MBA - GUESS PAPER

★ ANALYSIS OF BUSINESS SITUATION ★ COMPREHENSION ★ MATHS (Graduate Level)
★ DATA SUFFICIENCY (Mathematics) ★ ENGLISH USAGE

ANALYSIS OF BUSINESS SITUATION

Directions : There are two passages in this Section. Read each one; read also the directions for answering questions under the passage.

FIRST PASSAGE

The home office of the Jan Insurance Company was divided into several departments, each consisting of over 200 persons. This problem concerns Department K, which employs mostly skilled men. Almost, every man within the department works without direct supervision, although each is under the general supervision of a section head. Each employee has definite duties to perform and definite lines of responsibility. These duties do not necessarily follow any definite sequence throughout the day, although the work must be completed on schedule.

The head of Department K retired, and no qualified successor was available in the department. Finally the management hired a man from another company. This man had satisfactory over-all qualifications, but his experience was in a position which was different from the one to which he was appointed. In general, the employees opposed selection of the new department head, because they felt some of their own number were qualified. Shortly after becoming head of the department, the new executive issued a directive through his assistant that effective immediately each employee within the department would account for his time hour for hour throughout the working day. Each person would give this time report to his section head, who would in turn send a report to the department head. The reaction was immediate and negative. A majority of the working force were intelligent men of high caliber who had been with the Jan Insurance Company from ten to thirty years. Their judgement on utilization of time during the day had seldom before been questioned. The younger employees and those who had been with the organization for only a short time took the attitude, "I will not observe the directive. I will resign first." The older men and those who had only a few years until retirement, took a strongly negative attitude towards the directive, refusing to accept it for its apparent lack or reason. They argued that they never had reported their time, that other departments did not now have to report time and that Department K would not become an exception to the rule.

The section heads had no recourse other than to report to the new department head that the men refused to co-operate with the directive. The department head threatened to render his resignation to his superior, the vice-president, effective at once. The president of the Jan Insurance Company received trouble from the vice-president. The president immediately intervened and supposedly settled the matter by soothing hot tempers with a diplomatic speech to the section heads. He then dropped the matter completely. The department head felt that he was left with no recourse. Many employees still did not report their time, and their section heads asked the department head what should be done.

DATA EVALUATION QUESTIONS

Directions : Based on your analysis of the business situation described above, classify each of the following elements, given as questions 1-5, in one of the five categories (1)-(5). Mark.

1. If the item is a MAJOR OBJECTIVE in making the decision-the result desired by the decision maker;

2. If the item is a MAJOR FACTOR in arriving at the decision-a primary, a consideration spelled out in the passage, that influences the decision;

3. If the item is a MINOR FACTOR in making the decision-a less important consideration in the decision;

4. If the item is a MAJOR ASSUMPTION-a conclusion reached by the executive not necessarily supported by the factors present;

5. If the item is an UNIMPORTANT ISSUE-a consideration not directly related to the problem.

Question :

1. **Department K head and subordinate relations.**
2. **The work force was of high caliber.**
3. **The company had several department.**
4. **Employees have no direct supervision.**
5. **The head of Department K retired.**

DATA APPLICATION QUESTIONS

Directions : Answer each of the following questions using information contained in the passage.

Mark (1) : If the answer is I only.
Mark (2) : If the answer is III only.
Mark (3) : If the answer is I and II only.
Mark (4) : If the answer is II and III only.
Mark (5) : If the answer is I, II and III.

6. **According to the passage, which of the following employees threatened to resign?**
   I. The new department head.
   II. Sections head.
   III. The vice-president.

7. **A new department head was needed because the previous one.**
   I. Was fired
   II. Was promoted
   III. Retired

8. **The president's talk to section heads**
   I. Solved the company's problem
   II. Soothed "hot tempers"
   III. Delayed a solution

9. **Department K personnel refused to accept time reports because**

   I. They resented the new department head.
   II. Other departments did not have time reports.
   III.They never had to report time before.

10. **It can be inferred from the passage that the department head's difficulties with his subordinates was due to**

   I. A lack of communication.
   II. His promotion from outside the company.
   III.His poor mannerisms.

SECOND PASSAGE

THE UNITED FRONT Government's faith in reforms is apparently absolute. Reforms are the key to growth; lack of them can undermine the process. This is the hypothesis sketched by the Economic Survey tabled in Parliament on Tuesday. While the seven percent growth achieved in the past three years is linked to the slackening of reforms before and during the elections last year. Now that the reforms are on the road again, the Survey expects the economy to regain speed.

When the Government assumed office, it had perceived three challenges before it: how to control the fiscal deficit, how to improve infrastructure services and how to increase employment. Seven months on barring some success on the fiscal front, the challenges remain as daunting as ever.

The fiscal for 1996-97 may just be held at the promised 5 percent of GDP after accounting for the growing oil pool deficit at over Rs.15,000 crores. Oil pool arrears have been shifted to the banking system through loans and external borrowings by oil companies. The Survey agrees when it says, "though this deficit does not directly affect the gross fiscal deficit of the Central Government, it adds to the 'quasi-fiscal deficit' of the public sector as a whole. And the cumulation of arrears due to domestic oil companies compromises their financial strength and operation effectiveness.

There is no economically viable alternative to adjusting petroleum prices to reflect the impact of international oil price. Furthermore, if we are to reap the benefits of increased investment and efficient production in all stages of petroleum sector (ranging from exploration and development to refining and distribution), we must carry out a phased dismantling of the existing administered price mechanism in this sector.

"The time for initiating this reform is already overdue". Total gross domestic saving touched a high of 25.6 percent of GDP in 1995-96, topping the previous peak of 24.9 percent of GDP in 1994-95. "This seems to vindicate the reform strategy of encouraging saving by expanding saving and investment opportunities, rather then giving special incentives", says the Survey.

Gross domestic investment (adjusted), as a proportion of GDP at current prices, rose even faster than gross domestic saving in 1995-96 to a high of 27.4 percent from 26 percent in the previous year. Gross fixed capital formation, which is more important for productivity and growth, exceeded the 1994-95 peak of 21.9 percent by a substantial 2.2 percentage points to reach a new peak of 24.1 percent of GDP in 1995-96.

"Private sector investment appears to have responded vigorously to the policy of promoting competition, removing policy distortions and hurdles and improving access to factors of production (e.g., technology, capital)", contends the Survey.

The capital goods sector "appears to have adjusted rapidly" to quick cuts in tarriff. On consumer durables, the Survey says

"Further growth will depend on increased cost competitiveness, which requires a fuller exploitation of the comparative advantage that India has in the production of (skilled and unskilled) labour-intensive parts. It is possible that the slowing of non-oil imports is partly due to the maturing of the consumer durables industry". Tariff cuts hurt none and benefit all.

For the present, the economy has decelerated a wee bit and 1996-97 may see a marginal drop in growth at 6.8 percent. But the contratrends need not occupy the Finance Ministry as priming reforms may be more sensible.

The farm sector needs to be rid of all controls: and the resources for developing rural infrastructure could come from the larger and better-off farmers, as suggested by the Survey. Ambiguities on private investment in civil aviation, telecommunication and other sectors need to be erased, as the Survey candidly admits. No doubt, betting on private enterprise may have paid off well in the last few years as the men scripting the Survey point out. But the Government would do well to realise that the dynamism may be sputtering some what.

There is no disputing the assertion in the Survey that, "over the last 5-6 years the Indian economy has demonstrated enviable resilience and buoyancy as a result of wide-ranging economic reforms and closer integration with the world economy. On the whole, those dimensions of the economy have performed best where reform efforts have been most through and far-reaching.

We must learn from this experience as we look ahead to meet the challenges of the future". Even if one cannot quite agree that there is "growing participation of virtually the entire spectrum of political opinion in the reform process", everything is still going well for the Indian economy to break into spring song. If the Finance Minister, can push ahead on reforms, as the Survey urges, he will find an appreciative audience.

DATA EVALUATION QUESTIONS

Directions : Based on your analysis of the business situation described above, classify each of the following elements, given as (Questions 11-20, in one of the five categories described below):

   1. If the elements is a MAJOR OBJECTIVE in making the decision, that is, the outcome or result sought by the decision maker;

   2. If the elements is a MAJOR FACTOR in arriving at the decision, that is, a consideration explicitly mentioned in the passage that is basic in determining the decision.

   3. If the element is a MINOR FACTOR in making the decision, that is, a secondary consideration in determining the decision;

   4. If the element is a MAJOR ASSUMPTION made in deliberating, that is, a supposition or projection made by the decision maker before weighing the variables;

   5. If the element is an UNIMPORTANT ISSUE in getting to the point, that is, a factor that is insignificant or not immediately relevant to the situation.

Question :

11. **The loss of momentum in more recent months is slackening of reforms before and during the elections last year.**

12. **How to improve infrastructure services.**

13. **The capital goods sector "appears to have adjusted rapidly" to quick cuts in tariff. Therefore this factor can be exploited further.**

14. **Non oil-imports into the country must be further encouraged to increase the rate of imports.**

15. **Finance Minister must find an appreciative audience.**

16. **Oil pool deficit has been made 'quasi fiscal deficit'. Therefore the government has gained financial strength and operational effectiveness.**

17. **The economy must regain speed through the reform process.**

18. **Private Sector investments need sops since they aid in promoting competition, removing policy distortions and improving access to factors of production.**

19. **Ambiguities in policies on private investment require attention.**

20. **In "growing participation of virtually the entire spectrum of political opinion in the reform process", lies the success.**

COMPREHENSION

Directions : This part contains three reading passages. You have to read them carefully. Each passage is followed by questions based on its contents. Choose the best answer to each question.

FIRST PASSAGE

There is a basic discipline that makes team work. Teams and good performance are inseparable; you cannot have one without the other. But people use the word team so loosely that gets in the way of learning and applying the discipline that leads to good performance. For managers to make better decisions about whether, when, or how to encourage and use teams, it is important to be more precise about what a team is and what it isn't. Teamwork represents a set of values that encourage listening and responding constructively to views expressed by others, giving others the benefit of the doubt, providing support, and recognising the interests and achievements of others. Such values help teams perform, and they also promote individual performance as well as the performance of an entire organisation. But teamwork values by themselves are not exclusive to teams, nor are they enough to ensure team performance.

Nor is a team just any group working together. Committees, councils, and task forces are not necessarily teams. Groups do not become teams simply because that is what someone calls them. The entire work force of any large and complex organisation is never a team, but think about how often that platitude is offered up. To understand how teams deliver extra-performance, we must distinguish between teams and other forms of working groups. That distinction turns on performing results. A working group's performance is a function of what its members do as individuals. A team's performance includes both individual results and what we call "collective work-products". A collective work-product is what two or more members must work on together, such as interviews, surveys or experiments. Whatever it is, a collective work-product reflects the joint, real contribution of team members.

Working groups are both prevalent and effective in large organisations where individual accountability is most important. The best working groups come together to share information, perspectives, and insights, to make decisions that help each person do his or her job better; and to reinforce individual performance standards. But the focus is always on individual goals and accountabilities. Working-group members don't take responsibility for results other than their own. Nor do they try to develop incremental performance contributions requiring the combined work of two or more members.

Teams differ fundamentally from working groups because they require both individual and mutual accountability. Teams rely on more than group's discussion, debate and decision; on more than sharing information and best practice preformance standards. Teams produce discrete work-products through the joint contributions of their members. This is what makes possible performance levels greater than the sum of all the individual bests of team members. Smiley stated, "a team is more than the sum of its parts". The first step in developing a disciplined approach to team management is to think about teams as discrete units of performance and not just as positive sets of values.

The essence of a team is common commitment. Without it, groups perform as individuals; with it, they become a powerful unit of collective performance. This kind of commitment requires a purpose in which team members can believe. Whether the purpose is to "transform the contributions of suppliers into the satisfaction of customers", to "make our company one we can be proud of again", or to "prove that all children can learn", credible team purposes have an element related to winning, being first, revolutionising, or being on the cutting edge. Teams develop directions, momentum, and commitment by working to shape a meaningful purpose. Building ownership and commitment to team purpose, however, is not incompatible with taking initial direction from outside the team. The often asserted assumption that a team cannot "own" its purpose unless management leaves it alone actually confuses more potential teams than it helps. In fact, it is the exceptional case-for example, entrepreneurial situation-when a team creates a purpose entirely on its own. Most successful teams shape their purposes in response to demand or opportunity put in their path, usually by higher management. This helps teams get started by broadly framing the company's performance expectation. Management is responsible for clarifying the charter, rationale, and performance challenge for the team, but management must also leave enough flexibility for the team to develop commitment around its own spin on that purpose, set of specific goals, timing, and approach. The best teams invest a tremendous amount of time and effort exploring, shaping, and agreeing on a purpose that belongs to them both collectively and individually. This "purposing" activity continues throughout the life of the team. In contrast, failed teams rarely develop a common purpose. For whatever reason-an insufficient focus on performance, lack of effort, poor leadership-they do not coalesce around a challenging aspiration.

Questions :

21. **According to the author**
    1. Team and good performance are two different things
    2. Discipline makes the difference between a team that performs and one that does not
    3. Team values always help raise the level of performance of a group
    4. All of these
    5. None of these

22. **The author is of the opinion that no group becomes a team unless there is**
1. Mutual accountability
2. Mutual commitment
3. Mutual goals
4. All of these
5. None of these

23. **Team values include all of the following factors, except**
1. Supporting
2. Encouraging
3. Delegating
4. Recognising each other's contribution
5. None of these

24. **The above passage is most likely from**
1. A book on Team building
2. A newspaper article on Group dynamics
3. An article from a Management journal
4. All of these
5. None of these

25. **We can infer from the passage that synergy is a characteristic of**
1. Work groups
2. High performing teams
3. Committees
4. All of these
5. None of these

26. **A working group's performance is a function of**
1. Individual goals and accountability
2. Mutual goals
3. Mutual accountability
4. All of these
5. None of these

27. **According to the passage a team differs from a working group in terms of**
1. Leadership
2. Accountability
3. Work products
4. All of these
5. None of these

28. **It can be inferred that in the paragraph immediately preceding this passage the authors discussed**
1. A survey on team effectivenss and performance
2. A working definition of team work
3. Factors that distinguish teams from work group
4. All of these
5. None of these

29. **Which of the following is false according to the passage?**
I. Teams encourage open-ended discussion and active problem-solving meetings.
II. Teams discuss, decide and delegate
III. Teams have shared leadership roles
1. I only
2. II only
3. I and II
4. II and III
5. All of these

30. **The author's tone in the passage can best be described as**
1. Humanistic
2. Dispassionate
3. Dogmatic
4. All of these
5. None of these

SECOND PASSAGE

Indian management is undergoing a process of change, both intellectually and operationally. This change is partly indigenious in as much as it pertains to the changing cultural and political orientation of the people and it is partly foreign in as much as the economy of the country shows a basic direction towards the utilization of foreign techniques and concepts of business in achieving the desired growth pattern. The dual nature of change which is characterizing the modern managerial behaviour in India is a significant example of "cultural fusion" and "international integration". Judged in this manner, the identity of Indian Management appears to be primarily electric in nature and essentially adaptive in substance.

The discipline of comparative management provides the framework for comparing managerial systems through several variables and models. It enables the analyst to compare (and contrast) the history and practice of administration in two separate regions, hypothesizing about the similarities and divergences. This is an interesting and novel aid for the manager, as it permits him to see his performance in a comparative setting and crosscultural perspective. However, in the history and practice of Indian management, the effectiveness of this research methodology is questionable, at least in the immediate time span. The processes of transition and fusion through which management is currently passing in India preclude the possibility of effective utilization of the research and conceptual models based upon the assumptions and hypothesis derived from the discipline of comparative management. Management is in a state of great flux in India, addressing itself in a number of different directions simultaneously and also moulding itself according to a number of different structures at the same time. All the four sectors, namely, the Public, Private, Family and Foreign-functioning in the Indian context-have not organized their contents and actions in a rigid fashion with the result that they are malleable and supple enough to experiment with practically anything. Various new innovations and experiments that are being made by Indian industry and the Government are signs of this fluid state of behaviours in the body of Indian management. Unless this flexibility is transformed into something positively identifiable, it would be futile to apply comparative technique for the study of Indian managerial processes. Another reason for the present inadequacy of the comparative framework for the analysis of Indian management is the existence of various "norms" of managerial behaviour functioning simultaneously in the same areas and also reflecting in the actions of the same executives on different occasions. When there is such a great degree of diversity both in management's actions and patterns, what will the comparative management analyst accept as being the "normal" managerial action and reaction in India, for the purposes of comparing them with the "norms" in other countries and cultures? The diversities in income, population mix and living habits, in addition to the more fundamental items such as the language, religion, caste and educational level lead to the existence of differing, and at times mutually contradictory, behaviour patterns and managerial actions in the Indian business scene. It has also been noted that the Indian manager is capable of exercising his decision-making in a number of different item-periods simultaneously. These considerations suggest the solid existence of quite a few different managerial pattern in India. It is therefore impossible to isolate any single one from them as being typically representative of the Indian administrative practice.

Questions :

31. **According to the author, comparative management methodology in the study of India management is**
1. Effective in long-run
2. Effective in short-run
3. Questionable in the long-run
4. Questionable in the short-run
5. Of no conceivable use at all

32. **In what area is Indian management undergoing a change?**
1. Intellectual
2. Social
3. Technological
4. Organizational
5. Political

33. Management in Indian can be categorized as being in a state of
1. Stability
2. Uncertainty
3. Retrenchment
4. Change
5. Permissiveness

34. According to the author, there are four sectors of management: Public, Private, Foreign and
1. Domestic
2. Family
3. Native
4. Government
5. Caste

35. Differences in language, religion, education and caste have led to what sort of managerial actions?
1. Contradictory
2. Deleterious
3. Consensus decision-making
4. Eclective
5. Ineffective

36. Comparative management can be best expressed as a study of
1. Indian management
2. Western management
3. Managerial processes
4. Comparative settings
5. Managerial systems of two or more countries

37. Managerial behaviour in India can be described as
1. Inefficient
2. Following "normal" patterns
3. Inflexible
4. Exhibiting a great degree of diversity
5. Unresponsive to change

38. Which of the following is described by the author as descriptive of Indian administrative practice?
1. Rapid decision-making
2. Western oriented
3. Too much reliance on the British system
4. Lacking an indigenous frame of reference
5. There is no one pattern which can be called typically Indian

THIRD PASSAGE

Much as an electrical lamp transforms electrical energy into heat and light, the visual "apparatus" of a human being acts as a transformer of light into sight. Light projected from a source or reflected by an object enters the cornea and lens of the eyeball. The energy is transmitted to the retina of the eye whose rods and cones are activated.

The stimuli are transferred by nerve cells to the optic nerve and then to the brain. Man is a binocular animal and the impressions from his two eyes are translated into rapid sight, compound analysis of the shape, form, colour, size, position and motion of the things he sees.

Photometry is the science of measuring light. The illuminating engineer and designer employ photometric data constantly in their work. In all fields of application of light and lighting, they predicate their choice of equipment, lamps, wall finishes, colours of light and backgrounds and other factors affecting the luminous and environmental pattern to be secured, in great part from data supplied originally by a photometric laboratory. Today, extensive tables and charts of photometric data are used widely, constituting the basis for many details of design. Although the lighting designer may not be called upon to do the detailed work of making measurements or plotting data in the form of photometric curves and analyzing them, an understanding of the terms used and their derivation form valuable background knowledge.

The perception of colour is a complex visual sensation, intimately related to light. The apparent colour of an object depends primarily upon four factors: its ability to reflect various colours of light, the nature of the light by which it is seen, the colour of its surroundings and the characteristics and state of adaptation of the eye.

In most discussions of colour, a distinction is made between white and coloured objects. White is the colour name most usually applied to a material that diffusely transmits a high percentage of all the hues of light. Colours that have no hue are termed neutral or achromatic colours. They include white, off-white, all shades of grey and black. All coloured objects selectively absorb wave-lengths of light and reflect or transmit others in varying degrees. Inorganic materials, chiefly metals such as copper and brass, reflect light from their surfaces. Hence we have the term "surface" or "metalic" colours, as contrasted with "body" or "pigment" colours. In the former, the light reflected from the surface is often tinted. Most paints, on the other hand, have body or pigment colours. In these, light is reflected from the surface without much colour change, but the body material absorbs some colours and reflects others; hence, the diffuse reflection from the body of the material is coloured but often appears to be overlaid and diluted with a "white" reflection from the glossy surface of the paint film. In paints and enamels, the pigment particles, which are usually opaque, are suspended in a vehicle such as oil or plastic. The particles of a dye, on the other hand, are considerably finer and may be described as colouring matter in solution. The dye particles are more often transparent or translucent.

Questions :

39. Light projected from a source enters the eyeball through the
1. Cornea
2. Retina
3. Rods
4. Cones
5. Brain

40. Photometry is the science of
1. Studying sight
2. Colour configurations
3. Light projection
4. Light and motion
5. Measuring light

41. According to the passage, lighting engineers need not
1. Understand photometric techniques
2. Plot photometric curves
3. Utilize photometric data
4. Have mathematical expertise
5. Be college gradutes

42. The colour black is an example of a
1. Surface colour
2. Organic colour
3. Achromatic colour
4. Diffuse colour
5. Pigment colour

43. The reflection of light wave-lengths is accomplished by
1. Achromatic colours
2. Selective colours
3. Surface colours
4. All colours
5. Pigment colours

44. The subject of the passage is concerned with the
I. Transmission of light
II. Colour perception
III. Photometry
1. I only
2. III only
3. I and II only
4. II and III only
5. I,II and III

45. This passage could have been called from
1. Business journal
2. Popular magazine
3. Lighting manual
4. Designer's manual
5. Medical textbook

Directions : For each of the following questions, select the choice which best answers the question.

46. $\frac{0.250}{0.333}$ divided by $\frac{0.125}{0.167}$ is most nearly

1. 10   2. 5   3. 1   4. 0.667   5. 0.5

47. A child needs at least 0.2 kg of proteins and o.03 kg of minerals per week for balanced growth. Each packet of item A contains 15 gm of proteins and 0.25 gm of minerals. Each tin of item B contains 10 gm of proteins and 0.30 gm of minerals. Then, x the number of packets of A and y the number of tins of B to be purchased by the parent per week must satisfy the condition(s)

1. $20x+30y \leq 25.55$
2. $15.25x+10.30y \geq 230$
3. $15x+10y=200$, $0.25x+0.30y=30$
4. $15x+10y \geq 200$, $0.25x+0.30y \geq 30$
5. $15x+10y \leq 200$, $0.25x+0.30y \leq 30$

48. The value of an office machine depreciates in such a way that its value at the end of each year is 4/5 of its value at the beginning of the same year. If the initial value of the machine is Rs.5,000, what is its value at the beginning of the 4th year?

1. Rs.4,750.20   4. Rs.2,000.00
2. Rs.4,000.00   5. Rs.640.00
3. Rs.2,560.00

49. A man starting from a place P walks 2,000 steps east, then 4,000 steps south, 2828 steps northeast, 4242 northwest and 1414 steps southwest, in that order. Where is he finally in relation to P

1. At or very close to P
2. About 1000 steps north of P
3. About 1000 steps east of P
4. About 1000 steps west of P
5. About 1000 steps northeast of P

50. A polygon having 54 diagonals is a

1. Decagon (10 sides)   4. Hexagon (6 sides)
2. Dodecagon (12 sides)   5. Octagon (8 sides)
3. Pentagon (5 sides)

51. What is the maximum area of a hexagon which can be inscribed in a circle of radius 6 cm?

1. $9\sqrt{3}$ cm²   4. $51\sqrt{3}$ cm²
2. 36 cm²   5. $54\sqrt{3}$ cm²
3. $48\sqrt{2}$ cm²

52. In a certain shipment of 120 new cars, 2/3 of the cars are equipped with radios and 2/5 are equipped with air conditioners. If 20 of the cars are equipped with neither a radio nor an air conditioner, how many cars in the shipment are equipped with both a radio and an air conditioner?

1. 20   2. 28   3. 32   4. 58   5. 76

53. Robert is 15 years older than his brother Stan. However, y years ago Robert was twice as old as Stan. If Stan is now b years old and b>y, find the value of (b–y).

1. 13   2. 14   3. 15   4. 16   5. 17

54. A club has 8 male and 8 female members. The club is choosing a committee of 6 members. The committee must have 3 male and 3 female members. How many different committees can be formed?

1. 112896   3. 720   5. 9
2. 3136   4. 112

55. An employer pays 3 workers X,Y and Z a total of Rs.610 a week. X is paid 125% of the amount Y is paid. It is also equal to 80% of the amount Z is paid. How much does X make a week?

1. Rs.150   3. Rs.180   5.Rs.200
2. Rs.175   4. Rs.195

56. Three times the first of three consecutive odd integers is 3 more than twice the third. What is the third integer?

1. 9   2. 11   3. 13   4. 15   5. 7

57. A basic solution of a system of m liner equations in n unknowns (m<n) is a solution of the system, obtained after equating n–m variables to zero. Find all the basic solutions of the system

$x_1 - x_2 + 2x_3 = 18$

$x_1 + 2x_2 - x_3 = 12$

1. (14,0,2), (0,14,16), (16,–2,0)
2. (0,14,16), (14,0,2)
3. (14,0,2), (0,16,–2), (14,16,0)
4. (0,0,6), (16,–2,0), (18,0,0)
5. (0,0,6), (0,16,–2), (14,16,0)

58. If x is an even number, which of the following must be odd?

I. $3x+1$ II. $5x^2+2$ III. $(x+1)^2$

1. I only   4. I and III only
2. III only   5. I, II and III
3. I and II only

59. If 50 apprentices can finish a job in 4 hrs and 30 journeymen can finish the same job in 4½ hrs, how much of the job should be completed by 10 apprentices and 15 journeymen in one hr?

1.   2. $\frac{29}{180}$ 5. $\frac{39}{121}$ 4. $\frac{1}{5}$ 3. $\frac{26}{143}$

60. If $1^2+2^2+3^2+\ldots$to n terms$= 1 + 2 + 3 +\ldots$ to (2n) terms, then n =

1. 6   2. 4   3. 5   4. 3   5. 10

61. Find how much principal amount Susi should invest on compound interest so that she could earn Rs.72 more than on simple interest at 12% p.a. in 2 years

1. Rs.500   3. Rs.600   5. Rs.5,000
2. Rs.1,500   4. Rs.2,500

62. The probability that a candidate for the entrance examination will get admission is 0.4 what is the probability that out of 5 candidates at least one will be admitted?

1. 0.26   3. 0.08   5. 0.54
2. 0.92   4. 0.46

$\frac{1}{9}$

63. If 1–i is a root of the equation $x^2+ax+b=0$, then the values of a and b are respectively

    1. 2, 1   2. –2, 2   3. 2, 2   4. 2, –2   5. 1, –1

64. The complex numbers 1, –1, $i\sqrt{3}$ form a triangle which is

    1. right angled triangle   4. isosceles right angled triangle
    2. isosceles triangle   5. none of these
    3. equilateral triangle

65. Give $\sqrt{5}=2.236$ nearly, what is the value of

$$\frac{\sqrt{4.8}\times\sqrt{0.125}\times\sqrt{0.56}}{\sqrt{0.7}\times\sqrt{0.08}\times\sqrt{24.3}} ?$$

    1. 4.97 nearly   4. 0.693 nearly
    2. 49.7 nearly   5. 3.47 nearly
    3. 6.928 nearly

66. If $f(x)=2x+1$, $g(x)=x–1$ and $h(x)=X^2$ then $gofoh(x)$ =

    1. $(2x+1)^2$ 4. $2x$
    2. x^2+1 5. $2x^2$
    3. x^2

67. The average height of students in a class of 20 is 105 cm. If a number of students of average height 120 cm are added to the class, the average height of students in the class becomes 110 cm. How many students were added?

    1. 8   4. 14
    2. 10   5. 28
    3. 12

68. If AC is a diameter of a circle, B is any point on the circle and D is the midpoint of chord AB, then $CD^2=$

    1. $AC^2–3AD^2$ 4. BD^2+2BC^2
    2. $\dfrac{AC^2}{4}$ 5. BD^2+2BC^2
    3. BC^2+BA^2

69. What number would follow the last term of the series:

7 , 12, $16\frac{1}{4}$, $20\frac{1}{2}$?

    1. $27\frac{1}{4}$ 4. $32\frac{1}{2}$
    2. $24\frac{3}{4}$ 5. $25\frac{1}{2}$
    3. 30

70. The point represented by the complex number 2–i is rotated about origin through an angle of $\pi/2$ in clockwise direction. The new position of the point is

    1. $1+2i$ 4. $–1+2i$
    2. $–1–2i$ 5. $1–2i$
    3. $2+i$

DATA SUFFICIENCY (Mathematics)

Directions : Each of the following problems has a question and two statements which are labelled (a) and (b). Use the data given in (a) and (b) together with other available information (such as the number of hours in a day, the definition of clockwise, mathematical facts, etc.) to decide whether the statements are sufficient to answer the question. Then, indicate the answer to the given problem as

    1. If you can get the answer from (a) alone but not from (b) alone;

    2. If you can get the answer from (b) alone but not from (a) alone;

    3. If you can get the answer from (a) and (b) together, although neither statement by itself suffices;

    4. If statement (a) alone suffices and statement (b) along suffices;

    5. If you cannot get the answer from statements (a) and (b) together, but need even more data.

71. **What is x?**
    a. $2x + 10 = 35$ b. $x + y = 17$

72. **Is 'p' a positive number?**
    a. 5p is a positive number
    b. –p is a negative number

73. **How much is an author paid in royalties by a publisher in a certain year?**
    a. The publisher pays her a guaranteed minimum of Rs.10,000 per year plus royalty
    b. The author receives a yearly of 6.5 percent on the gross sales of her book in excess of Rs.1,00,000

74. **Mary, Paul and Susan all played in a summer softball league and each hit at least one home run during the season. Which of the 3 players hit the most home runs?**
    a. Paul hit 4/5 as many home runs as Mary.
    b. Mary hit 5/4 as many home runs as Susan.

75. **What is the perimeter of a rectangle if the ratio of its width to its length is 3 to 4?**
    a. The width of the rectangle is 6
    b. The area of the rectangle is 48

76. **Amy's graduate seminar in history meets once each week, on Thursday afternoons. If it met every Thursday in the month of May, how many times did the seminar meet that month?**
    a. There were five Wednesdays in the month.
    b. The seventeenth of May was a Friday.

77. **If x,y and z are the lengths of three sides of a triangle, is z>8?**
    a. $x+y=8$ b. $x=6$

78. **At 9 a.m., a hiker was due south of point P. What direction was point P from her position at noon?**
    a. From 9 a.m., until 11 a.m., she walked due east at 2 miles per hour, and from 11 a.m. until noon, she walked due north at 3 miles per hour.
    b. At noon she is exactly 4.5 miles from point P

79. **If N and P denote the nonzero digits of a four-digit number NNPP, is NNPP divisible by 4?**
    a. NNPP is divisible by 8
    b. NNPP is divisible by 4

80. A supermarket sells both a leading brand of laundry powder and its own brand of laundry powder. On all sizes of the leading brand it makes a profit of 15 percent of cost per box. On all sizes of its own brand it makes a profit of 10 percent of cost per box. For a certain month, from the sales of which of the two brands does the supermarket realize the greater profit?

   a. Ounce for ounce, the super market pays a higher wholesale price for the leading brand than it does for its own brand.

   b. Ounce for ounce, the super market sells 25 percent more of its own brand than of the leading brand.

81. If the number of square units in the area of a circle is A and the number of liner units in the circumference is C, what is the radius of the circle?

   a. $A/C = 3/2$

   b. $A > C + 3$

82. Is quadrilateral PQRS a square?

   a. PR = SQ

   b. All of the interior angles are equal

83. If S is a sequence of numbers the first term of which is 1 and each succeeding term of which is x more than the preceding term, what is the value of x?

   a. The sum of the third and fourth terms of s is 22

   b. The sum of the second and ninth terms of S is 39

84. Two children, Bob and Mary, have piggy banks into which they deposit money earned from doing odd jobs. In a certain year, both Bob and Mary each deposited Rs.5 on the first of every month into their respective piggy banks. If these were the only deposits made into the piggy banks during the year, on December 31 does Bob have more money in his piggy bank than Mary has in her piggy bank? (Assume no withdrawals)

   a. On March 15 Bob had three times as much money in his piggy bank as Mary had in hers.

   b. On June 15 Bob had twice as much money in his piggy bank as Mary had in hers.

85. A certain packing crate contains between 50 and 60 books. How many books are there in the packing crate?

   a. If the books are counted out by threes, there will be one book left over.

   b. If the books are counted out by sixes, there will be one book left over.

ENGLISH USAGE

Directions (86-100) : Read each sentence to find out whether there is any grammatical error in it. The error, if any, will be in one part of the sentence. The number of that part is the answer. If there is no error, then answer is 5. (Ignore the errors of punctuation, if any).

86. Seetha did not like (1) / leaving her old parents alone in the house (2) / but she had no alternative (3) / as she has to go out to work (4) / No error (5)

87. Can you (1) / repair (2) / my watch (3) / until Monday (4) / No error (5)

88. There was (1) / a vast difference (2) / of opinion (3) / among the members of the Board (4) / No error (5)

89. We take up (1) / this issue in the (2) / next meetings of (3) / our housing society (4) / No error (5)

90. Whether you like (1) / or not (2) / you have to (3) / go for Mumbai (4) / No error (5)

91. All the lecturers (1) / agree (2) / that Paresh is the (3) / most intelligent of all the boys in his class (4) / No error (5)

92. The doctor (1) / advised us (2) / not to told (3) / the patient about his disease (4) / No error (5)

93. She did not eat (1) / the fruit (2) / because it tasted bitterly (3) / and was slightly rotten (4) / No error (5)

94. If you are good (1) / to people, you will be (2) / treated well (3) / by themselves (4) / No error (5)

95. The young child (1) / singed (2) / a very (3) / sweet song (4) / No error (5)

96. Visitors are forbidden (1) / to taking (2) / their cameras (3) / inside the temple (4) / No error (5)

97. Reading did not (1) / make him wise (2) / the more he read (3) / his confusion was greater (4) / No error (5)

98. The patient (1) / has been suffering (2) / from (3) / the Malaria (4) / No error (5)

99. The carpenter (1) / is not making (2) / any furniture (3) / today (4) / No error (5)

100. I know well (1) / that his father (2) / and my (3) / are friends (4) / No error (5)