

Section – I

Direction for questions 1 to 10: There are 10 arguments given below. Read carefully and answer the questions that follow.

1. A common belief is that money is the most valuable possession. But for a hard-working person it is his own capabilities that will support him more than money. Especially in today's world of uncertainty about everything, it is one's capabilities that should be valued the most.

The above can be said to be true if which of the following assumptions is made?

- a. A hard-working person is an unusual person.
 - b. Money is not really the most valuable thing in life.
 - c. Value of one's own capabilities is so high that it cannot be estimated.
 - d. A person's capabilities always help him out.
2. The recent turnaround of his business is an example of how careful management can do wonders for a company's profits. The new management has brought the company back to profit from the loss-making position that it had occupied for the previous two years.

Which of the following is a flaw in the above reasoning?

- a. The turnaround seen by the company may not sustain for a long period.
 - b. The new management alone is seen as responsible for the turnaround.
 - c. The passage does not give details of the losses the company was making.
 - d. It might be the incentives that the new management is getting that have led to profits in the company.
3. More and more elected representatives in the government, all over the world, are getting caught in various scandals related to their personal or professional lives. This is dangerous for them, as the public is becoming more conscious about electing its representatives based on their character rather than their qualifications.

The given passage best concludes with which of the following?

- a. We need more people with clean characters.
 - b. Elected representatives in the government do not realise what the people are looking for in the government.
 - c. To be able to attract voters, people entering public life should make sure that there is no aspect in their public or professional lives that can be questioned.
 - d. People looking for a place in the government should be of sound character.
4. There are fewer copies of this book available for sale than the number of people who want to buy them. Last week about 5,000 copies were sold, while the number of people who had made bookings for a copy exceeded 20,000.

Which of the following, if true, would strengthen the claim made in the above lines?

- a. People who want to buy books are voracious readers.
 - b. The number of people wanting to buy a copy of the book has been steadily increasing.
 - c. The number of books sold this week is greater than that of the last week.
 - d. The number of books sold last week equals the number of books sold.
5. Some people feel that the rise in price of coffee beans last year meant some users switched from drinking coffee to tea. Now tea leaves are in short supply due to rising demand. The prices of coffee beans and tea leaves are now equal.

Which of the following can be safely inferred from the passage?

- a. Consumption of tea leaves has been high the world over in the past year.
 - b. Consumption of coffee will now start increasing again.
 - c. Surplus stocks of tea have been consumed to some extent in the last year.
 - d. Tea growers made huge profits due to high costs of coffee.
6. In a study on about 80,000 men, it has been found that high blood cholesterol levels increase the risk of heart failure in men younger than 40 years of age.

Which of the following statistics, if correct, would contradict the above study?

- a. The risk of eventual death due to heart attack increased with increased cholesterol levels in the early years.
 - b. This is one of the few studies conducted on younger men.
 - c. The men with lower cholesterol levels lived for four to nine years longer than those with unfavourable levels of cholesterol.
 - d. Fewer men with cholesterol levels above 200 suffered heart attacks than those with cholesterol levels below that limit.
7. Jim is taller than Tom. Sam is taller than Kim. Kim is taller than Tom. Tina is taller than Jim.

If the above information is true, which of the following is also true?

- a. Jim is taller than Kim.
 - b. Tom is taller than Kim.
 - c. Jim is shorter than Kim.
 - d. Tina is taller than Tom.
8. Most striking observation regarding the increasing poverty in most parts of the world is the concentration of poverty in families headed by single women. Such families constituted over half of all poor families last year, as compared with 21 per cent 20 years ago. Women can thus be said to be unable to take care of families as well as men can.

Which of the following, if true, would seriously weaken the above argument?

- a. Whenever a family breaks up, the mother takes care of the children.
- b. Single women find it difficult to effectively look after the home as well as job responsibilities.
- c. Women have always been able to cope better with added responsibilities.
- d. The number of single women heading families has risen six fold in the period under consideration.

9. Even the American Government has criticised the reliance on credit cards for online transactions. The treasury is also experimenting with e-cheques and smart cards.

Which of the following, if true, would contradict the above argument?

- a. Credit cards are too costly.
 - b. Credit cards call for a uniform mechanism for electronic payments.
 - c. Very few people use credit cards for online shopping.
 - d. American teenage population would balloon to 42 million in next two years and teenagers are the major users of credit cards as well as online shopping.
10. Amazon.com is thought to be the biggest and the best of the e-tailers. It has always irritated those left on the sidelines of the dotcom boom. But a report issued on June 23 by Lehman suggests that Amazon could run out of money within a year, crushed by chronic unprofitability. This humbling of Amazon marks the death of e-commerce. The Internet's period of grace is over. If Amazon.com cannot make profit, no other dotcom business can.

The force of the argument given above is most seriously weakened if which of the following is true?

- a. Shopping on the Internet is booming — this year consumer spending online may reach \$4,100 billion globally.
 - b. Due to its vast selection and ease of use, Amazon.com has 20 million customers.
 - c. AOL, now such a stock market darling, lost more money than Amazon and over a period twice as long, e-commerce is still in its infancy and like off-line retailing the aim should not be instant profits but a clear path to profitability soon.
 - d. Even in this depressed state, Amazon shares trade much better than off-line competitors like Barnes and Noble.
11. How many flowers do I have if all of those are roses except two, all of them are tulips except two, and all of them are daisies except two?
- a. 2
 - b. 3
 - c. 4
 - d. 5
12. Three logicians — A, B and C are wearing hats, which they know are either black or white but not all white. A can see the hats of B and C; B can see the hats of A and C; C is blind. Each is asked in turn if they know the colour of their own hats. The answers are 'A : No, B : No, C : Yes'. What is the colour of C's hat?
- a. Black
 - b. White
 - c. Black if A is wearing a white hat
 - d. Cannot be determined
13. There are two cities A and B, separated by a time gap of 12 hr. A friend from city A calls up a friend in city B. He asks him the time at that place. To his surprise he finds that the time at B is same as the time at A. If both the friends are wearing a normal analog watch, what time is it in A?
- a. 6 or 12 o'clock
 - b. 3 or 9 o'clock
 - c. For any value
 - d. Data insufficient

14. Raj Kapoor takes 80 days to travel around the globe. He circumscribes the globe by travelling along the equator. He can carry food which would mean amount wise last for 60 days. He has an option of taking a helper with him. A helper could accompany him either for the entire journey or just a part of the journey. In case a helper drops out in the middle of the journey, he could transfer all that he carries to Raj Kapoor and returns to the base. If all of them reach their respective destinations safely, what is the maximum number of days the helper can accompany Raj Kapoor to complete his voyage?
- a. 20 b. 10 c. 30 d. None of these
15. There is a clock hanging on the wall. The reflection of the clock in a mirror shows exactly the same time as the clock. How many times does this happen in 6 days?
- a. 11 b. 12 c. 22 d. 24

Direction for questions 16 to 20: Answer the questions based on the following data.

Market share of Colossus Ltd.

State	1975-85	1986-95
MP	35 (1)	79 (1)
Bihar	25 (20)	39 (1)
Orissa	10 (4)	30 (2)
Punjab	5 (6)	38 (2)
Delhi	7 (5)	42 (1)
Assam	2 (11)	10 (4)
AP	12 (3)	22 (2)

The above table gives the market share (in percentage) of Colossus Ltd., over two different periods in different states. The figures in brackets give the market position of Colossus Ltd. during the given period for the given state. You may assume that the company does not operate in any other states.

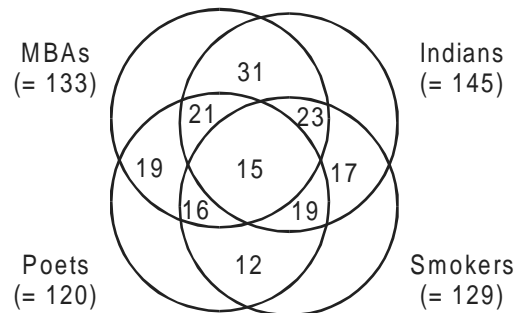
16. In what percentage of states has the market share shown a growth over the two given periods?
- a. 71.44% b. 100% c. 85.72% d. 14.28%
17. In how many states has the percentage growth rate of market share exceeded 75% over the two given periods?
- a. 7 b. 5 c. 6 d. None of these
18. If total business done by Colossus Ltd. in the period 1975-85 was Rs. 500 crore, the total market size for the given period for the given states was
- a. Rs. 1,650 crore b. Rs. 1,950 crore c. Rs. 2,050 crore d. Cannot be determined

19. If the business done by Colossus Ltd. in Assam in 1975-85 was Rs. 9 crore, total market size of Assam was
 a. Rs. 450 crore b. Rs. 400 crore c. Rs. 550 crore d. Rs. 425 crore
20. The business volume for Colossus Ltd. during 1986-95 in Orissa and Assam were in the ratio 1 : 2. Find the market size of Orissa if Colossus did a business of Rs. 5 crore in Assam.
 a. Rs. 33.3 crore b. Rs. 8.33 crore c. Rs. 8 crore d. Rs. 25 crore

Direction for questions 21 to 25: Answer the questions based on the following Venn diagram.

Profile of a sample group under study

The Venn diagram shown depicts the attributes exhibited by a sample population. The figures shown inside the diagram refer to the 'only' region.



21. Number of Indians who were neither MBAs nor poets nor smokers is
 a. 21 b. 19 c. 17 d. 25
22. Total number of people having exactly two attributes is
 a. 79 b. 89 c. 69 d. 77
23. Number of Indian MBAs is
 a. 88 b. 81 c. 80 d. 90
24. Number of people surveyed is
 a. 245 b. 196 c. 527 d. 427
25. Number of people having exactly two attributes exceed those having exactly three attributes by
 a. Nil b. 2 c. 21 d. 7

In the country of 'Serendipity' there is a company WTC Ltd. The company was doing great business till it was shut down in 2001. The detail of the company's sales turnover is given in the table below for 1996-97 to 1999-2000.

Year	Sales T/O (moolahs in crores)
1996-97	120 crore
1997-98	140 crore
1998-99	175 crore
1999-2000	200 crore

26. What is the average growth rate of sales for WTC Ltd. from 1996-97 to 1999-2000?

 - a. 16.66%
 - b. 22.22%
 - c. 33.33%
 - d. None of these
27. During 1996-97 to 1999-2000 if the unit sales of the products of WTC Ltd. increased by 33.33%, find the increase in the average price per unit of the products sold?

 - a. 66.66%
 - b. 33.33%
 - c. 25%
 - d. 20%
28. Which year registered the largest growth rate in the sales turnover in rupees terms?

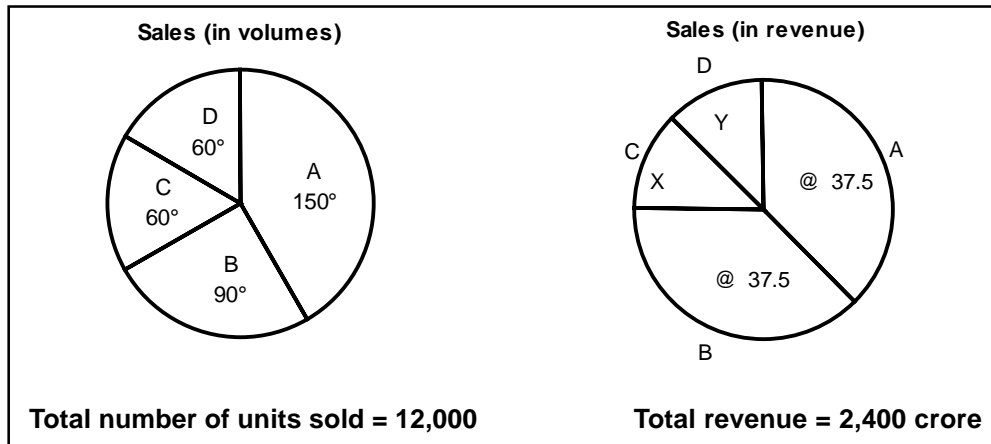
 - a. 1997-98
 - b. 1998-99
 - c. 1999-2000
 - d. Data insufficient
29. The profit percentage in 1998-99 was 20%. If this entire amount was converted into rupees, what is the profit?

 - a. Rs. 36 crore
 - b. Rs. 28 crore
 - c. Rs. 28.8 crore
 - d. Rs. 23.3 crore
30. If the moolah becomes 25% stronger in 1999-2000 with respect to rupee, find the turnover of WTC Ltd. (in rupees) in 1999-2000?

 - a. Rs. 250 crore
 - b. Rs. 200 crore
 - c. Rs. 160 crore
 - d. None of these

Direction for questions 31 to 35: Answer the questions based on the following information.

The sales of company XYZ Ltd. comprises of the brands A, B, C and D. The details of the sales break-up for 1999-2000 is given in the pie charts below.



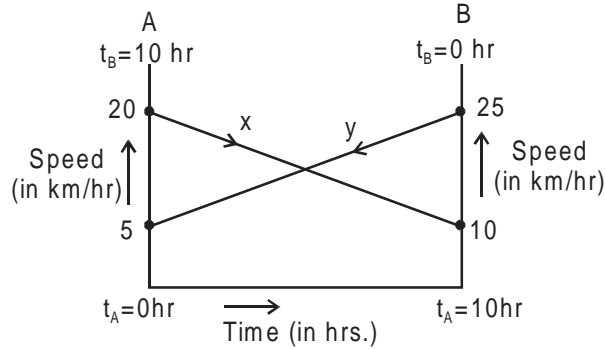
@ is defined as per 125.

The ratio $x : y$ is 1 : 1.

31. What is the angle subtended by the sector which represents the sales (in revenue) of product C?
 - a. 25°
 - b. 36°
 - c. 72°
 - d. None of these
32. What is the sales turnover of products B?
 - a. 800 crore
 - b. 900 crore
 - c. 720 crore
 - d. 600 crore
33. What is the ratio of the average price of product C to product A?
 - a. 1 : 1
 - b. 2 : 3
 - c. 5 : 3
 - d. 3 : 5
34. If the sales in volume of product A increases by 10% and the @ share of the product increases to 75, what is the increase in turnover of product A in percentage terms in 2000-01?
 - a. 120%
 - b. 110%
 - c. 100%
 - d. Data insufficient
35. What is the average price of product D in 1999-2000?
 - a. 2.4 lakh
 - b. 24 lakh
 - c. 0.24 lakh
 - d. None of these

Direction for questions 36 to 40: Answer the questions based on the following information.

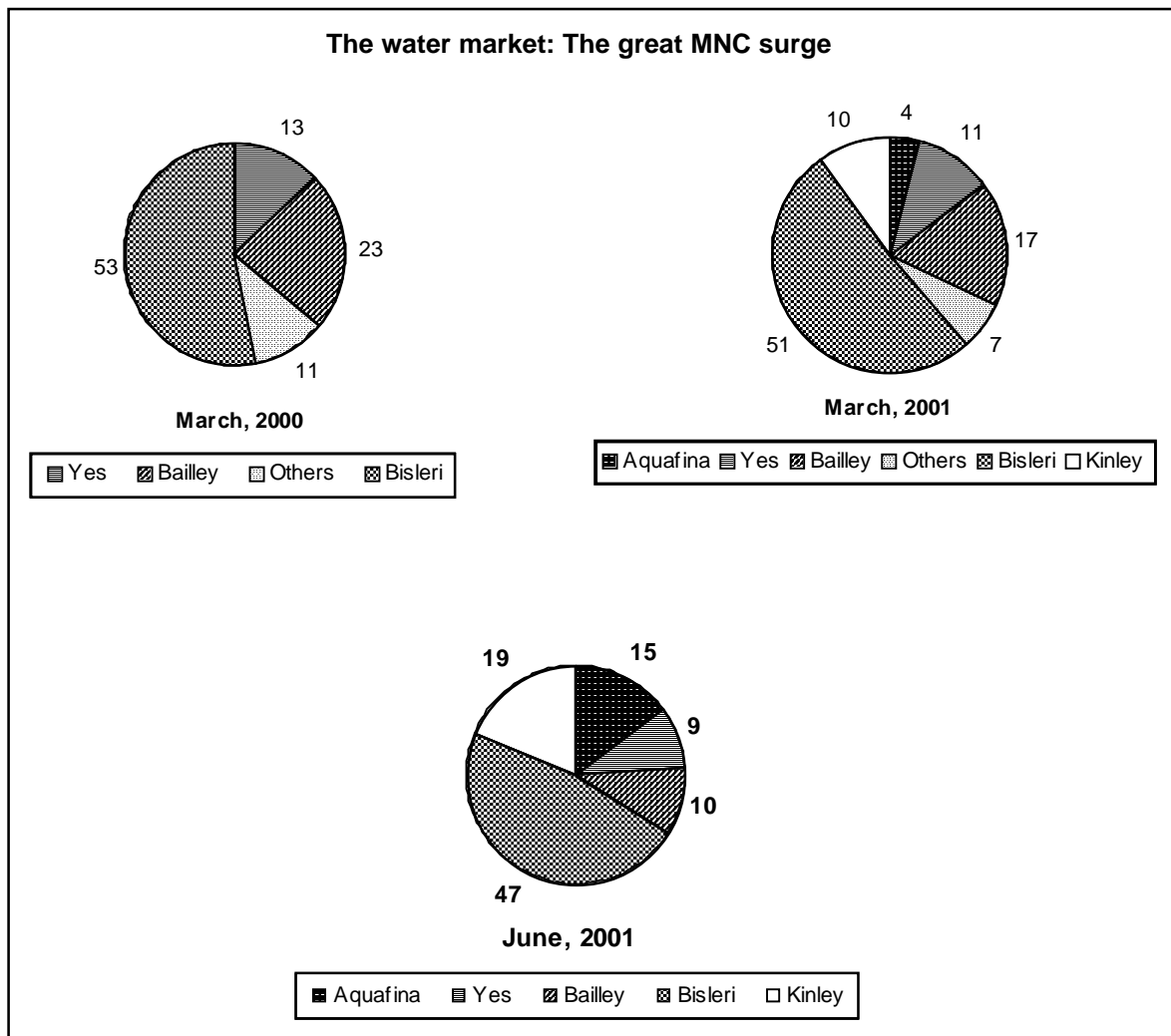
The speeds of x and y are tracked between the points A and B which are separated by a particular distance. x is moving towards B and y is moving towards A. t_A and t_B are times for A and B respectively. Both start simultaneously from A and B respectively. The following is the data collected.



36. What is the distance between A and B?
 - a. 70 km
 - b. 150 km
 - c. 200 km
 - d. Data insufficient
37. What times after $t = 0$ would they cross each other?
 - a. $t = 2.5$ hr
 - b. $t = 5$ hr
 - c. $t = 7.5$ hr
 - d. None of these
38. What is the average speed of y?
 - a. 15 km/hr
 - b. 20 km/hr
 - c. 25 km/hr
 - d. None of these
39. At what distance from A do they meet?
 - a. 70 km
 - b. 75 km
 - c. 187.5 km
 - d. None of these
40. x and y end their journey at P and Q respectively. If the rate of decrease in the speeds is constant, what is the distance PQ equal to?
 - a. 305.5 km
 - b. 310.6 km
 - c. 312.5 km
 - d. None of these

Direction for questions 41 to 45: Answer the questions based on the following information.

The following pie charts give the percentage market share of the sales turnover of the different brands of mineral water in the Indian domestic market.



41. The total market for mineral water in March 2000 was worth Rs. 73,000 crore. What is the sales turnover of Bailey in March 2001, if its sales turnover increased by 5% from March 2000 to March 2001?
a. Rs. 17,630 crore b. Rs. 17,200 crore c. Rs. 16,740 crore d. Rs. 15,820 crore
42. In question 41, what is the percentage increase of sales for Yes in March 2001 over March 2000?
a. 0.5% b. 15% c. 20% d. None of these
43. If Tamil Nadu had a market share of 26% of the Indian domestic market in March 2001, what was Bisleri's total sales in Tamil Nadu during that period?
a. Rs. 26,500 crore b. Rs. 27,100 crore c. Rs. 28,500 crore d. Cannot be determined

44. If the size of global water market is estimated at 55 billion L in June 2001, what is Bisleri's percentage share in it if India's water market is 16% of the global market? (Assume that Bisleri is not sold anywhere else except India.)
 a. 4.13 billion L b. 5.23 billion L c. 10 billion L d. Cannot be determined
45. If a one-litre bottle of Kinley costs Rs. 10 and that of Aquafina Rs. 11 and half of the sales for each brand is from one-litre bottles, what is the ratio of sales of these two brands volumewise for one-litre bottles in March 2001? (Assume the data of question 42.)
 a. 10 : 7 b. 15 : 2 c. 11 : 4 d. None of these

Direction for questions 46 to 55: Each question has two statements, I and II. Mark the answer as

- a. if you can get the answer using one of the statements only.
 b. if you can get the answer from any of the statements.
 c. if you can get the answer using both the statements only.
 d. if you cannot get the answer from the given statements.

46. x and y are real numbers. Is $x > y$?

I. $\frac{x^3 - y^3}{x^{12} + y^{12}} > 0$

II. $\frac{x^3 + y^3}{x^{12} + y^{12}} > 0$

47. What is the value of $a + b$?

I. $a^2 + b^2 = 22$

II. $ab = 3$

48. I am travelling in north-east direction from Madhubani to Darbhanga. What is the distance between Madhubani and Darbhanga?

I. I cover $\frac{1}{3}$ of the total distance and then I am 3 km east and 1 km north of Madhubani.

II. I cover $\frac{2}{3}$ of the total distance and then I am 6 km east and 2 km north of Darbhanga.

49. Is $a^x > b^x$?

I. $\frac{1}{a} > 1, \frac{1}{b} > 1, x > 0$

II. $a > b, x > 0$

50. Is V an integer? (x is a real number.)

I. $Vx^2 + 2x = 0$

II. $Vx^2 + 4x = 0$

51. Is $x + y + z > 24$? Given that x , y and z are positive integers.
I. $x + 3y = 24$
II. $z + 2x = 16$
52. Is $x^3y^2 > 1$?
I. $x^2 = 1$
II. $y = 1$
53. x , y and z are real numbers. What is the value of $x + 2y + 3z$?
I. $x^2 + y^2 + z^2 = 0$
II. $x = 2y = 3z$
54. Is product of P and V rational?
I. P is an irrational number.
II. V is a rational number.
55. What is the value of x ?
I. $(x!)! = x$
II. $x^{105} = x$

Section – II

Direction for questions 56 to 95: Read each of the following passages carefully and answer the questions that follow.

Passage – 1

Sick of paying Rs. 200 or so a month to surf the Net? Tired of your local ISP and its lack of nationwide access numbers? Whether you want to save money or be able to access the Net with your laptop, free, nationwide Internet access may interest you . . . possibly fascinate you. Ever since the government opened up the gates for private ISPs, the exercise of tariff-slashing has been constant. The latest in this game is offering Internet for free. Few web bargains are as luring as free Net access — offered by a small but growing band of Internet Service Providers. Normally, the Net service costs are covered through an ISP's monthly fees; for F-ISPs, it's an advertising bar that occupies about one-fifth of your computer screen. And that, along with the connectivity/speed problem, raises a moot point: Are such services worth your bandwidth?

One must realise that Internet access can't be free. Someone has to pay the people who keep a network running, buy and maintain the equipment it's made up of, and handle the fees involved in having the network access the Internet backbone. Normally, these costs are covered through an ISP's monthly fees: Rs. 200. Of course, there is another way for Net service providers to generate the revenue they need — through advertising. By having its members' complete profiles that record their interests and demographic data, the F-ISP sits on a goldmine of valuable data that can be passed on to web advertisers for a fat sum. Thus, while F-ISP can provide advertising that's of interest to the consumer, the advertisers pay to reach only those (segments) who are interested in their products. Eventually, this turns out to be a win-win situation for all the players.

Those turned off by targeted ads might want to keep the following in mind: broadcast TV and radio are free for precisely the same reason. If you listen to a particular type of station, you fit into a certain demographic segment. Though they might be off in guessing your age (though not as far-off as you would like to believe), chances are advertisers are getting a few of your interests right, and definitely your geographical location.

The real concern from the consumers will come only when they feel that the net access is very slow. Already, this phenomenon has started happening in a few cities. Krishna Bhaskaran, a businessman in Bangalore, says, "I was initially excited by this offer. But, of late, I have realised that this is costing me more money than before. Free is still not really free in India, for we have to pay the telephone bills. And with the kind of connectivity speed that these free ISPs provide, I tend to pay more (on the telephone bills). This is the reason I have also subscribed to another ISP. It is only during late nights that I use the free service."

Now let us see how it all began. It was in the later part of 1999 that the 'free Internet' craze began in India. Caltiger, an ISP brand owned by Kolkata-based Patriot Automation Projects Ltd (PAPL), kicked off the free mania in the country. Today, it has a subscriber base of 3.3 lakh. With this model proving to be a major success (in terms of members), two Delhi-based companies have jumped on the free access bandwagon: Bharat Connect Ltd and Freedialin.

Freemove was the company which launched the model for the very first time. This US company also had its own followers in Excite@home, Net Zero, Freei.net and AltaVista. Net Zero in the UK has over 1.2 million subscribers. Compaq, which has invested \$33 million in Net Zero, bundles the program with its Presario range of personal computers. AltaVista has been around since the early days of the Internet as a search engine. It began offering free e-mail and surfing close to a year ago. Both companies require you to answer a series of questions that allow them to build a demographic profile that they can then sell to advertisers. Both feature an advertising bar that occupies about one-fifth of your computer screen. Apart from these, there is another company which is planning to enter the segment very soon. WorldSpy, an online shopping site, is likely to offer Internet access and e-mail for free. The interesting part of this service is that it claims to give access free of ads, thus leaving the full screen free for browsing. The other major move is likely to come from Microsoft, which is considering free dial-up access. But the real blow to the ISPs would come from telecom when they start offering free access, that too broadband services. Basically, all these free ISPs are depending on the advertisements as their prime revenue source. Ads keep popping up every few minutes while you are accessing the Net through their connection. They also intend to make money by claiming equity in the companies to which they are providing services. For instance, Caltiger has bought equity in e-commerce and Application Service Providers (ASPs) who are using its services. It holds equity in Noshutters.com, Adserwiz.com and Ticklewit.com. F-ISPs are also into technical consultancy for other players. Building Virtual Private Networks (VPNs) is another important aspect for their revenue generation, apart from mailing solutions for corporates and leased line facility. Most plan to make more money through these services rather than through ads. "We have nearly 140 clients for our VPN and we generate one crore rupees every month by selling our default page. At present Indya.com is our default page and it will continue to be the default page for some more time. Since we have a large subscriber base, we are able to manage VPN, licensing software to other clients and, most importantly, we have the first-mover advantage," claims Joseph E. Silva, managing director of Caltiger.com.

Most of the free ISPs are banking on selling the default pages. Unlike VSNL, these F-ISPs leave no option for the customer to change the default page. Caltiger claims it gets calls everyday from various portals to have their site as the default page.

Are the regular ISPs bothered about the growing F-ISP brotherhood? Apparently not. They claim to be providing better access speed and more value-added services than their 'free' counterparts. Says a Satyam Infoway official, "It is very difficult for them to sustain as growth in the number of subscribers will inversely affect the services provided by these free ISPs. They'll have to tackle all these and still keep the revenue generation intact."

But surely the free Internet model is creating an impact on the market. Everyone has slashed prices drastically. Today, the approximate cost of Internet access is being put at Rs. 5 per hour compared to Rs. 15 per hour a couple of months back and Rs. 30 a year ago. On top of it, the night-time surfing comes bundled free. Many have come out with festival offers, wherein they are giving Internet access for much lower prices. Some have offers for 'happy hours' wherein the customer can use the Net for free. All these are a definite reaction to the free Net concept, say market analysts.

But will the big players like Satyam Infoway, Mantraonline and Wipro turn to the 'free' model? Says a Satyam Infoway executive, "In the Internet industry, we have to get the critical mass before we start making

major moves. I don't think at least for the next seven to eight months, we would be in a position to offer free access. But the free movement has to happen and will force everyone to join the race. Maybe dial-up access would be given free, while value-added services would be charged."

Slow access has been the major charge against F-ISPs. People complain that advertisers are given more prominence — even before the page gets downloaded, the ads keep popping out. "We cannot really do much surfing with the free providers. Unless these people improve their connectivity speed, it will be very difficult for them to sustain in the market. Today, most of the people have one free account and another paid account. Though the paid account is equally slow, it doesn't have the ads that distract you, even before the page opens," says S. Sailaja, a subscriber of Caltiger in Chennai. On its part, Caltiger says the bandwidth problem pertains only to a few cities like Bangalore. The company says though it bought 10 Mbps connectivity from VSNL, it was not getting more than 370 Kbps. "This definitely means lower speed (and slower downloads). But places like Chennai and Cochin are doing very well," says Silva. The firm has now decided not to extend its services unless the international gateway is in place. The F-ISPs also face competition from broadband providers and basic telephony providers if and when they enter the Internet arena. These companies are rolling voice, mail, data, video, TV and cable into one line. In the process, Internet access might be given for free. "For example, if basic telephony provider in Hyderabad — Tata Teleservices starts offering broadband services through its network, then we will have problems. The only advantage we have is that there is still one year or so to go for the broadband services to take off. In fact, we are changing our position of being just an ISP. We want to be a full telecom service provider," says Joe Silva of Caltiger. This is not a case with India alone. Even in the US, telecom giants are seriously planning to offer broadband services. And, with players like AT&T moving aggressively to package cable TV, telephone and online services, they'd be in a position to provide dial-up access free while make money on 'broadband' or higher-speed services.

But is free really free? How free is the free Net? This is a million-dollar question, especially with the kind of telephone bills one encounters each time one accesses the Net. "I think Net access will not be really free unless phone charges come down. It is very heartening to note that we are given free access time, but who will take care of our phone bills?" asks Sridevi Komala, a consumer in Bangalore. But the F-ISPs feel that with the basic telephony opening up, most of the operators might offer unlimited domestic calls, while they charge for STD and ISD services. Some say they will offer package deals for subscribers to use the Net. Till that happens, if you decide to use the free Net service, be sure to check about the kind of information that you're doling out. And, don't forget to keep a tab on your phone bills. Also, with the competition even in the free online service market being fierce, feel free to go elsewhere if your favourite access provider starts asking for money.

The latest entrant, Bharat Connect Ltd., offers free ISP service in Delhi. It also provides value-added solutions like e-mail, web designing/hosting, e-commerce and web strategy consulting. It has decided to invest Rs. 150 crore in the infrastructure set-up for 22 cities where it is launching its services. Target audience: the age group of 16 to 30 years, and looking to have a base of one lakh subscribers by year-end.

Caltiger.com is the ISP brand of Patriot Automation Projects Ltd. service, and began in Kolkata in August 1999. Its current subscriber base is 3,30,000, spread over 38 locations in India. Caltiger.com aims to have the widest Internet network by December 2000, with a presence in over 100 cities, connected by almost

12,500 km of optical fibre. The current subscribe capital is Rs. 25 crore, and primary revenue source is advertising. Button rentals and auto registration are also used. It is setting up 10 international gateways in various cities. Cheecoo Networks offers a unique navigation, notification and communication tool called the Cheecoobar. It's a small window displayed at the bottom of the user's computer screen while the user is online. Users log in to activate the Cheecoobar every time they are online. For all the time that the Cheecoobar is active on the screen, while the user is on the Internet, surfers get credited with hours that can be redeemed against free Internet access from an ISP of their choice. Freedialin Jain Internet started this service in Delhi in July this year and already has more than 20,000 subscribers. Freedialin start-up CD kit is available in more than 3,000 retail outlets, which also includes 54 NIIT centres.

Launched two months ago in Hyderabad, Webveda.com offers free Net access against registering with its e-mail service. Once you register, you are entitled 10 hours of free Net access. If you continue to use Webveda mail account, you can get up to 100 free hours per month. Offer is valid in Ahmedabad, Bangalore, Kolkata, Chennai, Delhi, Hyderabad, Mumbai and Pune.

Thus, for now the Indian user has a lot of choice in his hands, provided the phone bills allow it.

56. According to the passage, what will the F-ISPs try to do to survive the competition from the basic telephony in future?
- Add to the services they are offering.
 - Provide their services at a lower rate.
 - Provide free telephone connections.
 - Offer more freebies.
57. We can infer from the passage that one way of tackling the problem of high telephone bills while using the Internet can be
- offering free telephone access and making money on the additional facilities the telephony services will offer.
 - offering unlimited free domestic calls.
 - offering free telephone access during night hours.
 - increasing the connectivity speed at peak hours.
58. Caltiger has decided to further extend its services only after
- telephone rates are slashed.
 - broadband width is introduced in the country.
 - the international gateway is in place.
 - government does something to improve the connectivity speed.
59. All of the following are ways through which the F-ISPs generate money, except
- by building virtual private networks.
 - by demanding equities from the companies to which they provide their services.
 - through advertisements.
 - by using their own site as the default homepage.

60. The author says that the present situation is a win-win one for all the players. These players include everyone of the following except
- | | |
|-----------------------------------|---------------------|
| a. the ISPs. | b. the consumers. |
| c. the basic telephony operators. | d. the advertisers. |
61. 'Both companies require you to answer a series of questions'. Which two companies are we talking about here?
- | | | | |
|----------------|--------------|---------------|------------------|
| I. Compaq | | | |
| II. Net Zero | | | |
| III. AltaVista | | | |
| a. II and I | b. I and III | c. II and III | d. None of these |
62. The advantage that WindSpy claims it would have over other F-ISPs is
- | |
|---|
| a. a broadband width. |
| b. access free of ads. |
| c. faster connectivity. |
| d. no need to divulge any information on part of the members. |
63. The first company to offer free services in India was
- | | |
|-------------------------------|-------------------------------------|
| a. Bharat Communications Ltd. | b. Freedialin. |
| c. Freeserve. | d. Patriot Automation Projects Ltd. |

Passage – 2

The stage for Modern Day Living is set, and it's grim. There's stress, there's anxiety, there's a litany of woes. There's job insecurity, long working hours, bad news, frayed nerves, family pressures, noise, dust, pollution, lack of sleep, exhaustion . . .

Enter Sunova Spirulina, touted as the 'world's most powerful medicine', and life begins to spin right back into control . . . with a few kilocalories of energy to spare.

That's the kind of story ad campaigns have been telling and retelling for centuries. But when word-of-mouth starts backing an energy promising brand, and straightfacedly too, it's time to take note.

Spirulina's lineage assures it a measure of credibility to being with. Launched in 1996 as a 'food supplement', it is marketed by Sanat Products Ltd., a technical and financial collaboration of Dabur with an ayurvedic firm. Spirulina may be termed a moderate success; it sold Rs. 5 crore worth of tablets and capsules last year, and Sanat is aiming for a turnover of Rs. 15 crore next year and Rs. 50 crore in 2004-05.

Spirulina is an unlikely food. It is a blue-green algae. Don't grimace, it's good stuff. What makes it unique is that it's rich in chlorophyll and dozens of high-value nutrients rarely ever found in such concentrated doses. In fact, it is believed to be the earliest form of plant life on earth, having evolved from the first living cell nearly 3.5 billion years ago. Originally found in the alkaline lakes of Mexico and Africa, Spirulina is thought to have been widely used by the ancient Azetic African civilizations. Since its rediscovery in the 1960s, Spirulina has been extensively tested by scientists around the world. Their conclusion? It's among

the most concentrated and well-balanced sources of nutrition on the planet. America's NASA has certified it as an ideal compact food for astronauts. The World Health Organization (WHO), boasts Sanat, hails it as one of the 'greatest super-foods on earth'. One kilogram of the algae is claimed to be equivalent to 1,000 kilogram of assorted vegetables.

According to Samar S. Sheikawat, controller, marketing and sales, Sanat Products Ltd. 'Spirulina is not an ayurvedic product as commonly assumed, as all ayurvedic products have to be mentioned either in the Charaksamhita or the Bhavaprakagin Prakash'. The general attributes are the same, though. Spirulina is safe for children and pregnant women. Developed by the Dabur Research Foundation, the product has been clinically tested and found to have no side effects. But, Sheikawat continues, "As Indian laws do not recognise food supplements as a separate category, we end up paying the same taxes as food product labels such as Kissan."

Spirulina is steep, at least for anyone on a daily recommended regimen of 2-3 doses. A pack of 10 capsules sells for Rs. 22, a pack of 30 for Rs. 55 and a pack of 60 for Rs. 110. The product is aimed at the 30-55-year-old health-conscious fellow with a MHI of over Rs. 10,000, who displays a propensity to self-medicate, living in a big city.

"The incidence of self-medication in India is low as people are wary of taking pills without a doctor's advice," says Sheikawat. This means that much of the 'natural' health products potential remains untapped. The overall market is placed at Rs. 2,300 crore, and is expected to double to Rs. 4,500 crore by 2002-03. This market is dominated by regional and unorganised players. Says Sheikawat, "Less than one-fourth of the market has been tapped by the organised sector with Dabur accounting for around Rs. 100 crore, The Himalaya Drug Co. for Rs. 130 crore and Baidyanath for around Rs. 70 crore."

Sanat expects its R&D efforts to give it eventual leadership. Claims Sheikawat, "The only corporate houses which can boast of the same kind of R&D facilities as ours are Ranbaxy and Hindustan Lever."

Sanat's image-consciousness has accounted for part of its success. The company, once known as Lucky Laboratories, rechristened itself Sanat ('sa' for god and 'nat' for natural) after MR revealed that some Delhites associated the name with a blood bank in Chandni Chowk. And its umbrella brand, Sunova? 'Su' is a symbol of life, while 'nova' means new and natural. Sunova's brand mission is to 'add life to life naturally'.

Sanat has positioned Spirulina as a 'super-food' rather than a bed performance-booster in the league of Thirty-Plus and others. Steering clear of any sexually suggestive undertones has given the brand the sort of halo that's required to be taken seriously as a remedy for stress and exhaustion. Something that one can openly be seen with, without attracting stares. Anything that gives the impression of its being a Viagra replacement has to be meticulously avoided. All the more because Sanat has opted for the over-the-counter (OTC) route, as opposed to an exclusively prescription-led one.

Luckily, Sanat's confidence in the product's efficacy allows it to make a low-profile pitch, and let word-of-mouth recommendations do the job, slowly but surely. Claims Sheikawat, "Repeat purchases are high."

Unlike with regular pharma pills, natural products tend to contain rare ingredients that push up variable costs. This tilts them in favour of a low volume, high-margin strategy. However, Spirulina does need higher volumes, and this might require strategic bursts of publicity — to create word-of-mouth waves. Sheikawat says, “Currently about 50 per cent of the turnover goes into advertising.” The ad agency on the account, Mudra, had unleashed a blitzkrieg of electronic advertising in March-April this year. But only press ads and outdoor hoardings are in use now. In addition, Sunova Biocare Centre, which works as a complaint redressal system, is soon to have an information-packed website.

Spirulina isn't a lone player in its market. It faces competition from similar exhaustion-tackling products marketed by Cadilla, Baidyanath and others. But Sanat is more aggressive. Distribution-wise, Sanat's self-built network (distinct from Dabur's) of 12 branch offices, 200 distributors and 25,000 chemist shops, is soon to be expanded. Explains Sheikawat, “With Dabur, we would have been one amongst its 600-odd products, and not its primary focus.”

So far, the product has reached India's top 60 cities, where it is available at gymnasiums, sports goods shops, grocery stores, supermarkets and kirana stores, apart from chemists. Getting into smaller towns is also on the cards.

Sanat is looking at other South Asian countries as prospective markets. Take Nepal, for example, which resembles India in that the demand is latent but strong. The brand has touched a turnover of Rs. 40 lakh in that country.

The success of Spirulina has made it the flagship brand of the entire company, and it can now use the recognition gained by Sunova, the umbrella brand, to sell other natural products in its portfolio. These include Bioslim, a sub-brand of herbal slimming capsules, Nopane, a gel for arthritis, and Memovita, a product for improving memory. Spirulina accounts for about 40 per cent of Sunova sales, Bioslim accounts for 25 per cent, Nopane 27 per cent, Memovita 10 per cent and the rest, 7 per cent.

The company intends launching a series of new natural products soon. Spirulina, meanwhile, might see its capsules and tablets joined by new delivery forms (such as breakfast flakes, biscuits and so on). Yet, it could be years before it attains blockbuster status.

Perhaps what Spirulina needs is a lifestyle facet. Not in the frivolous sense, of course. But, a discreet inclusion (as a heroic help) in some Hindi could give it an entry to people's lives. This is, doubtlessly, sensitive territory. But it's critical to show that the Spirulina-user is not deficient in any way—it's just that pressing circumstances require a super-dose of super-food. Remember Popeye's spinach case from the US?

64. The author feels that
- a. Spirulina sales might be getting hampered because of the connotation in the target consumer.
 - b. Spirulina requires strategic bursts of publicity.
 - c. Spirulina can take other forms besides the capsule and tablet form.
 - d. All of these

65. According to the passage, which of the following is a contributor towards Sunova's success?
- The affordability of the product.
 - The encouragement and endorsement it got from doctors in India.
 - Apart from its nutritive value it is also tasteful.
 - The image-consciousness of the promoter.
66. Sanat Products Ltd.
- uses advertising to help boost sales.
 - depends on word-of-mouth recommendations for the brand.
 - effectively uses mail order marketing.
 - Both (a) and (b)
67. Compared to other players in the market, Sanat Products Ltd.
- is more strategic rather than tactical in its marketing approach.
 - is more aggressive.
 - makes use of the OTC route to marketing only.
 - All of these
68. Sanat Products could have alternatively positioned Spirulina as a/an
- super-food.
 - sexual-potency booster.
 - baby food.
 - aphrodisiac.
69. The other players who compete with Sanat Products are
- Thirty-plus and Complian.
 - Himalaya Drug and Baidyanath.
 - Himalaya Drug, Baidyanath and Tomco.
 - Himalaya Drug, Baidyanath and Cadilla.
70. Spirulina is a product developed by
- Dabur Research Foundation.
 - Ancient Aztec Africans.
 - Sanat Pharma.
 - Himalaya Drug Company.
71. Chief competitors in exhaustion-tackling products are
- Sanat, Baidyanath, Cadilla.
 - Sanat, Ranbaxy, Dabur.
 - Ranbaxy, Cadilla, Himalaya Drug.
 - None of these

Passage – 3

The core of modern doctoring is diagnosis, treatment and prognosis. Most medical schools emphasize little else. Western doctors have been analysing the wheezes and pains of their patients since the 17th century to identify the underlying disease of the cause of complaints. They did it well and good diagnosis became the hallmark of a good physician. They were less strong on treatment. But when sulphonamides were discovered in 1935 to treat certain bacterial infections, doctors found themselves with powerful new tools. The area of modern medicines was born. Today there is a ever-burgeoning array of complex diagnostic tests, and of pharmaceutical and surgical methods of treatment. Yet, what impact has all this had on health?

Most observers ascribe recent improvements in health in rich countries to better living standards and changes in lifestyle. The World Health Organisation cites the wide differences in health between Western and Eastern Europe. The two areas have similar pattern of diseases: heart disease, senile dementia, arthritis and cancer are the most common causes of sickness and death. Between 1947 and 1964, both parts of Europe saw general health improvement, with the arrival of cleaner water, better sanitation and domestic refrigerators. Since the mid-1960s, however, European countries, notably Poland and Hungary, have seen mortality rates rise and life expectancy fall, why? The WHO ascribes the divergence to differences in lifestyle — diet, smoking habits, alcohol, a sedentary way of life (factors associated with chronic and degenerative diseases) rather than differences in accessing the in modern medical care.

In contrast, the huge sum now spent in the name of medical progress produces only marginal improvements in health. America devotes nearly 12 per cent of its GNP to it high-technology medicine, more than any other developed country. Yet, overall, Americans die younger, lose more babies and are at least as likely to suffer from chronic diseases. Some medical producers demonstrably do work: mending broken bones, the removable of cataracts, drugs for ulcers, vaccination, aspirin for headaches, antibiotics for bacterial infections, techniques that save new-born babies, some organ transplant, yet the evidence is scant for many other common treatments. The coronary bypass, a common surgical technique, is usually to overcome the obstruction caused by a blood clot in arteries leading to the heart. Deprived of oxygen, tissues in the heart might otherwise die. Yet, according to a 1988 study conducted in Europe, coronary bypass surgery is beneficial only in the short term. A bypass patient, who dies within five years, has probably lasted longer than if he had simply taken drugs. But among those who get to or past five years, the drug-takers live longer than those who have done surgery.

An American study completed in 1988 concluded that removing tissue from the prostate gland after the appearance of (non-cancerous) growth, but before the growths can do much damage, does not prolong life expectancy. Yet the operation was performed regularly and cost Medicare, the federally — subsidised system for the elderly, over \$1 billion a year.

Though they have to go through extensive clinical trials, it is not always clear that drugs provide health benefits. According to Dr Louise Russel, a professor of economics at Rutgers University, in New Jersey, although anti-cholesterol drugs have been shown in clinical trials to reduce the incidence of deaths due to coronary heart disease, in ordinary life there is no evidence that extend the individual drug taker's life expectancy. Medical practice varies widely from one country to another. Each year in America about 60 of every 1,00,000 people have a coronary bypass. In Britain, about six anti-diabetic drugs are far more commonly used in some European countries than others. One woman in five, in Britain, has a hysterectomy (removal of the womb) at some time during her life: In America and Denmark, seven out of ten do so.

Why? If coronary heart problems were far commoner in America than Britain, or diabetes in one part of Europe than another, such differences would be justified. But that is not so. Nor do American and Danish women become evidently healthier than the British ones. It is the medical practice, not the pattern of illness or the outcome, that differs. Perhaps American patients expect their doctors to 'do something' more urgently than British ones? Perhaps American doctors are ready to comply? Certainly the American medical fraternity grows richer as a result. No one else seems to have gained through such practices.

To add injury to insult, modern medical procedures may not be just of questionable worth but sometimes dangerous. Virtually all drugs have some adverse side effects on some people. No surgical procedure is without risks. Treatments that prolong life can also promote sickness: the heart-attack victim may be saved but survive disabled.

Attempts have been made to sort out this tangle. The ‘outcomes movement’, born in America during the past decade, aims to lessen the use of inappropriate drugs and pointless surgery by reaching some medical consensus — which drug to administer? Whether to operate or medicate? — through better assessment of the outcome of treatments.

Ordinary clinical trials measure the safety and immediate efficacy of products or procedures. The outcome enthusiasts try to measure and evaluate far wider consequences. Do patients actually feel better? What is the impact on life expectancy and other health statistics? And, instead of relying on results from just a few thousand patients, the effects of treatment to tens of thousands are studied retrospectively. As an example of what this can turn up, the adverse side effects associated with Oprelvekin, an anti-arthritis drug, were not spotted until it was widely used.

Yet Dr Arnold Epstein, of the Harvard Medical School, argues that, worthy as it may be, the outcome movement is likely to have only a modest impact on medical practice. Effectiveness can be difficult to measure: patients can vary widely in their responses. In some, a given drug may relieve pain, in others it may not — is highly subjective. Many medical controversies will be hard to resolve because of data conflict.

And, what of the promised heart disease or cancer cures? Scientists accept that they are unlikely to find an answer to cancer, heart disease or degenerative brain illness for a long while yet. These diseases appear to be highly complex, triggered when a number of bodily functions go awry. No one pill or surgical procedure is likely to be the panacea. The doctors probably would do better, looking at the patient’s diet and lifestyle, before he becomes ill than giving him six pills for the six different body failures that are causing the illness once he has got it.

Nonetheless, modern medicine remains entrenched. It is easier to pop pills than change a lifetime habit. And there is always the hope of some new miracle cure — or some individual miracle.

Computer technology has helped produce cameras so sensitive that they can detect the egg in the womb, to be extracted for test-tube fertilisation. Bio-materials have created an artificial heart that is expected to increase life expectancy among those fitted with one by an average of 54 months. Biotechnology has produced expensive new drugs for the treatment of cancer. Some have proved life-savers against some rare cancers: none has yet had a substantial impact on overall death rate due to cancer.

These innovations have vastly increased the demand and expectations of healthcare and pushed medical bills even higher — not lower, as was once hoped. Inevitably, governments, employers and insurers who finance healthcare have rebelled over the past decade against its astronomic costs, and have introduced budgets and rationing to curb them.

Just as inevitably, this limits access to healthcare: rich people get it more easily than poor ones. Some proposed solutions would mean no essential change, just better management of the current system. But others, mostly from American academics, go further, aiming to reduce the emphasis on modern medicine and its advance. Their trust is two headed:

- I. prevention is better — and might be cheaper — than cure; and
- II. if you want high-tech, high-cost medicine, you (or your insurers but not the public) must pay for it, especially when its value is uncertain.

Thus, the finance of healthcare systems, private or public, could be skewed to favour prevention rather than cure. Doctors would be reimbursed for preventive practices, whilst curative measures would be severely rationed. Today the skew is all the other way: governments or insurers pay doctors to diagnose disease and prescribe treatment, but not to give advice on smoking or diet.

Most of the main chronic diseases are man-made. By reducing environmental pollution, screening for the treating biological risk indicators such as high blood pressure, providing vaccination and other such measures — above all, by changing people's own behaviour — within decades, the incidence of these diseases could be much reduced. Governments could help by imposing ferocious 'Sin taxes' on unhealthy products such as cigarettes, alcohol, maybe even fatty foods, to discourage consumption.

The trouble is that nobody knows precisely which changes — apart from stopping smoking — are worth putting into effect, let alone how. It is clear that people whose blood pressure is brought down have a brighter future than if it stayed high. It is not clear that cholesterol screening and treatment are similarly valuable. Today's view of what constitutes a good diet may be judged wrong tomorrow.

Much must change before any of these 'caring' rather than 'cure' schemes will get beyond the academic drawing board. Nobody has yet been able to assemble a coherent preventive programme. Those countries that treat medicine as a social cost have been wary of moves to restrict public use of advanced and/or costly medical procedures, while leaving the rich to buy what they like. They fear that this would simply leave ordinary people with third-class medicine.

In any case, before fundamental change can come, society will have to recognise that modern medicine is an imprecise science that does not always work and that questions of how much to spend on it, and how should not be determined, almost incidentally, by doctor's medical preferences.

72. The discovery of sulphonamides
 - a. helped the doctors to diagnose better.
 - b. led to better treatment of some bacterial infections
 - c. eventually led to pharmaceutical and surgical methods of treatment.
 - d. None of these
73. The current medical practice, as carried out in America, mostly benefits the
 - a. rich.
 - b. biotechnology companies.
 - c. public
 - d. doctors

74. In some European countries, anti-diabetic drugs are far more commonly used than in others because
- a. the drugs are fairly easy to take.
 - b. more people in those countries suffer from diabetes than in other countries.
 - c. medical practice varies in different countries.
 - d. the sedentary way of life which marks their lifestyle results in more people becoming diabetic.
75. Which of the following statements is false?
- a. Coronary bypass operation is entirely ineffective.
 - b. Drug intake is sometimes better than undergoing coronary bypass surgery.
 - c. Removing tissue from prostate gland after non-cancerous growths appear is a risky operation.
 - d. The American Medicare is billed about a billion dollars annually for prostate operations.
76. Which of the following measures, if undertaken under 'Care rather than Cure' movement, could prove to be controversial?
- a. 'Sin taxes' on harmful substances such as tobacco and alcohol
 - b. Screening for high blood pressure
 - c. Providing vaccinations
 - d. Cholesterol screening
77. The 'outcomes movement' could make a significant impact on medical practice, if only
- a. the efficacy of all drugs could be tested fast.
 - b. the results from just a few thousand patients could be relied on.
 - c. the patient had responded uniformly to drugs and medical procedure.
 - d. pain could be easily relieved.
78. Modern cures are known to be expensive, because
- a. bio-materials are expensive.
 - b. employing biotechnological process in making medicines is an expensive process.
 - c. there is a huge demand for them but the supply is limited.
 - d. None of these
79. The main objection to 'Care rather than Cure' approach is that it
- a. might leave the poor to fend for themselves.
 - b. will lead to confusion as far as the choice of medical technique to be followed is concerned.
 - c. is not possible to put together a coherent preventive programme.
 - d. will lead to the neglect of curative techniques.

Passage – 4

Every year, the number of people using cellular telephones increases by the millions. The convenience of these devices is indisputable, but their safety remains inconclusive. According to the US Food and Drug Administration (FDA) reports, "The available scientific evidence does not allow us to conclude that mobile phones are absolutely safe, or that they are unsafe."

The potential risk of a mobile phone comes from its emission of low levels of radio frequency radiation (RF), the same type of energy that comes off a microwave oven. The RF pulses off the device's antenna right next to the user's head, and that proximity to the brain is what concerns some researchers.

The FDA says the research in this field is conflicting, but points at two findings that merit further examination. One study showed an association between mobile phone use and one rare type of brain cancer, but the FDA report also underscores that the finding could have been a chance. A second study suggests that cellphone radiation may have some effect on an individual's genetic material.

None of the data warrants intervention by the FDA, the consumer update says, but the agency is pursuing further action. It is urging the mobile phone industry to conduct further research; design phones to minimise RF exposure to the user; and keep the public informed about health issues surrounding the use of these devices. Despite its cautions about the inconclusive nature of any findings about health risks, the FDA does offer some suggestions to cellphone using consumers: don't hold prolonged conversations on the mobile phone; use a phone design that moves the antenna away from the head.

Questions have been raised about hand-held mobile phones, the kind that have a built-in antenna that is positioned close to the user's head during normal telephone conversation. These types of mobile phones are of concern because of the short distance between the phone's antenna — the primary source of the RF — and the person's head. The exposure to RF from mobile phones in which the antenna is located at greater distance from the user (on the outside of a car, for example) is drastically lower than that from hand-held phones, because a person's RF exposure decreases rapidly with distance from the source. The safety of so-called 'cordless phones' which have a base unit connected to the telephone wiring in a house and which operate at far lower power levels and frequencies, has not been questioned.

Briefly, there is not enough evidence to know for sure, either way; however, research efforts are on-going. The existing scientific evidence is conflicting and many of the studies that have been done to-date have suffered from flaws in their research methods. Animal experiments investigating the effects of RF exposure characteristic of mobile phones have yielded conflicting results. A few animal studies, however, have suggested that low levels of RF could accelerate the development of cancer in laboratory animals. In one study, mice genetically altered to be predisposed to developing one type of cancer developed more than twice as many such cancers when they were exposed to RF energy compared to controls. There is much uncertainty among scientists about whether results obtained from animal studies apply to the use of mobile phones. First, it is uncertain how to apply the results obtained in rats and mice to humans. Second, many of the studies that showed increased tumour development used animals that had already been treated with cancer — causing chemicals, and other studies exposed the animals to the RF virtually continuously — up to 22 hours per day.

For the past five years in the United States, the mobile phone industry has supported research into the safety of mobile phones. This research has resulted in two findings, in particular, that merit additional study. In a hospital-based, case-control study, researchers looked for an association between mobile phone use and either glioma (a type of brain cancer) or acoustic neuroma (a benign tumour of the nerve sheath). No statistically significant association was found between mobile phone use and acoustic neuroma.

There was also no association between mobile phone use and gliomas when all types of gliomas were considered together. It should be noted that the average length of mobile phone exposure in this study was less than three years.

When 20 types of gliomas were considered separately, however, an association was found between mobile phone use and one rare type of glioma, neuroepitheliomatous tumours. It is possible with multiple comparisons of the same sample that this association occurred by chance. Moreover, the risk did not increase with how often the mobile phone was used, or the length of the calls. In fact, the risk actually decreased with cumulative hours of mobile phone use. Most cancer-causing agents increase risk with increased exposure. An ongoing study of brain cancers by National Cancer Institute is expected to bear on the accuracy and repeatability of these results.

Researchers conducted a large battery of laboratory tests to assess the effects of exposure to mobile phone RF on genetic material. These included tests for several kinds of abnormalities, including mutations, chromosomal aberrations, DNA strand breaks, and structural changes in the genetic material of blood cells called lymphocytes. None of the tests showed any effect of the RF except for the micronucleus assay, which detects structural effects on the genetic material. The cells in this assay showed changes after exposure to simulated cellphone radiation, but only after 24 hours of exposure. It is possible that exposing the test cells to radiation for this long resulted in heating. Since this assay is known to be sensitive to heating, heat alone could have caused the abnormalities to occur. The data already in the literature on the response of the micronucleus assay of RF are conflicting. Thus, follow-up research is necessary.

FDA is currently working with government, industry and academic groups to ensure the proper follow-up to these industry-funded research findings. Collaboration with the Cellular Telecommunications Industry Association (CTIA), in particular, is expected to lead to FDA providing research recommendations and scientific oversight to new CTIA — funded research based on such recommendations.

Two groups of 18 people were exposed to simulated mobile phone signals under laboratory conditions while they performed cognitive function tests. There were no changes in the ability of subjects to recall words, numbers, or pictures, or in their spatial memory, but they were able to make choices quickly in one visual test when they were exposed to simulated mobile phone signals. This was the only change noted among more than 20 variables compared.

In a study of 209 brain-tumour cases and 425 matched controls, there was no increased risk of brain tumours associated with mobile phone use. When tumours did exist in certain locations, however, they were more likely to be on the side of the head where the mobile phone was used. Because this occurred in only a small number of cases, the increased likelihood was too small to be statistically significant.

In summary, we do not have enough information at this point to assure the public that there are, or are not, any low incident health problems associated with use of mobile phones. FDA continues to work with all parties, including other federal agencies and industry, to assure that research is undertaken to provide the necessary answers to the outstanding questions about the safety of mobile phones.

People who have used mobile phones have been diagnosed with brain cancer. But it is important to understand that this type of cancer also occurs among people who have not used mobile phones. In fact, brain cancer occurs in the US population at a rate of about six new cases per 1,00,000 people each year. At that rate, assuming 80 million users of mobile phones (a number increasing at a rate of about one million per month), about 4,800 cases of brain cancer would be expected each year among those 80 million people, whether or not they use their mobile phones. Thus, it is not possible to tell whether any individual's cancer arose because of the mobile phone, or whether it would have happened anyway. A key question is whether the risk of getting a particular form of cancer is greater among people who use mobile phones than among the rest of the population. One way to answer this question is to compare the usage of mobile phones among people with brain cancer with the use of mobile phones among appropriately matched people without brain cancer. This is called a case-control study. Under the law, FDA does not review the safety of radiation-emitting consumer products such as mobile phone, before marketing, as it does with new drugs or medical devices.

However, the FDA has authority to take action if mobile phones are shown to emit radiation at a level that is hazardous to the user. In such a case, FDA could require the manufacturers of mobile phones to notify users of the health hazard and to repair, replace or recall the phones so that the hazard no longer exists. Although the existing scientific data do not justify FDA regulatory actions at this time, FDA has urged the mobile phone industry to take a number of steps to assure public safety. The agency has recommended that the industry support is needed for research into possible biological effects of RF of the type emitted by mobile phones; to design mobile phones in such a way that minimises any RF exposure to the user that is not necessary for device function; and it should cooperate in providing mobile phone users with the best possible information on what is known about possible effects of mobile phone use on human health. At the same time, FDA belongs to an interagency working group of the federal agencies that have responsibility for different aspects of mobile phone safety to ensure a coordinated effort at the federal level.

80. The evidence provided in the passage about health risks in cellphone usage is
 - a. sufficient.
 - b. inconclusive.
 - c. negative.
 - d. confirmatory.
81. The existing scientific data on cellphone safety
 - a. justify regulatory action by the FDA.
 - b. do not necessitate any further research analysis.
 - c. do not justify FDA regulatory action at present.
 - d. are not the reason cited by FDA in urging the mobile phone industry to take adequate steps.
82. The FDA has recommended that
 - a. the government provides funds to carry out research into the possible effects of frequency radiation.
 - b. the industry designs mobile phones in a way that augment RF exposure to the user.
 - c. the industry aids in educating mobile phone users on the possible effects on health.
 - d. the industry compensates for any health hazard caused by mobile phone use.
83. In the author's analysis, the FDA finds which of the following as meriting further study?
 - I. The proposed relation between mobile phone use and a certain brain cancer.
 - II. The suggested effect that mobile phone radiation may have on an individual's genetic material.
 - III. The emission of low levels of radio frequency radiation from a microwave oven.
 - a. II only
 - b. I only
 - c. II and III
 - d. I and II

84. In the author's observation
- the research methodology employed in examining the safety of mobile phones is not reliable.
 - studies conducted on animals refuted the claim that low levels of RF could accelerate the onset of cancer.
 - there is an agreement among scientists regarding the application.
 - there is no uncertainty as to how to apply the results obtained in mice to humans.
85. Animal experiments investigating the effects of RF exposure are unreliable because
- the studies were conducted on mice and not on higher levels of animals.
 - the animals used had already been treated with cancer-causing chemicals.
 - the exposure period of animals to RF was not long enough for generalization.
 - the animals chosen for the experimental group were not similar to those chosen for the control group.
86. Which of the following is not a finding of the hospital-based case control study?
- There was no significant correlation between mobile phone use and a tumour of the nerve sheath.
 - There was no significant correlation between mobile phone use and a certain cancer of the brain.
 - There was a correlation between mobile phone use and neuroepitheliomatous tumours.
 - There was significant correlation between mobile phone use and structural changes in the genetic material of blood cells.
87. It can be inferred from the passage that
- follow-up research is necessary to arrive at conclusive evidence on the safety of all phones.
 - studies conducted on animals cannot yield credible data on the effects of RF on phone users.
 - radio frequency radiation is not as harmful as it is thought to be.
 - mobile phone users have no cause to worry about the much publicised menaces of the device.

Passage – 5

What's common between Ratan Tata and Anil Ambani? Apart from running the country's biggest industrial empires, the two industry honchos are also among the country's foremost buyers of Dom Perignon: the best-known brand of champagne in the world. Clinking glasses with them is Parmeshwar Godrej, the wife of yet another industry leader Adi Godrej, said to be the single-largest buyer of this pricy bubbly drink in India.

In the next six months, Tata, Ambani and Godrej could have at least a couple of hundred others raising toast with them. For, Moët-Hennessy Asia is all set to make its flagship champagne brand, which costs anything between Rs. 8,000 and Rs. 15,000 per bottle and is now available mostly in five-star hotels, a habit with the more than 20 lakh super-affluent Indian households. According to the NCAER, these households have a monthly family income above Rs. 5,00,000.

But it won't be just the Dom Perignon brand that Moët-Hennessy, the company behind it, will be promoting here. It will also induce a taste for one of its relatively cheaper but popular champagne brands Moët & Chandon (five-star hotel price: Rs. 3,500-5,000 per bottle). Besides, it will ensure that a large number of upwardly-mobile young Indians also sip Hennessy cognac (five-star hotel price: Rs. 200-800 per peg), as

they puff on their after-dinner cigars.

There will also be a wide array of French, Australian and Californian wines to choose from; Moët-Hennessy's portfolio is in the process of being finalised. "Right now, the market for champagne and cognac is negligible in India. But, we expect it to grow significantly in the next couple of years," says Moët-Hennessy's India chief representative and commercial director Pradeep Gidwani.

Indeed, the Indian market is essentially a scotch whisky and beer market. Annually, scotch sells nearly five lakh cases in the country. In contrast, champagne sells only about 3,500 cases which amounts to estimated annual sales of Rs. 38 crore. The market for cognac is even smaller at 3,000 cases or sales of Rs. 25 crore annually. Of this, Moët-Hennessy brands perhaps account for over 70 per cent share with Remy Martin following behind.

Moët-Hennessy belongs to the FR 48 billion Louis Vuitton Moët-Hennessy (LVMH) group, which is described as one of world's largest luxury goods companies. The LVMH group has four business interests in wines and spirits, fashion and leather goods, fragrance and cosmetics, and retailing; Givenchy perfumes, Christian Dior cosmetics and Tag Heur Swiss watches are some of the brands in its kitty. Besides owning cognac brands Hennessy and Hine, LVMH is also the global leader in champagne with brands such as Dom Perignon, Moët & Chandon, Veuve Clicquot and Pommery. Group champagne houses also produce still and sparkling wines in the US, Europe, Latin America, Australia and New Zealand.

So, exactly how is Moët-Hennessy planning to establish itself in India? How will it influence scotch drinking and beer guzzling Indians to sip champagne and cognac for a change? Is it by associating a certain image and lifestyle with these drinks, just as cigarette companies do with their brands? Or, is it by introducing products at various price points within the premium segments so that it induces greater trials? Well, a bit of both. "In India, the scotch market is all about brand marketing but in the categories that we are in, we are talking about the concept of drinking rather than specific brands," says Gidwani.

On what occasions must one drink a flute or two of champagne? When should one pour oneself a peg of cognac: during or after dinner? How does one mix the drinks? How does one hold the shaker? Which kind of glasses go with these drinks? What quantity of the drinks must be poured in one go? What kind of food goes with these drinks? These are some of the questions that Gidwani is addressing in his sales pitch across the country.

In the next 15 months, Moët-Hennessy will follow a four-pronged strategy to grow the market for champagne and cognac. First, it will ensure that the product is easily accessible both in price and availability — through a proper distribution system. In fact, no sooner than Moët-Hennessy had opened office in April this year, it appointed distributors in five Indian cities: Delhi, Mumbai, Kolkata, Chennai and Bangalore.

These distributors will take orders from the customers (hotels are, by far, the biggest buyers of champagne and cognac), source the requirements directly from the regional Moët-Hennessy warehouse in Singapore, and store the stock in their own warehouses in the respective cities. Alongside, Moët-Hennessy will educate affluent Indians on the fine art of drinking and spread brand awareness.

In champagnes, Moët-Hennessy will follow a dual branding strategy. Brut Imperial, one of the seven varieties of champagne that exists under the Moët & Chandon umbrella worldwide, will be used to penetrate the market and induce trial. The more upmarket Dom Pérignon will woo connoisseurs, by simply being displayed at the appropriate events such as embassy get-togethers, fashion shows and high-society bashes.

The dual strategy is based on Moët-Hennessy's own in-house research which indicates that most Indian consumers fail to distinguish between sparkling wines and champagnes. Also, there is complete lack of awareness about the fine art of drinking champagne. For many aspiring champagne drinkers, it's still too pricey. "We decided to start with the very basic variety, and gradually upgrade," says Gidwani.

In an attempt to break the price barrier, Moët-Hennessy will soon begin a champagne-by-the-glass promotion in various hotels in Delhi and Mumbai, the two largest markets for champagne in the country. The promotion will be enacted somewhat like this. As an unsuspecting guest settles down for a sumptuous five-star meal to celebrate a birthday, anniversary, engagement or a business deal, there will be attractive Moët & Chandon point-of-purchase items on the table enticing him to raise a toast with champagne — it could be a table display, or an ash tray, or a menu holder. Or, even an ice bucket strategically placed at the adjacent table. Once his curiosity is aroused, the waiter will cajole the guest to try a glass of Brut Imperial for Rs. 600.

As part of the promotion, Moët-Hennessy will also provide the hotels with bottle re-sealers so that the taste of the drink stays intact even after a portion has been poured out of it. Each bottle can fill up to six glasses. "Volumes are expected to surge with this promotion," says Gidwani.

Besides tackling the price issue, Gidwani is also trying to position champagne as the ideal drink with spicy Indian food. In August, he kicked off this campaign with a food and wine festival at Delhi's Radisson Hotel where culinary expert Jiggs Kalra turned out delectable North Indian cuisine, as champagne flowed and music played. Subsequently, Indian food also featured prominently on the menu of yet another food and wine bash at the Ritz Carlton Hotel in Singapore.

The strategy for cognac will be slightly different. That's because while champagne drinking is not a new concept in India, cognac is not so popular yet. So Gidwani's primary task is to include cognac in the Indian drinking repertoire and, in the process, build an awareness about the Hennessy brand. Unlike in the case of champagne, Gidwani is promoting three variations of Hennessy cognac here, at three price points, to induce greater trials. The X.O. is the most expensive (price: Rs. 500-800 per peg), and is served on the rocks. Normally associated with cigars, the Hennessy X.O. is being offered in India to a select clientele over specially arranged cognac and cigar dinners at five-star hotels.

The V.S. (price: Rs. 200-300 per peg) and V.S.O.P. (price: Rs. 250-450 per peg) variations of Hennessy cognac are both targeting the youth. Just as in the US where Hennessy V.S. is served as a tall drink, mixed with ginger ale and tonic, in fashionable bars, here too Moët-Hennessy is carrying out sampling exercise at hangouts like 'Thank God, It's Friday'.

As Gidwani talks champagne and cognac, the former vice-president (sales and marketing) of Australian beer maker Foster's India is clearly laying ground for the future. Year 2001 to be precise, when alcohol imports will likely be allowed. Once that happens, Moët-Hennessy can sell its own products directly here.

Today, champagne and cognac largely sell through duty-free shops and local bootleggers. In addition, about 300 hotels that have the license can import its products. The reason is that, unlike scotch and whisky, these drinks cannot be bottled here; globally, they are made only in particular districts of France and then shipped to the various Moët-Hennessy warehouses around the world.

Besides the WTO agreement, Gidwani is also banking on a new taste that is developing among alcohol aficionados in India. In a scotch whisky and beer-dominated country, Indians who've travelled abroad in the last couple of years have been found to be increasingly open to other categories of drinks rather than sticking to their age-old favourites. And, though it's still like a drop in the ocean, sales of champagne and cognac are actually growing. Guesstimates are that for every 20 bottles of scotch or beer bought, at least one bottle of champagne or cognac is getting picked.

The marketing director of a multinational liquor company says that while all this is very good, the fact is that alcohol, like cigarettes, is a matter of individual taste. Champagne and cognac are not part of the regular drinking repertoire of Indians. Changing that will take time. So Gidwani has to ensure that he follows up on his frothy plans by delivering substance.

88. Moët-Hennessy intends to follow which of the following marketing strategies in India?
- Making the product accessible in terms of price
 - Proper distribution covering major cities of India
 - Both (a) and (b)
 - Neither (a) nor (b)
89. To establish in India, Moët-Hennessy is planning to
- associate a certain lifestyle with the champagne brands.
 - introduce products at various price points within the premium segment.
 - introduce certain processed foods that go with the brand of liquor.
- a. I only b. II only c. II and III d. I and II
90. It can be inferred from the passage that
- Brut Imperial is a variety of champagne owned by Remy Martin.
 - Moët-Hennessy has conducted research to explore the awareness of Indian drinkers about wines.
 - the largest markets for champagne in India are Bangalore and Mumbai.
 - Brut Imperial is a more upmarket brand than Dom Perignon.
91. Moët-Hennessy is planning to launch a champagne-by-the-glass promotion campaign in order to
- reach out to the middle class upwardly mobile drinker.
 - break the price barrier, which keeps many a drinker away.
 - woo wine connoisseurs and the high society who associate a certain image to what they drink.
 - attract business houses and to persuade them to make champagne as an item at a business deal dinner.
92. It can be inferred from the passage that
- Hennessy's strategies to sell champagne and cognac are not exactly the same.
 - cognac is more popular in India than champagne is.
 - Hennessy's regional warehouse is situated in Hong Kong.
 - beer sells nearly five lakh cases in the country annually.

93. According to the commercial director of Moët-Hennessy (India),
- positioning champagne as the ideal drink with spicy Indian food is a good promotion strategy.
 - Moët Hennessy should have its warehouse in India for immediate accessibility.
 - promoting different variations of Hennessy cognac simultaneously is a potential risk.
 - X.O. cognac brand is ideal for youth.
94. It can be inferred from the passage that
- most of the hotels in the metros have the licence to import champagnes and cognacs.
 - unlike whisky, bootleggers do not have access to the sale of cognacs.
 - champagne and cognac are made in certain districts of France.
 - unlike beer, scotch whisky is not bottled in India.
95. According to the passage,
- the biggest buyers of cognac in India are celebrity bashes.
 - Moët-Hennessy doesn't have a distribution network in South India.
 - Veuve Clicquot is a brand owned by Remy Martin.
 - wooing the Indian customer to drink cognac is not an easy task.

Direction for question 96: Arrange the four sentences, which are marked as A, B, C and D, to form a coherent paragraph.

96. A. To keep savings inert is an economic waste.
 B. Investment growth leads to income growth, thereby resulting in a virtuous cycle of saving growth.
 C. It is a common perception that heavy investments should be made for higher net profits.
 D. Savings must be converted into investments, which means using the savings for activities that ensure wealth addition.
- a. ADBC b. ABDC c. DCBA d. CABD

Direction for questions 97 to 100: In these questions the opening of a paragraph is given, followed by four sentences. Arrange the sentences logically to form a coherent paragraph.

97. Whenever she came to town, she had the press in hot pursuit.
- Bankers, the global chaps, the ministers and the top bureaucrats.
 - The other was the company she kept.
 - Photographers, shedding corporate ennui, chased her — in Delhi, in Mumbai.
 - Those honey brown eyes, the Armani suits, and three-inch stilettos and the white, very white teeth in a tanned face were part of the reason.
- a. ADBC b. DCBA c. CDBA d. CBAD
98. James Gleick, the science journalist who wrote *Faster, the Acceleration of Just about Everything* argues that the world is more rushed, more connected, with more time saving devices.
- Politics, culture, religious ceremonies, peace processes, sport, information technology and management decisions are all packed crazily into ever-narrowing time spans.
 - Though the term 'Hurry Sickness' may not convey the gravity of the affliction; the author says it is a portmanteau phrase, which includes attention deficit disorder and being collectively manic.

- C. There is no doubt that the manic need for novelty and distraction is a manifestation of the faster pace of life. All too often though, it is grimly illustrated in all its preservation, such as the trivialisation of the Oval Office and the American Presidency with the Lewinsky scandal.
- D. In another age it would be called sensation-seeking; in the decade of five-minute crises and conflict-resolution, it is called political death and vengeance.
- a. ADCB b. ABCD c. DCBA d. DACB

99. Even as the Vajpayee administration declares that it is in the process of unleashing a second generation of reforms, it is clear that the task ahead is more fundamental than it appears.
- A. There is no doubt that setting the government's finances in order tops the reform agenda.
- B. Which is why this jumbo dispensation at the Centre must try its very best to be sure-footed.
- C. If the new government were to take meaningful steps in just this direction is the next six months, it would be the ruling coalition's biggest millennium gift to the people.
- D. So, before we start examining whether India can rival China as an investment destination in the next few years or whether the 21st century will belong to India, we must ask ourselves whether nearly a decade of varying shades of liberalisation has ushered in a reformist mindset — a thinking that puts equal emphasis on globalisation and deregulation.
- a. BACD b. BCDA c. CBDA d. CDAB
100. What does the state do in a country where tax is very low?
- A. It investigates income sources and spending patterns or tries to spy upon the taxpayer.
- B. Exactly what the tax authority tries to do now, even if inconsistently.
- C. It could also encourage people to denounce to the tax authorities any conspicuously prosperous neighbours who may be suspected of not paying their taxes properly.
- D. The ultimate solution would be an Orwellian System.
- a. BACD b. DBAC c. ABCD d. DCBA

Direction for questions 101 to 105: Arrange the sentences A, B, C and D between sentences 1 and 6, so as to form a logical sequence of six sentences.

101. 1. Currency movements can have a dramatic impact on equity returns for foreign investors.
- A. This is not surprising as many developing economies try to peg their exchange rates to the US dollar or to a basket of currencies.
- B. Many developing economies manage to keep exchange rate volatility lower than that in the industrial economies.
- C. India has also gone in for the full float on the current account and abolished the managed exchange rate.
- D. Dramatic exceptions are Argentina, Brazil and Nigeria.
6. Another emerging market-specific risk is liquidity risk.
- a. ADBC b. CDAB c. BDAC d. CABD

102. 1. Total forgiveness for a mistake generates a sense of complacency towards target achievement among the employees.
 A. In such a situation the work ethos gets distorted and individuals get a feeling that they can get away with any lapse.
 B. The feeling that they develop is: 'whether I produce results or not, the management will not punish me or does not have the guts to punish me'.
 C. Also, excess laxity damages management credibility, because for a long time, the management has maintained that dysfunctional behaviour will result in punishment, and when something goes wrong, it fails to take specific punitive action.
 D. The severity of the punishment may be reduced, by modifying it, but some action must be taken against the guilty so as to serve as a reminder for all others in the organisation.
 6. Moreover, it helps establish the management's image of being firm, fair and yet human.
 a. DCBA b. BACD c. DBCA d. CABD
103. 1. The top management should perceive the true worth of people and only then make friends.
 A. Such 'true friends' are very few and very rare.
 B. Factors such as affluence, riches, outward sophistication and conceptual abilities are not prerequisites for genuine friendship.
 C. Such people must be respected and kept close to the heart.
 D. Business realities call for developing a large circle of acquaintances and contacts, however, all of them will be motivated by their own self-interest and it would be wrong to treat them as genuine friends.
 6. There is always a need for real friends to whom one can turn for balanced, unselfish advice, more so when one is caught in a dilemma.
 a. ABCD b. ADBC c. CABD d. ACBD
104. 1. Despite the passage of time, a large number of conflicts continue to remain alive, because the wronged parties, in reality or in imagination, wish to take revenge upon each other, thus creating a vicious circle.
 A. At times, managers are called upon to take ruthless decisions in the long-term interests of the organisation.
 B. People hurt others, at times knowingly, to teach them a lesson and, at other times, because they lack correct understanding of the other person's stand.
 C. The delegation of any power, to any person, is never absolute.
 D. Every ruthless decision will be easier to accept if the situation at the moment of committing the act is objectively analysed, shared openly and discussed rationally.
 6. Power is misused; its effects can last only for a while, since employees are bound to confront it some day, more so, the talented ones.
 a. BCAD b. ADBC c. DABC d. BADC
105. 1. It is significant that one of the most common objections to competition is that it is blind.
 A. This is important because in a system of free enterprise based on private property, chances are not equal and there is indeed a strong case for reducing the inequality of opportunity.
 B. Rather, it is a choice between a system where it is the will of few persons that decide who is to get what and where, it depends, at least partly, on the ability and the enterprise of the people concerned.

- C. Although competition and justice may have little else in common; it is as much a commendation of competition as of justice that it is no respecter of persons.
- D. The choice today is not between a system in which everybody will get what he deserves according to some universal standard and one where shares of individuals are determined by chance of goodwill.
6. The fact that opportunities open to the poor in a competitive society are much more restricted than those open to the rich, does not make it less true that in such a society the poor are more free than a person commanding much greater material comfort in a different type of society.
- a. CDBA b. DCBA c. ABCD d. BADC

Direction for questions 106 to 110: In each of the following sentences, part/parts of the sentence is/are left blank. Beneath each sentence four different ways of completing the sentence are indicated. Choose the best alternative from among the four.

106. A cost-effective solution to the problem of airport congestion is to provide high-speed ground transportation
- a. between major cities lying 200 to 500 miles apart.
b. within major cities lying 200 to 500 miles apart.
c. costing far less than to expand existing ones.
d. lying 200 to 500 miles apart.
107. Even though most educational institutions retain royalties from faculty members' inventions,
- a. the royalties from books and articles are retained by the faculty members.
b. the faculty members retain the royalties from the books and articles they write.
c. the books and articles written by the members are retained by them.
d. they retain, from books and articles, the royalties from these.
108. It was discovered by researchers that people who have low levels of immune system activity
- a. tend to score much lower on tests than do people with normal immune system activity.
b. tends to score as much lower than people with normal immune system.
c. tended to score as much as normal people in their immune system.
d. showed tendency to score much lower on tests as people with normal immune activity.
109. Today's businesses are looking for innovative ways to differentiate themselves in the minds of their customers
- a. to build loyalty and allegiance.
b. to build honesty and abeyance.
c. to rebuild new strategies.
d. to seek and to be sought.
110. It is scarcely to be expected that the ____ entities who bestride the world are going to ____ in the blinding light of a change of heart.
- a. governing ... leave b. rich ... fall
c. powerful ... crumble d. popular ... be relegated

Section – III

Direction for questions 111 to 113: Answer the questions based on the following information.

A vessel contains a mixture of milk and water. The volume of the vessel is 100 L. The concentration of milk in the vessel is given by

$C(n) = A \times C(n-1)$, where n is a natural number.

n is the number of times a certain volume of the solution is replaced by the same volume of water.

$C(0) = 80\%$, $C(n) = A^n C(0)$

111. If for some n , $\frac{C(n)}{C(n-2)} = \frac{1}{4}$, then what is the value of A ? ($n \geq 2$)

- a. $\frac{1}{2}$ b. $\frac{1}{4}$ c. 2 d. Data insufficient

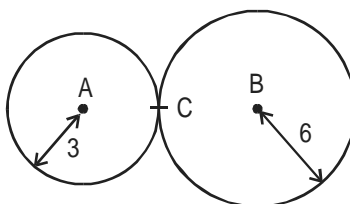
112. If $C(n) = 5\%$ and $A = \frac{1}{2}$, then n is

- a. 16 b. 4 c. 2 d. None of these

113. If $A = \frac{3}{4}$ and $n = 3$, then $C(3)$ is equal to

- a. 26.6% b. 60% c. 33.75% d. None of these

Direction for questions 114 and 115: Answer the questions based on the following information.



Two circles with centres A and B are touching each other at C. The radii of the two circles are 3 m and 6 m respectively. Ramu and Shamu start simultaneously from C with speeds 6π m/s and 3π m/s and travel along the circles with centres A and B respectively.

114. If they start simultaneously, after what time would they meet for the first time at C?

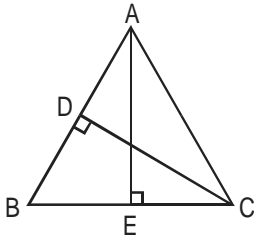
- a. 2 s b. 3 s c. 4 s d. Data insufficient

115. If Ramu gives Shamu a start of 2 s, what time after Ramu's start would they be separated by a distance of 18 m?

- a. 7 s b. 10 s c. Data insufficient d. Never

116. What is the least value of $(x-1)^2 + (x-2)^2$ for real value of x ?

- a. 0 b. 1 c. $\frac{3}{2}$ d. $\frac{1}{2}$

117. The perimeter of a square is 24 cm more than twice the diagonal. The area of the square is
 a. $36(4+3\sqrt{2}) \text{ cm}^2$ b. $144\sqrt{2} \text{ cm}^2$ c. $72(3+2\sqrt{2}) \text{ cm}^2$ d. $48(\sqrt{2}+1) \text{ cm}^2$
118. Four prime numbers are written down in ascending order of magnitude. The product of the first three is 385 and that of the last three numbers is 1309. Find the sum of the second and the fourth numbers.
 a. 24 b. 16 c. 28 d. 22
119. The sides of a triangle are a , b and $\sqrt{a^2 + ab + b^2}$ cm. Find the cosine of the largest angle of the triangle.
 a. $\frac{1}{2}$ b. $-\frac{1}{2}$ c. $\frac{\sqrt{3}}{2}$ d. $\frac{1}{\sqrt{2}}$
120. How many odd numbers between 100 and 1000 can be formed with the digits 0, 1, 2, ..., 9, if no digit is repeated in the same number?
 a. 315 b. 270 c. 320 d. 720
121. If $\frac{(n+1)!}{(n-1)!} = 90$, find n .
 a. 5 b. 9 c. 7 d. 8
122. In $\triangle ABC$, $AE \perp BC$ and $CD \perp AB$, $AE = 6$ and $CE = 7$.
 $BE : EC = 3 : 4$. Find the length of AB .
- 
- a. 6 b. $\frac{3}{4}\sqrt{113}$ c. $\frac{9}{2}\sqrt{3}$ d. $6\sqrt{3}$
123. A number of students (x) decide to give a farewell party to the seniors and agree to contribute as many paise each as the number of students. At the last minute, 32 students back out and consequently the rest have to contribute 40 paise each more than before. Find x .
 a. 180 b. 200 c. 172 d. 160
124. The germination of seeds is estimated by a probability of 0.8. What is the probability that out of 5 seeds sown at least 4 will germinate?
 a. 0.73728 b. 0.4096 c. 0.08192 d. None of these

125. $V(x)$ is a function such that $V(a) \times V(b) = V(a + b)$. Which of the following must be true?
- I. $V(\alpha) \div V(\beta) = V\left(\frac{\alpha}{\beta}\right)$ II. $V(\alpha) \div V(\beta) = V(\alpha - \beta)$
- III. $[V(\alpha)]^m = m.V(\alpha)$ IV. $V(\alpha)^m = [V(\alpha)]^m$
- a. I and II b. II and IV c. II only d. None of these
126. Simplify: $\frac{3^{-2} + 3^0}{\left(\frac{1}{3}\right)^2 - 6(-3)^{-2} + \left(\frac{4}{3}\right)^{-2}}$
- a. 172 b. 160 c. 125 d. 81
127. $V > 0$ is an integer ending in 3. $m > 0$ and $n > 0$ are two integers. If $V^m - V^n$ is divisible by 10, then $m - n$ is necessarily divisible by (Given $m > n$)
- a. 8 b. 4 c. 10 d. 6
128. The roots of $x^2 - 8|x| + 12 = 0$
- a. do not form a progression b. form an AP with zero sum
- c. form an AP with non-zero sum d. form a GP
129. A letter-lock consists of three rings, each marked with 15 different letters. It is found that Vijay could open the lock only after he makes half the number of possible unsuccessful attempts to open the lock. If each attempt takes 10 s, the time he must have spent is not less than
- a. 4 hr b. 5 hr c. 6 hr d. 7 hr
130. How many three-digit natural numbers are there so that unit's digit is always more than ten's as well as hundred's digit?
- a. 300 b. 360 c. 320 d. 240
131. V is the natural number below 1000, which has the maximum number of divisors. Find the sum of the digits of V .
- a. 9 b. 18 c. 12 d. 15

Direction for questions 132 and 133: Answer the questions based on the following information.

V is the least number using all the digits from 0 to 9, exactly once that is exactly divisible by all the natural numbers from 1 to 9.

132. The digit in ten thousand's place in V is
a. 5 b. 6 c. 4 d. 7
133. The digit in unit's place in V is
a. 4 b. 5 c. 8 d. None of these

134. What is the value of $(a + c)$ if $(a \times c \times ac = ccc)$, a and c are digits from 1 to 9?
 a. 11 b. 10 c. 12 d. None of these
135. What is the remainder when $1! + 2! + 3! + \dots + 100!$ is divided by $11!$?
 a. 1 b. 3 c. 5040 d. None of these
136. The values of V for which the equation $x^2 - 2x(1 + 2V) + 24V - 23 = 0$ has equal roots are
 a. 1 and 2 b. 2 and 3 c. 3 and 4 d. 4 and 5
137. The length of the chord of the circle $x^2 + y^2 - 4x - 1 = 0$ drawn through the point $(1, 2)$ making an angle $\frac{\pi}{3}$ with the diameter through the point is
 a. $2\sqrt{5}$ b. $\sqrt{5}$ c. $\sqrt{15}$ d. $\sqrt{10}$
138. The probability that the sum of the squares of the two numbers which show up when two fair dice are thrown is even, is
 a. $\frac{3}{7}$ b. $\frac{4}{7}$ c. $\frac{5}{7}$ d. None of these
139. If a, b, c are real and the equation $ax^2 + bx + c = 0$ has only one root greater than 2, then
 a. $a + b + c = 0$ b. $c(a + b + c) \leq 0$ c. $a(a + b + c) \geq 0$ d. None of these
140. A number of three digits in base 5, which when expressed in base 9 has its digits reversed in order, is
 a. 144 b. 441 c. 236 d. 632
141. V is a natural number. For how many V s, $V^2 + 1$ will be divisible by 3?
 a. 1 b. 2 c. 3 d. None of these
142. How many five-digit numbers of the form $34x5y$ (x and y are digits) are divisible by 36?
 a. 4 b. 3 c. 2 d. 1

Direction for questions 143 to 145: Answer the questions based on the following information.

Madhubani and Darbhanga towns stand by a river: Darbhanga downstream from Madhubani. At 9 a.m. a raft starts moving downstream from Madhubani to Darbhanga (the rate of the raft relative to the bank of the river is the same as the rate of the current). At that time, a boat starts out from Darbhanga for Madhubani and meets the raft in 5 hr. On reaching Madhubani, the boat turns back and returns to Darbhanga arriving at the same time as the raft.

143. What is the speed of the boat in still water?
 a. 5 km/hr b. $5(1 + \sqrt{2})$ km/hr c. $10\sqrt{2}$ km/hr d. Data insufficient
144. What is the distance between Darbhanga and Madhubani?
 a. 25 km b. 35 km c. 40 km d. Data insufficient

145. At what time did the raft reach Darbhanga?
 a. Between 9 p.m. and 10 p.m. b. Between 10 p.m. and 11 p.m.
 c. Between 11 p.m. and 11.30 p.m. d. Data insufficient

Direction for questions 146 and 147: Answer the questions based on the following information.

Three points A, B and C are connected by straight roads. Adjoining AB of the road is a square field with a side of $\frac{1}{2}AB$, adjoining BC is a square field with a side equal to BC, and adjoining CA is a rectangular section of the woods of length equal to AC and of width 4 km. The wooden area is 20 sq. km greater than the sum of the areas of the square fields.

146. Area of the woods is
 a. 36 sq. km b. 40 sq. km c. 20 sq. km d. Data insufficient
147. The distance between A and B is
 a. 8 km b. 2 km c. 6 km d. Data insufficient
148. Three fair dice are thrown. The probability that the numbers that appear are not all distinct is
 a. $\frac{5}{9}$ b. $\frac{4}{9}$ c. $\frac{1}{6}$ d. $\frac{5}{6}$
149. In which of the following base systems is 25 doubled by reversing the digits?
 a. 12 b. 14 c. 93 d. None of these
150. If α and β are the imaginary cube roots of unity, then $\alpha^5 + \beta^5$ is equal to
 a. $a^{-1}b^{-1}$ b. ab c. $a^{-2}b^{-2}$ d. $-ab$
151. In how many ways can Rs. 18.75 be paid in exactly 85 coins consisting of 50-paisa, 25-paisa and 10-paisa coins?
 a. 1 b. 2 c. 4 d. 8
152. $\log\left\{\frac{1}{3}(a+b)\right\} = \frac{1}{2}(\log a + \log b)$
 Which of the following is equal to $a^2 + b^2$?
 a. $9ab$ b. $7ab$ c. $5ab$ d. None of these
153. In how many ways may 20 identical gold coins be given to 5 persons so that no person may receive less than 3 of them?
 a. 126 b. 162 c. 120 d. 210

Direction for questions 154 and 155: Answer the questions based on the following information.

A sum of money is distributed amongst a certain number of persons. The second person receives Re 1 more than the first person, the third person receives Rs. 2 more than the second, the fourth person receives Rs. 3 more than the third, and so on. The first person gets Re 1 and the last person gets Rs. 67.

154. What is the number of persons?
a. 10 b. 11 c. 12 d. 13
155. What is the total sum distributed?
a. Rs. 286 b. Rs. 298 c. Rs. 268 d. Rs. 289
156. What is the remainder when $(789346783)^{78}$ is divided by 9?
a. 5 b. 7 c. 8 d. 1
157. If N is the sum of first 13,986 prime numbers, then N is always divisible by
a. 6 b. 4 c. 8 d. None of these
158. A total of 'a' L of pure acid was drawn from a tank containing 729 L of pure acid and was replaced by water. The result was thoroughly mixed to obtain a homogenous solution and then another 'a' L of solution was drawn off, and again replaced by water, and again thoroughly mixed. This procedure was performed six times and thus the tank contained 64 L of pure acid. Determine 'a'.
a. $\frac{1}{3}$ b. 243 c. 81 d. 3
159. A small town, Madhubani, in an effort to raise money hired 'Spice gals' to play in its civic stadium. The gals offered to give on concert for Rs. 10,000 and 20% of the gate receipts. It is assumed that 10,000 people would attend. What admission charge per person would the town have to charge to earn a profit of Rs. 25,000?
a. Rs. 4.375 b. Rs. 43.75 c. Rs. 47.35 d. Rs. 5.50
160. A young lady looked at a picture and said, "This person's mother was my mother's mother-in-law." What would be the relation between the young lady and the person in the picture?
a. Her father b. Her mother c. Her husband d. Data insufficient