MBA 2008 - EXAMINATION PAPER

PART I

Directions:

This section comprises of two passages. After each passage questions consisting of Items relating to the preceding passage are given. Evaluate each item separately in terms of the respective passage and choose your answer as per the following guidelines:

(1) If the item is a MAJOR OBJECTIVE in making the decision; that is the outcome or result sought by the decision maker.

(2) If the item is a MAJOR FACTOR in arriving at the decision; that is consideration, explicity mentioned in the passage that is basic in determining the decision.

(3) If the item is a MINOR FACTOR in making the decision; a less important element bearing on or affecting a Major Factor, rather than a Major Objective directly.

(4) If the item is a MAJOR ASSUMPTION made deliberately; that is a supposition or projection made by the decision maker before considering the factors and alternatives.

(5) If the item is an UNIMPORTANT ISSUE in getting to the point; that is a factor that is insignificant or not immediately relevant to the situation.

PASSAGE I

S.J. Tandem & Co. is a leading producer of products used for house care. It has established a reputation for quality, integrity, and satisfaction with its line of waxes, insect repellent, furniture polish, and air fresheners, and it commands a very respectable share of the market for these goods.

Tandem has long had a desire to expand its products beyond just house care lines. In the hopes of increasing revenues and profit, Tandem introduced a hair conditioner, Glow, last year. The market for hair conditioners is estimated at Rs. 200 million. By the end of its first year of operation in this field, Tandem s new product was accounting for 20 percent of the sales of such items.

Marketing research has established the fact that personal care products represents one of the fastest growing items in the consumer field. Surveys of personal care products indicate that hair shampoos make up an important segment of this market.

There are approximately 150 brands of shampoo sold throughout India and Sri Lanka. These products racked up sales of Rs. 800 million in the last year. Mr. Akbar, who is Vice-President of Tandem incharge of marketing and new product research, says that no one owns the market. He has recommended that Tandem introduce a new hair shampoo, also called Glow.

There has been a tremendous influx of women into the labour force. On the basis of internal surveys, Mr. Akbar reports that working women are the most frequent users of shampoo and that they wash their hair every other day. The popularity of hair dryers, which make home care of hair easier, has also been a contributing factor to the phenomenal growth in this field. College women have been surveyed and they, too, have been found to be heavy users of shampoo.

At present, the shampoo market is dominated by two manufacturing giants. PG is a leading manufacturer of many successful brands of soap and dish washing products. Two of its hair shampoo products are the first and third popular

brands sold. Sales of these two shampoo account for 18 percent of the market in shampoos. HL, an aggressive marketer of cosmetics and perfumes, has introduced a successful hair shampoo which now commands 9 percent of the market and is the second largest seller. The rest of the shampoo market is divided up among the smaller manufacturers, who provide shampoo brands which are sold in regional markets.

Mr. Akbar has devised an expensive advertising program which will cost Tandem and estimated Rs.30 million He wants to have ads placed in twenty-five national women's magazines and in Sunday newspaper supplements. He also plans to start advertising on television networks during winter

Mr. Akbar plans to use Rs. 12 million of the planned advertising budget to distribute free samples and for coupons discount purchases. It is planned to distribute forty-five million samples of the shampoo throughout India and Sri Lanka via the post office. This mailing, according to Mr. Akbar, will cover 60 percent of the households in India and in Sri Lanka and should cover most of the working women and housewives.

Mr. Akbar then expects to go after another major market source-female college students. Five million samples of Glow shampoo will be distributed on college campuses, and Glow ads with sample packets will appear in college newspapers.

With these efforts, Mr. Akbar expects that Tandem will be able to capture at least 8 percent of the market within a year and that Glow will become a profitable operation at the end of eighteen months.

Although PG, usually plays its advertising cards close to its chest, it has been intensifying its promotional activities. At the retail level, it is known that it plans to sell trial samples at discount prices and also plans to increase the use of self-standing point-of-purchase displays. HL, has not made public its advertising plans but, based on its past performance when encroachment of its market share has loomed, it, too, will prove to be a tough competitor.

This might represent one situation in which only the consumer will benefit. Consumers should be able to look forward to bargains in Shampoos, as manufacturers try all sorts of marketing techniques to woo customers and test their product loyalty.

Questions:

a. The market in personal care products is rapidly expanding.

b. Working women wash their hair more frequently than housewives.

c. Successful marketing of a new hair conditioner by Tandem.

d. Fragmented state of shampoo market.

e. Aggressive advertising can help capture a share of the market.

f. Tandem expects to achieve 8% share of the shampoo market.

g. The sale and popularity of hair dryers.

h. Choosing the same name 'Glow'

i. Distribution of free samples to households in India and Sri Lanka via post will cover 60 % of the households

j. The advertising plans of the competitors

PASSAGE II

The I-Estates had been the largest landowner in Maharashtra, for many decades. It owned 77,000 acres of land about 60 km south of Mumbai. Of this vast property, only 7000 acres had been built up. There were marinas, ten shopping centers, six golf courses, office and

apartment complexes, industrial parks, a university, portions of several towns, and one completely new town. There are approximately 75,000 people who live or own home in this property in Maharashtra. 1-Estates also had large land holdings - 84,000 acres in Pune and property in Goa.

I- Estates was a privately held company, incorporated in 1954. The land was being developed in accordance with a master plan that would provide for a planned residential community, with no thatch houses and no overbuilding. A majority — 54.5 percent-of the stock was owned by the I-Estate Foundation, which managed and developed the property according to the wishes of its founder. However, in 1989 a new law was passed, which prohibited any foundation from owning more than 2 percent of a profit-making company. Therefore, the I-Estate Foundation was forced to sell its stock.

The foundation was interested in selling a company that would follow its master, plan and would not actively develop the land without considering all factors involved. It offered its 8.6 million shares for sale and agreed to sell to one of the large oil companies in the area at a bid of Rs. 2 million because the prospective purchaser had agreed to be a non-activist investor.

The granddaughter of the founder owned 22 percent of the company stock, and for many years she had battled the foundation for control of the land development. She felt that the oil company's offer was too low, and she actively sought other buyers. A group was formed, which included the granddaughter, and the company was bought for Rs. 337 million. The investors were able to raise Rs. 97 million in cash and incurred a short-term debt of Rs. 240 million from a nine-bank consortium led by Uttam Ghosh.

The new company took over the I-Estates name, but there were dire predictions made on its ability to continue. It was felt that choice-income property would have to be sold in order to meet the dept obligations, and once the property was sold to outsiders, the master plan would be scuttled. Business people in the developed community felt that their economic well-being would be endangered if the I-Estates did not prove to be economically sound. Up until the time of the sale of the company, the land had always been debt-free. There was concern that the land would be pledged to debtors, who would be able to take over the land for unpaid debts.

The new company has managed to confound all its critics. Its revenues jumped to Rs. 225 million in its first year of operations-an increase of 60 percent. The company did not disclose its earnings, but it says they are up from the Rs. 17.5 million of last year, although not rising as swiftly as revenues. In spite of its spectacular money-making ability, I-Estates does not plan to pay dividends for a while.

The company has concentrated on the repayment of its debt. First, the company obtained a long-term loan from the Uni Insurance Company for Rs. 100 million, which is secured by 5000 acres of land. In its first year of operations, I-Estates paid back Rs. 5 million of the loan because of the cash flow generated by the land leases of the pledged 5000 acres, which more than pays for the costs of the loan plus its amortization. Ninety million rupees of the short-term debt owed to Uttam Ghosh has already been paid back.

I-Estates restructured its operations to improve its cash flow positions. Formerly it would lease land to home builders, who would pay for the land after the homes they build were sold. Now I-Estates required that the land be paid for in cash before construction is started. Thus, not only does I-Estates get the cash from the sale of this land at an earlier time, but it also does not have to pay taxes on the property.

The company sold its income-producing property outside of Mumbai area and used the proceeds to repay its debt. Thus, out of the original short-term debt of Rs. 240 million in loans with which it started, all but Rs. 50 million has either been refinanced or paid back.

It has not sold any of its income-producing properties in the Mumbai area, but it has sold land for industrial and housing use. Prices of industrial sites have jumped 50 percent; the average price is now Rs. 200,000 an acre. The company built 1700 residential units last year, which sold at prices ranging from Rs. 80,000 to Rs. 500,000. Demand has been so great for the residential properties that I-Estates has had to use lotteries and auctions to determine who would get what house.

Since all the property that I-Estate owns is now located in Maharashtra, it will benefit greatly from Act XXX, which calls for tax reductions on all property in Maharashtra. This will provide I-Estates with an estimated annual reduction of Rs. 8 million in the property taxes that it pays. Some of that savings will have to be paid out in taxes, but I-Estate's cash flow position will be ever better as a result, and there should be a further reduction in its outstanding debt.

Questions:

k. Act XXX calls for tax reduction on all real estate in Maharashtra.

l. Sale of income-producing property outside the Mumbai area.

m. Cash payments required for land bought from I-Estates.

n. Repayment of debt without selling income-producing property.

o. Charitable foundation cannot own more than 2 percent of the stock in a profit-making company.

p. I-Estates is the largest land owner in Maharashtra.

q. Proposal to develop the land as per a Master Plan.

r. The economic well being of the business community in the area would be endangered if the I-Estates did not prove itself to be economically sound.

s. In spite of its spectacular money making ability, I-Estates does not plan to pay dividends for a while.

t. As against the earlier procedure, I-Estates now requires that cash for land be paid, before construction is started.

PART II

Directions:

Each passage in this section is followed by questions based on its contents. Read the passages carefully and then answer the questions given below them by choosing the best answer to each question. Answer the questions on the basis of what is stated or Implied In the passages.

PASSAGE I

There is a war being waged in the coffee market, and the supposed giant is being cut down to size. Soorya, the country's leading marketer of packaged goods, has introduced its ground coffee Roasted Kofe into the eastern market with less than startlingly good results. Roasted Kofe is the leading brand of coffee in Tamil Nadu,

but apparently it cannot gain a foothold in the East.

One of the main factors acting as a deterrent to the Soorya product is a head-on counterattack launched by one of Soorya's main competitors, Jothi Foods.

The Orissa area is Roasted Kofe's weak point. The market share at present is barely 7 percent, a far cry from the 15 percent target Soorya has set for itself. Soorya struck out hard to win the favour of Orissa coffee lovers, but Jothi Foods responded with equal force. Roasted Kofe mailed out coupons worth Rs.'5 toward the purchase of a 10 gms sachet of coffee; Jothi Foods countered the action with a newspaper coupon of its own. Then Roasted Kofe offered a 15 percent discount on the list price of 500 gms of coffee, and Jothi Foods met them head on. Roasted Kofe led with a television campaign that filled eastern living rooms with housewives despairing over the fact that the husbands were dissatisfied with the coffee they made. Quick as a wink, Jothi Foods put their spokeswoman on the air to tell her customers to stick with a good thing, Tasty Coffee (the Jothi Foods ground roast coffee).

The big question remains - why isn't Roasted Kofe following the pattern of other Soorya products? Why is it moving so slowly? One reason has to do with the cold climate in Nilgiri mountains that ruined 75 percent of coffee trees in 2004. Nature made Soorya's usually meticulous planning virtually impossible, because of uncertainties about customer demand, prices, and supply.

Another reason may be sales-force problems. Roasted Kofe was launched early, before a solid backup sales team was organized, so the heavy promotional campaign had to depend on Soorya salespeople from other lines to push the "new" product; apparently, they couldn't give their all to coffee, as they could to other products. Supermarket owners in the Orissa area were constantly visited by Jothi Foods' salespeople, while the Roasted Kofe force was nowhere to be seen.

But this still does not account for Roasted Kofe's poor performance in the East. Where does the blame lie? Certainly not in the product itself, which is much like its competitor and is a leader outside the East Coast.

In addition, everyone knows it is sound promotional strategy to advertise a new product heavily and to give the customer an extra nudge by offering a free sample, such as the discount coupon. On paper, Soorya's strategy seems sound. Perhaps the coupon should have been worth more. It was mailed directly to 70 percent of the households in Orissa, not hidden somewhere in the newspaper, and Soorya expected about 40 percent of those coupons to be redeemed. At present, only 8-9 percent of the coupons have actually been redeemed, a figure that may well increase as the campaign wears on.

Still another problem facing Roasted Kofe is that of pricing. While it is a leader in Tamil Nadu, it does not have enough strength in any one area to afford it the luxury of flexibility in pricing. Tasty Coffee, however, has been using the money gained from the comfortable margins in the East to carry on its counterattack against Roasted Kofe in other parts of the country. Also, Roasted Kofe is a single brand, while Tasty Coffee shares shelf space with three other Jothi

Foods coffees. There is strength, if not safety, in numbers.

Perhaps the single greatest weakness in the Roasted Kofe picture is instant coffee. The instant coffee area is the most profitable part of the entire coffee market, where margins are as high as 5 percent (compared to the ground roast average of 1 percent). Roasted Kofe instant comes in a poor third in the soluble (instant) market, where Jothi Foods is the leader (Rs. 130 million for Roasted Kofe, as compared to Rs. 760 million for Jothi Foods).

One might have expected Roasted Kofe to concentrate its efforts in the instant market instead of taking on Jothi Foods in the East. According to a Soorya executive, however, they wanted to first establish Roasted Kofe as a national brand with a strong, nationwide sales force behind it. If Roasted Kofe can grab 12 percent of the East Coast market (forget the original 15 percent goal), it will then have the unique characteristic of being the best-selling coffee in the country, a powerful and useful credential that could pull a lot of weight in advertising campaigns. With this leverage, Roasted Kofe could then plunge into the soluble market.

Soorya is not daunted by the relatively poor performance of Roasted Kofe in the East. They will, in the best tradition of the company, continue to pump money into the product's promotion and may even go so far 3s to cut prices further, since moderate price cutting has been - unsuccessful so far.

Observers of the coffee war are speculating that Soorya, in addition to introducing an instant coffee within the next couple of years, will also come out with a decaffeinated brand to compete with Jothi Foods and will build a new plant (valued at approximately Rs. 200 million) to manufacture these and other products. It is thought that Soorya will eventually have a 25 percent share of the market.

Questions:

u. Ideally, Soorya is aiming for what percentage of the market share in Orissa area?
1) 7 2)15
3) 12 4) 10
5) 25

v. What can be Inferred from the passage about a sales force in relation to marketing a new product?
1) The sales force must be "educated in the product
2) There must be a strong sales force behind a heavily promoted new product
3) A sales force is not necessary if the product is heavily advertised
4) Sales forces must visit supermarkets frequently in order for the product to succeed
5) Sales force has no effect on marketing a new product

w. Why is the soluble market so profitable?
1) Sales are higher
2) Companies usually have more than one soluble brand thus increasing profits
3) Margins are higher
4) More people drink instant coffee that ground roast
5) Cheaper coffee beans can be used for instant coffee than for ground roast because the consumer does not expect instant coffee to be as tasty as ground roast.

x. What is the main reason behind Roasted Kofe's "failure"?
1) insufficient advertising
2) pricing too high
3) poor strategic planning

4) weakness in the soluble market
5) inferior quality of the product

25. Why does Roasted Kofe not enjoy total freedom in pricing?
1) Coffee prices are regulated by the government
2) Coffee prices are regulated in each state
3) A cold climate in Nilgiri mountains drove coffee prices up
4) Roasted Kofe does not have a sufficient market share anywhere in the country
5) Roasted Kofe is the only coffee product marketed by Soorya

26. Roasted Kofe needs to get what percentage of the East Coast market to become the country's best-selling coffee?
1) 10 2) 15
3) 12 4) 7
5) 25

27. Which of the following is (are) responsible for Roasted Kofe's poor performance In the East?
I. poor product quality
II. uncertain prices
III. lack of a sales force
IV. weakness in the soluble area
1) I and II only 2) II only
3) II and IV only
4) II, 111 and IV only
5) All of the above

28. What is Roasted Kofe's present share?
1) 15 percent 2) 12 percent
3) 10 percent 4) 7 percent
5) 8-9 percent

29. Why is it Roasted Kofe not concentrated on the instant market?
1) They do not have the necessary funds
2) They wanted to first establish Roasted Kofe as a national brand
3) They do not have a marketing strategy for instant coffee
4) They want to introduce a decaffeinated brand first
5) None of the above

30. Why is it "surprising" that Roasted Kofe is performing rather poorly?
I. Soorya's strategy, on paper, seems perfect.
II. Soorya is the country's leading marketer of packaged goods.
III. Roasted Kofe is a leader outside the East Coast.
IV. Competition does not usually wage a very strong counterattack against Soorya.
1) I and III only 2) I and II only
3) I. II and III only 4) I, II and IV only
5) All of the above

PASSAGE II

Does the person make the company or does the company make the person? Although in many cases it is a good combination of both, the story of Anil Bedi and the Reli Can Company leans heavily toward the former, the person making the company.

Bedi joined Reli in the early eighties as sales director, and within five years he became a leading figure in Reli's management. At the age of fifty, in 1993, Bedi was named Chief Executive Officer (C.E.O.) of Reli, and he has proved himself to be an extremely effective C.E.O. The growth record Reli has shown since Bedi's move to the top is excellent and quite unusual for the can industry. In India there are approximately eighty-five can makers competing in a business in which demand increases slowly. But in the last ten years, Reli's revenues has gone from Rs.180 million to over Rs. 1 billion, pushed up mainly by strong can sales.

The can market is marked by strong competition and rather slow growth. The nature of the market has pushed the two leaders in the industry into diversification and not necessarily into related fields. Big

Can Company has spread into life insurance, while the Rao Group has gone into recorded music distribution. Reli on the other hand, has gone in the opposite direction and is trimming off excess, unrelated fat that had been acquired prior to Bedi joining the company. According to Bedi, Reli wants to stay in the area that they know best - the can business. Eighty-two percent of the company's sales is concentrated in cans and metal caps and lids; glass and plastic bottles account for 13 percent of total sales.

Growth has been achieved under Bedi's direction through a skillful combination of factors — aggressive salesmanship, calculated strategic planning, and maximization of Reli's small-company advantages, such as its ability to move quickly and to grab up small pieces of new business that have been either neglected or rejected by larger competitors.

In the past, Reli's success was based largely on good, old-fashioned salesmanship. Special efforts were made to cultivate and maintain good customers, and today many of Reli's important customers are the ones who have been with the company through the years. When Bedi arrived, he had the same super-salesman qualities as the previous chief officer, but in addition, he provided Reli with a dual-faceted marketing strategy. One one hand, Reli began to seek out smaller companies that Big Can and Rao did not consider important prospects. The second aspect of Bedi's strategy was an aggressive sales program to two industries in which the demand for cans was beginning to grow - beer and soft drinks.

Bedi is an innovator, not a follower. He has broken tradition in the can industry by pursuing his own initiative rather than maintaining the pattern set by industry leaders. When Big Can and Rao decided to head off brewers (who had begun making their own cans.) by building competitive plants, Reli committed some of its own production to the brewers. This saved the beer makers worry about capital costs.

The two-piece can was perhaps Bedi's most daring step. These cans are the backbone of the beverage business today. Traditional three-piece cans are made of a body and two end pieces, rolled from a flat sheet of tin plate and then secured into a cylindrical shape with a seam. The two-piece can has only one end piece and no side seam, is less expensive, and can be manufactured more quickly.

Bedi had enough foresight to realize that the two-piece can was to be an extremely important factor in the future of the can industry. He knew it would open the can market to aluminum and permit economies in production. Reli entered the two-piece can business at a time when none of the other can companies had yet made a serious commitment to the new container. This was in 1987. There were still problems to be ironed out, but in an area in which Reli has expertise - process refinements. The basic research and development (R&D), which was not Reli's forte, had been taken care of. Bedi gambled on undertaking these refinements. It meant developing new types of machinery to handle the two-piece containers, and it was not a sure thing that it would work. But Reli did overcome the difficulties and thus was able to pick up a two-year lead on the industry.

While Reli has grown into a billion rupee company, Bedi has kept an informal and lean type of management and has continued to run his operation as a small

company. While sales have doubled, the size of the managerial staff has remained nearly the same. Reli's offices are plain and austere, including those of senior executives, and instead of having a company plane, Reli is located near a large airport.

Informality is the key to Bedi's style. Information flows freely; communication is direct and open at all levels -there is no hierarchy at Reli. Bedi is very down-to-earth in his operating manner, careful about details, aware of all that is going on, accessible to all, and concerned about his employees. Some may argue that top managers should not be bothered with detail, but Bedi feels that a good manager must be involved, and work with fellow managers.

Smooth-flowing communications are of prime importance to Bedi. Some years ago he and his newly hired head of operations reorganized the company structure to improve the flow of communications. The project took two years to complete, but the result was a system of total integration, from top management to the lowest factory worker.

Bedi is also extremely concerned about the well-being of those he supervises, going so far as to hold open house parties at Reli plants so that families of the workers can actually see where the employees spend so many of their waking hours. He has no compunction, however, about closing down unprofitable or uneconomic plants, but does go out of his way to try to find other positions for the workers who consequently lose their jobs. It is Bedi's firm belief that attention to and involvement with employees all comes out for the good on the bottom line; loyalty and high morale are a boon to productivity.

There is some speculation on whether Bedi's personal style of running a company can continue to benefit Reli as it has obviously done to date. The company has grown to a size that makes over involvement of the C.E.O. with details a bit cumbersome. Top executives feel that, instead of trying to take care of details himself, Bedi should work on strengthening the management system, so that these small points and/or errors are caught and taken care of before they even reach him.

That Reli will continue to grow and expand is almost certain. Bedi is now looking for areas of diversification suited to the company's expertise and style. A new type of plastic bottle is being worked on by one of the divisions, which could lead to an entirely new line of business if it is successful. Reli is definitely heading in a bigger and more complex direction that will necessitate modification of Bedi's informal style. A policymaker, not an intensely involved manager, is what Bedi may have to become in order to stay at the top of his organization. If he can do this, which means reversing the style that has been his up until now, he will have led the transition of his small company to a bigger one; this could be his greatest achievement.

Questions:

31. According to the passage, the can market Is characterized by

I. Slow growth

II. Companies diversifying its unrelated fields

III. Strong competition

IV. Strong Management

1) I and III only 2) I and II only

3) II, III and IV only 4) III and IV only
5) All of the above

32. What factors have led to Rell's growth?
I. Maximization of Rell's small-company advantages
II. Aggressive salesmanship
III. Careful strategic planning
1) I and III only 2) I and II only
3) II and III only 4) III only

5) All of the above

33. The passage implies that Bedi was a director with foresight. Which of the following demonstrates that capability?
1) Maintaining old customers
2) Being an aggressive salesman
3) Using his own initiative rather than following industry patterns
4) Working on the two-piece can
5) Concentrating on the can business only

34. Why has Reli de-diversified?
1) They fear competition from the industry leaders
2) Bedi has no experience in other fields
3) They want to concentrate on what they do best
4) Unrelated companies, acquired prior to Bedi's arrival, were unprofitable
5) The nature of the industry in against diversification

35. Before Bedi joined the company, Reli's success was based mainly on
1) Strong technology
2) Innovative strategy
3) Making a superior product
4) Good salesmanship
5) Keeping overhead at a minimum

36. Badi's marketing strategy consisted of
I. sailing to smaller companies
II. creating a new type of can
III. sales to new customers In two Industries
IV. building plants for brewers
1) I and II only 2) I, II and III only
3) I and IV only 4) I and III only
5) II, III and IV only

37. All but one of the following are characteristics of the two-piece can:
1) less expensive
2) can be manufactured more quickly
3) opened the can market to aluminum
4) is a more solid container
5) permits production economics

38. Bedi estimated that Reli could successfully manufacture the two-piece can because
1) Reli's expertise was in process refinements
2) Reli was constructing a new plant
3) Aluminum was readily available to Reli
4) Reli already had the necessary machinery for perfecting the two-piece can
5) Bedi wanted Reli to become an industry leader

39. All but one of the following describe Bedi's style of management:
1) Informality
2) Smooth flow of communications
3) Concern for employees
4) Attention to detail
5) Operating on a very low budget

40. The author implies that to maintain growth at Reli and his own success as C.E.O., Bedi will have to
1) Diversify into other areas
2) Build a stronger management system
3) Give up his informal style
4) Not allow Reli to grow faster than the company can handle
5) Develop new products

PART III

41. An owner of a pizza stand sold small slices of pizza for Rs. 150 each and large slices for Rs. 250 each. One night he sold 5000 slices, for a total of Rs. 10.50 lakh. How many small slices were sold?
1) 3000 2) 2000

3) 4000 4) 2500
5) 3500

42. Jack has three more cards than Bill. Together they have 47 cards. If x represents the number of card Bill has, then an equation that can be used to determine the number of cards each one has is
1) x+3 = 47 2) 2x+3=47
3) x-3 = 47 4) 2x-3 = 47
5) 3x + 3 = 47

43. If two fractions, each of which has a value between 0 and 1, are multiplied together, the product will be:
1) always greater than either of the original fractions
2) always less than either of the original fractions
3) sometimes greater and sometimes less than either of the original fractions
4) remains the same
5) never less than either of the original fractions

44. A father can do a certain job in x hours. His son takes twice as long to do the job. Working together, they can do the job in 6 hours. How many hours does it take the father to do the job?
1) 9 2) 18
3) 12 4) 20
5) 16

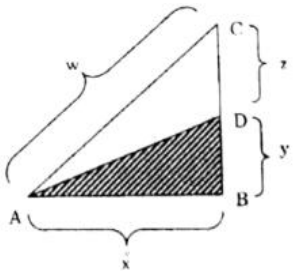
45. If x units are added to the length of the radius of a circle, what is the number of units by which the circumference of the circle is increased?
1) x 2) 2
3) 2π 4) $2\pi x$
5) x^2

46. John weighs twice as much as Marcia. Marcia's weight is 60% of Bob's weight. Dave weighs 50% of Lee's weight. Lee weighs 190% of John's weight. Which of these 5 persons weighs the least?
1) Bob 2) Dave
3) John 4) Lee
5) Marcia

47. There were P people in a room when a meeting started. Q people left the room during the first hour, while R people entered the room during the same time. What expression gives the number of people in the room after the first hour as a percentage of the number of people in the room who have been there since the meeting started?
1) $\frac{(P-Q)}{(P-Q+R)}$ 2) $100\times\frac{(P-Q+R)}{(P-Q)}$
3) $\frac{(P+R)}{(P-Q)}$ 4) $100\times\frac{(P-Q)}{(P-Q+R)}$
5) $100\times\frac{(P+R)}{(P-Q)}$

48. It cost Rs. x each to make the first thousand copies of a compact disk and Rs. y to make each subsequent copy. If z is greater than 1,000, how many dollars will it cost to make z copies of the compact disk?
1) 1,000 x + yz 2) zx – zy
3) 1,000 (z-x)+-xy 4) 1,000 (z-y) + xz
5) 1,000 (x-y)+ yz

49. If the shaded area is one half the area of triangle ABC and angle ABC is a right angle, then the length of line segment AD is



1) $\frac{1}{2}w$ 2) c
3) $\sqrt{2x^2+z^2}$ 4) $\sqrt{w^2-3y^2}$
4) $\sqrt{y^2+z^2}$

50. A plane flying north at 500 kmph passes over a city at 12 noon. A plane flying east at the same attitude passes over the tame

city at 12.30 pm. The plane le flying east at 400 kmph. To the nearest hundred km, how far apart are the two planes at 2 pm?

1) 600 km 2) 1000 km
3) 1100 km 4) 1200 km
5) 1300 km

51. A clothing manufacturer has determined that she can sell 100 suits a week at a selling price of Rs. 200 each. For each rise of Rs. 4 In the selling price she will sell 2 less suits a week. If she sells the suits for Rs. x each, how many rupees a week will she receive from the sales of the suits?

1) $\frac{x^2}{2}$ 2) $200 - \frac{x}{2}$
3) $50x\ \frac{x^2}{4}$ 4) $150x - \frac{x^2}{2}$
5) $200x - \frac{x^2}{2}$

52. The schedule of G first year students were Inspected. It was found that M were taking a Mathematics course, L was taking a Language course and B were taking both a Mathematics course and a Language course. Which of the following expression gives the percentage of the students whose schedule were inspected who were taking neither a Mathematics course nor a Language course?

1) $100 \times \frac{G}{(B+L+M)}$ 2) $100 \times \frac{(B+L+M)}{G}$
3) $100 \times \frac{(G-L-M)}{G}$ 4) $100 \times \frac{(G-B-L-M)}{G}$
5) $100 \times \frac{(G+B-L-M)}{G}$

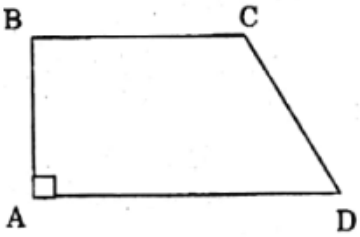
53. A car traveled 75% of the way from town A to town B by traveling at T hours at an average speed of V kmph. The car travels at an average speed of S kmph for the remaining part of the trip. Which of the following expression represents the average speed for the entire trip?

1) 0.75V + 0.25S 2) 0.75T + 0.25S
3) $\frac{VT}{(3s)}$ 4) $\frac{4VT}{\left(\frac{T+S}{3}\right)}$
5) $\frac{4VS}{(3S+V)}$

54. Joan started work 2 years ago. Her starting salary was 1/2 of Mike's salary at that time. Each year since then Joan has received a raise of 10% in his salary. What percentage (to the nearest percent) of Mike's current salary is Joan's current salary?

1) 45 2) 46
3) 48 4) 50
5) 220

55. ABCD has area equal to 28. BC is parallel to AD. BA is perpendicular to AD. If BC IS 6 and AD is 8, then what is CD?



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

56. Which of the following has the largest area?

I. A circle of radius J2
II. An equilateral triangle whose sides each have length 4
III. A triangle whose sides have lengths 3, 4 and 5

1) I 2) II
3) III 4) I and II
5) II and III

57. A charity solicited P persons over the phone who agreed to an average pledge of Rs. E each. Q of these people who had pledged in average of Rs. S each never sent in the pledged amount. Which of the following expressions represent the percentage of pledged money that the charity received

1) $100 \times \frac{PR}{QS}$ 2) $100 \times \frac{QS}{PR}$

3) 100 (PR – QS) 4) $100\left(1-\frac{QS}{PR}\right)$

5) $100\left(PR-\frac{QS}{PR}\right)$

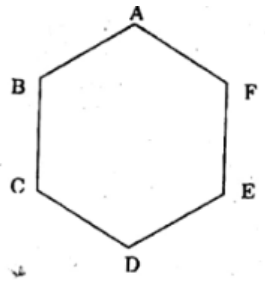
58. If x, y, z in chosen from the three numbers, -3, 1/2 and 2, what is the largest possible value of the expression $\left(\frac{x}{y}\right) z^2$?

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

3) 24 4) 36

5) 54

59. The hexagon ABCDEF is regular. That means all its sides are of the same length and all its interior angles are of the same size. Each side of the hexagon is 2m. What is the area of the rectangle BCEF?



1) 4 sq.m. 2) $4\sqrt{3}$ sq.m.

3) 8 sq.m. 4) $4 + 4\sqrt{3}$sq.m.

5) 12 sq.m.

60. 36 identical chairs must be arranged in rows with the same number of chairs in each row. Each row must contain at least three chairs and there must be at least three rows. A row is parallel to the front of the room. How many different arrangements are possible?

1) 2 2) 4

3) 5 4) 6

5) 10

PART IV

Directions:

Each of the following problems has a question and two statements which are labeled (1) and (2) In which certain data are given. You have to decide whether the data given in the statements are sufficient for answering the question. Using the data given in the problem plus your knowledge of mathematics and very day facts choose:

(1) If you can get the answer from (1) ALONE but not from (2)

(2) If you can get the answer from (2) ALONE but not from (1)

(3) If you can get the answer from BOTH (1) and (2) TOGETHER, but not from (1) alone or (2) alone

(4) If EITHER statements (1) ALONE or statement (2) ALONE suffices

(5) If you CANNOT get the answer from statement (1) and (2) TOGETHER but need even more data

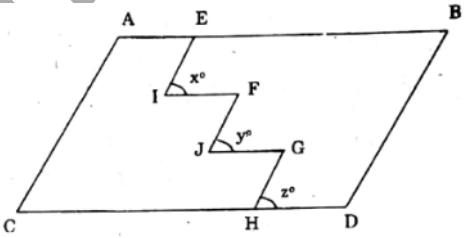
Questions:

61. Do sides

AC+CD=line AE+EI+IF+FJ+JG+GH+HD

1) ABCD is a parallelogram

2) Angles x, y and z = angle C



62. If It takes A and B, 6 hours to paint a room, how long will it take A to do the room alone?

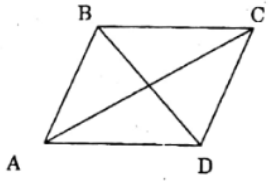
1) B can paint the room alone in 15 hours

2) Both painters use latex paint and rollers.

63. ABCD is a rhombus. Find the length of BC?

1) BD = 6 metres, AC = 8 metres

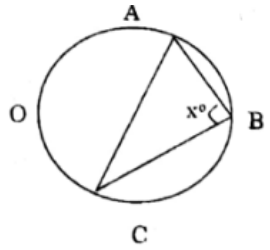
2) The perimeter is 20 metres.



64. ABC is a triangle Inscribed in circle AOCB. Is AC a diameter of the circle AOCB?

1) Angle ABC is a right angle

2) The length of AB is 3/4 the length of BC.



65. Is $2<x<4$?
1) $x^2-5x+6<0$ 2) $5x^2-25x>0$

66. Is the Integer n divisible by 9? n is a two digit number.
1) When n is divided by 3, the remainder is 2.
2) When n is divided by 7, the remainder is 1.

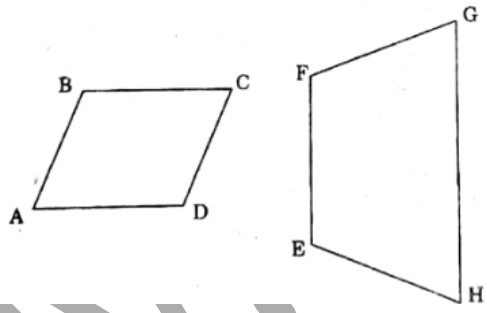
67. John and Paul are standing together on a sunny day. John's shadow is 10 metres long. Paul's shadow is 9 metres long. How tall is Paul?
1) John is 6 metres tall
2) John is standing 2 metres away from Paul.

68. A group of 49 consumers were offered a chance to subscribe to 3 magazines: A, B and C. 38 consumers subscribed to at least one of the magazines. How many of the 49 consumers subscribed to exactly two of the magazines?
1) Twelve of the 49 consumers subscribed to all three of the magazines
2) Twenty of the 49 consumers subscribed to magazine A

69. A jar is filled with 60 marbles. All the marbles in the jar are either red or green. What is the smallest number of marbles, which must be drawn from the jar in order to be certain that a red marble is drawn?
1) The ratio of red marbles to green marbles is 2:1.
2) There are 20 green marbles in the jar.

70. If n and k are even integers, is $\frac{n}{3}+\frac{k}{2}$ an integer?
1) n is a multiple of 3
2) k is a multiple of 4

71. Which of the two figures, ABCD or EFGH, has the largest area?
1) The perimeter of ABCD is longer than the perimeter of EFGH
2) AC is longer than EG.



72. A sequence of numbers a_1, a_2, a_3,... is given by the rule $a_n^2 = a_n+1$. Does 3 appear in the sequence?
1) $a_1 = 2$ 2) $a_3 = 16$

73. How much does John weigh? Tim weighs 100 kg.
1) Tim's weight plus Matt's weight is equal to John's weight
2) John's weight plus Matt's weight is equal to twice Tim's weight

74. What was the value of the sales of the ABC company in 2000?
1) The sales of the ABC company increased by Rs.10 lakh each year from 1990 to 2000
2) The value of the sales of the ABC company doubled between 1990 and 2000

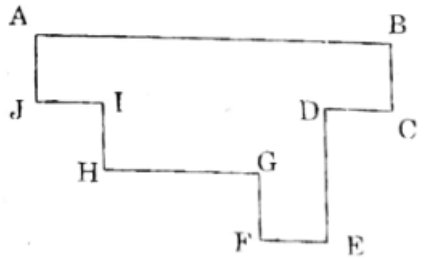
75. How many families own exactly two phones?
1) 150 families in Jaipur own atleast one telephone.
2) 45 families in Jaipur own atleast three telephones.

76. Find the value of the expression $x^3y-\left(\frac{x^3}{y}\right)$
1) $x = 2$ 2) $y = 1$

77. What is the length of the line segment AB? All lines that meet are perpendicular. AJ,

JI, HI, BC, FE, GF and DC are each equal to x. HG and DE are each equal to y.

1) y=4 2) x = 2



78. How much cardboard wilt it take to make an open cubical box with no top?

1) The area of the bottom of the box is 4 sq.m

2) The volume of the box is 8 cubic m

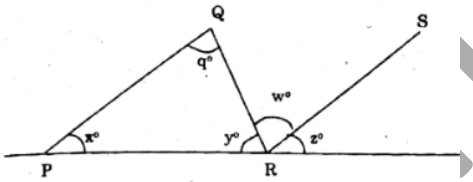
79. A dozen eggs cost Re. 24 In Jan 2007. Did a dozen eggs cost more than Rs.24 In Jan 2008?

1) In Jan 2007, the average worker had to work 1 hour to pay for a dozen eggs

2) In Jan 2008, the average worker had to work 45 min to pay for a dozen eggs

80. Is the line PQ parallel to the line SR?

1) w = q 2) y = z



PART V

Directions:

In each of the following sentences four words or phrases have been underlined. Only one underlined part In each sentence is not acceptable in standard English. Pick up that part - (1) or (2) or (3) or (4). If there is no mistake mark (5).

Questions:

81. She flouts her furs and jewelry at
(1) (2)
every opportunity; no wonder she
(3)
was robbed. No error.
(4) (5)

82. As the boat was rocking from the impact
(1) (2) (3)
of the waves, the dishes slid off of the
(4)
gallery table. No error.
(5)

83. The tire was flat, moreover the pump
(1) (2)
was not in the tool box. No error.
(3) (5)

84. We don't care who the new bate were
(1)
given to, but we do care how much they
(2) (3)
cost. No error.
(5)

85. As the dance progressed, the differences
(1) (2)
among the two couples became more
(3)
pronounced. No error.
(4) (5)

86. Either the first or the third of the proposals
(1) (2) (3)
they have offered are to be accepted.
(4)
No error.
(5)

87. By giving prompt and strict obedience
(1)
to orders, a soldier learns self-discipline
(2) (3)
and and consequently would have steady
(4)
nerves in time of war. No error.
(5)

88. Although she had not read much, she had
(1) (2)
the capacity of choosing the right word In
(3)
the right context. No error.
(4) (5)

89. The difference between good and bad

(1)
acting rest in the ability to project emotion
(2) (3)
to the audience. No error.
(4) (5)

90. Projecting emotion to an audience requires
(1) (2)
control of the voice, restrained use of gesture, and a mysterious gift, called
(3)
"stage presence," which makes everything
(4)
work. No error.
(5)

91. Many mistakes were made and condoned by his associates, and he kept the firm
(1) (2)
going by stringent measures, intelligent
(3)
decisions, and intensive public relations.
(4)
No error.
(5)

92. Never had the American navy sank so
(1) (2)
many foreign warships as they did during
(3)
that initial battle. No error.
(4) (5)

93. Each member of the Rangers wore their
(1)
team emblem, which appeared on all
(2) (3)
articles of clothing. No error.
(4) (5)

94. He is one of those persons who is never
(1) (2) (3) (4)
satisfied. No error.
(5)

95. The judges wanted to see only witnesses
(1) (2)
whom they knew were honest. No error.
(3) (4) (5)

96. It was she who determined the policy of
(1) (2)
the board of directors, not them, the
(3)
members who were selected by popular
(4)
vote. No error.
(5)

97. The atmosphere in his classroom is
(1) (2)
different than that in his home. No error.
(3) (4) (5)

98. Several legislators stood up and shouted angry in opposition to the motion
(1)
under consideration: nevertheless, it
(2) (3)
passed by a wide margin. No error.
(4) (5)

99. This is a story where a man, left alone on a
(1) (2)
desert island, loses the ability to act like a
(3) (4)
civilized person. No error.
(5)

100. There is no doubt but that you will learn to
(1) (2)
express yourself clearly, compactly, and
(3) (4)
accurately. No error.
(5)

MBA 2008 – ANSWERKEY

1.	2	2.	4	3.	1	4.	3	5.	4	6.	1	7.	5	8.	2	9.	2	10.	3
11.	2	12.	2	13.	2	14.	1	15.	2	16.	2	17.	1	18.	4	19.	2	20.	2
21.	2	22.	2	23.	3	24.	2	25.	3	26.	3	27.	4	28.	4	29.	2	30.	3
31.	1	32.	5	33.	4	34.	3	35.	4	36.	2	37.	4	38.	1	39.	5	40.	3

41. 2	42. 2	43. 2	44. 1	45. 4	46. 5	47. 2	48. 5	49. 4	50. 4
51. 5	52. 5	53. 5	54. 4	55. 4	56. 2	57. 4	58. 4	59. o	60. 3
61. 3	62. 1	63. 4	64. 1	65. 4	66. 1	67. 1	68. 5	69. 4	70. 1
71. 5	72. 4	73. 3	74. 3	75. 5	76. 2	77. 2	78. 4	79. 5	80. 1
81. 3	82. 4	83. 2	84. 1	85. 3	86. 4	87. 4	88. 3	89. 2	90. 5
91. 3	92. 2	93. 1	94. 4	95. 3	96. 3	97. 3	98. 1	99. 4	100. 1

MBA 2008 - DETAILED SOLUTIONS

1. (2)
This is has encouraged/ motivated Tandem to enter new areas.
2. (4)
This is the major assumption based on which Tandem enters shampoo market.
3. (1)
Obviously Tandem's main objective is to market successfully a new hair conditioner. This is the desire of Tandem.
4. (3)
Fragmented state of shampoo market - This is aspect has to be taken but is not a major factor.
5. (4)
The major assumption is aggressive advertising can help capture a share of the market. Basis of advertising is this assumption.
6. (1)
This is the goal or desire or action plan of the company and hence major objective.
7. (5)
Usage of shampoos involves use of hair dryers also. P| But this is not a factor which will affect the HP company's major objective.
8. (2)
The company decides to use the same name because it is already in the minds of the people and it will be major factor which will help the company to achieve its major objective.
9. (2)
This strategy is expected to help the company reach its goal.
10. (3)
Tandem has to be in the know of advertising of the competitors. However this will not affect the major objective.
11. (2)
This is a factor which will help the company o achieve its objective and is a cause of the efforts taken by the company.
12. (2)
This is a major factor which has helped the company achieve good results and hence major factor.
13. (2)
Insistence of this has enabled the company to mobilise cash resources and helped the company to achieve its major objective.
14. (1)
This is the aim of the company/goal of the company and hence major objective.
15. (2)
This rule has necessitated taking strategies as done by the company.
16. (2)
This has helped the company achieve its major objective.
17. (1)
This is also major objective of the company.
18. (4)
This major assumption has enabled the company to plan accordingly.
19. (2)
Though it can pay dividend it does not pay—this factor has helped the company achieve its main objective and will make the company stronger in financials.
20. (2)
As already seen this strategy has helped the company mainly.
41. (2)
Let the number of small slices of pizza be x and the number of large slices of pizza be y. Then
$x+y = 5000$ ... (1)
$150x+250y = 1050000$
$\Rightarrow 3x+5y = 21000$ ... (2)
(1) × 5 => $5x + 5y = 25000$ ... (3)
(3) - (2) $\Rightarrow 2x = 4000$

x = 2000

∴ Number of small slices of pizza sold = 2000

42. (2)

Number of card Bill has = x

Jack has three more cards than Bill.

Number of Jack's cards = x+3

Given, total number of cards = 47

⇒ x+(x+3) =47

⇒2x+3 =47

43. (2)

Consider two fractions $\frac{1}{3}$, $\frac{1}{2}$ between 0 and 1.

Then $\frac{1}{3} \times \frac{1}{2} = \frac{1}{6}$

Clearly $\frac{1}{6} < \frac{1}{3}$ and $\frac{1}{6} < \frac{1}{2}$

44. (1)

Given father can do a job in x hours and son takes twice as long to do the job.

∴ Son can do the job in 2x hours.

Father's 1 hour job = $\frac{1}{x}$

Son's 1 hour job = $\frac{1}{2x}$

Given $\frac{1}{x} + \frac{1}{2x} = \frac{1}{6}$

$\frac{2+1}{2x} = \frac{1}{6}$

⇒ x = 9

∴ Father can take 9 hours to do the job.

45. (4)

Let the radius of the circle be r units Then circumference = 2πr

New radius = r+x

New circumference = 2π(r+x)

= 2πr+2πx

∴ Increase in the circumference

= New circumference-Old circumference

= (2πr+2πx)-2πr

= 2πx

46. (5)

Let John's weight be x kg.

Then Marcia's weight = $\frac{x}{2}$

Also Marcia's weight = 60% of Bob s weight

⇒ $\frac{x}{2} = \frac{60}{100} \times$ Bob's weight

Bob's weight = $\frac{5x}{6}$

Now

Lee's weight = 190% of John's weight

= $\frac{190}{100} \times x = \frac{19x}{10}$

Dave weight = 50% of Lee's weight

= $\frac{50}{100} \times \frac{19x}{10} = \frac{95x}{100}$

Now

John's weight = x

Marcia's weight = $\frac{x}{2}$ = 0.5x

Bob's weight = $\frac{5x}{6}$ = 0.83 x

Lee's weight = $\frac{19x}{10}$ = 1.9 x

Dave's weight = $\frac{95x}{10}$ = 0.95x

∴ Marcia's weigh the least.

47. (2)

After 1 hour, number of people in the room = P-Q+R.

But After 1 hour number of people, who have been there since the meeting = P-Q

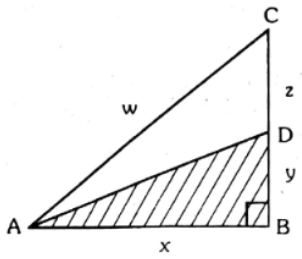
Required percentage = $\frac{P-Q+R}{P-Q} \times 100$

48. (5)

Required amount = 1000x + (Z-1000)y

= 1000x+zy-1000y

= 1000(x-y) + zy



AB = x

BC = y+z

Given ∟B = 90°

Height of ΔABC = BC

∴ Area of ΔABC

$\frac{1}{2}$AB × BC = $\frac{1}{2}$x(y + z)

Area of Δ ABD = $\frac{1}{2}$ AB×BD

= $\frac{1}{2}$ x×y

$= \frac{1}{2}xy$

Given shaded area (Area of ΔABD) is one half the area of ΔABC

⇒Area of ΔABC = 2 × Area ΔABD

$\Rightarrow \frac{1}{2}x(y+z) = 2\left(\frac{1}{2}xy\right)$

$\Rightarrow \frac{1}{2}x(y+z) = xy$

⇒y + z = 2y

⇒z = y

Now in ΔABC

$AC^2 = AB^2+BC^2$

$\Rightarrow W^2 = x^2+(y+z)^2$

$= x^2 + (2y)^2$ [∵ y=z]

$= x^2+4y^2$

$x^2 = w^2 - 4y^2$

Now in ΔABD

$AD = \sqrt{AB^2 + BD^2}$

$= \sqrt{x^2 + y^2}$

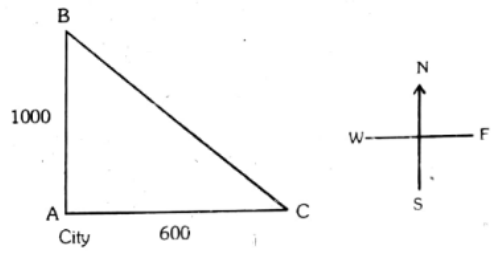
$= \sqrt{w^2 - 4y^2 + y^2}$

$= \sqrt{w^2 - 3y^2}$

49. (4)

At 2 pm, the first plane was 2 × 500 = 1000 km away north from the city.

At 2 pm, the second plane was 1.5×400 = 600 km away east from the city.



Nearest distance = BC

$= \sqrt{1000^2 + 600^2}$

$= \sqrt{1000000 + 360000}$

$= \sqrt{1360000}$

= 1166.99 ≈ 1200 km

50. (5)

No. of cloths sold	Price
100	200
98	204
96	208
94	212

Clearly if the price is 200 + 4y then number of suits sold = 100-2y

Given price of the suit = x

⇒ x = 200 + 4y

⇒ 4y = x-200

$y = \frac{x-200}{4}$

When the price is x, number of suits sold = l00-2y

$= 100 - 2\left(\frac{x-200}{4}\right)$

$= 100 - \left(\frac{x-200}{2}\right)$

$= \frac{200 - x + 200}{2}$

$= \frac{400-x}{2}$

Amount received from the sales

= Number of suits x price

$= \frac{400-x}{2} \times x$

$= \left(200 - \frac{x}{2}\right)x$

$= 200x - \frac{x^2}{2}$

52. (5)

n(Maths ∪ Language)

= n(Maths) + n(Language)-n(Maths ∩Language)

= M+L-B

No. of students taking neither Maths nor Language = Total students-

n(Maths ∪ Language)

= G-(M + L-B)

= G-M-L+B

∴ Required % = $\frac{G-M-L+B}{G} \times 100$

53. (5)

Let the distance between A and B be x km

Given car covered 75% of x by travelling at T hrs. at an average speed V kmph

$\Rightarrow \frac{75}{100}x = VT$

$\Rightarrow \frac{3x}{4} = VT$

$\Rightarrow x = \frac{4VT}{3}$

Car travels the remaining distance $x - \frac{3x}{4} = \frac{x}{4}$ at an average speed S.

Let time takeh to cover $\frac{x}{4}$ with average speed S be

R hours then $\frac{x}{4} = SR$

$\Rightarrow \frac{\left(\frac{4VT}{3}\right)}{4} = SR$

$\frac{VT}{3} = SR$

$R = \frac{VT}{3S}$

Now Average speed of the entire trip

$= \frac{\text{Total distance}}{\text{Total time taken}}$

$= \frac{x}{T+R}$

$= \frac{\left(\frac{4VT}{3}\right)}{T+\frac{VT}{3S}} = \frac{\left(\frac{4VT}{3}\right)}{T+(3S+V)}$

$= \frac{4VTS}{3ST+VT} = \frac{4VTS}{T+(3S+V)}$

$= \frac{4VTS}{3S+V}$

54. (4)

Let John s salary 2 years ago = x

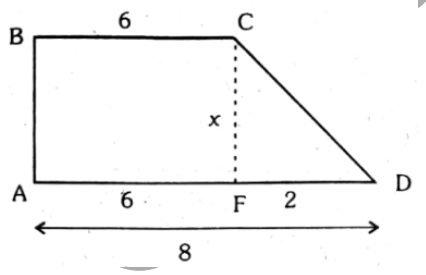
Then Mike Salary = 2x

John s present salary = $\frac{110}{100}\left(\frac{110}{100}x\right)$

Mike s present salary = $\frac{110}{100}\left(\frac{110}{100} \times 2x\right)$

Required % = $\frac{\frac{110}{100}\left(\frac{110}{100}x\right)}{\frac{110}{100}\left(\frac{110}{100} \times 2x\right)} \times 100 = 50\%$

55. (4)



Let CF = AB = x

Also AD = 8

FD = 8-6 = 2

Area of ABCD = Area of the rectangle ABCF+ Area of the triangle CFD

$= 6x+\left(\frac{1}{2} \times 2 \times x\right) = 6x+x = 7x$

Given Area of ABCD = 28

$7x = 28$

$x = 4$

$\therefore CD^2 = FD^2+FC^2$

$= 2^2+4^2 = 4 + 16=20$

$CD = \sqrt{20} = \sqrt{4 \times 5}= 2\sqrt{5}$

56. (2)

I. Radius of circle = $\sqrt{2}$

Area of the circle = $\pi(\sqrt{2})^2 = \pi^2$

$= \frac{22}{7} \times 2 = \frac{44}{7}$

= 6.2857 7

II. Area of the equilateral triangle

$= \frac{\sqrt{3}}{4} a^2$

where a is the side of the triangle Given a = 4

$\therefore$ Area of the equilateral triangle

$= \frac{\sqrt{3}}{4} \times (4)^2$

$= \sqrt{3} \times 4 = 1.732 \times 4 = 6.9282$

III. Area of the triangle whose sides are a, b, c

$\sqrt{S(s-a)(s-b)(s-c)}$

where $S= \frac{a+b+c}{2}$

Given: a=3, b=4, c=5

$S = \frac{3+4+5}{2} = \frac{12}{2} = 6$

$\therefore$ Area = $\sqrt{6(6-3)(6-4)(6-5)}$

$= \sqrt{6 \times 3 \times 2 \times 1}$

= 6

$\therefore$ Equilateral triangle has the largest area.

57. (4)

Total amount expected = PR

Total amount not received = QS

Amount received = PR-QS

$\therefore$ Required percentage = $\frac{PR-QS}{PR} \times 100$

$= 100\left(1-\frac{QS}{PR}\right)$

58. (4)

When x=-3 or y=-3 the expression $\left(\frac{x}{y}\right)z^2$ is negative.

$\therefore$Take z = -3

If we take x=2 and y = $\frac{1}{2}$ we get maximum

59. (2)

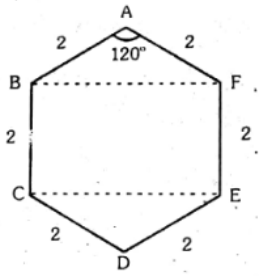
In a regular polygon with n sides interior angle = $\frac{2n-4}{n} \times 90$

$\therefore$ In Hexagon n = 6

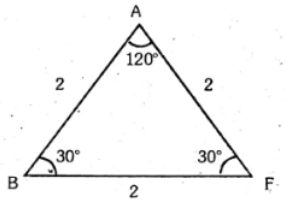
$\therefore$ Interior angle = $\frac{2\times6-4}{6}\times90$

= $\frac{12-4}{6} \times 90$

= 120°



Consider the triangle ABF



Since BA = AF = 2

$\Rightarrow \Delta$ ABC is an isosceles triangle.

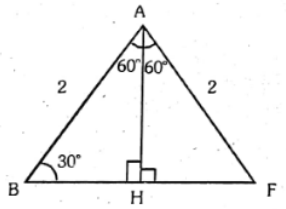
$\angle B = \angle F$

$\angle B + \angle F = 180\text{-}120 = 60$

$2\angle B = 60°$

$\angle B = 30°$

Also $\angle F = 30°$



Clearly BH = HF

In Δ ABH,

cos 30 = $\frac{BH}{2}$

$\frac{\sqrt{3}}{2} = \frac{BH}{2}$

BH = $\sqrt{3}$ BF

$\therefore$ BF = 2BH = $2\sqrt{3}$

Now Area of the rectangle BCEF

= BC×BF

= $2\times2\sqrt{3} = 4\sqrt{3}$

60. (3)

No. of Rows	No. of chairs in each Row
3	12
4	9
6	6
9	4
12	3

No. of different arrangement = 5.

61. (3)

(1) alone is not sufficient

(2) alone is not sufficient

But from (1) and (2) we have

AC+CD = AE + EI+IF+FJ + JG + GH + HD

So required answer is 3.

62. (1)

From (1)

B can paint the room in 15 hrs.

B's 1 hour work = $\frac{1}{15}$

Given (A + B)'s 1 hour work = $\frac{1}{6}$

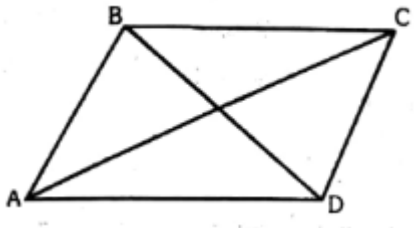
$\therefore$ A's 1 hour work = $\frac{1}{6} - \frac{1}{15} = \frac{5-2}{30} = \frac{3}{30} = \frac{1}{10}$

$\therefore$A alole can finish in 10 hours.

$\therefore$ (1) is sufficient to derive the answer.

(2) is not sufficient.

63. (4)



Formula:

In a rhombus d_1, d2 are diameters and a is the side then a = $\frac{1}{2}\sqrt{d_1^2 + d_2^2}$

From (1)

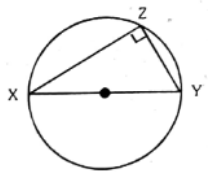
d_1 = AC =8

d_2 = BD =6

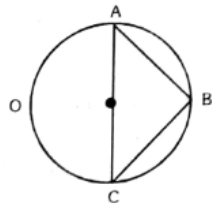
$\therefore$ a = $\frac{1}{2}\sqrt{8^2 + 6^2}$

So we can derive the value of a using (1).
∴ (1) alone is sufficient.
From (2) perimeter = 20
⇒ 4a =20
a = 5
From (2) alone we can derive the answer.
⇒ (2) alone is sufficient.
∴ Required choice is (4).

64. (1)



If XY is a diameter then ∟XZY = 90°

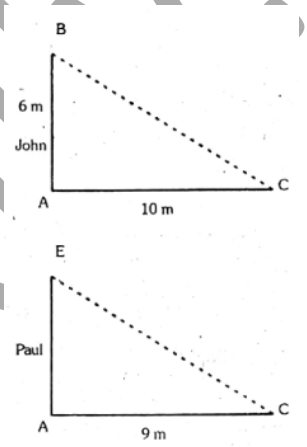


From (1) ∟ABC is a rightangle
∴ AC is a diameter.
∴ using (1) alone we can derive the answer.
⇒ (1) alone is sufficient.
(2) alone is not sufficient.

65. (4)
From (1)
x^2-5x+6<0
⇒ (x-2)(x-3)<0
⇒ 2<x<3
So from (1) we can derive the answer.
From (2)
$5x^2$-25x>0
⇒ x(x-5)>0
d (x-0)(x-5)>0
sd x ∈ (-∞, 0) ∪ (5, ∞)
So from (2) we can derive the answer.
Note: In Data sufficiency questions, we may get different answers from (1) and (2). Our aim is to analyse whether we can derive answer (No need to derive actual answer) from the data.

66. (1)
If n is divisible by 9.
then n is divisible by 3.
From (1) n is not divisible by 9.
(1) alone is sufficient to derive the answer.
(2) alone is not sufficient because
when 36 is divided by 7.
remainder is 1
36 is divisible by 9
when 71 is divided by 7 remainder is 1
But 71 is riot divisible by 9
So (2) alone is not sufficient.

67. (1)
From (1)



ABC and DEF are similar triangles.
$\frac{DE}{AB} = \frac{DE}{AC}$
$\frac{DE}{6} = \frac{9}{10}$
Paul height = DE = $\frac{9}{10} \times 6$
So using 1) alone we can derive the answer.
(1) alone is sufficient
(2) alone is not sufficient.

68. (5)
Given n(A∪B∪C) = 38
No. of consumers subscribing exactly two magizines = n(A∩B) + n(B∩C) + n(C∩A)-n(A∩B∩C)
(1) alone is not sufficient
(2) alone is not sufficient.
By (1) and (2)
n(A∩B∩C) = 12

n(A) = 20
Also given
n(A∪B∪C) = 38
Now
n(A∪B∪C) = n(A) + n(B) + n(C) - n(A∩B)-n(B∩C) -n(C∩A)+n(A∩B∩C)
= n(A) + n(B)+n(C)
-n(A∩B)+n(B∩C) + n(C∩A) -n(A∩B∩C)]
38 = 20 + n(B) + n(C)
- [n(A∩B) + n(B∩C) + n(C∩A) -12]
We cannot derive the answer because n(B) and n(C) are not given.

69. (4)
From (1) alone - red: green = 2:1
Red marbles $\frac{2}{3} \times 60 = 40$
Green marbles = 20
So we have to draw 21 marbles to make sure that red marbles is drawn.
Smallest number = 21
(1) alone is sufficient.
From (2) there are 20 green marbles.
So 21 marbles must be drawn to be certain that a red marble is drawn.
So (2) alone is sufficient.

70. (1)
From (1) alone n is a multiple of 3
$\Rightarrow \frac{n}{3}$ is an integer
Also since k is even k
$\Rightarrow \frac{k}{2}$ is an integer n k
$\Rightarrow \frac{n}{3} + \frac{k}{2}$ is an integer
(1) alone is sufficient to derive the answer
In (2) nothing is mentioned about n.
So we cannot derive the answer using (2).

71. (5)
(1) and (2) are not sufficient.

72. (4)
From (1) $a_1 = 2$
$a_n^2 = a_{n+1}$
$a_1 = 2$
$a_2 = a_1^2 = 4$
$a_3 = a_2^2 = 9$
So we can derive the answer.
From (2)
$a_3 = 16$
$a_3 = a_2^2 = 4^2$
$a_2 = 4$
$a_2 = a_1^2 = 2^2$
$a_1 = 2$
So using (2) alone we can derive the answer.

73. (3)
(1) alone and (2) alone is not sufficient.
Let John's weigh = J
Tim's weigh = T
Matt's weight = M
Given T = 100
From (1)
T+M = J
J-M = T = 100
From (2)]
J + M = 2T
J + M = 2T = 200
∴ J - M = 100
J + M = 200
Solving 2J = 300
J= 150
So using (1) and (2) we can derive the answer.

74. (3)
(1) alone is not sufficient
(2) alone is not sufficient
Let the sales in 1990 be Rs. x lakh.
From (1)
Sales in 2000 is = x+10x10 lakh
= x+100 lakh
From (2)
Sales in 2000 is = 2x
2x = x + 100
∴ x =100 lakhs

75. (5)
(1) and (2) are not sufficient.

76. (2)
From (1) x = 2
$x^3y - \left(\frac{x^3}{y}\right) = 2^3y - \left(\frac{2^3}{y}\right) = 8y - \frac{8}{y}$

y is not given.

Using (1) alone we cannot derive the answer

From (2)

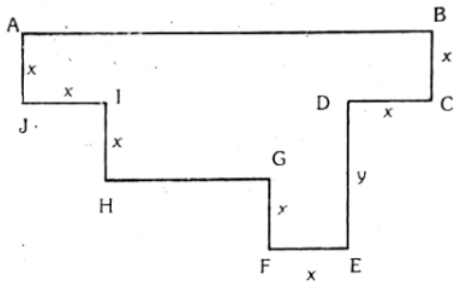
$y = 1$

$x^3y - \left(\frac{x^3}{y}\right) = x^3 \times 1 - \left(\frac{x^3}{1}\right)$

$= x^3 - x^3 = 0$

So (2) alone is sufficient to derive the answer.

77. (2)



From the figure

$y = DE = FG + HI = x+x$

$\Rightarrow y = 2x$

Also from the diagram

$AB = JI + HG + FE+DC$

$= x+ y+ x+ x = 3x + y = 3x + 2x = 5x$

(1) alone is not sufficient.

From (2) $x = 2$

$\therefore AB = 5x = 5\times2=10$

$\therefore$ (2) alone is sufficient to derive the answer

78. (4)

If the side of the cube is a then surface area of the required box (with no top) = $5a^2$.

Required cardboard = $5a^2$

From (1)

Area of the bottom = 4 sq.m.

$\Rightarrow a^2 = 4$

$a = 2$

So using (1) alone we can derive the answer

From (2)

Volume = 8 cubic m.

$\Rightarrow a^3 = 8$

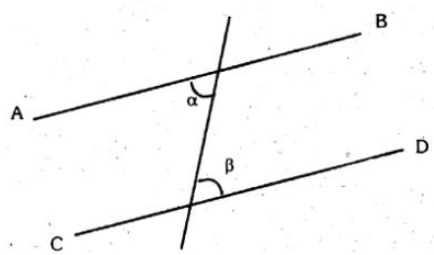
$a = 2$

Using (2) alone we can derive the answer.

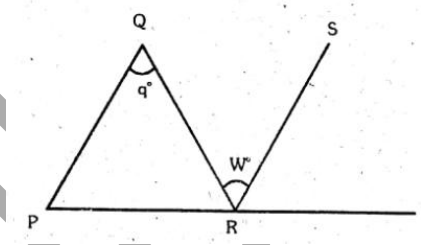
79. (5)

(1) and (2) are not sufficient we need more data.

80. (1)



If AB and CD are parallel then $\alpha=\beta$



From (1)

$w = q$

$\Rightarrow$ PQ and RS are parallel.

So (1) alone is sufficient.

(2) alone is not sufficient.

81. (3)

Change as "not a wonder"

82. (4)

delete 'of'

83. (2)

substitute moreover with 'and'

84. (1)

changes as 'to whom'

85. (3)

change as 'between-

86. (4)

change as 'is'

87. (4)

change as 'will have'

88. (3)

change as 'using'

89. (2)

change as 'rests'

90. (5)

No error

91. (3)

change as ‘actions’

92. (2)
change as ‘sunk’

93. (1)
change as ‘his’

94. (4)
change as ’are’

95. (3)
change as ‘whom’

96. (3)
change as ‘they’

97. (3)
substitute than with ‘from’

98. (1)
change as ‘angrily’

99. (4)
substitute like with ‘as’

100. (1) delete but factor that is insignificant or not immediately relevant to the situation.