



**II Semester M.B.A. Examination, June 2015**  
**(2011 Scheme)**  
**Business Administration**  
**Quantitative Methods**

Time : 3 Hours

Max. Marks : 75

**SECTION – A**

Answer all questions. Each question carries six marks. (5×6=30)

1. Distinguish among the following sets of items and suggest the significance of each in a research context.
  - a) Concept and construct.
  - b) Hypothesis and preposition.
2. How does qualitative research differ from quantitative research ?
3. Discuss the relative merits of and problems with Likert and differential scales.
4. What are the differences between a probability sample and a nonprobability sample ?
5. What is descriptive research design ? What is its purpose ?

**SECTION – B**

Answer any three questions. Each question carries ten marks. (3×10=30)

1. A company has four salesmen who are to be assigned to four different sales territories. The monthly increases, estimated for each salesman in different territories (in lakh rupees) are shown in the table below :

Salesmen	Sales Territories				
	I	II	III	IV	V
A	75	80	85	70	90
B	91	71	82	75	85
C	78	90	85	80	80
D	65	75	88	85	90

Suggest optimal assignment for the salesmen. Which sales territory will remain unchanged ? What will be the maximum sales increase every month ?

P.T.O.



7. Solve the following transportation problem.

Source	Destination				Supply
	P	Q	R	S	
A	15	18	22	16	30
B	15	19	20	14	40
C	13	16	23	17	30
Demand	20	20	25	35	

Is the optimal solution obtained by you a unique one ? If not why ? What are alternate optima then ?

8. Find the sequence that minimises the total elapsed time required to complete following jobs. Each job is processed in the order ACB.

Jobs :	J <sub>1</sub>	J <sub>2</sub>	J <sub>3</sub>	J <sub>4</sub>	J <sub>5</sub>	J <sub>6</sub>
Time on Machine A :	12	8	7	11	10	5
Time on Machine B :	7	10	9	6	10	4
Time on Machine C :	3	4	2	5	2	4

9. A businessman has two independent investments A and B available to him, but he lacks the capital to under take both of them simultaneously. He can choose to take A first and then stop, or if A is successful then take B, or vice versa. The probability of success on A is 0.7, while for B it is 0.4. Both investments require an initial capital outlay of Rs. 2 lakhs, and both return nothing if the venture is unsuccessful. Successful completion of A will return Rs. 3 lakhs (over cost) and successful completion of B will return Rs. 5 lakhs (over cost). Draw the decision tree and determine the best strategy.

10. A firm makes two products, X and Y and has total production of 9 tonnes per day, X and Y requiring the same production capacity. The firm has a permanent contract to supply at least 2 tonnes of X and at least 3 tonnes of Y per day to another company. Each tonne of X requires 20 machine hours production time and each tonne of Y requires 50 machine hours production time; the daily maximum possible number of machine hours is 360. All the firm's output can be sold and the profit made is Rs. 80 per tonne of X and Rs. 120 per tonne of Y. It is required to determine the production schedule for maximum profit and to calculate this profit by simplex method.

SECTION – C  
(Compulsory)

11. Case Study.

15

When Fossil recently opened the doors on its chain of specialty stores, it created the perfect place to show case its ever-growing product line.<sup>3</sup> "This is Fossil in a box. Really, for us to be able to communicate the essence of the brand, we had to be in a retail setting where it was all together in one place — where you could walk into this environment and it's very readily communicated what our brand image [is] from a product perspective," says Vice President of Image Tim Hale.

At the retail store, surrounded by Fossil's trademark salute to 1950s' nostalgia, shoppers can choose from hundreds of different Fossil products. Although Fossil is best known for its fashion-savvy watches, the company's trendy eye wear, leather goods, sports caps and even boxer shorts are becoming hot fashion accessories around the world. While the majority of its products are manufactured in Hong Kong, Fossil designs its products at its corporate headquarters in Richardson, Texas.

Stephanie Thatcher, director of marketing, says, "For each product division that we have — watches, sunglasses, leather goods—we have a design team. That design team spends a lot of time overseas researching trends and seeing what's new and happening. They spend a lot of time in Europe and in Hong Kong really finding out what's going on in those markets and then adapting them to our market and to our customers".



Whether it's in a Fossil kiosk in Hong Kong or at the flagship Fossil store Dallas, Fossil employs a universal product strategy. "We have a business system that works, and that system is that you buy at least 85 percent of your product from a core assortment that we have identified as our best-selling product. We still do realize there are some cultural differences. Some parts of the world like little more gold than silver, some areas sell more blue dials than yellow dials and we allow a 15 percent tweak factor for regional differences in taste level," says Gary Bolinger, senior vice president of international sales and marketing.

**Questions :**

- 1) Does a company that focuses on a retro image of the 1950s need business research ?
- 2) How do the information needs of an entrepreneurial company change as it begins to market its product through its own retail stores rather than through a traditional channel of distribution ?
- 3) How can a company use business research to determine the best product to sell in global markets ?
- 4) How can business research help a firm that focuses on high fashion watches ?

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