

SERIES 20

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SECTION 1 (50 Questions)

Directions for questions 1-6:

Read passage-I, and answer the questions given below the passage. Answers should be based on the author's views or inferences drawn from the passage.

Passage-1

Now I want to return to the phenomena about which, partly by chance and partly through Mayo, I had become curious and with which, partly by reinforcement and partly by choice I decided to stick. I call this episode my discovery of life space. When I was in philosophy, I was more interested in the "true" than in the "real," the "good," or the "beautiful." To use traditional subdivisions of philosophy, I was more interested in epistemology (what makes knowledge knowledge) than in metaphysics (what makes the real real), or ethics (what makes the good good), or aesthetics (what makes the beautiful beautiful). These sixty-four dollar questions I decided to consider no longer -- at least not until I retired. Mayo told me that philosophy was a good subject to engage in at the beginning and end of one's life. In the middle years, he said, one should live it.

One epistemological distinction still meant a great deal to me. This was the one David Hume made between two kinds of knowledge: one that referred to "relations of ideas" and the other to "matters of fact". Analytical propositions, as they were called in philosophy, such as "The sage is wise," belonged to the first kind. In such propositions, the predicate (wise) was contained in the subject (sage), so that nothing new had been added; they were true apart from experience and thus constituted *a priori* knowledge. Synthetic propositions, on the other hand, such as "The rose is red" belonged to the second kind of knowledge. In such propositions the predicate (red) was not contained in the subject (rose). Their truth was contingent upon experience and could not be known apart from experience; they constituted *a posteriori* knowledge.

Although it was this distinction that had led to Hume's scepticism about knowledge and Kant's resolution of it, I felt it was important to maintain this distinction without having to accept wholly either Hume's or Kant's epistemological conclusions. The distinction, it seemed to me, neither cast a giant shadow on the status of *a posteriori* synthetic propositions, as Hume thought, nor did it require the possibility of *a priori* propositions in order to get out of this dilemma, as Kant thought. Hence, in the best fashion of the day, that is, in terms of the newly emerging analytic philosophy of Whitehead and Russell, I put the propositions of both logic and mathematics in the class of *a priori* analytic knowledge and the proposition of common sense and science in the class of *a posteriori* synthetic knowledge. The criterion for the truth of propositions in, the first class was logical consistency; the criterion for the truth of propositions in the second class was some correspondence with the phenomena, a matter, which could not be settled apart from verification by observation.

However, I did not keep these two kinds of propositions-analytical and synthetic-totally unrelated. It seemed to me that the development of scientific knowledge required both kinds of propositions so long as they were differentiated from and related to each other. At the time, I was not too clear what this relationship was. It seemed to me that the question was going to be settled by experience, not philosophical dogma. In this case, experience seemed to me to mean having something to do with convenience and utility as well as observation. Thus, I had three different notions of the truth in the back of my mind: (1) the notion of consistency, (2) the notion of correspondence to the phenomena, and (3) the notion of convenience and utility. In matters about truth I was a bit of a logician, a bit of a positivist, and a bit of a pragmatist, and so I have remained for the rest of my life. For to me now the question no longer was which one of these truths was absolute; it was how these different notions about truth worked together to produce knowledge. As the search for an answer to this question lurked behind the scenes throughout my career, I want to describe how it began in my counselling activities with students. When I started interviewing students, I

conceived of my mission partly as a research project and partly as a counselling service to them. Helping them was important to me but not my sole objective. I was also interested in the preoccupations of the students and the uniformities I felt I saw in them. These became the phenomena about which I became curious and which I wanted to understand.

The readings that I have previously mentioned helped me. Both Pierre Janet and Sigmund Freud had influenced Mayo. In talking about obsession or compulsion neurosis (Mayo, following Janet, used the word obsession) Mayo contrasted and related the two men's approaches to psychopathology. He felt that Janet described the phenomena better, whereas Freud showed their historical determination. That is to say, Freud was more concerned with how the obsessive's thinking got that way, whereas Janet was concerned with its present form. The researches of Janet on mental illness are of course much less well known than those of Freud. Janet's most important books (1909, 1919, and 1921) have not been translated into English, although *Psychological Healing* (1925) has been. Mayo wrote a book in 1948 about Janet's work.

As a result, I was somewhat of a maverick in interviewing students; that is, I used the most general ideas underlying the conceptual schemes of both Janet and Freud. I concentrated first on the nature of a student's preoccupations here and now; only if I thought it necessary did I explore his personal history to see what may have influenced him in his present direction. This seemed to me the natural course that most interviews took anyway. Many times I would state the form of the student's preoccupations in Janet's terms; I hardly ever stated the dynamics in Freudian terms. Here I felt I was following the principle of doing the least harm—a principle upon which, as Mayo and Henderson told me again and again, the practice of medicine was based.

I also found Janet's concepts more congenial than Freud's, because during this period I was anti-metaphysical. Freud's way of thinking seemed to me to have too many metaphysical entities circling around in it. I felt that I could study a person's preoccupations and concerns without having to posit an unconscious. Moreover, much of the "wild" psychoanalytical talk that certain circles indulged in at that time I found distasteful. I was going to stay as close to the phenomena as I could and become well acquainted with them before seeking too quickly for any explanation of them. In constantly comparing Janet and Freud, Mayo performed an inestimable service for me. Although annoying at times - because of course I was still bothered about who was right - the comparison prevented me from going off half-cocked. I had to try to make sense out of both positions. It could be said that I experimented with Freud's ideas more upon myself than upon my students. I underwent psychoanalysis for a period of six months after which my analyst died; he had been analysed by both Freud and Jung (and at this period in Boston they were tops). I did not continue with anyone else.

1. Which of the following is *not* a true statement?

- (1) The author of the passage was analysed neither by Freud nor by Jung
- (2) The author of the passage did not compare Mayo and Freud
- (3) Janet and Freud were compared by Mayo
- (4) The author constantly compared Janet and Freud

2. According to the passage, which of the following sub-division of philosophy deals with knowledge?

- (1) Ontology
- (2) Aesthetics
- (3) Epistemology
- (4) None of these

3. According to the passage,

- (1) Mayo was influenced by Russell and Whitehead
- (2) The author was not influenced by Janet and Freud
- (3) The author was influenced by Janet and Freud
- (4) Mayo was influenced neither by Janet nor by Freud

4. Which of the following is not a true statement?

- (1) "Analytical propositions" refer to the 'relations of ideas'
- (2) "Analytical propositions" constitute 'a priori knowledge'
- (3) "Synthetic propositions" refer to the 'relations of facts'
- (4) "Synthetic propositions" constitute 'a priori knowledge'

5. According to the author,

- (1) The same person can be a positivist, a logician and a pragmatist at the same time.
- (2) The same person can never be a positivist, a logician and a pragmatist at the same time.
- (3) Few people can be a positivist, a logician and a pragmatist at the same time.
- (4) Some people do not want to be a positivist, a logician and a pragmatist at the same time.

6. The author of the passage is

- (1) a follower of Kant
- (2) a follower of Hume
- (3) a critique of Hume and Kant
- (4) neither a critique nor a follower of Kant or Hume

Directions for questions 7-13 :

Read the following passage-2 and answer the questions given at the end of the passage. The answers should be based either on the author's views or inferences drawn from the given passage.

Passage-2

FDI can promote diffusion of international technology if the technological advantages of multinational firms do not remain restricted to one firm or its affiliates. Technological spillover may take place in the recipient country through demonstration effects (imitation), labour turnover, or increased competition. The channels for spillover can be horizontal (originating in the entry of the multinational-investor in the same sector) or vertical (originating in backward links when local suppliers supply multinational investors or in forward links when local customers buy from multinational investors).

Because a multinational has more incentive to promote local suppliers, backward links may be more widely observed than horizontal links, which inherently are associated with increased competition. Research by Javorcik (2004) finds a positive effect of FDI on Lithuanian local suppliers work through backward links. Another finding is that greater productivity gains are associated with projects partially owned by foreign entities (joint ventures), suggesting that domestic capital participation increases productivity spillover. That could serve as an interesting model for Russia might be able to attract FDI to complement domestic firms' market share to direct foreign competition.

The evidence from Russia indicates that FDI inflows are lagging behind those of some BRICS comparators (see box 3-1), suggesting that the benefits from international technology diffusion have flowed to only a few economic sectors, with FDI heavily concentrated in oil and natural resources. At the same time, the large increases in FDI observed since 2002 suggest a growing balance within manufacturing and between the manufacturing and service sectors, indication that the growing domestic demand for consumer goods is driving a consistent share of total FDI flows in Russia.

Russian multinationals continue to dominate the outward FDI of the south eastern Europe and CIS region for FDI in joint ventures and mergers, accounting for 87 percent of the total in 2005. Investment includes large deals to acquire and create joint ventures with enterprises in developed economics - notably Lukoil's purchase of Nelson Resources, a Canadian based oil company, and the recently announced merger of the aluminium and alumina assets of RUSAL, the SUAL Group, and Glencore International. Such partnerships are likely to gain in importance, given evidence that foreign-invested enterprises (FIEs) have been important for increasing labour productivity and export competitiveness in such countries as China.

One of the most powerful channels for technology' diffusion is the information and communications technology (ICT) channel. Usually, a good indicator of a country's capacity to leverage the ICT channel is the amount of FDI in communications, which in Russia remains extremely low (0.4 percent of total annual FDI in 2004-05). Moreover, according to various private sources, such as WITSA (2006), the amount of ICT investment in Russia, as a percent of GDP, is substantially lower than that in Central and Eastern Europe (CEE) countries.

Note that neither trade in capital goods nor FDI inflows are sufficient for the successful diffusion of technology. A country must be ready to absorb foreign knowledge and manufacturing and sales methods. In Russia vertical knowledge spillover could be hampered by the central planning legacy of large industrial plants, -which were more vertically integrated than 'Western plants. Moreover, local R& D, domestic research laboratories, and workers with the right skills are key aspects of the process. Trade competition and R&D expenditures are closely interrelated: unless a country is also well endowed in R&D and invests in R&D , spillover is not likely.

Box 3-1. Gain from Reducing Barriers to Trade and to FDI Flows in Russia

Russia stands only to gain by reducing its barriers to trade and FDI inflows and thus reaping the benefits of global integration, increased competitiveness, and improved access to business services.

Tariff barriers: The CIS has high average tariff and nontariff barriers, which would need to be reduced in the medium term in order to gain from international integration. For Russia in particular, Rutherford and Tarr (2006) shows that the average tariff increased between 2001 and 2003 from 11.5 percent to between 13 and 14.5 percent, placing its tariff rates (unweighted, or weighed averages) at a higher level than those of other middle-income countries, which average 10.6 percent. A reduction in the import tariff by 50 percent will produce gains to the economy on two counts: one, improved domestic resource allocation due to a shift in production to sectors where the value of production is higher, based on world market prices, and two, an increase in Russian productivity as a result of Russian businesses being able to import modern technologies. The second impact is more important for Russia.

Trade Restrictiveness Index: Kee, Nicita, and Olarreaga (2006) computes indicators of trade restrictiveness that include measures of tariff and nontariff barriers for ninety-one developing and industrial countries. Of the indicators for the manufacturing sector, one focuses on the trade distortions imposed by each country on imports and another focuses on market access for exports in the rest of the world. It is interesting to note that the trade restrictiveness index (TRI) for imports .for Russia (.19) is lower than that for Brazil (.22) and India (.20) but higher than that for South Africa (.06). China (.12) and the European Union (.08).

Russia's TRI is the highest in the Europe and Central Asia region, a reflection of the high tariff and nontariff barriers that it imposes on its imports. On the other hand, Russia faces less trade distortion on its exports from the rest of the world, China being the only country facing a lower level of restrictiveness.

Barriers to FDI: Russia fares worse than other countries in the region, attracting one of the lowest levels of FDI inflows. Among the key restrictions on foreign service providers in Russia are the monopoly of Rostelecom on fixed-line telephone services, the prohibition of affiliate branches of foreign banks, and the restricted quota on the share multinationals in the insurance sector. The reduction barriers to FDI in services alone would result in a gain of the order of 3.7 percent of GDP, accounting for about three-quarters of the total gains to Russia from WTO accession. The reduction in barriers to FDI in the service sector would allow multinationals to obtain greater post tax benefits on their investments, encouraging them to increase FDI to supply the Russia market. That in turn would lead to an increase in total service providers in Russia, giving Russian users improved access to telecommunication, banking, insurance, and other business services; lowering the cost of doing business and increasing the productivity of Russian firms using those services; and providing a growth impetus to the economy.

7. Which of the following is a correct statement?

- (1) Local suppliers promote multinationals
- (2) Horizontal links are associated with increased competition
- (3) Backward links are associated with increased competition
- (4) Multinationals promote backward links

8. According to the passage,

- (1) FDI inflows into Russia are the highest amongst BRICS
- (2) FDI inflows into Russia are the lowest amongst BRICS
- (3) Some BRIC countries are ahead of Russia in terms of FDI inflows
- (4) All BRIC countries are ahead of Russia in terms of FDI inflows

9. Since the year 2002,

- (1) FDI was made largely into oil and natural resources
- (2) All sectors in Russia have received nearly equal amount of FDI inflow
- (3) Manufacturing sector has received far more FDI inflow than service sector
- (4) Service sector has received far more FDI inflow than the manufacturing sector

10. Russian multinationals

- (1) receive most of FDI from South-eastern Europe
- (2) invest most of FDI into South-eastern Europe
- (3) invest largely in CIS countries
- (4) do not receive much FDI from CIS countries

11. According to the passage,

- (1) Russian MNCs have created large partnerships
- (2) Russian MNCs have refrained from entering into JVs and Mergers
- (3) Large European and US MNCs have deliberately kept Russian MNCs out of all major deals
- (4) None of the above

12. The most suitable title for the above passage is

- (1) Russian MNCs
- (2) Multinational investments
- (3) Foreign Direct Investment
- (4) Diffusion of International Technology

13. The passage suggests that

- (1) Russia has benefited from information and communication technologies (ICT) as a powerful channel
- (2) Compared to Russia, Central and Eastern European countries have received far less amount of ICT investment
- (3) Central and Eastern European countries have received far more of ICT investment
- (4) Russia was found ready to absorb vertical knowledge spillover

Directions for questions 14-26:

Read the following passage-3 and answer the questions given at the end of the passage. The answers should be based either on the author's views or inferences drawn from the given passage.

Passage-3

The systems perspective, applied to organizations in its classic formulations as an organic or a cybernetic model, is open to criticism for failing to give a sufficient account of change. In the organic model, change is seen primarily as an adaptive response by the system, acting as a whole or through subsystems with specific functions, to maintain itself in balance with a shifting environment. Change is thus externalised beyond the system boundary. The organism's response is characterized as a negative feedback process by means of which a control centre becomes aware of a disparity between actual and desired behaviour or conditions and triggers actions to reduce the disparity. The model assumes that the organism is so constituted as to be able to detect significant disparities and to be able to adjust its behaviour in response to them.

When the organic model is generalized to apply to organizations, the emphasis on boundary, environment, feedback and adaptive response are carried over, and management is readily identified as the control centre, which directs the organization's operations. However, organizations do not possess the same unity or consistency of form as organisms. Their external boundaries, as well as internal boundaries between subsystems, are less evident and less fixed. Responses to internal and external problem situations are not generally preset or inbuilt, but have to be invented. Applied uncritically, the model attributes too central a role to management and overestimates management's power to control events and actions. Direction of operations comes not from an integrated control centre but from a multiplicity of factors whose behaviour is not merely adaptive but also creative and contentious.

The cybernetic model provides a more elaborate account of control and communication mechanisms organized hierarchically and recursively and distributed throughout the system. It also includes an environmental scanning function, which opens up the possibility of proactive change in the system. Nevertheless, although change becomes a subtler, complex and generalized phenomenon in this model, changes are still seen as adjustments, whether reactive or proactive, which serve to maintain or increase order in the system. Nor is it any easier to relate change to human agency in the cybernetic model than in the organic.

In the "soft systems" approach articulated by Checkland, attention shifts from the actual constitution of organizations as complex systems towards organizational actors' understandings and formulations of problem situations. This is a view, which allows and expects multiple interpretations of the world at hand. When soft systems

methodology (SSM) is applied to a problem situation in an organization, it culminates in a debate which aims to define changes which are "systemically desirable and culturally feasible". The human role in defining (and subsequently carrying out) changes is thus recognized.

The soft systems approach makes change more central to organizational life' than it is in the harder approaches sketched above, which focus on the system's capacity to cope with and respond to environmental perturbations. Change now becomes something, which flows from human understanding and decision-making, which is not in general prefigured or automatic, and which involves negotiation by competing parties. However, some of the legacy of the earlier systems views persists in the soft systems approach and methodology, and serves to prevent fuller appreciation of the nature of change in organizational life. For instance, the central notion of transformation in the methodology relates still to the transformation of inputs into outputs by the system, rather than to transformation of the system itself. Analysis and modelling in SSM, by and large, is conducted by the analyst alone, so that some of the most important interpretations in the change exercise are supplied by external experts. When the conceptual model is brought forward by the analyst for organizational debate, the voice of management is likely to be dominant, again restricting opportunity for a more thoroughgoing review of possibilities. Thus, even though the soft systems approach brings change to the centre of the organizational stage by focusing on human activity systems and embracing the interpretative standpoint, change is still characterized as a discontinuous step from an old order to a new one, facilitated by the alchemy of the analyst, and sanctioned by management.

In the systems tradition as discussed so far, there is a common interest in how complex systems achieve, maintain and increase order, in a turbulent environment, which threatens to invade or dissolve them. In the organic model, change is essentially an external threat to be responded to. Richer notions of change are developed in the cybernetic and soft systems approaches, but still, change is seen as a way of preserving or improving order in the system, rather than as a fundamental feature of the system itself. In the translation of systems concepts to organizational models, the identification of control with management has produced an impression that organizational change must be managed, and that managers, in alliance with experts, can and should manage change.

It has always been clear that organizations are not organisms, but the limitations of applying the organic metaphor have only become obvious relatively recently, when the pace of organizational and technological change has thrown into question the contemporary validity of organizational models based on central control, stability and bureaucracy. It may be that continuous change is an essential feature of organizations or it may be that disorder is not only tolerable in organizations but also natural and productive. To contemplate these possibilities, it is necessary to go beyond the familiar systems models and at the same time to question ideas of change management.

Kiel, following an earlier formulation by Jantsch, describes three stages in the development of models of organizational change. The first stage, deterministic change, is a mechanical or linear view, which equates to a pre-systems or early systems view of organizations as machines subject to rational control. The second stage, equilibrium-based change, is essentially the systems perspective, especially as represented by the organic or cybernetic models. The third stage, dissipative or transformation change, views organizations as dynamic self-organizing systems capable of radical transformation as well as gradual evolution, and continually moving between order and disorder and between stability and instability. Organizational models in this third stage go beyond (or may be seen to extend) the systems tradition, drawing on theories of chaos, complexity and self-organization from the natural sciences. New holistic theories of change are emerging which challenge the centrality of order and control in complex systems.

According to these theories, many complex systems are non-linear, i.e. systems in which relationships between cause and effect are not constant. Therefore, small inputs can sometimes lead to' disproportionately large consequences (and at other times not), and small variations in initial conditions can sometimes produce large variations

in outcomes (and sometimes not). Generally, processes cannot be fully controlled or planned, and cannot be run back and repeated. Many natural systems, including ecologies and the weather, are non-linear. They are characterized by complex multiple patterns of interaction which combine with random disturbances to produce unpredictable events that will sometimes transform the system into an entirely new configuration. In general, as they move from one relatively stable region of behaviour to another, such systems pass through a chaotic transition phase. A system far from equilibrium and at the edge of chaos is one on the point of transformative change, but the future state of the system is not predictable.

It seems attractive to adopt a transformational model of organizational change derived from these more general ideas of dynamic non-linear systems. The complexity, uncertainty and centrality of change processes seem much better captured in this kind of model than in earlier systems models. However, it should be remembered that just as organizations are not organisms, neither are they weather systems or whirlpools. Organizations are constituted by people, not particles. Change is produced not by the complex interaction of effectively structureless atoms, but by the meaningful and value-laden interaction of already complex individual human beings.

Though it may indeed be fruitful to see organizations as non-linear systems, to do so will require a fundamental shift in our understanding of the role and limits of control and likewise of the role and limits of management. It would, for instance, be fallacious to assume that management can apply the transformational model in order to produce a desirable transformation in their organization, since this would be to treat non-linear systems as though they were linear (and so predictable and controllable). Another danger is that by simply adopting the language of non-linear systems we will produce a spurious jargon and mystification which will lead neither to increased understanding nor to practical action in organizational life. The theories of chaos and complexity are seductive, and can easily lead you into a world of butterfly effects, strange attractors and NK fitness landscapes. Nevertheless, a cautious and sober application of them might prove fruitful in our area of interest.

14. Choose the correct statement from the following:

- (1) Cybernetic model focuses on actors' understanding and formulations of problem situations
- (2) Organic model focuses on actors' understanding and formulations of problem situations
- (3) Soft systems approach focuses on actors' understanding and formulations. of problem situations
- (4) Soft systems approach focuses on organisations as complex systems

15. Which of the following assumptions may be made from the passage?

- (1) Processes can be fully planned
- (2) Many natural systems are characterised by complex patterns of interaction
- (3) People are particles of organisations
- (4) Change is produced by complex interactions of atoms

16. According to the passage, which of the following is not a correct statement?

- (1) In the organic model, change is viewed as an external threat
- (2) In the cybernetic model, change is viewed as a way of improving order in the system
- (3) In the cybernetic model and in the soft systems approach, change is seen as a fundamental feature of the system
- (4) In the soft systems approach, change is viewed as a way of improving order in the system

17. The systems model has been criticised because it

- (1) failed to provide a satisfactory account of change
- (2) revealed the classic dimension of the organic model
- (3) did not respond to negative feedback
- (4) refused to look beyond the system

18. Which of the following is a correct statement?

- (1) Deterministic change is the systems perspective
- (2) Equilibrium-based change is the systems approach
- (3) Equilibrium-based change is a mechanical view
- (4) Transformational change is a mechanical view

19. Which of the following is *not* a correct statement?

- (1) Change is primarily a response to the environment
- (2) The system as a whole or the sub-systems adapt to the environment
- (3) The environment is not stable
- (4) Change cannot be externalised beyond the system boundary

20. According to the passage, change

- (1) does not flow from human understanding or decision-making
- (2) is generally prefigured
- (3) is automatic
- (4) involves negotiation by competing parties

21. The organic model assumes that

- (1) the organism's response is negative
- (2) a control centre influences behaviour
- (3) the organism is able to adjust its behaviour
- (4) the organism is not able to detect significant disparities

22. Change is seen flowing from human understanding in the

- (1) cybernetic model
- (2) organic model
- (3) soft systems approach
- (4) harder approaches

23. Which of the following is not a correct statement?

- (1) Management is seen as the control centre of organisations
- (2) Organic model uses concepts of boundary and adaptive response
- (3) The organic model views management as a part of environment
- (4) Organisations are not totally comparable to organisms

24. Which of the following is not a correct statement?

- (1) Cybernetic model recognises human role in defining change
- (2) Organic model does not recognise human role in defining change
- (3) Soft systems approach recognises human role in defining change
- (4) Soft systems approach defines changes, which are systemically feasible

25. According to the passage,

- (1) cybernetic model is more realistic
- (2) organic model is more realistic
- (3) organic model is as realistic as the cybernetic model
- (4) cybernetic model is as realistic as the organic model

26. Which of the following is a correct statement?

- (1) Cybernetic model takes better care of environmental factors
- (2) Organic model takes better care of environmental factors
- (3) Cybernetic model is not suitable for proactive change
- (4) Organic model is suitable for proactive change

Directions for questions 27-50:

Read passage-4, and answer the questions given below the passage. Answers should be based on the author's views or inferences drawn from the given passage.

Passage-4

Early books on business strategy aimed to structure and codify the many documentary histories and memoirs of business leaders. They contained precious little theory or models drawn from economics or other social sciences. They do contain many good ideas but few frameworks in which to place them. There was limited guidance as to when and where anyone idea would or would not work. Just because an idea was useful in one company at one moment in time, does not mean it will always work. Gradually ideas and models emerged that provided the necessary structure to the chaos of anecdotal memories. First we need to distinguish between corporate and business level strategy. At the corporate level, businesses need to ask themselves fundamental questions such as 'Which business should we be in?' At the business level, a business needs to ask itself, 'How do we compete?' It is at this latter level that we position our thinking. The organization has decided that it will compete in a certain market and is seeking ways to optimise what it does in pursuit of its goals, in other words, what its strategy should be. How we think about business strategy has evolved and changed as new and better ideas have become more widely known and accepted and as the needs of business have changed. Business strategy has had many definitions but these are two that give a sense of what is involved irrespective of where we are in time: 'Strategy is about matching the competencies of the organization to its environment. A strategy describes how an organization aims to meet its objectives'.

The changing environment for any business can be understood by assessing the main factors that create change in a marketplace: political (including legislative), economic, social and, technological trends. If strategy is about matching your business to the opportunities and challenges of the environment, then it pays to understand what that means and how the environment is changing and likely to change in the future. A company's ability to match itself to its environment can be assessed in turn by listing its main strengths, weaknesses, opportunities and threats - the now familiar SWOT analysis. PEST and SWOT analyses have become the logical starting points for any business looking to

appraise itself and to define or redefine its strategy. How a company matches itself to its environment is left to its management to decide. We believe that it is time to identify better ways in which any organization can identify how to match itself to the changing needs and views of the most important part of its environment, its customers. We also believe that management needs to look more inside their organizations to find the answers to the challenges presented by their environment. A third definition of strategy explains why commercial organizations should invest time and money in creating a strategy: 'A successful strategy is one that achieves an above average profitability in its sector.' We also believe that any approach to strategy must be capable of demonstrating that it can guide a business organization to above average profitability or at least to an increase in profitability. For not-for-profit organizations the performance measures will be very different. A business school might aim merely to break even but measure itself by the number of students it educates. A charity might measure its total giving or a ratio of donations to income. A church might measure itself by the size of its congregation. Performance measures that are relevant to commercial business can be applied to any type or style of organization.

While companies still use SWOT and PEST analyses, other strategic tools have become dated as business has changed in its nature. A century ago, the multinational was the exception on the corporate landscape. Most business was small and local and this is still true in many countries and in many sectors to this day. In markets where competition is fragmented and the main competitors are small, a relatively unsophisticated business plan, one that concerns itself solely with the business itself and its immediate market, is likely to be more than adequate. Gap analysis is still a relevant technique that can focus the management of such organizations into thinking about the main issues they face, specifically how to bridge the gap between their existing financial performances and where they would like the business to be in the future. If the gap is wide and if the recent performance has been poor, it is likely that the company will have to reinvent itself and to find a different answer to the question 'What business are we in?' Used in conjunction with a PEST and SWOT analysis, a firm can construct a clear sense of direction. By identifying and costing various projects that will help to fill the strategic planning gap, it can create a strategic plan. The value of gap analysis lies in its simplicity, but it has one key weakness. It ignores competition. It also lacks any model to help management decide what to do or how to appraise their ideas as to how to fill the planning gap. But first there is a question on the way strategies actually evolve. Is it via the purposive analysis implied by Gap, SWOT and PEST analyses?

There has been a lively debate as to whether 'strategy' is something that senior management can decide upon and impose upon an organization or whether strategies emerge from within an organization, guided by managers rather than decided by them. Many argue that specific strategies tend to emerge, rather than be created, in larger organizations because many new and different strategies are constantly being created and acted upon routinely through the interaction between the firm and its customers or even suppliers. An order might arrive from another country and before it knows it, the firm is in the export business. An existing customer, impressed by what the firm has done in the past in supplying one product or service, asks it to provide another outside its normal scope of operation. It does so successfully and finds itself in a new business. This idea of a business almost lurching from one opportunity to another may appeal, but the analogy of strategy as evolution where a series of often random events occur, a tiny minority of which change the business because they produce sustained sales or profit, is not too far from reality. Indeed some have argued that you can apply this thinking outside of the firm - one business species thrives as it adapts to a changing environment while another is wiped out when its main source of nourishment declines.

In reality, businesses do, indeed must, try to formalize their strategies, to take control of their own destiny. The problem is how? The best answer will probably be a combination of direction and evolution. From the top or centre will come an analysis and formal plan. This will include the financial objectives of the firm, as there is no sense in delegating those. The contribution from lower down the organization, the bottom up component can include the

source of options to be analysed. The role of the planner is to select the best options so that the firm has a clear direction to follow. The worst possible situation is where the company is actively trying to pursue more than one competing strategy at *the* same time. It does not work. The problem with such thinking is that it leaves the role of strategy formulation somewhat in limbo. On the one hand we are saying that strategy is about having a clear understanding of how the organization is planning to meet its objectives. On the other, we are arguing the value of allowing radical ideas to emerge from the customer interface, somewhere not always regarded as the place where strategy is formed. So just where do we stand on the issue of who are responsible for strategic management? What is best left to the senior team in our view are decisions about which markets to be in, whether to enter country X this year or next, whether to acquire Company Y or to divest Division A - what we labelled earlier as corporate level strategy. Our focus is on market strategy; what organizations should do to manage their way in markets they are already in and intend to stay in. For the first type of decision we concede the need for a centralized function that makes decisions. For the second type of role we will argue that managers should create a framework and set objectives and then let the organization get on with meeting those objectives.

The strategy process is about flows of ideas and instructions up and down the organization. There will be two distinct flows in any business, the financial planning flow and the strategic planning flow. They interact and often conflict. A typical financial objective might be to achieve a 24 per cent return on assets employed each year. A typical vision statement is more qualitative and more long-term, to be market leader in a specific field. Underpinning the company vision will be a strategy that gives practical form to that vision. At the same time, it explains how the company expects to achieve its financial goals and objectives. All too often, it is far from clear in written plans how the strategy will deliver the required financial performance. Tactics are the shorter term, day-to-day matters that will be of relevance to many employees, for example a sales target of four customer calls a day, a production plan for 50 tonnes of product. Money is required to fund the business and to meet day-to-day expenditure. Typically a financial budget is prepared for every part of an organization. Individual budgets are totalled and compared with the revenue forecasts to judge the viability of the plan.

Those reading this who have prepared budgets and forecasts know only too well that preparing them is an art as well as a science. The art comes in not leaving yourself with too little fat, in slightly over forecasting a budget and under forecasting a revenue stream. Those reading this who manage those who prepare budgets and forecasts recognize that managers 'suffice' rather than maximize profit, and probably have a number of ways of ensuring that both forecasts and budgets appear challenging while still being feasible. There is a danger in our experience of believing one's own forecasts. Senior managers spend time and effort making sure that the next year's plan looks' sound because revenue and expenditure balance. But what appears on paper is no more than a wish list. If the organization is in a stable environment then a simple extrapolation from last year is adequate. In such a case, the financial flow will dominate management thinking. In situations where the environment is more fluid and less predictable, then rigidity creates myopia. Organizations in the service sector have to be prepared to change, often on a daily basis to respond to shifts in what their customers want or in what their competition are doing. Visionary companies often out-perform financially driven ones because there is not a reliance upon budgeting and forecasting, there is often not enough time to do such things, as the business is too concerned with how it can cope with the opportunities that are there in the market and that can never be predicted. Having a rigid top down approach can stifle the very essence of organization's ability to succeed. Senior management's role is to set targets, let middle and junior managers decide or at least influence how to meet them. As organizations become more complex and physically larger, it becomes more impossible for one person at the top to be able to manage down. Education standards have risen but companies can ignore the potential they recruit, trying to control what they should be letting free, lacking the framework that will guide employees to achieve without detailed manuals on what to do and how to do it.

An approach can be adopted that is not budget driven in the sense that the firm relies upon replicating what it did last year, but not so free and easy so that senior management lose all control over what is happening. The balance between the two flows in terms of the relative power they have in the organization is interesting to observe. Some companies have a good strategy. Profitability is almost taken for granted. The debate is more about how much profit to return to shareholders, how much to invest, and what the staff bonus scheme should payout this year. In other companies, financial management is all-powerful. It needs to be, as the business has not discovered a position in its market that it can use to achieve above average profitability, most probably because it lacks an effective strategy. It lurches from one financial crisis to another. Many businesses survive in this way for years, but the better employees leave for better paid and more satisfying jobs 'elsewhere. Even among some apparently better performing organizations employee turnover can be an issue. Here financial performance has been gained at the expense of employees. Employees leave, disliking the uncaring attitude to both staff and to customers that means they care little for their employer. Over the years, a number of models have been produced largely from academic research that companies can use to improve their chances of achieving above average profitability. The strategic decision-making in an organization is guided by a model, a simplified picture of what makes for success in business. So what are these models and how useful have they proven to be? By the 1980s, businesses realized that they needed more sophisticated tools to help them construct valid strategies. The main problems to be faced in their markets were not so much the trends identified by their trend analyses, but by the less predictable actions of their competitors. Take the retail sector as a good example. In the 1950s, there were few countries in the world where concentration levels in the retail sector were high. By the 1990s, most developed nations had food retail sectors that were dominated by a small number of players. At the same time such companies owned more than one retail business and strategies were needed for each market.

27. Which of the following is a true statement?

- (1) An idea found useful in one company at one time will always work in other companies
- (2) An idea found useful in one company at one time may not work in other companies
- (3) An idea found irrelevant in one company at one time will work in other companies
- (4) A useful idea will always remain relevant for all companies at all times

28. According to the passage,

- (1) Anecdotal memories created chaos
- (2) Useful ideas emerged fairly rapidly to deal with business strategy
- (3) Gradual emergence of ideas confused the business strategists
- (4) Sudden emergence of ideas created confusion among the business strategists

29. According to the passage,

- (1) Recent literature aims to codify documentary histories on business strategy
- (2) Recent books aim to document memoirs of business leaders
- (3) Many documentary histories were codified in early books on business strategy
- (4) None of the above

30. According to the author of the passage,

- (1) There is no difference between business and corporate level strategy
- (2) We cannot differentiate business from corporate strategy
- (3) Business should be based on questions raised at the corporate level
- (4) Strategy is based on the questions raised at the business level

31. Which of the following is not a true statement?

- (1) Early books on business strategy contained very little theory
- (2) Early books on business strategy contained many models drawn from social sciences
- (3) Early books on business strategy contained little or no theory derived from social sciences
- (4) Early books on business strategy contain many good ideas

32. It is true that

- (1) business strategy has not changed for many years
- (2) not many new ideas have become widely known to influence our business strategy
- (3) not many new ideas have become widely known as the needs of business have changed
- (4) new ideas have changed our business strategies

33. According to the passage,

- (1) there cannot be many definitions of business strategy
- (2) there are only two definitions of business strategy
- (3) there are many definitions of business strategy
- (4) no definition of business strategy is an accurate description

34. We can understand the changing environment of a business by

- (1) analysing the factors affecting the market
- (2) assessing the political, economic, social and technological trends
- (3) Both of the above
- (4) None of the above

35. SWOT analysis is a process

- (1) which tests a company's ability to cope with the environment
- (2) which helps a company to appraise itself
- (3) Both of the above
- (4) None of the above

36. According to the passage,

- (1) customer is a part of the environment
- (2) customer defines the business environment
- (3) business environment shapes the customer
- (4) business strategy moulds the customer

37. Which of the following is not a true statement?

- (1) Commercial organizations should invest time and money in creating strategy
- (2) Commercial organizations should not invest time and money in creating strategy
- (3) A successful strategy should lead to profitability
- (4) Performance measures that are relevant to commercial organizations are also applicable to not-for-profit organisations

38. According to the passage, SWOT analysis

- (1) has become a dated tool
- (2) is not a tool used by companies any more
- (3) is a tool still used by companies
- (4) has become redundant

39. Which of the following is a true statement?

- (1) A century ago most businesses were multinational
- (2) A century ago most businesses were big
- (3) A century ago most businesses were local
- (4) Multinational businesses were common until the end of the last century

40. According to the passage, Gap analysis

- (1) is no more relevant
- (2) bridges the gap between the present and the future
- (3) identifies the difference between the present performance and the future vision
- (4) None of the above

41. According to the passage,

- (1) Gap analysis is a fairly complex process
- (2) Gap analysis has no weakness
- (3) Gap analysis has many weaknesses
- (4) None of the above

42. Which of the following is not a true statement?

- (1) Specific strategies often evolve
- (2) Specific strategies are always created
- (3) Strategies are constantly created through interaction between customers and suppliers
- (4) Strategies are dictated to the customers and suppliers

43. The businesses must formalise their strategies by

- (1) Controlling and monitoring
- (2) Direction and evolution
- (3) Planning and analysis
- (4) All of these

44. According to the passage,

- (1) Strategy demands' a clear understanding of the future
- (2) Strategy should encourage radical ideas to emerge from customers
- (3) Organisation should be clear as to how it plans to achieve its goals
- (4) All of the above

45. The author of the passage focuses on

- (1) Corporate strategy (2) Market strategy
- (3) Both of the above (4) None of the above

46. According to the passage, the financial planning flow

- (1) and the strategic planning flow mean the same
- (2) should be based on strategic planning flow
- (3) and the strategic planning flow do not ever interact
- (4) and the strategic planning flow conflict with each other

47. According to the passage,

- (1) organisations which perform well do not experience employee turnover
- (2) employee turnover could be an issue even in organisations which perform well
- (3) organisations which perform well faces employee turnover more acutely than others
- (4) financial performance should be considered more important than employee turnover

48. According to the passage,

- (1) in a stable environment, organisation should be prepared to change
- (2) in a fluid environment, planning is not required
- (3) in a stable environment, financial flow will dominate management thinking
- (4) in a fluid environment, rigid plans often work well

49. The passage suggests that

- (1) senior management should not set targets
- (2) senior managers should set targets
- (3) junior management should not be asked to meet the targets
- (4) middle managers cannot be asked to influence as to how to meet targets

50. Which of the following is a tactic?

- (1) Specific production plan for a specific product
- (2) A sales target for a specific day
- (3) Both of the above
- (4) None of the above

SECTION 2 (50 Questions)

Directions for questions 51 to 53:

The letters of the English alphabet are numbered from 26 to 1 such that 26 stands for A, 25 stands for B, and so on. The assigned numbers are used to write the letters of the original alphabet.

51. What will be the sum total of all vowels in the sequence?

- (1) 78 (2) 84 (3) 76 (4) None of these

52. Which of the following sequences denotes a valid word?

- (1) 6-12-17-23 (2) 5-11-18-22 (3) 5-12-18-23 (4) 5-12-17-2.3

53. If each of the alphabets stands for the number which denotes it, what will be the next term in the following sequence?

Z, W, R, K, --

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

54. Six students are sitting in a row in an examination hall. K is sitting between V and R. V IS sitting next to M. M is sitting next to B. B is sitting on the extreme left and Q is sitting next to R. Who are sitting adjacent to V?

- (1) M and R (2) M and K (3) K and R (4) M and Q

55. If the letters 'Q, B, Z, H, X, H, Q, D, U, M, B' are placed in the order opposite to the one in which these normally appear in the English alphabet, then which of these would be the fifth letter from right to left?

- (1) H (2) Z (3) U (4) X

56. Arun started walking positioning his back towards the sun. After some time, he turned left, then turned right and then towards the left again. In which direction is he going now?

- (i) North (ii) West
(iii) South (iv) East

- (1) (i) or (ii) (2) (i) or (iii) (3) (ii) or (iii) (4) (iii) or (iv)

Directions for questions 57 to 60 : In a club, combinations of five out of the eight songs P, Q, R, S, T, U, V and Ware to be played by a DJ on a daily basis. On anyone day, except for the first day of a month, only three of the songs must be the ones that were played on the previous day. The song combinations must also satisfy the following conditions:

- (i) If song "P" is to be played on a day, song "V" cannot be played.
(ii) If song "Q" is to be played on a day, "T" must be one of the songs to be played after "Q".
(iii) If "R" is to be played on a day, "V" must be one of the songs to be played after "R".
(iv) The last song to be played on any day must be either "S" or "U".

57. Which of the following could be the combination of songs to be played on the first day of a month?

- (1) P, R, V, S, U (2) Q, S, R, V, U (3) T, U, R, V, S (4) U, Q, S, T, W

58. If the songs "R" and "W" are to be played on the first day, which of the following could be the other songs to be played on that day?

- (1) P, T, U (2) Q, S, V (3) T, S, V (4) Q, T, V

59. Which of the following is TRUE of any day's valid combination of songs?

- (1) "P" cannot be played at third place
(2) "Q" cannot be played at third place
(3) "T" cannot be played at third place
(4) "U" cannot be played at fourth place

60. If song "R" is played at third place in a sequence, which of the following cannot be the second song to be played in that sequence?

- (1) Q (2) S (3) T (4) U

Directions for questions 61 to 63: In a business school, four students Dinakaran, Sumit, Tarun and Amul exhibit a very strange mix of hobbies and subject interests. One of them studies Commerce and plays Golf and Lawn Tennis. Dinakaran and Sumit study Psychology. Dinakaran plays Billiards. Both the Psychology students play Chess. Tarun is a student of Physics. The Physics student plays Chess and Badminton. All the friends play two games each and study one subject each. One of the students also does Weight Training.

61. Who does not play Chess?

- (1) Dinakaran (2) Sumit (3) Tarun (4) Amul

62. Who studies Psychology and plays Billiards?

- (1) Dinakaran (2) Sumit (3) Tarun (4) Amul

63. How many games are played and subjects studied by all the four students?

- (1) 2, 1 (2) 3, 2 (3) 6, 3 (4) 5, 4

Directions for questions 64 to 66 : Six products - Ariel, Vivel, Rin, Nirma, Gillette Gel and Pepsodent - are to be placed in six display windows' of a shop numbered 1-6 from left to right of a shopper standing outside the shop. As per the company requirements, Rin and Ariel should be displayed next to each other, but Ariel should be at least three windows away from Nirma. Pepsodent is preferred to be kept between Gillette Gel and Rin but away from Vivel at least by two windows. Vivel cannot be displayed next to Rin for the reasons of mixed-product identity. Also Vivel cannot be displayed in window 1.

64. Which of the following products is displayed left to Ariel?

- (1) Vivel (2) Nirma (3) Rin (4) Pepsodent

65. If the positions of Rin and Ariel are interchanged, which item will be displayed in window 5?

- (1) Ariel (2) Nirma (3) Rin (4) Vivel

66. Which of the following products except Rin will be displayed left of Ariel but right of Gillette Gel?

- (1) Vivel (2) Rin (3) Pepsodent (4) None of these

Directions for questions 67 to 69 : In the English alphabet, letters from A to M denote numeric values from -13 to --1 (such that A is -13, B is -12,), and letters from N to Z denote values from 1 to 13 (such that N means 1, O means 2,).

67. Which of the following words will have a negative numeric value as a product of the numeric codes?

- (1) HIS (2) HELL (3) ROD (4) None of these

68. Which one of the following words will have an absolute numeric value equal to that of BELL as a product of the numeric codes?

- (1) YELL (2) HELL (3) RODE (4) None of these

69. Assuming that the salaries and perks are basically coded with the help of designations using the code given above, who will be drawing the highest salary amongst the following?

- (1) PEON (2) CLERK (3) HEAD (4) None of these

70. Out of the given four groups of letters, three groups follow a certain code. Which one of these is the odd group that does not follow the code?

- (1) DSFU (2) PGRI (3) INKR (4) BUDW

71. Sanjay says, "I have as many sisters as brothers." Sarita says, "Each of us sisters has only half as many sisters as brothers." Assuming that Sanjay and Sarita are brother and sister, how many brothers and sisters are there in the family?

- (1) 6 brothers and 4 sisters (2) 4 brothers and 6 sisters
(3) 3 brothers and 4 sisters (4) 4 brothers and 3 sisters

72. In a row at a bus stop, A is 9th from the right and B is 7th from the left. They both interchange their positions. If there are 20 people in the row, what will be the new position of B from the left'?

- (1) 11th (2) 12th (3) 13th (4) 10th

Directions for questions 73 to 78: The Financial Statements of Oracle Corporation for the period 2004-2008 are summed up given in the table below.

(Figures in US \$ M n)

Particulars	2004	2005	2006	2007	2008
Revenue	10,156.00	11,799.00	14,380.00	17,996.00	22,430.00
COGS	1,770.00	2,033.00	2,516.00	3,349.00	3,984.00
Gross Profit	8,386.00	9,766.00	11,864.00	14,647.00	18,446.00
Net Income	2,681.00	2,886.00	3,381.00	4,274.00	5,521.00
Total Assets	12,763.00	20,687.00	29,029.00	34,572.00	47,268.00
Total Current Liabilities	4,272.00	8,063.00	6,930.00	9,387.00	10,029.00
Total Liabilities	4,768.00	9,850.00	14,017.00	17,653.00	24,243.00
Total Equity	7,995.00	10,837.00	15,012.00	16,919.00	23,025.00
Total Liabilities and Equity	12,763.00	20,687.00	29,029.00	34,572.00	47,268.00

Evaluate the pairs of statements in each question on the basis of data given in the table and mark:

- (1) if only Statement I is correct.
- (2) if only Statement II is correct.
- (3) if both the statements are correct.
- (4) if none of the statements is correct.

- 73.** Statement I: Percentage Revenue growth over the previous year has been the highest in the year 2007.
Statement II: Percentage Revenue growth over the previous year has been the lowest in the year 2008.
- 74.** Statement I: Lowest growth rate over the previous year in Total Assets was recorded in the year 2006.
Statement II: Highest growth rate over the previous year in Total Equity was recorded in the year 2008.
- 75.** Statement I: Gross Profit every year has recorded higher growth rate as compared to the previous year for the period under review.
Statement II: Total Assets every year has not recorded higher growth rate as compared to the previous year for the period under review.
- 76.** Statement I: The COGS to Revenue ratio is the lowest in the year 2006.
Statement II: The COGS to Revenue ratio is the highest in the year 2007.
- 77.** Statement I: The Gross Profit to Revenue ratio is the lowest in the year 2007.
Statement II: The Gross Profit to Revenue ratio is the highest in the year 2005.
- 78.** Statement I: Total Assets to Total Liabilities Ratio is the lowest in the year 2007.
Statement II: Total Assets to Total Liabilities Ratio is the highest in the year 2005.

Directions for questions 79 to 81: In a family picnic, Shikhar, Dolly, Snehal, Akash, Swarn and Amar were playing a game. Shikhar's father, mother and uncle were in the group. Group has only two females. Dolly, the mother of Shikhar got more points than Shikhar's father. Akash got more points in the game than Swarn but less than that of Amar. Niece of Swarn got the lowest points. Father of Shikhar got more points than Amar but could not win the game.

79. Who was the lady in the group besides Dolly?

- (1) Snehal (2) Akash (3) Swarn (4) None of these

80. Who stood second in the game?

- (1) Shikhar (2) Dolly (3) Snehal (4) None of these

81. Who won the game?

- (1) Shikhar (2) Dolly (3) Amar (4) Akash

Directions for questions 82 to 85: In a post-induction training placement of an Export Oriented Unit, five new recruits Aditya, Aryan, Harish, Puru and Sheetal are to be placed in departments of Corporate Planning, Information Technology, Finance, HR and Exports. Aditya is recommended by Corporate Planning and Exports Departments. Aryan gets recommendations from Information Technology and HR Departments. Harish is recommended by Corporate Planning and Exports Departments. Puru makes it to Information Technology, Finance, Personnel as well as Exports. Only Sheetal could not get recommended by more than one department and it is also known that every department recommended at least two recruits from this group.

As per the placement policy of the company, departments have certain educational preferences while recommending available candidates. The department of:

- Exports prefers MIBs as most suitable
- Information Technology stresses more on a qualification of MCA
- Finance prefers an MFC
- HR gives top preference to applicants having a PMIR
- Corporate Planning prefers an MBA

82. Which of the following is an MBA?

- (1) Aditya alone (2) both Aditya and Aryan
(3) both Aditya and Harish (4) None of these

83. For which department is Sheetal shortlisted?

- (1) Information Technology (2) Finance (3) HR (4) Exports

84. The qualification which is most common among the new recruits:

- (1) MIB (2) MFC (3) MCA (4) MBA

85. The recruit who is an MCA as well as MFC?

- (1) Aditya (2) both Aditya and Aryan
(3) both Aditya and Harish (4) Puru

Directions for questions 86 and 87:

A + B means A is the mother-in-law of B; A - B means A is the daughter-in-law of B; and A*B means A is the sister-in-law of B.

86. P*Q+R means:

- (1) P is the mother-in-law of Q
- (2) P is the mother-in-law of Rand Q
- (3) R is the daughter-in-law
- (4) None of the above

87. Given X - Y + Z, which-of the following is certainly true?

- (1) Y is the mother-in-law
- (2) X is the mother-in-law
- (3) Z is the mother-in-law
- (4) None of these

Directions for questions 88 to 90:

Seven workmen named Amrita, Bhushan, Ronnie, Deepak, George, Prem and Gunjan are sitting in a circle in a garment fabrication factory. Amrita, Bhushan, Ronnie, Deepak, Prem and Gunjan are sitting at equal distances from each other. Ronnie is sitting two places to the left of Prem, who is sitting one place to the right of Deepak. Amrita forms an angle of 90 degrees from George and an angle of 120 degrees from Bhushan. Bhushan is just opposite Gunjan, who is sitting to the left of George.

88. Who is the only person sitting between Ronnie and Bhushan?

- (1) Prem
- (2) Deepak
- (3) George
- (4) Amrita

89. George is not sitting at equal distance from:

- (1) Deepak and Amrita
- (2) Ronnie and Prem
- (3) Bhushan and Prem
- (4) None of these

90. Which of the following statements is *not* correct?

- (1) Prem is between Bhushan and Amrita
- (2) Bhushan is two places away from Gunjan
- (3) George is sitting opposite Prem
- (4) None of the above

Directions for questions 91 and 92:

In each of these questions, jumbled alphabets of a meaningful word are given. You are to rearrange the alphabets and select from the given alternatives the word which is almost opposite in, meaning to the re-arranged word.

91. R B A N O E H C E R :

- (1) apprehension
- (2) aversion
- (3) appreciation
- (4) liking

92. I O G T C N R Y U :

- (1) inconsistency (2) irregularity
(3) disagreement (4) mismatch

93. Pointing to a photograph, Devika says, "This man's son's son's son is my grandson". What is Devika's husband's relation with the man in the photograph?

- (1) Son (2) Nephew
(3) Father (4) Grandson

Directions for questions 94 to 97:

There are two circular concentric rings, with 26 sectors on each ring marked A to Z. Sectors on outer and inner circles match in a perfect size fit. Whereas the outer ring contains the sectors marked clockwise, the inner ring has sectors marked anticlockwise, such that sectors marked A on both the circles are coinciding at present, B on the outer circle coincides with Z on the inner circle and so on.

94. Apart from alphabet A, how many more alphabets coincide at present?

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

95. How many vowels on the sectors in the outer circle have vowels on the corresponding sectors on the inner circle?

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

96. If the inner circle is rotated anti-clockwise by one sector from the original position, how many alphabets will coincide on both the circles?

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

97. If the outer circle is rotated clockwise by two sectors from the original position, how many alphabets will coincide on both the circles?

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

Directions for questions 98 to 100:

Six directors of a private limited company namely A, B, C, D, E and F are playing Golf. A and E are brothers. F is the sister of E. C is the only son of A's uncle. B and D are the daughters of the brother of C's father.

98. How is C related to F?

- (1) Cousin (2) Brother
(3) Son (4) Uncle

99. How many male executives are there in the group?

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

100. How many of these executives are real brothers?

- (1) Two (2) Three
(3) Cannot be said (4) None of these

SECTION 3 (50 Questions)

Directions for questions 101 to 103:

The underlined part of the statements could be corrected or expressed more appropriately using one of the four options that follow.

101. In the Netherlands, a larger percentage of the gross national product is spent on defence of their coasts from rising seas than is spent on military defence in the United States.
- (1) In the Netherlands, a larger percentage of the gross national product is spent on defence of their coasts from rising seas than is spent on military defence in the United States
 - (2) In the Netherlands they spend a larger percentage of their gross national product on defending their coasts from rising seas than the United States does on military defence
 - (3) The Netherlands spends a larger percentage of its gross national product defending its coasts from rising seas than the military defence spending of the United States
 - (4) The Netherlands spends a larger percentage of its gross national product on defending its coasts from rising seas than the United States does on military defence.
102. While some propose to combat widespread illegal copying of computer programs by attempting to change people's attitudes toward pirating, others by suggesting reducing software prices to decrease the incentive for pirating, and still others by calling for the prosecution of those who copy software illegally.
- (1) by suggesting reducing software prices to decrease the incentive for pirating, and still others by calling
 - (2) suggest reducing software prices to decrease the incentive for pirating, and still others are calling
 - (3) by suggesting the reduction of software prices to decrease the incentive for pirating and still others call
 - (4) suggest the reduction of software prices for decreasing the incentive for pirating, and still others call
103. Proponents of artificial intelligence say they will be able to make computers that can understand English and other human languages recognize objects, and reason as an expert does-computers that will be used to diagnose equipment breakdowns, deciding whether to authorize a loan, or other purposes such as these.
- (1) as an expert does, which may be used for purposes such as diagnosing equipment breakdowns or deciding whether to authorize a loan
 - (2) like an expert-computers that will be used for such purposes as diagnosing equipment breakdowns or deciding whether to authorize a loan
 - (3) like an expert, the use of which would be for purposes like the diagnosis of equipment breakdowns or the decision whether or not a loan should be authorized
 - (4) like an expert, to be used to diagnose equipment breakdowns, deciding whether to authorize a loan or not, or the like

Directions for question nos. 104 and 105:

Which among the following set of words appropriately fits in the blank spaces in the sentence?

104. "India is an immensely country with manypursuits, vastly conviction, widelycustoms and a feast of view points".
- (1) diverse, distinct, disparate, divergent, veritable
 - (2) divergent, disparate, distinct, veritable, diverse
 - (3) distinct, disparate, diverse, divergent, veritable

(4) diverse, divergent, distinct, disparate, veritable

105. "Indian texts include religious expositions and defence. They also contain lengthy and debates among different religious schools. But there are, in addition, a great many between defenders of religiosity on one side and advocates of general on the other".

- (1) elaborate, protracted, sustained, controversies, scepticism
- (2) protracted, sustained, controversies, scepticism, elaborate
- (3) elaborate, protracted, controversies, scepticism, sustained
- (4) elaborate, sustained, protracted, scepticism, controversies

Directions for questions 106 and 107:

The pair of words in capitals is followed by four pairs of related words/phrases, which best express a relationship similar to that expressed in the original pair.

106. STYGIAN: DARK

- (1) Abysmal : Low
- (2) Cogent: Contentious
- (3) Fortuitous : Accidental
- (4) Cataclysmic : Doomed

107. CONTIGUOUS: ABUT

- (1) Possible: Occur
- (2) Synthetic: Create
- (3) Simultaneous: Coincide
- (4) Constant: Stabilise

Directions for questions 108 to 111:

Questions consist of sentences part of which is underlined. Following each sentence are four different ways of wording the underlined part labelled (1) through (4). Select the best alternative.

108. Men's interest in developing a cure for cancer have promoted the rapid advances in the abstruse field now known as Genetic Engineering.

- (1) Men's interest in developing a cure for cancer has promoted.
- (2) That men are interested in developing a cure for cancer have promoted
- (3) Interest in developing a cure for cancer has promoted
- (4) Men's interest in developing cure for cancer has promoted

109. A little known danger of potent hallucinogens such as lysergic acid deethylamide-25 is that not only is the user immediately disoriented, but also he will experience significant ego suppression for a period of three weeks as well.

- (1) also he will experience significant ego suppression for a period of three weeks
- (2) also there will be a three-week period of ego suppression as well
- (3) the ego is suppressed for a period of three weeks as well
- (4) but the user's ego is suppressed for a period of three weeks in addition

110. By the time peace and happiness will have come to the planet, many lives will be wasted.

- (1) come to the planet, many lives will have been wasted
- (2) will have come to the planet, many lives will have been wasted
- (3) shall have come to the planet, many lives shall be wasted
- (4) would have come to the planet, many lives would have been wasted

111. The leader of the Neanderthal tribe rarely hunted for food, and because of it was never acknowledged as a great hunter.

- (1) Because the leader of the Neanderthal tribe rarely hunted for food, he
- (2) In that he rarely hunted for food, the leader of the Neanderthal tribe was
- (3) Rarely hunting for food was the reason that the leader of the Neanderthal tribe
- (4) Hunts were rare, and because of this the leader of the Neanderthal tribe

Directions for questions 112 to 114:

Questions consist of sentences, which are divided into four parts, labelled (1) through (4). Only one part in each sentence is not acceptable in standard written English. Identify that part in each of the sentences which contains the error.

112.

- (1) He is the sort of person
- (2) who I feel
- (3) would be capable of
- (4) making these kind of mistakes

113.

- (1) Sumit found the new job
- (2) more preferable to the one
- (3) he had left
- (4) so he decided to continue for a while.

114.

- (1) Prakash said that,
- (2) if he were elected president
- (3) and that if funds were available,
- (4) he would create a national theatre.

Directions for questions 115 to 124:

In the following set of questions, a word in capital is followed by four options. From the options, find the appropriate word that reflects the **closest or similar meaning** (synonym) to the given word.

115. ACQUIESCENCE:

- (1) Quiet Submission
- (2) Great Diligence
- (3) Intense Confrontation
- (4) Subtle Variation

116. WHEEDLE:

- (1) Emaciated
- (2) Flattery
- (3) Purge
- (4) Scant

117. IMMISERATION

- | | |
|--------------------|--------------------|
| (1) Immigration | (2) Immersion |
| (3) Impoverishment | (4) Discrimination |

118. BEATITUDE:

- | | |
|---------------|--------------|
| (1) Accursed | (2) Cleansed |
| (3) Retreated | (4) Blessed |

119. BEDIZEN:

- | | | | |
|------------------|---------------------|--------------------|----------------------|
| (1) Nomadic Arab | (2) Gaudily Dressed | (3) Honest Citizen | (4) Tumultuous Event |
|------------------|---------------------|--------------------|----------------------|

120. CACHINNATE:

- | | | | |
|----------------|-----------------|-----------------|---------------|
| (1) Sing Aloud | (2) Speak Aloud | (3) Laugh Aloud | (4) Cry Aloud |
|----------------|-----------------|-----------------|---------------|

121. CANOODLE:

- | | | | |
|------------|--------------|------------|----------------|
| (1) Cuddle | (2) Canonise | (3) Brazen | (4) Articulate |
|------------|--------------|------------|----------------|

122. TUMESCENT:

- | | | | |
|------------|-----------|-------------|---------------|
| (1) Shrink | (2) Annoy | (3) Engorge | (4) Enlighten |
|------------|-----------|-------------|---------------|

123. TWADDLE:

- | | | | |
|-----------|----------------|-------------|------------|
| (1) Smart | (2) Indecisive | (3) Obscene | (4) Waffle |
|-----------|----------------|-------------|------------|

124. ENNUI:

- | | | | |
|---------------|--------------|-------------|------------|
| (1) Lassitude | (2) Confront | (3) Enthuse | (4) Entrap |
|---------------|--------------|-------------|------------|

Directions for questions 125 to 134:

In the following set of questions, a word in capital is followed by four options. From the options, find the appropriate word that reflects the Opposite / Contradictory meaning (Antonym) to the given word.

125. CANTANKEROUS:

- | | | | |
|---------------|------------------|-------------|---------------|
| (1) Irascible | (2) Co-operative | (3) Adamant | (4) Captivate |
|---------------|------------------|-------------|---------------|

126. EMBLAZON:

- | | | | |
|-----------|------------|------------|------------|
| (1) Extol | (2) Cinder | (3) Embalm | (4) Subtle |
|-----------|------------|------------|------------|

127. INVEIGH:

- | | | | |
|--------------|---------------|-------------|-------------|
| (1) Harangue | (2) Celebrate | (3) Endorse | (4) Neglect |
|--------------|---------------|-------------|-------------|

128. LEAVEN:

- (1) Static (2) Transform (3) Coherent (4) Diffuse

129. OPPROBRIUM

- (1) Ignominy (2) Opportunity (3) Obituary (4) Honour

130. PARSIMONIOUS:

- (1) Extravagant (2) Penurious (3) Partial (4) Passionate

131. INSIDIOUS:

- (1) Deceitful (2) Apparent (3) Insincere (4) Tepid

132. RAPACIOUS:

- (1) Avaricious (2) Satiated (3) Decorated (4) Subconscious

133. SOPORIFIC:

- (1) Somnolent (2) Unromantic (3) Alert (4) Slumber

134. UBIQUITOUS :

- (1) Universal (2) Rare (3) Ensnare (4) Conscientious

135. Which among the following words (adjectives) does not have a Latin origin?

- (1) *Ab Initio* (2) *Ante Mortem* (3) *Avant Garde* (4) *Biennial*

136. Which among the following words (adjectives) has a Greek origin?

- (1) Abhorrence (2) Acoustical (3) Addicted (4) Amenable

137. If 'Asinine' is for 'Donkey', then

- (1) 'Vulpine' is for 'Fox'
(2) 'Vulpine' is for 'Vulture'
(3) 'Avian' is for 'Cow'
(4) 'Avian' is for 'Dove'

138. If 'Stallion' is for 'Mare', then

- (1) 'Ewe' is for 'Ram'
(2) 'Ram' is for 'Ewe'
(3) 'Goose' is for 'Gander'
(4) 'Sow' is for 'Boar'

139. Which word among the following is *not* an 'Eponym'?
- (1) Boycott (2) Cardigan (3) Sandwich (4) Fresco
140. The months 'January to December' represent form of calendar.
- (1) Modern English
(2) Modern French
(3) Gregorian
(4) Roman-Greek
141. Words 'Kyogen', 'Kabuki', 'Duologue', 'Masque' and 'Pantomime' represent
- (1) Schools of Theology
(2) Types of Play/Drama
(3) Forms of Painting/Pictorial art
(4) Parts of photographic equipment
142. Words 'Chanson', 'Clerihew', 'Dirge', 'Haiku', and 'Tanka' represent:
- (1) Types of Poems/Songs
(2) Forms of Theatre/Cinema
(3) Names of Clergymen/Priests
(4) Types of storybooks
143. Which one of the following words is appropriately written (spelled) here?
- (1) Black Board (2) Black Box (3) Black Mail (4) Black Smith
144. Which among the following set of words are 'nouns' only?
- (1) Adage, Acolyte, Blame, Billow
(2) Blemish, Assert, Abut, Chasten
(3) Acolyte, Foible, Bigotry, Denizen
(4) Elixir, Ennui, Farcical, Flagrant
145. Which among the following set of words are 'adjectives' only?
- (1) Abstruse, Flagrant, Grandiose, Obdurate
(2) Apposite, Farcical, Acquaint, Ghastly
(3) Oblique, Observant, Paradoxical, Panorama
(4) Acknowledge, Potent, Posterity, Prudent
146. Which among the following set of words is 'noun, verb and adjective' as well?
- (1) Blanket, Object, Panic, Servile
(2) Fancy, Plane, Blind, Assert
(3) Billow, Crack, Cross, Elixir
(4) Bluff, Desert, Lead, Counter

- 147.** Wisdom of Thriftiness could be best surmised from which one of the following idioms?
- (1) Feast today, Famine tomorrow
 - (2) Here today, gone tomorrow
 - (3) Like there's no tomorrow
 - (4) A stitch in time saves nine
- 148.** A politician who is an opportunist without any scruples or ethics, who wants to represent a place they have no connection with, is best described in which of the following idioms ?
- (1) Dog-whistle politics
 - (2) Carpet Beggar
 - (3) Fifth Columnist
 - (4) Pork Barrel
- 149.** Meaning of the proverb "You can't tell a book by its cover" is best described under which one of the following?
- (1) Old wine could have been bottled inside a new bottle
 - (2) When you allot work to someone, you may not know whether he would, complete it
 - (3) Don't rush your work
 - (4) Character of the person cannot be judged by his/her looks
- 150.** Meaning of the proverb "You can take the boy out of the country but you can't take the country out of the boy" could be best described under which one of the following?
- (1) Wherever people may go, they will always come back to their families
 - (2) Despite living in the USA for several years, an expatriate Indian will retain his cultural roots and values
 - (3) Immigrants have more affection to their country of origin
 - (4) You can easily change the cultural values of an immigrant

SECTION 4 (50 Questions)

151. In counting n coloured balls, some red and some black, it was found that 49 of the first 50 counted were red. Thereafter, 7 out of every 8 counted were red. If, in all, 90% or more of the balls counted were red, the maximum value of n is :
- (1) 225 (2) 210 (3) 200 (4) 180
152. Two men at points R and S, 76 kilometres apart, set out at the same time to walk towards each other. The man at R walks uniformly at the rate of $4\frac{1}{2}$ kilometres per hour; the man at S walks at the constant rate of $3\frac{1}{4}$ kilometres per hour for the first hour, at $3\frac{3}{4}$ kilometres per hour for the second hour, and so on, in arithmetic progression. If the men meet x kilometres nearer R than S in an integral number of hours, then x is :
- (1) 10 (2) 8 (3) 6 (4) 4
153. A gives B as many rupees as B has and C as many rupees as C has. Similarly, B then gives A and C as many rupees as each then has. C, similarly, then gives A and B as many rupees as each then has. If each finally has 16 rupees, with how many rupees does A start?
- (1) 26 (2) 28 (3) 30 (4) 32
154. Six straight lines are drawn in a plane with no two parallel and no three concurrent. The number of regions into which they divide the plane is :
- (1) 16 (2) 20 (3) 22 (4) 24
155. A particle projected vertically upward reaches, at the end of t seconds, an elevation of s feet, where $s = 160t - 16t^2$. The highest elevation is :
- (1) 800 (2) 640 (3) 400 (4) 320
156. Given the line $y = \frac{3}{4}x + 6$ and a line L parallel to the given line and 4 units from it. A possible equation for L is:
- (1) $y = \frac{3}{4}x + 1$ (2) $y = \frac{3}{4}x$ (3) $y = \frac{3}{4}x - \frac{2}{3}$ (4) $y = \frac{3}{4}x - 1$
157. A person starting with 64 rupees and making 6 bets, wins three times and loses three times, the wins and losses occurring in random order. The chance for a win is equal to the chance for a loss. If each wager is for half the money remaining at the time of the bet, then the final result is :
- (1) a gain of Rs. 27
(2) a loss of Rs. 37
(3) neither a gain nor a loss
(4) a gain or a loss depending upon the order in which the wins and losses occur

158. If x is a number satisfying the equation $\sqrt[3]{x+9} - \sqrt[3]{x-9} = 3$, then x^2 is between:
 (1) 55 and 65 (2) 65 and 75 (3) 75 and 85 (4) 85 and 95
159. What is the value of $[\log_{10}(5 \log_{10} 100)]^2$?
 (1) 25 (2) 10 (3) 2 (4) 1
160. The graph of $x^2 - 4y^2 = 0$ is :
 (1) a parabola
 (2) an ellipse
 (3) a pair of straight lines
 (4) none of these
161. A jobber buys an article at "Rs. 24 less $12\frac{1}{2}\%$ ". He then wishes to sell the article at a gain of $33\frac{1}{3}\%$ of his cost after allowing a 20% discount on his marked price. At what price, in rupees, should the article be marked?
 (1) 30.00 (2) 33.60 (3) 40.00 (4) none of these
162. Given $2^x = 8^{y+1}$ and $9^y = 3^{x-9}$; the value of $x + y$ is :
 (1) 18 (2) 21 (3) 24 (4) 27
163. A farmer bought 749 sheep. He sold 700 of them for the price paid for the 749 sheep. The remaining 49 sheep were sold at the same price per head as the other 700. Based on the cost, the percent gain on the entire transaction
 (1) 6.5 (2) 6.75 (3) 7.0 (4) 7.5
164. Two numbers are such that their difference, their sum, and their product are to one another as 1 : 7 : 24. The product of the two numbers is :
 (1) 6 (2) 12 (3) 24 (4) 48
165. In a ten-kilometres race First beats Second by 2 kilometres and First beats Third by 4 kilometres. If the runners maintain constant speeds throughout the race, by how many kilometres does Second beat Third?
 (1) $2\frac{1}{4}$ (2) $2\frac{1}{2}$ (3) $2\frac{3}{4}$ (4) 3
166. If $\frac{a+b}{b+c} = \frac{c+d}{d+a}$, then :
 (1) a must equal c
 (2) $a + b + c + d$ must equal zero
 (3) either $a = c$ or $a + b + c + d = 0$, or both
 (4) $a(b + c + d) = c(a + b + d)$

167. A watch loses $2\frac{1}{2}$ minutes per day. It is set right at 1 P.M. on March 15. Let n be the positive correction, in minutes, to be added to the time shown by the watch at a given time. When the watch shows 9 A. M. on March 21, n equals :

- (1) $14\frac{14}{23}$ (2) $14\frac{1}{14}$ (3) $13\frac{101}{115}$ (4) $13\frac{83}{115}$

168. The number of real values of x satisfying the equation $2^{2x^2-7x+5} = 1$

- (1) 1 (2) 2 (3) 4 (4) more than 4

169. Consider the statements :

I. : $(\sqrt{-4})(\sqrt{-16}) = \sqrt{(-4)(-16)}$

II. : $\sqrt{(-4)(-16)} = \sqrt{64}$

III. : $\sqrt{64} = 8$

Of these the following is incorrect:

- (1) none (2) I only (3) II only (4) III only

170. The symbol 25_b represents a two-digit number in base b . If the number 52_b is double the number 25_b , then b is :

- (1) 7 (2) 8 (3) 9 (4) 11

171. Let the set consisting of the squares of the positive integers be called u ; thus u is the set 1, 4, 9, If a certain operation on one or more members of the set always yields a member of the set, we say that the set is closed under that operation. Then u is closed under :

- (1) addition
 (2) multiplication
 (3) division
 (4) none of these

172. Let $S = (x - 1)^4 + 4(x - 1)^3 + 6(x - 1)^2 + 4(x - 1) + 1$. Then S equals :

- (1) $(x - 2)^4$
 (2) $(x - 1)^4$
 (3) x^4
 (4) $(x + 1)^4$

173. Let r be the result of doubling both the base and the exponent of a^b , $b \neq 0$. If r equals the product of a^b by x^b , then x equals :

- (1) $2a$ (2) $4a$ (3) 2 (4) 4

- 174.** Two tangents are drawn to a circle from an exterior point A; they touch the circle at points B and C, respectively. A third tangent intersects segment AB in P and AC in R, and touches the circle at Q. If $AB = 20$, then the perimeter of triangle APR is :
- (1) 42
 (2) 40.5
 (3) 40
 (4) not determined by the given information
- 175.** Consider the graphs of $y = 2 \log x$ and $y = \log 2x$. We may say that :
- (1) They intersect in one point only.
 (2) They intersect in two points only.
 (3) They intersect in a finite number of points but more than two.
 (4) They coincide.
- 176.** The set of points satisfying the pair of inequalities $y > 2x$ and $y > 4 - x$ is contained entirely in quadrants :
- (1) I and II (2) II and III (3) I and III (4) III and IV
- 177.** If $3x^3 - 9x^2 + kx - 12$ is divisible by $x - 3$, then it is also divisible by :
- (1) $3x^2 - 4$ (2) $3x^2 + 4$ (3) $3x - 4$ (4) $3x + 4$
- 178.** Points P and Q are both in the line segment AB and on the same side of its midpoint. P divides AB in the ratio 2 : 3, and Q divides AB in the ratio 3 : 4. If $PQ = 2$, then the length of AB is :
- (1) 70 (2) 75 (3) 80 (4) 85
- 179.** Thirty-one magazines are arranged from left to right in order of increasing prices. The price of each magazine differs by Rs. 2 from that of each adjacent magazine. For the price of the magazine at the extreme right a customer can buy the middle magazine and an adjacent one. Then:
- (1) The adjacent magazine referred to is at the left of the middle magazine.
 (2) The middle magazine sells for Rs. 36.
 (3) The most expensive magazine sells for Rs. 64.
 (4) None of these is correct.
- 180.** If $\log_{10} 2 = a$ and $\log_{10} 3 = b$, then $\log_5 12$ equals :
- (1) $\frac{a+b}{1+a}$ (2) $\frac{2a+b}{1+a}$ (3) $\frac{a+2b}{1+a}$ (4) $\frac{2a+b}{1-a}$
- 181.** In racing over a given distance d at uniform speed, A can beat B by 20 metres, B can beat C by 10 metres, and A can beat C by 28 metres. Then d , in metres, equals :
- (1) 58 (2) 100 (3) 116 (4) 120

182. Any five points are taken inside or on a square of side 1. Let a be the smallest possible number with the property that it is always possible to select one pair of points from these five such that the distance between them is equal to or less than a . Then a is :

- (1) $\frac{\sqrt{3}}{3}$ (2) $\frac{\sqrt{2}}{2}$ (3) $\frac{2\sqrt{2}}{3}$ (4) 1

183. Find the minimum value of $\sqrt{x^2 + y^2}$ if $5x + 12y = 60$.

- (1) $\frac{60}{13}$ (2) $\frac{13}{5}$ (3) $\frac{13}{12}$ (4) 1

184. The expression $\sqrt{\frac{4}{3}} - \sqrt{\frac{3}{4}}$ is equal to :

- (1) $\frac{\sqrt{3}}{6}$ (2) $-\frac{\sqrt{3}}{6}$ (3) $\frac{\sqrt{-3}}{6}$ (4) $\frac{5\sqrt{3}}{6}$

185. Given the set of n numbers, $n > 1$, of which one is $1 - (1/n)$, and all the others are 1. The arithmetic mean of the n numbers is

- (1) 1 (2) $n - \frac{1}{n}$ (3) $n - \frac{1}{n^2}$ (4) $1 - \frac{1}{n^2}$

186. A man drives 150 kilometres to the seashore in 3 hours and 20 minutes. He returns from the shore to the starting point in 4 hours and 10 minutes. Let r be the average rate for the entire trip. Then the average rate for the trip going exceeds r , in kilometres per hour, by :

- (1) 5 (2) $4\frac{1}{2}$ (3) 4 (4) 2

187. When $(1 - \frac{1}{a})^6$ is expanded, the sum of the last three coefficients is :

- (1) 22 (2) 11 (3) 10 (4) -10

188. If $a = \log_8 225$ and $b = \log_2 15$, then a , in terms of b , is :

- (1) $b/2$ (2) $2b/3$ (3) b (4) $3b/2$

189. The angles of a pentagon are in arithmetic progression. One of the angles, in degrees, must be :

- (1) 108 (2) 90 (3) 72 (4) 54

190. Three machines P, Q and R, working together, can do a job in x hours. When working alone, P needs an additional 6 hours to do the job; Q, one additional hour; and R, x additional hours. The value of x is

- (1) $\frac{2}{3}$ (2) $\frac{11}{12}$ (3) $\frac{3}{2}$ (4) 2

191. For any real value of x the maximum value of $8x - 3x^2$ is :

- (1) $\frac{8}{3}$ (2) 4 (3) 5 (4) $\frac{16}{3}$

192. Which of the following sets of x -values satisfy the inequality $2x^2 + x < 6$?

- (1) $-2 < x < \frac{3}{2}$
 (2) $x > \frac{3}{2}$ or $x < -2$
 (3) $x < \frac{3}{2}$
 (4) $\frac{3}{2} < x < 2$

193. If $x_{k+1} = x_k + \frac{1}{2}$ for $k = 1, 2, \dots, n - 1$ and $x_1 = 1$, find $x_1 + x_2 + \dots + x_n$.

- (1) $\frac{n+3}{3}$ (2) $\frac{n^2-1}{2}$ (3) $\frac{n^2-n}{4}$ (4) $\frac{n^2+3n}{4}$

194. A man on his way to dinner shortly after 6 : 00 p.m. observes that the hands of his watch form an angle of 110° . Returning before 7 : 00 p.m. he notices that again the hands of his watch form an angle of 110° . The number of minutes that he has been away is :

- (1) $36\frac{2}{3}$ (2) 40 (3) 42 (4) 42.4

195. If both x and y are integers, how many solutions are there of the equation $(x - 8)(x - 10) = 2^y$?

- (1) 1 (2) 2 (3) 3 (4) more than 3

196. Which one of the following points is not on the graph of $y = \frac{x}{x+1}$?

- (1) (0, 0) (2) $(-\frac{1}{2}, -1)$ (3) $(\frac{1}{2}, \frac{1}{3})$ (4) (-1, 1)

197. For what value(s) of k does the pair of equations $y = x^2$ and $y = 3x + k$ have two identical solutions?

- (1) $-\frac{4}{9}$ (2) $\frac{9}{4}$ (3) $-\frac{9}{4}$ (4) $\frac{9}{4}$ or $-\frac{9}{4}$

198. Triangle ABD is right-angled at B. On AD there is a point C for which $AC = CD$ and $AB = BC$. The magnitude of angle DAB, in degrees, is :

- (1) $67\frac{1}{2}$ (2) 60 (3) 45 (4) 30

199. Given the four equations:

(a) $3y - 2x = 12$, (b) $-2x - 3y = 10$, (c) $3y + 2x = 12$, (d) $2y + 3x = 10$.

The pair representing perpendicular lines is:

- (1) (a) and (d) (2) (a) and (c) (3) (a) and (b) (4) (b) and (d)

200. Three numbers a , b , c , non-zero, form an arithmetic progression. Increasing a by 1 or increasing c by 2 results in a geometric progression. Then b equals :

- (1) 16 (2) 14 (3) 12 (4) 10

Rough Work

Rough Work