECTION 1

Directions Q1 - 35: Read the passages that follow and answer the question that follow each of them respect to your understanding of the passage.

PASSAGE-1

Over 1,26,000 that's the number of bank employees who have busted the myth, assiduously preserved and propagated by trade unions and their sympathies that Indians treasure job security above all else. Given the option of taking voluntary retirement, thousand of officers and clerical staff happily chose to grab the money and strike out on their own. Indeed, many public sector banks are now struggling to cope with this massive out flux of skilled professionals. In the long run though, they undoubtedly be better off for it. Public banks have long been labour-intensive inefficient organizations. But they are now moving actively to reduce the man power and upgrade technology, which should improve their efficiency and bottom lines. What about the employees who opted for VRS? According to some estimates, they are now flush with Rs15,000 crore, Details are not yet available about how the money is being spent, but survey of these retirees indicate a high aversion to risk. The bulk of the windfall gains seems to be headed right back into bank vaults in the form of fixed deposits. The other favoured investments are low-risk bonds and office schemes. Several in retirees are retraining, with an eye to getting jobs in sunrise sectors like medical transcription and insurance. But very few people are willing to set their own business. That's understandable. After all, they would be reluctant to take chances with their lifetime savings. But it's also symptomatic of a larger trend .

The banks may be gloating today at the money pouring in, but it will turn into a huge liability unless they can lend it out to someone else. And that does not seem to be happening. With business confidence running low few corporate are in the mood to take on debt, despite plummeting interest rates. This is clearly bad news, since economic growth and additional job creation depends on fresh projects being constantly set up. So why do not the banks themselves actively drum up business, through, say, a massive micro-credit disbursement exercise? They won't because it's almost impossible for them to recover debts that go bad. Insolvent companies are forcibly kept open, locking up labour and capital that could be profitable deployed elsewhere. A way out may be offered by the recommendations of the advisory group on bankruptcy laws, constituted by the Reserve Bank of India. The group has called for the repeal of the Sick Industrial Company (special provisions) Act and abolition of the Board for Industrial and Financial Reconstruction. It has also suggested that a default of Rs 1 lakh should immediately invite bankruptcy proceeding and dedicated benches should be established at every high court to deal with bankruptcy issues. Enforcing these suggestions would certainly be a step forward. But care should also be taken that the new rules are not applied just to small debtors while affluence go scot-free, secure in the knowledge that no harm would befall them. Economic commentators like to point out that there are many sick industries in India but not many sick industrialists. Unless that is remedied, the financial sector and by extension, the economy can never aspire to sound health.

1.   The myth of the Indian mindset treasuring jobs security above all else has been busted. The author reaches this conclusion by making which of the following assumptions?
        I.   1,26,000 is a sufficiently large number to universalize the conclusion.
        II.   Banking sector can be said to be representative of the entire Indian jobs market.
        (1) I only   (2) II only   (3) I and II   (4) Neither I nor II

2. The said conclusion can be attacked if somebody pointed out that
    (1)   The actual number of employees getting VRS was only 1,24,000.
    (2)   The percentage of people getting VRS who were below 50 years was very low.
    (3)   Banking sector was dying sector anyway.
    (4)   People left their jobs because of a fear retrenchment.

3. Huge inflows of money pouring in for a bank is essentially
    (1) An asset   (2) A liability
    (3) A transaction   (4) A withdrawal

4. Banks need to lend the huge inflows to somebody else. Why?
    I.   Idle money does not grow.
    II.   Bank has promised interest, i.e. growth, to their depositors.
    III.   It is imperative for additional jobs creation.
    (1) II only   (2) I and III   (3) I and II   (4) All I, II and III

5. One reasons why banks won't indulge in lending out micro-credit to business is that
    (1)   Business have traditionally defaulted on repayments
    (2)   Interest chargeable on this count is low.
    (3)   Laws don't offer sufficient protection against defaults.
    (4)   Additional jobs creation is not guaranteed.

6. The author seems to suggest that the present system of debt recovery in India unduly favours
    (1)   Small-sized companies
    (2)   Big-sized companies
    (3)   Both small and big-sized companies
    (4)   None of these

7. The author's advocacy of the repeal of BIFR etc could be attacked on the grounds that
    (1)   It will also entail frequent job destruction.
    (2)   It will stop bank from lending to traditional business.
    (3)   It will invite significant administrative hassles in implementation.
    (4)   It will benefit the MNCs ultimately.

PASSAGE- 2

The 15-year-old Consumer protection Act, responsible for consumer awareness in the country, is now facing certain changes that can alter its continuing impact and operation. We all are consumers- as the buyer of recipient of any product and services, if there is any defect and deficiency in the product and services. If here is any defect and deficiency in the product purchased, or service sought for which payment has been made, the consumer is entitled to the share of appropriate compensation. The product may range from the purchase of a screw to a motorcar and the service may range from dry cleaning of a saree to travelling in a plane or construction of a house.

Under this Act various "consumer courts" have been set up in all districts of the country and an effective setup has been established at the state and national level for dealing maximum demands of compensation and appeals. Consumer courts in the districts are turned District Forums. There are now 555 District Forums operating, mostly one in each district. In Delhi, an enviable instance, as many as nine District Forums have been established to deal with a large number of cases emanating from its population. At the state level these consumer courts are known as State Commissions and at the national level there is the National Commission which has jurisdiction all over the country for entertaining original cases of high value and also for dealing with appeals coming up against the orders of State Commissions.

Monetary limits of the awardable compensation have been prescribed in the Act. Originally the limit was Rs.1 lakh for disposal of cases by District Forums, Rs. 5 to Rs.10 lakh for the State Commissions, and above Rs.10 lakh for National Commission. Within five years of operation of these courts the limits were respectively to Rs.5 lakh for District Forums and above Rs. 5 to 20 lakh for State Commissions and above Rs20 lakh for the National commission. Since then these courts have just been operating.

It is worthwhile noting how these consumer courts have provided redress to consumers. Figures of the cases disposed off by them and pending before them are showing that District Forums have collectively so far decided about 11.5 lakh cases; they have about 2.5 lakh cases and present pendency before them is about 75,000, National Commission has decided about 12,000 cases and pendency at this level including appeals and original complaints, is about 9,500.
By and large, the work performed by these consumer courts has been satisfactory. There have been suggestions and demands for effective further improvements. These remain under consideration.

A major amendment proposed is to devise limits of compensation award and to revise the jurisdiction of these courts. Districts Forums can presently deals with case involving compensation payment up to Rs 5 lakh and same is the limit for State Commissions. This limit of amount in case of District forums has been increased to Rs20 lakh and that of State Commissions to Rs1 crore. National Commission will deal only with appeals arising from decisions of State Commissions. Rising of limit from Rs5 lakh to Rs1 crore in case of State Commissions is said to be justified on the ground that only aggrieved consumers now have to travel to Delhi for filing complaint.

Another important change proposed is to enable the National Commissions as well as State Commissions to have benches which will operate at other selected places, for meeting requirements of consumers rather than the consumers having to come to Delhi or go to State headquarters with their complaints. For enabling these benches to operate, certain amendments in the Act propose to have people from the concerned ministry, out of whom half the number

will be persons of "judicial background"--- which term describes that they will have at least ten years' experience as President of District level court or Tribunal.

Similarly, members of State Commission, which till now were only three, including the President who is a retired judge of a High Court, will now be any number which is determined by the ministry, excepting that at least half of them, as in the case of National Commission, will be persons of "judicial background"- meaning that they have at least ten years' experience as district judge. Benches of State Commission will be set up by its president with "one or two members" as the President may deem fit. Here again it appears odd that a bench of the level of the State Commission can operate at the designated place with only one or two members, of level of District Judge experience, to decide cases involving compensation up to Rs1 crore, which is prescribed to be the jurisdiction of State Commission. Both these provisions appear to be strange in the existing context.

While there may be certain doubts relating to provisions for constituting benches of National Commission and State Commissions, the proposed amendments of Consumer Act include certain very desirable provisions. One clause states that in each of the consumer court at the respective levels, cases will be decided within 90 days. This will obviate atrocious delay, which is being often caused at present. Another provision states that if an appeal is filed against any decision the appellant will have to first deposit half the amount of award compensation. Consumer courts are also proposed to be given powers to effect attachment and auction of property of a person who defaults in complying with the decision of payment of compensation. Power of a collector will also be exercisable by these courts for recovering any dues as arrears of land revenue. Punishment by imprisonment, as by judicial magistrate for default in compensation payment, will like wise be exercisable by these courts. A party will be allowed to engage legal practitioner only if the complainant has engaged one. Where necessary, consumer court will have the authority to try a case summarily.

These various provisions in the proposed amendments can obviously have far-reaching and healthy effect in expeditious redress of grievances of consumers.

8.   At present, the time taken for disposal of a case in consumer court is
      (1) Not too long   (2) Too short   (3) Too long   (4) Can't say

9.   The raising of limits (as proposed in the amendment) is justified on the grounds that it will
      (1)   Be commensurate with inflation
      (2)   Invite due attention of local authorities
      (3)   Not bother the national level commission which petty case
      (4)   Enable the applicants to settle their grievances without having to travel to far-off places

10.   The consumer protection laws at present have within their ambits
      I.   manufactured products
      II.   services
      (1) I only   (2) II only   (3) I and II   (4) Either I or II

11.   The ratio of decided cases to pendencies is worst in the case of
      (1) District consumer forum   (2) State commissions
      (3) National commission   (4) Data inadequate

12. As per the author, the instance of Delhi having nine district forums is
    (1) Welcome because it will deal effectively with large number of cases.
    (2) Welcome because Delhi is the capital of our country.
    (3) Not welcome because it is not wise to invest in nine courts where one can do.
    (4) Not welcome because it will create problems of jurisdiction.

13. Which of the following prospects are not faced by a party (in the new scheme of things) that has been found 'guilty ' by consumer court?
    (1) To pay compensation
    (2) Imprisonment
    (3) Attachment of property
    (4) Debarring from electoral rights

14. Which of the following provisions do not appear as proposed, in the passage?
    (1) Raising of monetary limits for compensation
    (2) Bond for future behavior
    (3) Deciding a time- frame in which to try the case
    (4) Summary proceedings.

PASSAGE - 3

Some years ago the then coach of the English football team, Glen Hoddle, found himself in the eye of a media storm. The irritant was Hoddle's gratuitous assertion in an interview that congenital disability was a function of an individual's karma in a previous life. The implication was that the disable had to learn to embrace, even cherish, their suffering as merited rather than attribute it to an arbitrary genetic predisposition.

In the righteous uproar that followed, Hoddle was pillared for holding views which were not just "weird" and "anachronistic" but also violated such sacred canons of liberal faith as equality and human dignity. Hoddle's protest that the interview contained his personal beliefs did not cut much ice owing to his eminently public status as the national coach. Faced with an unprecedented media witch-hunt, the Football Association had no option but to ask for Hoddle's head. The intriguing questions whether Hoddle's spin on the human condition had a legitimate basis in eastern spirituality" - a phrases frequently invoked by his critics falls outside the purview of what follows.

From the standpoint of this article Hoddle's fall from grace has a different meaning: It is a cautionary tale par excellence in the context of the curricular 'reforms' underway in our schools. Under the zealous direction of the learned professor, it is being strenuously asserted that value for it to be efficacious, must be at the heart of pedagogic intervention in schools. Further, that this value education, for it be efficacious, must be based on the bedrock of religion. This theme is at the very heart of the learned professor's document of vision, otherwise known as the National Curriculum Framework for school Education.

Aside from stressing the role of religion as a generator of "essential" values, the document states that religion education should not be an isolated part of school curriculum. It must be integrated with other areas of academic concern - rather described as "scholastic" and "co-scholastic" areas. Since the document is woefully short on explanatory details, one may only   be surprised that religion - based value education will hence forth be integrated with - probably given primacy over - the teaching of natural and human sciences and the values inherent there in.

An old - fashioned secularist may well agonize - with good reason too -- about the normal justification of an avowedly secular way of promoting religious education with such fervor. The document, unfortunately, does not. The sole possible defence based on precedent - that the independent Indian state has for long supported religious education through institutional funding - is, strictly speaking, basis of the point. State funding for religious institutions through institutions is emphatically not the same thing as the proposal of religious education - "not education about religion", as the document very helpfully clarifies in state-run schools. For obvious reasons, however, it is not the intention here to kill an interesting debate by taking a purist tack.

The first question is: in a society that is as religiously diverse as ours - where nomenclature Hindu religion is itself a short hand for widely heterogeneous beliefs and practices - which faith would constitute the bedrock of value education? The answer may seem obvious in the light of the professor's well-known predilection in the matter, but it does not tell the full story, not in this instance. In the specific context of value education at least, the curriculum is agnostic about the claims of any particular religion.

To escape the pluralistic conundrum this poses, the document, rather ironically, resurrect an old secular ghost, which has resisted burial for the better part of 75 years and continues to haunt us

when questions about religion are raised in our public life. In simple term, it the belief- indeed an article of faith- that there is a common essence which is shared by all religions.

From believers such as Gandhi to skeptics such as Nehru, not to mention their less literate intellectual and political heirs across the spectrum, this well-meaning assertion has been made so frequently and assiduously that its truth is now taken for granted. The document, not surprisingly, reiterates it as a banality: "The essence of every religion is common, only, practices differ." The implication is clear; this putative essence will inform the value education framework.

The problem is that this hoary thesis, despite being impeccable, has arisen more from the political and spiritual compulsions of those who propound it and less from an open- ended comparative appraisal of different faiths. Its veracity can be demonstrated only by subtracting from each religion what is distinctive, even valuable, about it. Plainly, unless the concept of religion is reduced to an empty moralism and even emptier theology, no two religions may be regarded as a like.

It is of course a sociological truism that all religions address a universal human need. But the substantive manner in which they do so varies very significantly indeed. Each major religion of the world is underpinned by a distinctive theology, a highly specific history and a quite unique conception of a desirable socio-political order. In the fundamental since few religions can be reconciled except at the minimalist level of a belief in a supernatural power, some conception of an afterlife, and so on.

What commonalities might then constitute the foundation of the proposal moral revolution: surely, it is difficult to ground an entire educational curriculum on such randomly chosen' universal' religious values as love and peace, honesty and truthfulness. But such is the logic of the curriculum's reduction absurdum. Even assuming that possibility of isolating such an essence exists, what moral force will it carry in the absence if any specific theology that supports it as in the case of individual religions?

Finally, to recall the poignancy of Hoddle's predicament. How shallow resolve the moral quandaries which must inevitably arise when religion-inspired values come into conflict-in the public domain –with those other values which a society upholds, say, constitutionally? Or when the values of scientific inquiry-of questioning and criticism- run counter to the unassailable truth-claims of religion? Will the spirit of science be then allowed to transcend religious dogma? Or will religious values be cast, by diktat, as being beyond the pale of critical reason?

It is morally incumbent on the learned professor that these and other questions are allowed to be religiously debated the troubled legacy of our secular education is hastily and irrevocably jettisoned.

15. Which of the following definitely follows from the passage?
    (1) Disabilities are essentially genetic
    (2) Hoddle's assertions are not based on a sound religious dogma.
    (3) Disabled people should not lament their trouble.
    (4) Not every body buys the karma theory.

16. Hoddle's head having to roll, implies that personal beliefs of public figures
    (1) Are essentially public beliefs
    (2) Should not be stated in public.
    (3) Have due repercussions if stated in public.
    (4) Do not have any justification.

17. The National Curriculum Framework for School Education
    I   is a controversial document.
    II   Should be taken with a lot of caution.
    III   Seek to cut away religion from schools; curricula.
    (1) I and   (2) only II   (3) II and III   (4) Only I

18. As per the passage,
    I   fundamentally, all religions have the same theology.
    II   There more to religion than mere morality.
    (1) I only   (2) II only   (3) I and II   (4) Neither I nor II

19. The belief that all religions have a common essence
    I   has been propounded by many in tell in truth intellectuals.
    II   May not have a should basis in truth.
    (1) I only   (2) II only   (3) I and II   (4) Neither I nor II

20. The "document of vision ", as mentioned in the passage,
    I   asserts that religion is the basis for essential values.
    II   Asserts that religion should be taught in schools albeit in an isolated manner.
    (1) I only   (2) II only   (3) I and II   (4) Neither

PASSAGE- 4

The last I visited China was in 1986 in the early days of liberalization. Now, thanks to a business assignment, I could see for myself the dramatic changes of the last decade.

As my flight touched down, I saw the same old building, great monoliths that I have come to associate with Beijing. It was a different story once we entered the airport terminal. It was modern, large and spanking clean, in parts like Singapore's Changi Airport. In 20 minutes I had cleared immigration and customs, definitely more business-friendly than Indian airport. On the expressway into the city (speed limit 110 kmph) cars whizzed past, while there was barely any sigh of the once ubiquitous bicycle.

The first hurdle came at the hotel, or so I thought. The in–house services directory said I could not connect to the Internet from my hotel room. However, the friendly service representative at the plush business center downstairs arranged for me to access the Net from my room and gave me a local number to dial. This was a facility I got at every hotel I stayed in China. The connections were consistently very fast indicating large bandwidth availability, a great boon to the business traveller.

Outside, a happy surprise was the brand new subway-- sparking clean. The passengers, all local Chinese, looked well fed and clothed. There were amazing changes on the culinary front as well. On my last trip I could only eat in restaurants earmarked for tourists. Not any more, with a range of very upscale Chinese, American and Italian restaurants to choose from, I found an Indian eating joint within two blocks of the hotel, not to mention three McDonald's one Pizza Hut, one KFC and two Starbucks and several more downscale but seemingly very clean Chinese restaurants.

Could Beijing be an exception? The showcase city that attracted the West? I got my answer soon. My consulting assignment was with a large manufactures of cell phones in Hangzhou, a city of about 1.7 million in south - east China. I flew the state-owned Air China. The aviation scene in China is similar to that of India, with 8 to 10 airlines, soon to consolidate into three major airlines. The other two besides Air China are 100 percent privately owned. The quality of service on Air China is comparable to the Indian Airlines. However, the flight departed and arrived exactly on time.

Hangzhou is impressive, its airport once again exceptionally clean and well - organized. For a city of its size, Hangzhou has excellent infrastructure: large fleet of electric buses supplement the 5,000 taxis, all with radio communications and digital meters. There are over and under passes everywhere. Several hundred large new buildings and a newly built athletics stadium.

The company I am consulting with used to be 100 percent state-owned. The state has divested a majority of the shares, which are now traded at the Shanghai stock market in two forms ---one for domestic investors and the other exclusively for foreigners, like India. But unlike India, the facilities at the manufacturing site of this $1.5-billion company just took my breath away. I have been to advanced electronic manufacturing site in the US and Singapore but I was unprepared for the scale and sophistication of the operation here. Their competitors apparently have better facilities.

Just when I thought nothing could go wrong, I came upon a hurdle, language of course. For all their efforts to go global, the Chinese grasp of the English language is very poor. The business card of one of the executives described him as "Execution Vice-President" while the sign on the toilet of a train I took said, "No Occupying While Stabling ". My translator Edward, a smart

youngster with a degree in English language, was the only person I could communicate with directly.

At the meeting an elaborate affair, the atmosphere was very Indian, with heavy-duty protocol and speech - making to boast, scenes I remember from my last trip. Some things never change, I suppose.

This time, though, everyone carried a cell phone. People placed their cell phones on the conference table as soon as they came in(much like folks did in the American Wild West with their guns!). While found this somewhat disconcerting, I did like their cell phone etiquette. They turned down the ring volume, and spoke very softly. Incidentally there will be over 100 million cell phones in China by end 2004(compared with around 4 million in India).

I can sense that the Chinese are very closely studying the success of Indian software industry and have every intention of surprising India in this field. While much has been written about the growth of their hardware exports, their achievements in garnering export business in software has largely been ignored China is hard at work neutralizing India's key competitive advantage of a US Fortune 500 company to move their offshore software development from China to India, but they are disinclined because of the high quality of work, lower cost and superior infrastructure in China.

Edward and I went sightseeing on the last day. We visited an absolutely stunning Buddha temple from the 4th century founded by an Indian monk and target for demolition during the cultural evolution. Former premier Chou En-Lai intervened to save it.

Edward was eloquent on a range of topics from the economic to unification of China and Taiwan. The latter; he was certain, would be resolved, because the people of Taiwan now see difference between China and Taiwan in economic, business conditions, personal freedom, and living standards. Indeed many Taiwanese businessmen are migrating to China. Unbelievably, a business associate from Taiwan expressed similar views.

Old China shows up every now and then. The food in the cafeteria at the cell phone company was indifferently served and unappetizing. The Chinese paranoia about security can suddenly throw you off balance at the Forbidden City. The guard said a firm no to even my copy of China Daily. The Chinese are not savvy about Western concerns like pollution. Beijing itself seems swathed in a brown blanket.

But for every rewind to the past, there's fast forward to the future. China will pull out all stops for business. As Edward succinctly summed up, "You can get away with anything here as long as you have money and do not bother the government with protests and demonstrations".

21. What is not mentioned as a characteristic of the old Chinese regime?
    (1)   little concern for environment
    (2)   overdoing the security
    (3)   poor hospitality standards at restaurants, etc
    (4)   disregard for money

22. Which of the following are common between Indian and Chinese meeting?
    I.   adherence to protocol
    II.   heavy dose of speeches
    (1) I only   (2) II only   (3) Both I and II (4) Neither I nor II

23. Fast internet connections indicate a
(1) dotcom revolution (2) leap in IT-enabled services
(3) progress of economy (4) large band width

24. The author's good impressions about Hanfzhou were created by the
I. cleaner at airport
II. excellent commuting infrastructure
III. wireless advanced communications in taxis
(1) I and II (2) II only (3) I and II (4) All, I II and III

25. The author found a change in Beijing mainly in terms of
I. a new expressway
II. New, big buildings
(1) I only (2) II only (3) Both I and II (4) Neither I nor II

26. Chinese optimism on the inevitability of unification with Taiwan is based upon a
(1) Progressively reducing international interest in the matter
(2) conducive atmosphere for sharing of option.
(3) New round of dialogues
(4) Similarity in both economies today

27. India's competitive advantage in the field of software exports vis-à-vis China lies in
(1) a vast number of Indian living in the US
(2) her comfortable state with English language
(3) her natural links with the US
(4) an availability of cheap labour

28. The multinational presence in Beijing is most visible in the form of
(1) clean airport (2) foreign brand restaurants
(3) clean roadways (4) radio- equipped taxis

29. The author's opinion about the punctuality of Indian Airlines flights is
(1) probably not very high (2) similar to that about China
(3) not mentioned (4) low

30. The author probably thought that the display of cell phones by the Chinese was a tendency to or indicator of
(1) flaunt (2) intimidate (3) snobbery (4) affluence

31. International companies find China a better destination than India because of
I. higher quality
II. better infrastructure
(1) I only (2) II only (3) Both I and II (4) Neither

32. Which of the following statements best sums up the passage?
(1) China has decided to put the soul of its communist agenda on the backburner for the sake of development.
(2) China is serious about an economic revolution, already visible in its successful efforts.
(3) China has changed a lot in the way it way it runs its economy.
(4) The author was very impressed with China during his visit

PASSAGE- 5

Last November, I organized a seminar about terrorism in aviation. In order to drive home the potential hazards to the students, we visited a large eastern U.S airport with the intention of acting like a terrorist group looking for targets of opportunity. What we discovered was, at times fascinating and at other times frightening.

In general US airports have two areas where the visitors have access: a public area with little active security measures and a more secure area in the airport-- waiting and boarding areas. The less secure areas usually contain ticket counters, baggage claim, gift shops, restaurants, and other airport services. Getting into the main areas involves going through a screening process that includes x-ray inspection of carry–on items and walking through metal detectors. Other security measures include limiting curbside parking at the terminal, securing unattended luggage, and requiring that all passengers be identified by the airlines-- by use of a picture identification. In the academic exercise, the group made several notable security observations.

Most of the trash bins in the terminal areas were set within larger concrete containers. An explosive set within one of these containers would likely be directed upward. However, in several cases there were metal and fiberglass containers, sometimes adjacent to the concrete ones; also located around the terminal.

During visit, there were numerous announcements about how unattended baggage would be collected by the airport authority. At one point, our party observed an unattended umbrella propped against a wall near one of the screening areas. The umbrella was plain in view and in close proximity to constant foot traffic. It was over 45 minutes before an airport staff member removed the umbrella. Most areas of the terminal were designed such that it was difficult to leave a bag unattended in heavily travelled areas of the terminal without it being seen.

Our group specifically observed custodial staff going about their duties to see they were security-conscious. We were impressed with their thoroughness. Many hidden places such as bathroom trash containers, bathrooms stalls, and areas behind furniture or machinery were visually checked by the custodial staff. At one point, different members of our group sat or stood in areas directly behind the staff at one security checkpoint to observe the x- ray monitor and general security procedures. Two females from our group were able to observe for as long as they wanted and were not approached by any security staff. A male member of our group, who is also a police captain, was told to move along soon after he arrived.

Three of our party checked-in for flights that too on different airlines .At the time, all passengers were supposed to be identified with a picture identification, I was never asked for mine, another person used an ID with a name that did not match that on her ticket, and the third was asked for ID, but did not open up an oddly shaped package even after being asked by a grate agent about its contents.

In general, we were quite impressed with the level of security. The most worrisome aspects of what we saw were that the effectiveness of active and passive security measures varied greatly, and that a group of people unschooled in the ways of terrorism could very quickly discover numerous opportunities for committing mayhem without being detected.

33.   Choose the meaning closest to "curb side" in the text.
       (1) on the side walk   (2) behind the terminal
       (3) in front of the terminal   (4) next to the sidewalk

34.   Choose the meaning closet to "unschooled" in the text.
       (1) expert   (2) inexpert   (3) stupid   (4) intelligent

35.   Which statement is correct?
        (1)   Ticket countries are more secure than boarding areas.
        (2)   Boarding areas are securer than ticket counters.
        (3)   Boarding areas are less than ticket counters.
        (4)   Boarding areas are more than ticket counters.

Directions Q. 36 - 43: Given below are sets of six sentences that form part of a paragraph. The first and the last sentences (S1 and S6) are at their right places. Arrange P, Q, R and S, the four sentences so that the given sentences constitute a coherent paragraph.

36.   S1.   In other words, grammar grows and changes, and there is no such thing
                as correct use of English for the past, the present and the future.
        P.   "The doors is broken".
        Q.   Yet this would have been correct in Shakespeare's time
        R.   Today, only an uneducated person would say," my arm is broken".
        S.   For example, in Shakespeare's play Hamlet, there is a line.
        S6.   All the words that man has invented are divided into eight classes, which are
                called parts of speech.
                (1) PSQR   (2) QPSR   (3) RSPQ   (4) SPRQ

37.   S1.   The Bhagvadgita recognizes the nature of man and the needs of man.
        P.   All these three aspects continue the nature of man.
        Q.   It shows how the human being is a rational one, an ethical one and a spiritual one.
        R.   More than all, it must be a spiritual experience.
        S.   Nothing can give fulfillment unless it satisfies his reason and his ethical conscience.
        S6.   A man who does not harmonies them, is not truly human.
                (1) PSQR   (2) PSRQ   (3) QSRP   (4) RSPQ

38.   S1.   Silence is unnatural to man.
        P.   even his conversation is in great measure a desperate attempt to prevent a
                dreadful silence.
        Q.   In the interval he does all he can to make a noise in the world.
        R.   There are few things of which he stands in more fear than of the absence of noise
        S.   He being life with a cry and ends it in stillness.
        S6.   He knows that ninety-nine percent of human conversation means no more than
                the buzzing of a fly, but he longs to join in the buzz and to prove that he is a man
                and not a waxwork figure.
                (1) PQRD   (2) PRQS   (3) QPRS   (4) SQRP

39.   S1.   During the Middle Ages the production of cloth was divided amongst a number
                of associations of skilled works who performed different operations required in
                its production.
        P.   But the association of skilled workers lacked capital to butt it.
        Q.   Consequently, he began to assume the role of the employer.
        R.   With the mechanization of these operations, capital became necessary for
                economic production.
        S.   The banker, therefore stepped in to finance the industrialization of these
                operations.
        S6.   This was one of the reasons why the industry flourished in such rich countries as
                Flanders, Italy and Britain.
                (1) PRQS   (2) PRSQ   (3) RPQS   (4) RPSQ

40.　S1.　He could not rise.
　　　P.　All at once, in the distance, he heard an elephant trumpet.
　　　Q.　He tried again with all his might, but to no use.
　　　R.　The next moment he was on his feet
　　　S.　He stepped into the river.
　　　S6.　It was colder than usual.
　　　(1) PQSR　　　(2) PRQS　　　(3) QPRS　　　(4) QPSR

41.　S1.　An elderly lady suddenly became blind.
　　　P.　The doctor called daily and every time he took away some of her furniture he liked.
　　　Q.　At last, she was cured and the doctor demand his fee.
　　　R.　She agreed to pay a large fee to the doctor who would cure her.
　　　S.　On being refused, wanted to know the reason.
　　　S6.　The lady said that she had not been properly cured because she could no see her furniture.
　　　(1) PQRS　　　(2) QPSR　　　(3) RQPS　　　(4) RSPQ

42.　S1.　A certain young man was entrusted to the care of a teacher.
　　　P.　This dullard will come to grief if I send him away without a single lesson, thought the teacher.
　　　Q.　He was so dull of mind that he could not, even in three months' time, learn as much as a single lesson.
　　　R.　The young man came to ask the teacher's permission to go home.
　　　S.　It's my business to provide a good education to my pupils, get go home.
　　　S6.　The teacher asked him to wait.
　　　(1) PSQR　　　(2) QPSR　　　(3) RQPS　　　(4) SRQP

43.　S1.　American private lives may seem shallow.
　　　P.　Students would walk away with books they had not paid for.
　　　Q.　A Chinese journalist, commented on a curious institution: the library.
　　　R.　Their public morality, however, impressed visions.
　　　S.　 But in general they returned them.
　　　S6.　This would not happen in China them.
　　　(1) PSQR　　　(2) QPSR　　　(3) RPSQ　　　(4) RQPS

Directions Q. 44 - 48: The sentences given below have none, one or more errors. The errors can be of any type: they can be one of spelling or grammar or incorrect usage of words etc. Count the number of errors. If the sentence has
Only one error mark (1);　　　　　Only two errors, mark (2);
More than two errors, mark (3); and　　No error, mark (4).

44.　A set of material presented in the body of this introductory course is designed to exposed the learned to the basis ingredients of written English and prepare him for continued learning in the language.

45.　We have tried to make this exercise relevant to the present and (the   possible) future of need of the learner.

46.　The resent interest in discourse analyses has made it possible to study more systematically the creative use of language in poetry.

47.   Dear Jolly, weaving this opportunities, I send my love to you and Paul.

48.   Theirs been a lot of smog in this year and we can expect a worse winter next year.

49.   Ones warned to ones language when ones angry.

50.   The arrogant fellow, sitting at the backside of the taxi, rudely ordered the driver to turn to the side.

51.   It is said that the water–closet (lavatory) came to be called ;you ' when a prankster shuffle all the name cards on the doors of a house and the name of a young woman called ;you ' ended upon the lavatory door.

52.   After his father's death Gaurav had to finally address himself to business of earning his own living.

53.   Ram 's father threatened that he would throw him out of the house and disinherit him if he dared to marry beneath himself.

Directions Q. 54 - 55: In each sentences below, there are two blank spaces. Below each sentence some pairs of words are given which are numbered (1), (2), (3) and (4). Pick out he most appropriate pair to fill in the blanks in the same order, to make the sentence meaningfully complete.

54.   What ….. one is the total absence of a coherent programme either on the part of the ruling or the opposition party to give ….to the poverty-stricken people that something will be done to improve their condition.
        (1) humiliates, promise   (2) frightens, hint
        (3) astounds, feeling   (4) shakes, notion

55.   Many of us who ….. rational–emotive therapy are…tense, angry or depressed.
        (1) seek, sometimes   (2) follow, scarcely
        (3) perform, usually   (4) practice, frequently

Directions Q. 56 - 57: In each the following questions, a related pairs of words or phrases is followed by four pairs of words or phrases. Select the pair that best describes a relationship similar to that expressed in the original pair.

56.   MODERATOR: DEBATE::
        (1) legislator: election   (2) chef: banquet
        (3) auditor: lecture   (4) umpire: game

57.   DELIRIUM: DISORIENTATION::
        (1) paralysis: immobility   (2) anorexia: pain
        (3) insomnia: fretfulness   (4) rash: vaccination

Directions Q. 58 - 62: Sometimes we conclude about general characteristics of a phenomenon by studying or analyzing a particular phenomenon, (For example, samplers ask 5000 voters and conclude which party will win.)

Below we are giving such inductive arguments. The generalization is followed by a particular statement. You have to find out whether the numbered particular statement confirms, disconfirms, or is irrelevant to the generalization. Read each of the questions below and answer accordingly.

58.   Generalization: Laws that the amount of money that can be spent in political campaigns usually help incumbents.
       In the 1970s, campaign reform laws were passed that limited the amount of money that could be spent in a political campaign. In the time that has elapsed the passage of these laws, the percentage of incumbents who have won reelection has increased.

       What type of support does statement (1) provide for this generalization?
       (1) Confirms   (2) Disconfirms (3) Irrelevant   (4) None of these

59.   Generalization: Predatory animals have eyes in the front of their heads, with overlapping visual fields.
       (1)   All animals have eyes in the front of their heads.
       (2)   Horses have eyes on the sides of their heads, with visual fields that do not overlap.
       What type of support does statement (1) provide for this generalization?
       (1) Confirms   (2) Disconfirms (3) Irrelevant   (4) Can't say

60.   Generalization: Predatory animals have eyes in the front of their heads, with overlapping visual fields.
       (1)   All animals have eyes in the front of their heads.
       (2)   Horses have eyes on the sides of their heads, with visual fields that do not overlap.
       What type of support does statement (2) provide for this generalization?
       (1) Confirms   (2) Disconfirms (3) Irrelevant   (4) Can't say

61.   Generalization: Professors with tenure don't work as hard as professors without tenure.
       (1)   The possibility of losing one's job is an incentive to work hard.
       (2)   Professors Smith, who is tenured, works 14 hours a day.
       What type of support does statement (1) provide for this generalization?
       (1) Confirms   (2) Disconfirms (3) Irrelevant   (4) None of these

62.   Generalization: Professors with tenure don't work as hard as professors without tenure.
       (1)   The possibility of losing one's job is an incentive to work hard.
       (2)   Professors Smith, who is tenured, works 14 hours a day.
       What type of support does statement provide for this generalization?
       (1) Confirms   (2) Disconfirms (3) Irrelevant   (4) None of these

Directions Q. 63 - **65:** In each the following questions, a word is followed by four sets of words or. Select the pair that best describes a relationship opposite to that expressed in the original pair.

63.cavil

(1)flexible
(2) commend
(3)complain
 (4) carp

64.limber
(1)stiff
(2)lissome
(3)agile
(4)hard

65.ungainly
(1)graceful
(2)awkward
(3)clumsy
(4)mean

SECTION 2

1. A, B and C secured 45% 50% and 60% marks respectively in Biology. D's marks in Biology are 10 more than A's marks and 20 less than C's marks. Find out the total marks of the four students.
   A. For all the students, total marks allotted for Biology is 800.
   B. Total of D's and A's marks is 190.
   C. C has obtained 120 marks.

   (1) A and B are sufficient
   (2) Only C is sufficient
   (3) Either of A, B or C is sufficient
   (4) All A, B and C even together are not sufficient.

2. The area of a rectangle and a square are equal. Find the side of the square.
   A. The length of the rectangle is 24 cm.
   B. The ratio of the length and breadth of the rectangle is 2 : 1¼.
   C. The breadth of the rectangle is 15 cm.

   (1) A and B are sufficient
   (2) C and A are sufficient
   (3) B and C are sufficient
   (4) Any two of the statements A, B and C are sufficient

3. Find the single value of an integer 'a'
   A. $a^2 < 26.01$ B. $a < 4$ C. $a^2 > 9.61$
   (1) All even together are not sufficient
   (2) All together are necessary
   (3) A and C are sufficient
   (4) A and B are sufficient

4. Find the length of a carpet which covers the floor of a rectangular hall.
   A. The length of the hall is 24 m.
   B. The width of the carpet is 1.5 m.
   C. The area of the hall is 372 sq. m.

   (1) Only A and B together are sufficient
   (2) Only A and C together are sufficient
   (3) Only B and C together are sufficient
   (4) Any two of A, B and C are sufficient

5. The ratio of the ages of Javed and Akhtar is 6 : 11. Find out the ratio of their ages 5 years ago.
   A. The difference of their ages is 25 years.
   B. The difference of their ages after 5 yrs will be 25 yrs.
   C. The sum of their age is 85 yrs.

   (1) Only A and C together are sufficient
   (2) Anyone of A, B, and C is sufficient
   (3) Only A and B together are sufficient
   (4) Any two of A, B and C are sufficient

Questions 6 to 10: Population living on less than $ 1 per day and headed index in developing countries, 1987, 1990 and 1998

Regions	Population covered by at least one survey (%)	#of people living one less than $1 a day (millions)		
		1987	1990	1998
East Asia and the pacific	90.8	417.5	452.5	267.1
Excluding china	71.1	114.1	92.0	53.7
Eastern Europe and Central Asia	81.7	1.1	7.1	17.6
Latin America and the Caribbean	88.0	63.7	73.8	60.7
Middle east and North Africa	52.5	9.3	5.7	6.0
South Africa	97.9	474.4	495.1	521.8
Sub – Saharan Africa	72.9	217.2	242.3	301.6
Total	88.1	1183.2	1276.4	1174.9
Excluding china	84.2	879.8	915.9	961.4

6. For Eastern Europe and Central Asia, what percentage of the population was covered by the three surveys together?
    (1) 81.7   (2) 80.1   (3) 44.5   (4) Cannot be determined

7. For China, what was the percentage decrease in the number of people living on less than $1 per day between 1987 and 1998?
    (1) Can't be determined   (2) 32.45   (3) 29.66   (4) 28.35

8. If Latin America and the Carribean had populations of 200,210 and 215 million respectively in
    987, 1990 and 1998, the average poverty ratio (defined as the total number of people living below $1 a day to the total population) for this region for the three years is:
    (1) 0.3177   (2) 0.3452   (3) 0.2966   (4) 0.3255

9. In 1998, for the countries and regions surveyed, what percentage of the population living below S 1 per day were in China?
    (1) 19.17   (2) 18.17   (3) 17.79   (4) 18.52

10. For the countries considered for the survey, what is the maximum possible expenditure per day of all the people living on less than $ 1 per day in 1990?
    (1) Can't be determined   (2) $ 1276.4 million
    (3) $915.9 million   (4) None of these

Questions 11 to 14: The bar chart given below provides information about the number of seats contested and number of seats won b\/ a national party in the Indian parliamentary elections in each of the yeas between 1980 and 2000.

Performance of a national party in Indian Parliamentary Election
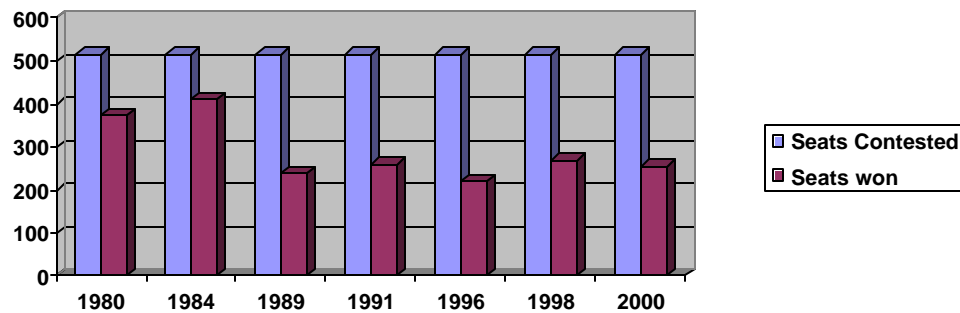
11. If the total seats in the parliament was 529, how many of the elections did the party get a two-
thirds majority?
(1) 3 years   (2) 2 years   (3) 4 years   (4) 1 year

12. In how many of the elections did the party have to seek external support to form a government, assuming that the party sought external support whenever it did not win more than 50% of the seats in the parliament? The parliament has 529 seats.
(1) Four   (2) Three   (3) Two   (4) None of these

13. In which of the elections did the party witness the maximum % change in the number of seats it won over the previous election?
(1) 1989   (2) 1998   (3) 1991   (4) (1)&(2)

14. How much % vote did the party get in the 1996 elections?
(1) 42.31%   (2) 16.98%   (3) 48.53%   (4) None of these

Questions 15 to 19: Use this additional information which provides statistics about the voting population in a country and votes secured by the national party during the above mentioned election

Election Statistics
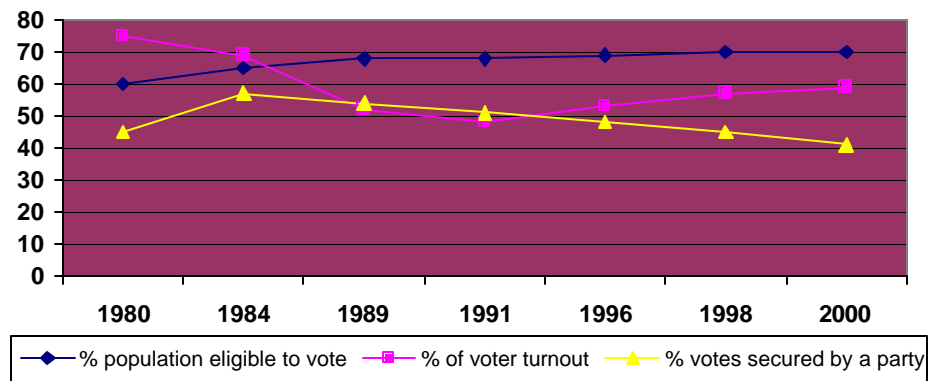
15. If the population in the country in the year 1989 was 800 mn, how many million votes did the party secure in this election?
    (1) 159.84   (2) 360   (3) 266.4   (4) None of these

16. If the population increased by *12%* between the year 1984 and 1989, what was the % increase in the % of population that is eligible to vote in the election?
    (1) 10.24%   (2) 12%   (3) M.64%   (4) 15.50%

17. Between 1996 and 1998, the number of people eligible to vote increased by 10% What was the % increase in population between 1996 and 1998?
    (1) 6.28%   (2) 4.4%   (3) 3.28%   (4) Cannot be determined

18. If in the year 1984, if for even additional 3% of the votes polled for the party meant the party get to have 450 seats in the parliament if the overall population of the country was 800 million in that year?
    (1) 52.25 mn   (2) 15.43 mn   (3) Cannot be determined   (4) None of these

19. Which of the following is true?
    (1) The largest % of votes were polled to the above party in the 1988 election.
    (2) A higher % of votes to the party in a particular election does not have a direct correlation to the number of seats won by the party in the election.
    (3) In four of the election, the number of seats won by the party increased over the previous election.
    (4) None of these.

Directions 20 -26: *The following pie charts give the percentage distribution of different types of employees in different departments, A, B, C, D and E.*

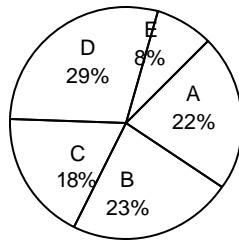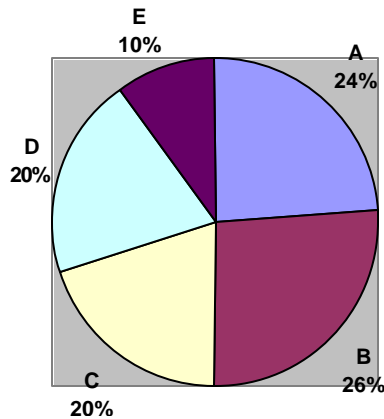Chart A: Percentage of employees in X Corporation in the year 1999 (Total number of employees: 18,000)

Chart B: Percentage of employees in X Corporation in the year 2000 (Total number of employees: 20,000)


20. What was the difference in total number of people in department A in 1999 and 2000?
   (1) 840   (2) 400   (3) 440   (4) 240

21. In the case of which department was there a maximum variation between 1999 and 2000?
   (1) E   (2) B   (3) D   (4) A

22. If 300 employees left in department B at the end of 1999, how many people joined in this department in 2000?
   (1) 340   (2) 460   (3) 980   (4) 1360

23. The number of employees in department D in 2000 is how many times the number of employees in department E in 1999?
   (1) 3.5   (2) 2.8   (3) 2.33   (4) 1.77

24. What is the percentage increase in the number of employees in department C in 1999-2000?
   (1) 2%   (2) 2.34%   (3) 23.45%   (4) None of these

25. If the average monthly salary of employees in department A in 1999 was Rs 4,000, what was the annual salary bill for department A in 1999?
   (1) Rs 19 lakh   (2) Rs 19 crore   (3) Rs 22 crore   (4) Rs 22 lakh

26. If the average salary for the whole company remained same in 1999 and 2000 at the level of Rs.5,000 per month, what was the percentage increase in the salary bill for the company in the two years?
(1) 4%   (2) 8%   (3) 9%   (4) 11%

Directions: 27 to 31are based on the following graph:

FOREIGN TRADE (in billion dollars)
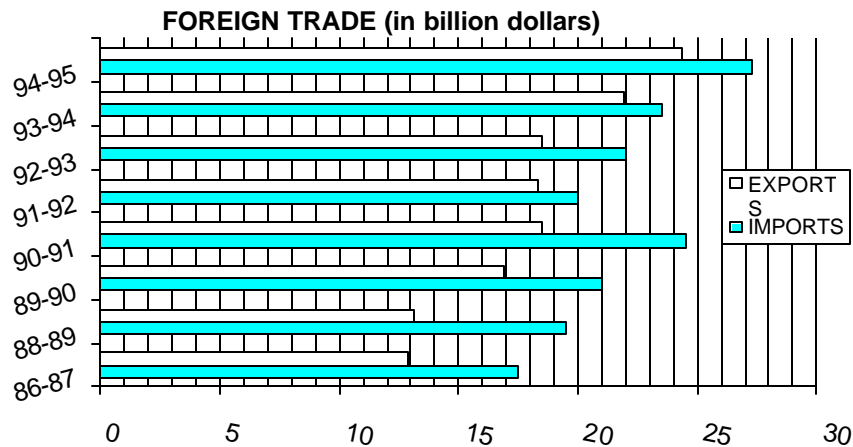
27. In which year was the trade deficit greatest?
(1) 87-88   (2) 88-89   (3) 89-90   (4) 90 - 91

28. Export earning in 90-91 is how many percent of imports in 91-92?
(1) 82   (2) 85   (3) 92   (4) 15

29. In how many years was the trade deficit less than the trade deficit in the succeeding year?
(1) 1   (2) 2   (3) 3   (4) 4

30. In the last three years the total export earnings have accounted for how many percent of the value of the imports?
(1) 80   (2) 83   (3) 95   (4) 89

31. Which of the following statements can be inferred from the graph?
I. In all the years shown in graph, the trade deficit in less than the export earning.
II. Export earnings increased in every year between 89-90 and 91-92.
III. In all the years shown in the graph, the earning by exports is less than the expenditure on imports in the preceding year.
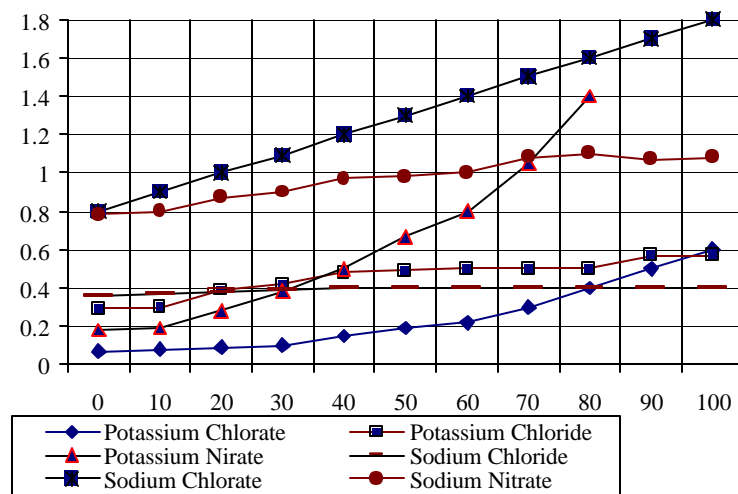(1) I only   (2) II only   (3) III only   (4) I and III only

Directions 32 to 35 are based on the graph given below:
Solubility - Temperature relationships for various salts.
(The Y-axis denotes Solubility (kg/litres of water)

32. Which of the following salts has greatest solubility?
    (1) Potassium Chlorate at 80^{0}C.
    (2) Potassium Chloride at 35^{0}C.
    (3) Potassium Nitrate at 39^{0}C.
    (4) Sodium Chloride at 85^{0}C.

33. Approximately, how many kg of Potassium Nitrate can be dissolved in 10 litres of water
    at 30^{0}C?
    (1) 0.04   (2) 0.4   (3) 4   (4) 0.35

34. By what % is the solubility of Potassium Chlorate in water increased as the water is
    heated from 30^{0}C to 80^{0}C?
    (1) 100   (2) 200   (3) 250   (4) 300

35. If 1 mole of Potassium Chloride weighs 0.7456 kg, approximately, how many moles of
    Potassium Chloride can be dissolved in 100 litres of water at 36^{0}C?
    (1) 700   (2) 650   (3) 480   (4) 540

SECTION 3

1 If $x = 2 + 2^{\frac{2}{3}} + 2^{\frac{1}{3}}$, find the value of $x^3 - 6x^2 + 6x$

   (1) 1 (2) 2 (3) 4 (4) cannot be determined

2. Find the value of p and q such that the equation $x^2 + px + q = 0$ has $5 + 3i$ as a root, where $i = \sqrt{?1}$

   (1) p = 10, q= 34 (2) p =-10, q =-34
   (3) p =-10, q =34 (4) None of these

3. Find the remainder when 2^{93} is divided by 7

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

4. If $a2 ? \dfrac{1}{b2} ? 4\dfrac{1}{9}$, Find $3 ? \dfrac{a^2 ? b^2}{a^2 ? b^2}$

   (1) 3/5 (2) 2/5 (3) −2/5 (4)-13/5

5. Which of the following is the highest?

   (1) $12^2 + 9^2$ (2) $13^2 + 8^2$ (3) $14^2 + 7^2$ (4) $15^2 + 6^2$

6. A, B and C are three angles of a triangle. Then the maximum value of Sin A + Sin B + Sin C is

   (1) 2?3 (2) 3?3 (3) 3?3/2 (4) 3/2

7. Which of the following numbers is not a sum of two prime numbers?

   (1) 78 (2) 88 (3) 51 (4) 60

8. N = 10x +y, where x and y are single-digit natural numbers. To find N, which of the following information's is/are necessary/sufficient?
    Y is a multiple of 3 and x is a multiple of 2
    N is a prime Number.
    N is a perfect square.

   (1) only A and B together (2) only B and C together
   (3) only A and C together (4) All even together are not sufficient

9. x is an even, y is an odd and Z is a prime number. Someone is asked to find the values of x, y and z such that $\sqrt{xyz}$ is an integer. Identify the correct alternative.

   (1) There is no such value set of (x, y, z).
   (2) There exist such sets of (x, y, z) only when z = 2
   (3) There exist many sets of (x, y, z) such that $\sqrt{xyz}$ is even
   (4) There exist only one set of (x, y, z).0

10 In a tractor there are four type of wheels. According to their positions, we call them T1 , T2, T3 and T4 wheels. When the tractor move for 36 feet, T1 makes 3 more revolutions than T2, T2 makes 3 more revolutions than T3, T3 makes 2 more revolutions than T4, T1 makes 8 more revolutions than T4. Find the ratio of the radii of wheels T1, T2, T3 and T4

   (1) 3:4:6:9 (2) 3:4:5:9 (3) 3:4:7:9 (4) Data inadequate

11. Which of the following statements is true?

   (1) $(8)^7 - 8$ is divisible by 7 (2) $(9)^{10} - 9$ is divisible by 10
   (3) $(10)^{11} - 10$ is divisible by 10 (4) None of these

12.   ABC is a three-digit number in which A, B and C are three different prime digits. The number formed by the first two digits, i.e. AB and the numbers formed by the last two, i.e. BC, are also prime numbers. Find the sum of the digits of the number.
(1) 12   (2) 15   (3) 21 or 15   (4) None of these

13.   What units digits exist in the product of all prime numbers between 10 and 30?
(1) 5   (2) 4   (3) 3   (4) 2

14.   In a survey of political preference, 78% of those asked were in favour of at least one of the proposal I, II and III 50% of those asked favoured proposal I, 30 % favoured II proposal, and 20 % favoured proposal III, If 5 % favoured all the three proposals, what % of those asked favoured more than one of the three proposals?
(1) 10   (2) 12   (3) 17,   (4) 22

15.   xyzw is a four digit number. When reverse of this number, i.e. wzyx is subtracted from it , which of the following does not represent answer?
(1) $999(x-w)+90(y-z)$ (2) $999(x-w) +99(y-z)$
(3) $9\{111(x-w) + 10y -10z\}$ (4) $9(111x -10z) - 9(111w -19y)$

16.   In the square x^{-1}, x^2, $x^{3,}$ x^4, x^5, x^6, x^7 the average of first three numbers is 13 and that of first four numbers is 30. Find the last number of the sequence.
(1) 128   (2) 8384   (3) 2187   (4) 729

Directions Q. 17- 19: Read the following information carefully and answer the questions given below.
A car has two engines, A and B. a computer controls them. The computer that control their duty can be fed with four type of instructions, as explained below:
Instruction type Explanations of the instructions
W(A, t)   Start engine 'A' and operate it for 't' hours.
T(A,B)   The job is being transferred from A to B
J(A,B)   A is instructed to join with engine B. that is , now both engines will work together.
S(A)   Stop engine A while B continues working.

When engine A works the speed of the car is 80 km/hr and fuel consumption is 10km/liter. When engine B works the speed of the car is 60km/hr and fuel consumption is 8km/liter. When hills come, both the engines are instructed to work together. In that case, the speed becomes 120 km/hr but fuel consumption remains the same.

17.   A set of five instructions is fed so that the car can cover a distance of 1700 km in 20 hrs. The sequence of first four instructions is W(A, 10), T(A , B) W(B, 5) , J(A,B) . Find the fuel consumed by the car
(1) 250 liters   (2) 252 liters   (3) 252.5 liters   (4) None of these

18.   A set of five instructions is fed in the computer. The first four instructions in the sequence are W (A, 5), T (A, B) W (B, 5), T (B, A). Find the fifth instructions so that car covers a distance of 1020 km
(1) W (A, 5)   (2) W (A, 4)   (3) W (A, 3)   (4) None of these

19   Another set of five instructions is fed in the computer so that the car can cover a distance of 1000 km using 139 liters of oil. The third instructions is missing from the sequence of instructions:

1st instructions: W (B, 6)
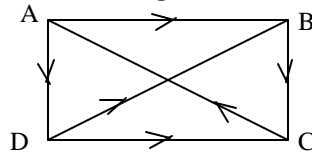2nd instructions: J (A, B)
3rd instructions: ---------
4th instructions: S (B)
5th instructions: W (A, B)
Find the 3rd instructions.

(1) W(A&B, (2)   (2) W(A&B,(1)   (3) W(A&B , (3)   (4) None of these

Directions Q. 20-21: Read the following information carefully and answer the questions given below.

In a rectangular field ABCD, there is only one B, A cemented is path is made along the lines BC, CA, AD, and DB. A person enters the field and start walking along the route BC –CA-AD-DB. After two hours he calculates that he covered total 2560 meters. He could not count number of rounds but he was sure that it was more than 6 but less than 10

20.   If the path BC is 60 m long then find the area of the field.
        (1) 6000 sqm   (2) 4900 sqm   (3) 4400 sqm.   (4) Can't be determined

21.   After first round, he takes rest for 2 minutes. After each successive round his period of rest increases by 2 minutes. Find his speed in meters per minute.

        (1) 40 m/min   (2) $53\dfrac{1}{3}$ m /min

        (3) 60 mi/min   (4) can't be determined

22.   Find the remainder when $43^{33} - 23^{33}$ is divided by 5.
        (1) Zero.   (2) 5   (3) 10   (4) 15

23.   A football is made of regular hexagonal pieces of leather. Each side of the hexagonal piece is 2 inches. If the side of the hexagonal are increased by 50 %, what is the ratio of the volume of water displaced by the new and the old football if they are sunk into a water tub?
        (1) 3:2   (2) 9:4   (3) 27: 16   (4) None of these

Direction Q. 24 - 27: The following questions are based on graphs of straight lines plotted on x-y axes.

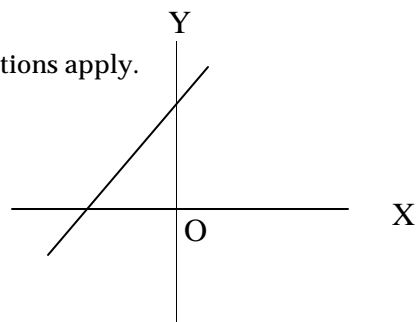   All the graphs represent the straight lines ax + by +c = 0
        Mark choice (1) if a> 0, b>0 and c> 0
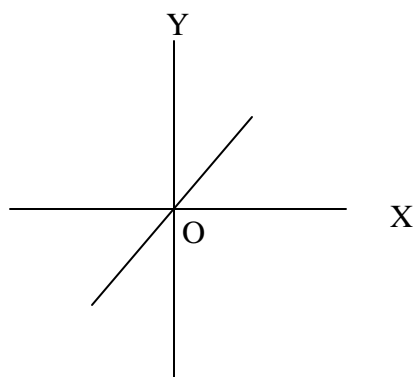   Mark choice (2) if a> 0, b<0 and c> 0
        Mark choice (3) if a> 0, b>0 and c = 0.
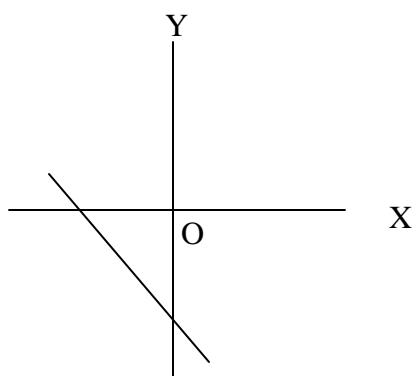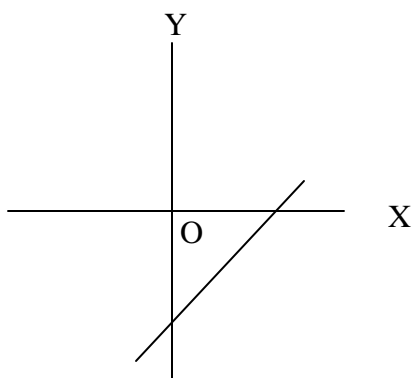   Mark choice (4) if none of the above conditions apply.

24.

25.

26.

27.

28. A man has to invite six of his friends on his birthday for dinner. He can send invitations by post, by phone or by his servant. In how many ways can he send invitations to his friends so that each of his friends gets only one invitation?
(1) 120   (2) 720   (3) 729   (4) 216

Directions Q. 29 - 30: Read the following information carefully and answer the questions given below.

We celebrate four festivals Holi, Dussehera, Diwali and New Year in our colony on community level in which each family contributes some money according to its capacity. In my annual budget I fixed an amount to contribute in these festivals. According to the level of expense in organizing these festivals, I decided to contribute in the following manner.

For Holi, I fixed Rs. 2 more than half of the amount which I fixed for all the festival. For Dussehra, I fixed Rs. 4 more than half of the amount left. For Diwali, I fixed Rs. 6 more than half of the amount left. And finally, Rs. 11 is left for New Year Contributions.

29. What amount was fixed for Diwali?
(1) Rs. 18   (2) Rs. 20   (3) Rs. 23   (4) Rs. 42

30. What amount did I fix for contribution in all four festivals?
(1) Rs. 156   (2) Rs. 166   (3) Rs. 176   (4) None of these

31. If $0 < x > 9$, $y > 10$, $9 < z < 10$, $0 < a < 3$, $b > 4$, $3 < c < 4$, which of the following is /are not true?

   A $ax < cz < by$

   B $abc < \sqrt{xyz}$

   C $(x + y + z) > (a + b + c)$

(1) All of A, B, and C   (2) only B,
(3) only C   (4) only B and C

32. A single Badminton tournament is held in which 20 men participate. It is a knockout tournament, a player is diminated as soon as he loses a match. How many matches should be played in the entire tournament?
(1) 20   20 19   (3) 10   (4) None of these

33. A man took a loan of Rs. 1200 on a flat rate of 5% per amount for 40 years. According to the terms, he has to pay the amount in 40 annual installments, which are in arithmetic progression. When 30 installment are paid, he dies, leaving one- third of the debt unpaid. Find the value (in Rs.) of the last installment.
(1) 120   (2) 124   (3) 129   (4) 134

34. $2^{\log 2^{1}}$? $3^{\log 3^{2}}$? $4^{\log 4^{3}}$? .... $n^{\log n^{(n-1)}}$

find the some of the above series for n = 100
(1) 4950   (2) 5050   (3) $\log_{100}{(5050)}$ (4) None of these

35. $?x ? y?^{n}$? $^{n}C_{0}x^{n}$? $^{n}C_{1}x^{n?1}y$? $^{n}C_{2}x^{n?2}y^{2}$? .... ? $^{n}C_{n}y^{n}$ when is positive integer, for any other positive integer $r ? n$, $^{n}C_{r} ? \dfrac{n!}{r!(n?r)!}$ and $n! = 1.2 \dots (n-1).n$.

for n= 6 find the term in the expansions of $(x + 1/x)^{n}$ which is independent of x.
(1) 15   (2) 20   (3) 6   (4) None of these

Directions Q. 36 - 37: Read the following information's carefully and answer the questions given below.

A person deposits some amount regularly in a nationalized and private bank. The rate of interest is compounded every two month in both the banks. The following chart shows the amount and time of deposits made by the person.

	Nationalised Bank	Private Bank
1 Jan, 2001	3000	4000
1 Mar, 2001	2000	2000
1May,	4000	5000

Total interest given by the nationalized bank in first 6 month is Rs.171

36. What is the compound rate of interest bimonthly (every two months) given by the nationalised bank?
    (1) 2%   (2) 1.5%   (3) 1%   (4) 2.5 %

37. Total interest given by both the banks in first 6 month is Rs. 424. What is the compound rate of interest bimonthly (every two month) given the private bank?
    (1) Less than 1%   (2) Between 1% and 1.4%
    (3) More than 1.5 %   (4) 2%

38. The side of equilateral triangle is 96 cm. the mid points of its side are joined to form another triangle whose mid points are turn joined to form still another triangle. This process is repeated indefinitely. Find the sum of the perimeter of all the triangles.
    (1) 1176 cm   (2) 1275 cm   (3) 576 cm   (4) None of these

39. a is +ve; b is –ve; c is +ve d is –ve; and so on up to z. which of the following statement is/are wrong?
    A   mx +ny + oz is a –ve value
    B   abc ? xyz –(a + b + c)^2 + (x + y + z)^3 is a –ve value.
    C   ab + cd + ef + …. + yz is a –ve value.
    D   abcd ……xyz is a –ve value
    (1) Only A and B are wrong   (2) Only B and C are wrong
    (3) Only C and D are wrong   (4) None of these

40. Let x, y and z be natural numbers satisfying x < y < z and x + y + z = k. which of the following is the smallest values of k which does not determine x, y, z uniquely?
    (1) 9   (2) 6   (3) 7   (4) 8

Directions Q. 41- 42: Read the following information carefully and answer the questions given below.

In an undergraduate college five subjects ate taught in B.A (Hons) course. These subjects are History, Geography, Political Science, Psychology, and Sociology. The seminars committee organizes regular Seminars. In one day a maximum of five seminars can be organized at different times so that a student can attend all the seminars. On the demand of the student the committee finalized the frequencies as follows:

"The seminars on History will be organized every second day, on Geography every third day, on Political Science every fourth day, on Psychology every fifth day, and Sociology every sixth day. The first seminar on all the five subjects during current academic year will be held on 1st August 2001."

41. On what date will seminars on all subjects be organized for the third time
   (1) 30 Oct, 2001   (2) 28 Nov, 2001
   (3) 29 Nov, 2001   (4) None of these

42. If Mohan Majumdar decides to attend all the seminars in August 2001, for how many days can he absent himself from collage?
   (1) 6   (2) 7   (3) 8   (4) 9

43. Among the given functions, which is not always defined?
   (1) $y = a^x$; a >0   (2) $y = \tan x + \cos x$

   (3) $y = \tan^{-1}x + \cot^{-1}x$ (4) $\dfrac{x^3 ? 3x ? 7}{x^2 ? 1}$

44. We are given that $\lim\limits_{x? a} \dfrac{x^n ? a^n}{x ? a} ? na^{n?1}$

   then using the above limit, determine $\lim\limits_{x? 0} \dfrac{(1 ? x)^n ? 1}{x}$
   (1) n   (2) 1/n   (3) 1   (4) -1

45. A man has 10 pairs of shows in his cupboard. One morning he picks 4 shoes (one by one) at random. Find the probability that there is at least one pair complete so that he can go to office without making any further withdrawal from the cupboard.
   (1) 224/323   (2) 99/323   (3) 112/323   (4) None of these

Directions Q.46 –47: Read the following information carefully and answer the questions given below.
A, B, C, O are points in a plane.
Suppose
(A, B) = line AB that joins two points A and B
$ (AB, ?, BC) means ? Angle between lines A and B.
? (A, B, C, O) = A , B and C are points on a circle whose centers is O

46. Which of the following statements is not true in ? (A, B, C, O)?
   (1)   If $ (# (C, O), ?, # (A, O)) is true then ? ABC is a right angle triangle.
   (2)   If $ (# (A, O), 120 # (B, O) is true then area (AOB) is one-third of the area of circle ABC.
   (3)   If $(#(A, B), x, #(C, O)) and$(#(A, B), y, #(C, B)), then x = 2y.
   (4)   None of these

47. If $ (#(A, B), ?/2, #(B, C) and $(#(A, D), ?/2 #(D, C) is true then ABCD is a
   (1) Rectangle   (2) parallelogram
   (3) Trapezium   (4) None of these

48. From each of the two given numbers, half the smaller number is subtracted. Of the resulting numbers, the larger one is three times as large as the smaller. What is the ratio of the two numbers?
   (1) 2:1   (2) 3:1   (3) 3:2   (4) None

Directions Q. 49- 52: for the following three questions pleas read the instructions carefully and then answer the questions that below.

In India nearly every state has one or more forts registered as historical landmarks. So a tourist couple planned their trip so that they could view as many as possible. Of the five they sought out (one being Akola Fort), each is near or in a different town or city and state (one is in Punjab, Gujarat), each was built in a different year (1855, 1865, 1868, 1908 or 1925) and each crossed a different river or stream. From the clues below, match each fort with the town or city and state it's in or near, the year the fort was completed, and the river or stream it crosses.

1. Ahmadia fort, built in 1868, is not in or near Chandigarh, Haryana.
2. Dalhouise Fort was built exactly 40 years after the fort over Yamuna River, but built before the fort in Chittore, Rajasthan.
3. The fort over Durg was built before presidency fort, which was built before the one near Chandigrah , Haryana , which does not cross Gomti River.
4. The fort over Onkaresh River is near is Wardha, Manipure.
5. The fort built in 1855 is neither the one near Badaayaun, Mussouri, nor Tughlaq Fort, which does not cross Sindhu Durg.

49. Ahmadia fort crosses which river?
(1) Yamuna   (2) Gomti   (3) Onkaresh   (4) Can't say

50. The last fort that was built among the given five was near
(1) Badaayun   (2) Chittore   (3) Chandigrah   (4) Wardha

51. The Presidency Fort was built in
(1) 1855   (2) 1908   (3) 1865   (4) 1868

52. The fort over Sindhu Durg is named
(1) Dalhousie   (2) Tughlaq   (3) Ahmadia   (4) Akola

Directions Q.53 – 55: For the following three questions please read the instructions carefully and the answer the questions.

Three logicians A, B and C, are wearing hats, which they know are either black or white but not all of them are white. A can see the hats of B and C; B can see hats of A and C ; C is blind . Each is asked in turn if they know the color of their own hat. The answer are: A: "No" C: "Yes"

53. C's hat is
(1) White   (2) Black
(3) Either white or black   (4) none of above.

54. A's hat is
(1) White   (2) Black
(3) Either white or black   (4) None of above

55. Which of the following is/are correct?
I.   C would not have known his hat's colour if he was asked immediately after A.
II.   C is lying when she says she knows her hat's colour despite being blind.
(1) I only   (2) II only
(3) Neither I nor II   (4) Both I and II

56. The number of pairs of positive integers (a, b) where a and b are prime numbers and $a^2 - 2b^2 = 1$, is
(1) 0   (2) 1   (3) 2   (4) 8

57. $(a + b + c + d + ...)^{23} = a^{23} + b^{23} + c^{23} + d^{23} + ... + M$, where M is divisible by
(1) 23　　　　(2) 17　　　　(3) 11　　　　(4) can't be determined

58. Let $A = 0.a_1 a_2 a_3 a_1 a_2 a_3 a_1 a_2 a_3$　　　　$B = 0.b_1 b_2 b_1 b_2 b_1 b_2....$
Both of them are non-terminating numbers, wherein a_1, a_2, a_3, b_1, b_2 are integer between 1 to 9 not necessarily distinct. Then which of the following is an integer?
(1) 1989? (A + B)　　　　　　(2) 10989? (A +B)
(3) 100989? (A + B)　　　　　(4) none of these

59. A shopkeeper is very particular that the amount for which he buys and sells goods always include the digit '9' in it and the price is always an integral value. More ever, the digits should not add up to 13 or a multiple of 13. If the lowest price that he can buy an item at is Rs.400 and the highest price he can sell it for is Rs. 899, the maximum profit possible is (in Rs.)
(1) 499　　　　(2) 498　　　　(3) 489　　　　(4) 479

60. The number of divisors of an odd number is 34. If it is multiplied by 12, the number of divisors will be
(1) 278　　　　(2) 76　　　　(3) 204　　　　(4) 216

Q 61-62 Pinky enters a shop to buy almonds, biscuits and chocolates. She has to buy at least 7 units of each. She buys more biscuits than she does almonds and more chocolates than she does biscuits. She picks up a total of 26 items.

61. How many almonds does she buy?
(1) 7　　　　(2) 8　　　　(3) 9　　　　(4) Cannot be determined

62. Which of the following is not a valid value for number of chocolates bought?
(1) 9　　　　(2) 10　　　　(3) 11　　　　(4) All are valid

63. Three plots having an area of 132, 204 and 228 sq. meter respectively are to be sub divided into equalized beds. If the breadth of a bed is 3 meters, what can be maximum length of the bed?
(1) 8　　　　(2) 4　　　　(3) 10　　　　(4) 16

64. How many positive integers divide at least two of the following integers: $4^{10}, 6^{20}, 3^{20}$?
(1) 39　　　　(2) 40　　　　(3) 41　　　　(4) None of these

65. Ratio of two rational numbers
(1) is always rational　　　　(3) is always real
(3) may be real but not always　(4) may be irrational

SOLUTION

SECTION 1

1. (3)	2. (2)	3. (2)	4. (3)	5. (3)	6. (2)	7. (1)	8. (3)	9. (4)	10. (3)
11. (3)	12. (1)	13. (4)	14. (2)	15. (4)	16. (3)	17. (1)	18. (2)	19. (3)	20. (1)
21. (4)	22. (3)	23. (4)	24. (3)	25. (1)	26. (4)	27. (2)	28. (2)	29. (1)	30. (2)
31. (3)	32. (2)	33. (4)	34. (2)	35. (4)	36. (4)	37. (3)	38. (3)	39. (4)	40. (3)
41. (2)	42. (2)	43. (4)	44. (3)	45. (2)	46. (2)	47. (1)	48. (1)	49. (3)	50. (2)
51. (1)	52. (1)	53. (4)	54. (3)	55. (4)	56. (4)	57. (1)	58. (1)	59. (1)	60. (3)
61. (1)	62. (2)	63.(2)	64.(1)	65.(1)					

SECTION 2

1. (3)	2. (4)	3. (1)	4. (3)	5. (2)	6. (1)	7. (3)	8. (1)	9. (2)	10. (2)
11. (2)	12. (3)	13. (1)	14. (4)	15. (1)	16. (4)	17. (1)	18. (4)	19. (2)	20. (1)
21. (3)	22. (4)	23. (2)	24. (3)	25. (2)	26. (4)	27. (2)	28. (3)	29. (4)	30. (4)
31. (1)	32. (3)	33. (3)	34. (4)	35. (1)					

SECTION 3

1. (3)	2. (3)	3. (1)	4. (2)	5. (4)	6. (3)	7. (3)	8. (3)	9. (3)	10. (4)
11. (1)	12.(3)	13. (3)	14. (3)	15. (2)	16. (3)	17. (3)	18. (2)	19. (1)	20. (1)
21. (1)	22. (1)	23. (4)	24. (2)	25. (4)	26. (1)	27. (4)	28. (3)	29. (3)	30. (1)
31. (4)	32. (2)	33. (3)	34. (1)	35. (2)	36. (3)	37. (2)	38. (1)	39. (4)	40. (4)
41. (3)	42. (3)	43. (2)	44. (2)	45. (2)	46. (3)	47. (4)	48. (1)	49. (1)	50. (2)
51. (3)	52. (1)	53. (2)	54. (3)	55. (1)	56. (2)	57. (3)	58. (2)	59. (4)	60. (2)
61. (1)	62. (1)	63. (2)	64. (3)	65. (1)					

SOLUTION

SECTION 2
1. 3   The sum can be solved by either statement
2. 4   We need the area of either of the two.
3. 1   all are inequalities, hence cannot be solved
4. 3   Area of Hall/Area of carpet.
5. 2   Any statement can five the solution
6. 1   7. 3   8. 1   9. 2   10. 2   11. 2   12. 3   13. 1   14. 4   15. 1   16. 4
17.1   18. 4   19. 2
20. 1   22% (18000) - 24% (20,000)
21. 3   Visually, we see D has the maximum variation.
22. 4   26% (20,000) = 23% (18,000) + 300
23. 2   20% (20,000)/8% (18,000)
24. 3   18% (18,000) to 20% (20,000) = 23.45%
25. 2   22% (18,000) ? 4000.
26. 4   (20 - 18)/18 = 11%
27.2   Trade deficit = Imports -Exports for a financial year. From the graph it can be seen that trade deficit was maximum in 1988-89 i.e. 6.2 billions.
28.3   Required % = (18.3/20) = 0.915 ? 100 = 91.5% ? 92% (approx).
29.   Trade Deficit was less than that of succeeding year in 87-88, 89-90, 91-92 & 93-94, hence correct answer is (4)
30.4   Required % = (18.2 + 21.8 + 24.3)/(22 + 23.4 + 27.2) = 64.3/72.6 ? 8/9 ? 89% (approx.)
31.   Only statement (I) i.e. in all the years shown in the graph, trade deficit is less than export earnings is true, hence (1) is the correct answer.
32.3   At 39 degree centigrade solubility of potassium nitrate is 0.48 keg/ it. Of water. In other three cases solubility is 0.4 or less. Hence option (3) is the correct answer,.
33.3   At 30 degree centigrade solubility of potassium nitrate is 0.38 kg/lt., so in 10 lt. 3.8 kg = 4 of potassium nitrate can be dissolved in it.
34. 4   % increase in solubility of potassium chlorate = (0.4 - 0.1) 100/0.1 = 300%
35.1.   solubility of potassium chloride at 36 C. = 0.4 kg/lt. Therefore amount of potassium chloride that can be   dissolved in 100 lt. at 36 C = 40 kg.
        Number of moles = (Wt. In kg)/(Wt. of 1 mole) = 40/0.07456 = 533(approx)
        Hence option (4) i.e. 540 is the correct answer.

SECTION 3

1. 3 $x = 2 + 2^{\frac{2}{3}} + 2^{\frac{1}{3}}$

   $(x - 2)^3 = (2^{\frac{2}{3}} + 2^{\frac{1}{3}})^3$

   $= 4 + 3.2^{\frac{2}{3}} 2^{\frac{1}{3}} (2^{\frac{2}{3}} + 2^{\frac{1}{3}}) + 2$ $2^{2/3} ? 2^{1/3} ? x ? 2$

   $= 6 + 6 (x - 2)$

   $?$ $x^3 - 6 x (x - 2) - 8 = 6 + 6 (x - 2)$

   or $x^3 - 6 x^2 + 12 x - 8 = 6 + 6 (x - 2)$

   or $x^3 - 6 x^2 + 6 x = 2$

   $?$ Answer is (2)

2. 3   Imaginary roots always occur in pairs, ie if 5+3i is one of the roots then the other roots is 5-3i.

3. 1   If we expand it, each term except last one 1^{31} will have 7 as a factor, so the required remainder is 1.

4. 2   Here $a^2 ? \dfrac{1}{b^2} ? 4\dfrac{1}{9} ? 4 ? \dfrac{1}{9}$? $a=2$, $b=3$

$? \; 3 ? \dfrac{a^2 ? b^2}{a^2 ? b^2} ? 3? \dfrac{4?9}{4?9} ? 3? \dfrac{13}{?5?} ? \dfrac{2}{5}$

5. 4   If $x+y=k$ then x^2+y^2 is higher when $|x?y|$ is higher.

6. 3   In a triangle sin A + sin B + sin C is maximum when $?A ?? B ?? C$, i.e., the triangle is equilateral.

$? \; 3 \sin 60^0 = 3? \dfrac{\sqrt{3}}{2} ? \dfrac{3\sqrt{3}}{2}$

7. 3   (1) 78=37+41
(2) 88=41+47
(4) 29+31=60
Sum of two prime numbers is always even, except when one of the two prime number is 2. In choice (3) the sum is 51, an odd number.
51=2+49 which is not prime, so our choice is (3).

8. 3   From C, required number might be 16,25,36,49,64,81.
From A, the numbers in which y is a multiple of 3 are 16,36, and 49.
The number in which x is a multiple of 2 are 25, 49, 64 and 81.
49 fulfils the conditions (A) and (C).

9. 1   Here x=even, y=odd, z=prime
As z has to be a prime no. it can only be 2, 3, 5,7 out of which only 5 occurs in perfect squares which is always followed by 2 in that case y would become even hence [1].

10. 4   First we will have to find number of revolutions made by T_1, T_2, T_3 and T_4. Then we can find the ratio of circumference (Circumference= $\dfrac{36}{\text{No. of revolutions}}$)
Ratio of radius =ratio of circumference. We have
$T_1-T_2=3$….(1)
$T_2-T_3=3$….(2)
$T_3-T_4=2$….(3)
$T_1-T_4=8$….(4)
Can we solve these equations?
We can 't solve these equations ; so our answer is(4): data inadequate.
Note: Since in the first look we see that there are four equations and four unknown, so they should get solved. But equation (1)+(2)+(3) gives the same equation as (4). So in reality they are only three equations and not four.

11. 1 $n^x - n$ is divisible by x if x is a prime no.

12. 3   A, B and C are from 2, 3, 5, 7. As AB and BC are prime numbers, B and C can't be 2 or 5.
Thus the possible numbers can be *37 or* 73.
Now in the first position, we can put either 5 or 2. We find two nos. which satisfy the condition: 537 and 237
Thus sum of digits = 12 or 15

13. 3   11 ? 13 ? 17 ? 23 ? 19 ? 29

                (…1) ? (…3) ? (…7) ? (…3) ? (…9) ? (…9)

       = _ _ _ _ 3

14. 3 $78 = 50 - (x+y+5) = 30 - (y+z+5) + 20 - (x+z+5) + (x + y + z) + (5)$

       or, $78 = 100 - (x + y + z)10$

       or, $(x + y + z) = 17$

15. 2   x y z w $= 1000x + 100y + 100y + 10z + w$ ……(1)

       w z y x $= 1000w + 100z + 10y + x$ …(20

       (1)-(2) $= 999x - 999w + 90y - 90z$

       $= 999(x-y) = 90(y-z)$

16. 3 $x^4 = 120 - 39 = 81$? $x = 3$

       ? $x^7 = 3^7 = 2187$

17. 3   At the end, A+B work for 5 hrs.

       fuels used $= \dfrac{800}{10}$? $\dfrac{300}{8}$? $\dfrac{600}{10}$? $\dfrac{600}{8}$? 140 ? $\dfrac{900}{8}$? 252.5 litres.

18. 2   Before 5th instruction, car has traveled for 80 ? 5 = 60 ? 5 = 700km.

       To cover 1020 - 700= 320km, the instruction W(A, 4) is correct.

19. 1   Before 2nd instruction, the car has covered a distance of 6 ? 60=360 km. In the last instruction it has covered 5 ? 80=400km. The rest 1000-(360=400)=240km will be covered by instruction

20. 1   It is clear that the person makes 8 rounds (as other possible numbers between 6 and 10 do not divide 2560 exactly)

       ? length of one round=2560 ? 8=320m

21. 1   He takes total rest of 2+4+6+8+10+12+14=56 minutes

       ? His speed in m/min=2560 ? (120-560)=40m/min

22. 1 $x^n - a^n$ is exactly divisible by x-a(where n is odd or even)

       ? $43^{33} - 23^{33}$ is exactly divisible by(43-23)=20

       ? $43^{33} - 23^{33}$ is also exactly divisible by 5

       Therefore by 50% required remainder=0

23. 4   When the side of each he football also increase by 50%. Therefore, if radius of new football is r and that of old football is then $r_n : r_0 = 3:2$.

       $\dfrac{\text{volume of new football}}{\text{volume of old football}} = \dfrac{\left(\dfrac{3}{2}r\right)^3}{r^3}$? $\dfrac{27}{8}$

24. 2   Clearly, the equation is of the form x-y+1=0

       Because if we put x=0 we get y=1 and if we put y=0 we get x=-1

       Note: To make our calculation easier we take the line x-y+1=0 although the coefficients of x and y may be different.

25. 4   The line is: x-y+1=0

26. 1   The line is: x=y+1=0

27. 4   The line is: -x+y+1=0

28. 3   Invitation may be sent to each of the six friends by any of three ways.
       ? Required number of ways
         =3 x3x3x3x3x3=3^6=729

29 - 30: We can solve these questions by taking Rs x as the total contributions, getting equations and solving them. but save time we should move from the given choice in Q.85. Rs. 156 as total contributions satisfies the stage when they give some amount in decimals.

29. 3   (Rs23)

30.1   (Rs156)

31. 4

32. 2   In each match one player is eliminated. So to eliminate 18 players (so that winner is decided) 19 games should be played.
       =3+6+9…..+198

       =3(1+2+3+……+66)= $\dfrac{3 ?66 ? 67 ?}{2}$? 6633

       Sum of integers which are multiples of 7
       =7+14+…….+196

       7(1+2+……+90= $\dfrac{7 ?28 ? 29 ?}{2}$? 2842

       Sum of integers which are multiples of 3 and 7
       =21+42+63+…..189

       =21(1+2+……+9)= $\dfrac{21 ?9 ? 10 ?}{2}$? 954

       Now, sum of integers which are not multiples of 3 or 7=(1+2+….200)-8530
       =20100-8530=11570

33. 3   Total amount to be paid

       =120+ $\dfrac{1200 ? 5 ? 40}{100}$? Rs3600

       Let the first installment be 'a' and common difference be 'd', then

       3600= $\dfrac{40}{2}$ {2a+(40-1)d}

       or, 180=2a+39d…(1)

       After 30 instalments $\dfrac{2}{3}$ of 3600 is paid

       ? $\dfrac{2}{3}$? 3600 ? $\dfrac{30}{2}$ {2a+(30-1)d}
       or,, 160=2a+29d…(2)
       Solving (1) and(2), d=2,a=51
       ? last instalment=40th term =a+(40-1)d
       =51+39x2=129

34. 1   We known that $a^{\log_a x}=x$

$\therefore$ The series: $1+2+3+\ldots99=$

$=\dfrac{99 \times 100}{2} = 4950$

35. 2   Clearly, the term will be independent of x for r=3

Now, the term for r=3

$^6C_3\ x^{6-3}\left(\dfrac{1}{x}\right)^3 = {}^6C_3 = \dfrac{6 \times 5 \times 4}{2 \times 3} = 20$

36. 3   Calculate interest at 1% (neglecting paise)

Interest on 28 Feb=Rs30

Interest on 30Apr=1% of (3030+2000)

=Rs50

Interest on Jan=1% of (5080+4000)

=Rs90

$\therefore$ total interest =30+50+90=Rs170

$\therefore$ rate of interest is nearly 1%

37. 2   Interest paid by private bank=425-171

=253.

If we calculated total interest at 1%(neglecting paise) we get 40+60+111=Rs211.

Which is much less than Rs Rs253.

Now, we calculated total interest at 1.5% (neglecting paise).

We get 60+90+165=Rs315, which is much higher than Rs 253.

$\therefore$ rate is between 1% and 1.4% $\therefore$ our answer is (2)

38. 1   Perimeter of 1st triangle=196 × 3=588cm

Now sum of perimeters

$(S)=588+\dfrac{588}{2}+\dfrac{588}{4}+\dfrac{588}{8}+\ldots\ldots..(1\ )$

$\dfrac{1}{2}s = \dfrac{588}{2}+\dfrac{588}{4}+\dfrac{588}{8}+\ldots..(2)$

$(1)-(2)\ \Rightarrow\ \ \dfrac{1}{2}s = 588$

$\therefore$ s = 1176cm.

39. 4   (B) is not true for x=-1,y=100,z=-2. Therefore (B) is not always true. (A). (C) and (D) are true.

40. 4   When k=6, (x,y,z)=(1,2,3) $\Rightarrow$ unique

k=7, (x,y,z)=(1,2,4) $\Rightarrow$ unique

k=8, (x,y,z)=(1,2,5) and(1,3,4)

41. 3   The next seminar on all subjects in one day is (LCM of 2,3,4,5,6) days after 1st August

$\Rightarrow$ 60 days after 1st August.

Now the third seminar on all subjects one day is 120 day after 1st August ie. 121st day from 1st August.

Aug (31days)+Sep(30days)=Oct(31days)+Nov(29days)=121days

$\therefore$ required date =29Nov 2001

42. 3   the dates of seminar on each subject follow an Arithmetic Progression.

Dates of History follow the pattern

$\therefore$ 1+2(n-1)

Dates of geography follow the pattern

$?$ $1+3(n-1)$

Dates of geography follow the pattern

$?$ $1+4(n-1)$

Dates of geography follow the pattern

$?$ $1+5(n-1)$

Dates of geography follow the pattern

$?$ $1+6(n-1)$

where n=1,2,3 ….

In August 2001, there are eight dates (2,8,12,14,18,24,30) which can't be found in any of the above series.

Note: The dates should be such that when we subtract I, they should not be divisible by 2,3,4,5 or 6. Clearly, these days should be one more than the prime number. So look for such dates which are just one more than prime numbers 9 except 2,3 and 5).

43. 2   All the f^n are defined for all values of except y= tan x for x= $(2n+1)\dfrac{p}{2}$ as we know

tan 90^0 is not defined.

44. 2 $\lim \dfrac{?1?x?\frac{1}{n}?\frac{1}{n}}{(1?x)?1}$

Let y=1+x; then y $?$ $1(? x? 0)$

Now, given lim=lim $\dfrac{?y?\frac{1}{n}?\frac{1}{n}}{y?1}$ $?$ $\dfrac{1}{n}?\frac{1}{n}?1$

$=\dfrac{1}{n}$

45. 2   Total no. of way of choosing 4 shoes so that no pair is formed is $20?18?16?14$.

Thus probability of not getting a pair is

$\dfrac{20?18?16?14}{20?19?18?17}$ $?$ $\dfrac{224}{323}$

$?$ probability of getting at least one pair is

$1?\dfrac{224}{323}?\dfrac{99}{323}$

46. 3   It is not when all the three points. A.B and C are on the same side of the center.

47. 4   We are given that $?D??B?90^0$. Nothing is said about sides or $?A$ or $?C$.
So simply a quadrilateral.

48. 1 $3?x?\dfrac{x}{2}??y?\dfrac{x}{2}?$ $2x=y$

$?$ x:y=1:2 or y:x=2:1

49 - 52:

$?$ Ahmadia Fort was built in 1868 (1). Dalhouseie Fort was built in 1908 (the only one exactly 40 years later, (2), which makes Ahmadia Fort the one over Yamuna River (1868,2) and the fort at Chittore builtin 1925(2).

$?$ The one built in 1855 is not Tughlaq Fort (5), or Presidency Fort(3), so it's Akola Fort. The fort built in 1925 isn't Presidency Fort (3), so it's Tughlaq Fort, which is then the fort at

Chittore (above), and Presidency Fort was built in 1865. so in the first over Durg was built in 1855 (3).

? The fort at Cahndigarh wasn't built in 1855 or 1865(30, or 1868 (1), or 1925 (Cittore, above), so was built in 1908. the fort over Onkaresh River (Wardha, 4) wasn't built in 1925 (Cittore, above) or 1908 (Chandigarh, above), so it was built in 1865. The fort over Sindhu Durg wasn't built in 1925 9Taghulaq Fort,5), so it was built in 1908, and the fort over Gomati River was built in 1925.

Summary of the above explanation is:

? Ahmadia Fort, Badayun, 1868, Yamuna River
? Tughlaq Fort, Chittore, 925, Gomati River
? Dalhouse Fort, Chandigarh, 1908, Sindhu Durg
? Presidency Fort, Wardhna, 1865, Onkaresh River
? Akhola Fort, Punjab, 1855, Durg.

49.1
50.2
51.3
52.1

53 - 55

A must see at least one block hat, or she would know that her hat is black since they are not all white. B also must see at least one block hat, and further, that hat had to be on C, otherwise she would know that her was black (since she known s A saw at least one block hat). So C knows that her hat is black, without even seeing the other's hats.

53.2
54.3
55.1