

## Answer to MTP\_Final\_Syllabus 2012\_Jun2014\_Set 2

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### Paper 15 - Business Strategy and Strategic Cost Management

Whenever necessary, suitable assumptions should be made and indicate in answer by the candidates.

Working Notes should be form part of your answer

#### Section A

Question No. 1 & 2 are compulsory. Answer any two questions from the rest.

1 In 2002, the Florida Turnpike became the first governmental toll agency to be given the ability to function as a private enterprise. The Florida's Turnpike Enterprise's goal was to become an innovative operation built on providing value at every part of the customer experience. As part of the "We Drive Smiles" initiative, a series of awareness and skill-building service training sessions were delivered to all 1,400 team members across the entire state of Florida.

Within one year, this ground-breaking effort resulted in many impressive operational improvements, including:

- Dramatic improvement of employee morale (up 18%) and customer satisfaction (92% would recommend to family/friends).
- has expanded and increased revenue, improved efficiency, cost-effectiveness and timely project delivery.
- has leveraged resulting additional revenue to make substantial improvements to the existing road system, delivered six expansion projects, contracted most in-house functions to the private sector, promoted customer service, maintained financial stability and improved bond rating.
- expanded responsibility for all operations on every FDOT-owned and operated toll road and bridge. This represents about 600 miles of roadway and 80 percent of all toll facilities in Florida. Based on the amazing success of this service transformation, Florida's Turnpike Enterprise was awarded the prestigious international President's Award for Innovation and Excellence in 2003 and later won the JD Powers Seal of Approval for Excellence in 2005.

Required:

(a) What are the impressive outcomes of adopting the strategies by Florida Turnpike?

(b) State the merits and demerits of Benchmarking.

(c) List the types of Benchmarking.

[4+5+6]

Answer 1:

(a) After adopting the strategies by Florida Turnpike , the impressive outcomes are:

- (i) Dramatic improvement of employee morale (up 18%) and customer satisfaction (92% would recommend to family/friends).
- (ii) has expanded and increased revenue, improved efficiency, cost-effectiveness and timely project delivery.
- (iii) has leveraged resulting additional revenue to make substantial improvements to the existing road system, delivered six expansion projects, contracted most in-house functions to the private sector, promoted customer service, maintained financial stability and improved bond rating.
- (iv) expanded responsibility for all operations on every FDOT-owned and operated toll road and bridge. This represents about 600 miles of roadway and 80 percent of all toll facilities in Florida.

### (b) Merits and Demerits of Benchmarking

#### Merits

The important merits of benchmarking are summarized as follows:

- (i) It increases customer satisfaction.
- (ii) It leads to significant cost savings and improvements in products and services.
- (iii) It helps in improving strategic planning by providing assessment of strengths and weaknesses of current process.

#### Demerits

- (i) It increases the diversity of information which much must be monitored by management this increases the potential for information overload.
- (ii) It may reduce managerial motivation if they are compared with a better resourced rival.
- (iii) There is a danger that confidentiality of data will be compromised.
- (iv) It encourages management to focus on increasing the efficiency of their existing business instead of developing new lines of business. As one write put it: Benchmarking is the refuge of the manager who's afraid of the future.
- (v) Successful benchmarking firms may find that they are later overloaded with requests for information form much less able firms whom they can learn little.

### (c) Types of Benchmarking :

**(i) Internal Benchmarking** - It involves looking within the organization to determine other departments, locations and projects which have similar activities and then defining the best practices amongst them. It involves seeking partners from within the same organization. For example, from business units located in different areas. The main advantages of internal benchmarking are that access to sensitive data and information are easier; standardized data is often readily available; and usually less time and resources are needed. There may be fewer barriers to implementation as practices maybe relatively easy to transfer across the same organization. However real innovation may be lacking and best in class performance is more likely to be found through external benchmarking.

**(ii) External Benchmarking** - External benchmarking involves seeking help of outside organizations that are known to be best in class. External benchmarking provides opportunities of learning from those who are at the leading edge, although it must be remembered that not every best practice solution can be transferred to others. In addition, this type of benchmarking may take up more time and resource to ensure the comparability of data and information, the credibility of the findings and the development of sound recommendations.

**(iii) Generic Benchmarking** - Generic benchmarking involves comparing with organizations that have similar processes. It involves the comparison of an organization's critical business processes and operations against best practice organization that performs similar work or delivers similar services. For example, how do best practice organization process customers' orders. It extends the benchmarking process outside the organization and its industry to get inspiration from organizations in dissimilar industry.

**(iv) Functional Benchmarking**- This type of benchmarking is used when organizations look to benchmark with partners drawn from different business sectors or areas of activity to find ways of improving similar functions or work processes. This sort of benchmarking can lead to innovation and dramatic improvements.

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- (v) Competitive Benchmarking** - It involves examining the products, services and processes of competitors and then comparing them with their own. It involves the comparison of competitors' products, process and business results with own. It requires that the company perform a detailed analysis of its competitors' products, services, and processes. Benchmarking partners are drawn from the same sector. However to protect confidentiality it is common for the companies to undertake this type of benchmarking through trade associations or third parties.
- (vi) Compatible Industry Benchmarking** - Compatible industry will include those companies that are not directly competing for the same customer. It makes comparisons within A general industry category. For example, a company, which is manufacturing automobile spare parts, compares itself with another company which is manufacturing automobile accessories.
- (a) Strategic Benchmarking** - It is similar to the process benchmarking in nature but differed in its scope and depth. It involves a systematic process by which a company seeks to improve their overall performance by examining the long-term strategies. It involves comparing high-level aspects such as developing new products and services, core competencies etc.
- (b) Global Benchmarking** - It is a benchmarking through which distinction in international culture, business processes and trade practices across companies are bridged and their ramification for business process improvement are understood and utilized. Globalization and advances in information technology leads to use this type of benchmarking.

**2. IKEA's goals of sustainability and environmental design are central to its business strategy. It has launched a new sustainability plan to take the company through to 2015. This will combine social, environmental and economic issues.**

**IKEA uses SWOT analysis to help it reach its objectives. This is a strategic planning tool. It helps the business to focus on key issues. SWOT is the first stage of planning and looks at the Strengths, Weaknesses, Opportunities and Threats involved in a project or business venture.**

**Strengths and weaknesses are internal aspects. This means that they are within the control of the business. They may refer to aspects of marketing, finance, manufacturing or organization.**

**Opportunities and threats are external factors. This means that they are outside the control of the business. These may include the environment, the economic situation, social changes or technological advances, such as the internet.**

**A business can create opportunities and counter threats by making the most of its strengths and addressing its weaknesses. For example, one of IKEA's key strengths is its strategic aim to use no more material than necessary in the production of each item. In addition, it develops its product plans to increase its use of waste or recycled materials.**

- **One particular table, the NORDEN table, uses knotty birch wood. The knots in this wood usually mean it is rejected by other retailers and manufacturers as unsuitable for use. However, IKEA has made the knots part of its design feature.**
- **OGLA chairs are made using wood waste from saw mills and LACK tables use a 'sandwich' of stiff card between wood sheets to reduce the amount of solid wood needed.**

**IKEA is a well-known global brand with hundreds of stores across the world. In order to improve performance, it must assess its external and competitive environment. This will reveal the key opportunities it can take advantage of and the threats it must deal with. IKEA responds to both internal and external issues in a proactive and dynamic manner by using its strengths and**

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reducing its weaknesses. Through this, IKEA is able to generate the strong growth it needs to retain a strong identity in the market.

IKEA's passion combines design, low prices, economical use of resources, and responsibility for people and the environment. The company's products, processes and systems all demonstrate its environmental stance. For example, clever use of packaging and design means more items can fit into a crate, which means fewer delivery journeys. This in turn reduces IKEA's carbon footprint.

IKEA believes that there is no compromise between doing good business and being a good business. It aims to go beyond profitability and reputation. IKEA is intent on becoming a leading example in developing a sustainable business. This will create a better everyday life for its customers. IKEA has discovered a business truth being sustainable and responsible is not just good for customers and the planet; it is also good for business.

**Required:**

**(i) Explain the meaning of strengths in the context of SWOT Analysis.**

**(ii) Describe the advantages of SWOT Analysis.**

**(iii) Mention the basic objectives of SWOT Analysis**

**(iv) What are the advantages of IKEA after adopting the SWOT Analysis?**

**[3+3+4+5]**

**Answer 2:**

**(i)** A firm's strengths are its resources and capabilities that can be used as a basis for developing a competitive advantage. It is an inherent capacity which an organization can use to gain strategic advantage. It may be the availability of a particular resource with the firm or the ability of the firm to leverage it to performing certain activities better than its competitors.

**Examples of such strengths include:**

- patents
- Strong brand names
- Good reputation among customers
- cost advantages from proprietary know-how
- Exclusive access to high grade natural resources
- Favorable access to distribution networks

**(ii) Advantages:-**

- (a) It provides a logical framework to be used for systematic discussion of various issues bearing on the business situation, alternative strategies and finally the choice of strategy.
- (b) Another application of SWOT analysis is the structured approach whereby key external threats and opportunities may be systematically compared with internal strengths and weakness.
- (c) A business may have several opportunities but also face some serious threats in the environment. It may have likewise several weaknesses along with one or two major strength. In such situations, the SWOT analysis guides the strategist to visualise the overall position of the firm, and helps to identify the major purpose of the grand strategy being considered.

**(iii) The basic objectives of conducting SWOT analysis are:**

- (a) To identify the shortcomings in the company's present skills and resources.
- (b) To exploit the strengths of the company to achieve its objectives.

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- (c) To focus on profit-making opportunities in the business environment and for identifying threats.
- (d) To highlight areas within the company, which are strong and which might be exploited more fully and weaknesses, where some defensive planning might be required to prevent the company from downfall.

(iv) After adopting the strategies get advantages:

- (a) IKEA responds to both internal and external issues in a proactive and dynamic manner by using its strengths and reducing its weaknesses. Through this, IKEA is able to generate the strong growth it needs to retain a strong identity in the market.
- (b) IKEA's passion combines design, low prices, economical use of resources, and responsibility for people and the environment. The company's products, processes and systems all demonstrate its environmental stance. For example, clever use of packaging and design means more items can fit into a crate, which means fewer delivery journeys. This in turn reduces IKEA's carbon footprint.

### 3. Contingency Planning. Enumerate the steps involved in it. List the benefits of Contingency Planning. [2+4+4=10]

**Answer 3:**

Planning is made on the basis of certain assumptions and conditions. If the conditions change drastically, the selected plans may have to be discarded altogether. The business firms are exposed to continuous changing economic environmental conditions. Therefore, a business organization should be well prepared to deal with contingencies i.e. unforeseen and other critical developments. A contingency plan is a plan to cope with such unforeseen consequences which mark major deviations from the strategic planning process. Such contingency plans are formulated in advance to take care of unknown events and unexpected challenges. They make the future through their proactive planning and advanced preparation. The advantage of contingency planning is that when external opportunities occur contingency plans could allow an organization to capitalize on them quickly.

#### **Steps in Contingency Planning**

Robert Lineman and Rajan Chandran have suggested that a seven step process as follows:

Steps 1 - Identify the beneficial and unfavorable events that could possibly derail the strategy or strategies.

Step 2 - Specify trigger points. Calculate about when contingent events are likely to occur.

Step 3 - Assess the impact of each contingent event. Estimate the potential benefit or harm of each contingent event.

Step 4 - Develop contingency plans. Be sure that contingency plans are compatible with current strategy and are economically feasible.

Step 5 - Assess the counter impact of each contingency plan. That is, estimate how much each contingency plan will capitalize on or cancel out its associated contingent event. Doing this will quantify the potential value of each contingency plan.

Step 6 - Determine early warning signals for key contingency event. Monitor the early warning signals.

Step 7 - For contingent event with reliable early warning signals, develop advance action plans to take advantage of the available lead time.

### Benefits of Contingency Planning

- (i) It will make the future through their proactive planning and advanced preparation.
- (ii) It will introduce original action by removing present difficulties.
- (iii) It enables to anticipate future problems.
- (iv) It will change the goals to suit internal and external changes.
- (v) It experiments with creative ideas and take initiative.
- (vi) It will attempt to shape the future and create a more desirable environment.
- (vii) It permits quick response to change,
- (viii) It prevents panic in crisis situations.
- (ix) It makes managers more adaptable to unforeseen changes.

### 4.How social analysis is conducted as a part of PEST Analysis? List the Drawbacks of PEST Analysis. [4+6=10]

#### Answer 4:

**Social Analysis** is the third aspect of PEST it focuses its attention on forces within society such as family, friends, colleagues, neighbours and the media. Social forces affect our attitudes, interests and opinions. These forces shape who we are as people, the way we behave and ultimately what we purchase. For example within the UK people's attitudes are changing towards their diet and health. As a result the UK is seeing an increase in the number of people joining fitness clubs and a massive growth for the demand of organic food. Products such as Wii Fit attempt to deal with society's concern, about children's lack of exercise.

Population changes also have a direct impact on organisations. Changes in the structure of a population will affect the supply and demand of goods and services within an economy. Falling birth rates will result in decreased demand and greater competition as the number of consumers fall. Conversely an increase in the global population and world food shortage predictions are currently leading to calls for greater investment in food production. Due to food shortages African countries such as Uganda are now reconsidering their rejection of genetically modified foods.

In summary organisations must be able to offer products and services that aim to complement and benefit people's lifestyle and behaviour. If organisations do not respond to changes in society they will lose market share and demand for their product or service.

- Demographics
- Class structure
- Education
- Culture (gender roles, etc.)
- Entrepreneurial spirit
- Attitudes (health, environmental consciousness, etc.)
- Leisure interests

### Drawbacks of PEST Analysis

It is very important to be aware of the drawbacks of PEST Analysis while conducting such an analysis. Here's a list of some of the drawbacks which can cloud the results of a PEST analysis.



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PEST, what is also known as PESTLE, is a strategic management tool used to study and analyze how Political, Economic, Social, Technological, Legal and Environmental factors affect a business or a project. This strategic planning tool is quite an effective way of scanning the operating environment of a project.

- (i) The external factors considered during PEST analysis are dynamic and they change at a very fast pace. At times, these changes may occur in less than a day's time, thus making it tricky to predict why and how these factors may affect the present or future of the project. On many occasions, environmental changes that may have an adverse effect on the project may not be noticeable during their initial stages. All that indicates that a certain amount of uncertainty still remains even after carrying out a detailed PEST analysis, which to some extent defeats the prime purpose of this analysis – cutting down the uncertainty.
- (ii) It's simple presentation can also be considered a limitation. For PEST analysis, the usual procedure is to present a simple list of the environmental factors that can affect the project. Without critical examination in terms of the degree of impact, the findings of the analysis don't seem to be of much value.
- (iii) Collecting enormous amounts of relevant data from the right sources becomes a bit of a problem, especially since most of the pertinent data must be collected from external agencies. This makes PEST analysis not only time consuming but costly as well. Also, getting the latest data and keeping the analysis updated with it becomes a problem.
- (iv) The lack of easily available updated information, as mentioned in the point above, leads to one more problem – making too many assumptions. Most of the factors mentioned in the analysis are based more on assumptions and less on actual facts. An analysis based on unfounded assumptions can lead to planning disasters. There is a need of some method to cross-verify whether the factors mentioned are not merely based on tenuous assumptions.
- (v) A proper PEST analysis requires a lot of information to be collected. But when handling too much information, the users tend to get confused and lose sight of what factors are more critical and this can put the entire planning on the wrong track.
- (vi) PEST analysis is insufficient for the purpose of strategic planning, since it scans only the external environment while completely ignoring the internal environment and the competitive scenario. For PEST analysis to make some worthwhile contributions towards strategic planning it must be in conjunction with other tools .

**5. (a) Discuss what is Retrenchment Strategies and why it is adopted?**

**[6]**

**(b) List the factors that affect the choice of a strategy.**

**[4]**

**Answer 5:**

**(a)** The corporate strategy of retrenchment is followed when an organization aims at contraction of its activities through a substantial reduction or elimination of the scope of one or more of its businesses in terms of their respective customer groups, customer functions or alternative technologies—either singly or jointly—in order to improve its overall performance.

Retrenchment involves total or partial withdrawal from a customer group, customer function, or use of an alternative technology in one or more of a firm's businesses, as can be seen from the situations given below:

A pharmaceutical firm pulls out from retail selling to concentrate on institutional selling in order to reduce the size of its sales force and increase marketing efficiency.

A training institution attempts to serve a larger clientele through the distance learning system and discard its face-to-face interaction methodology of training in order to reduce its expenses and use the existing facilities and personnel more efficiently.

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In this manner, retrenchment attempts to 'trim the fat' and results in a 'slimmer' organization, bereft of unprofitable customer groups, customer functions or alternative technologies. All the situations described above are, in fact, an over-simplification of the complex reality that an organization faces. In order to deal with the real-life situations, organisations have to evolve a combination of the three strategies.

### **Retrenchment strategy is adopted because:**

- (i) The management no longer wishes to remain in business either partly or wholly, due to continuous losses and the organization becoming unviable.
- (ii) The environment faced is threatening.
- (iii) Stability can be ensured by reallocation of resources from unprofitable to profitable businesses.

(b) Following are the factors that affect the choice of a strategy:

- (i) **External Constraints** : Choice of strategy is governed by the extent and degree of the firm's dependence on owners, customers, suppliers, the govt.
- (ii) **Intra-Organizational Forces** : Decisions are influenced by the power play among different interest groups and by the degree of uncertainty.
- (iii) **Values and preferences and managerial attitudes towards risk**: Evaluation of strategy is determined by personal values (truth, knowledge etc.) and attitude towards risk. Risk lover prefers high risky projects with high return. Risk averse prefers safer options.
- (iv) **Impact of past strategy**: The choice of strategy may be influenced by the earlier strategy because it is starting point in the formulation of new strategy and decision maker is involved in past strategy.
- (v) **Time constraint**: Choice of strategy is influenced by the time dimension i.e., whether it will be short term or long term, whether it has immediate action or not.

### Section B

**Question No.6 is Compulsory. Answer any two questions from the rest.**

6. Boraco Ltd. has been offered supplies of special ingredients S at a transfer price of ₹15 per kg by Chhotaco Ltd. which is part of the same group of companies. Chhotaco Ltd processes and sells S to customers external to the group at ₹15 per kg. Chhotaco Ltd. bases its transfer price on cost plus 25% profit mark-up. Total cost has been estimated as 75% variable and 25% fixed.

You are required to:

Discuss the Transfer prices at which Chhotaco Ltd. should offer to transfer special ingredient S to Boraco Ltd. in order that group profit maximizing decisions may be taken on financial ground in each of the following situations:-

- (i) Chhotaco Ltd. has an external market for all of its production of S at a selling price of ₹15 per kg. Internal transfers to Boraco Ltd. would enable ₹1.50 per kg of variable packing cost to be avoided.
- (ii) Conditions are as per (i) but Chhotaco Ltd has production capacity for 3,000 kg of S for which no external market is available.



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- (iii) Conditions are as per (ii) but Chhotaco Ltd has an alternative use for some of its spare production capacity. This alternative use is equivalent to 2,000 kg of S and would earn a contribution of ₹6,000. [4+3+3]

**Answer:**

- (i) The proposed Transfer price [tp], ₹15, is 125% of cost. So, cost= ₹12, of which variable cost is 75%= ₹9 and fixed cost is 25%= ₹3. Since Chhotaco [C] can sell all its production of S in external market, the market price, which is marginal cost plus opportunity cost, should normally be the internal tp.  
MP=₹15, Variable cost is ₹9; so opportunity cost is ₹6. However, for internal transfer, packing cost of ₹1.50 will not be needed. Hence, while the outside SP will remain at ₹15, internal tp will be=Variable cost Of ₹7.50+opportunity cost of ₹6= ₹13.50 – which is the same as MP- Selling expenses avoided.
- (ii) For the 3,000 kg where no external market is available, the opportunity cost will not apply and transfers should be at the variable cost of ₹7.50. It will not add to the profit of C Ltd but will enable it to avoid under-capacity working. The remaining output should be transferred at ₹13.50 as described above.
- (iii) The lost contribution for the 2,000 kg is ₹3 per kg (₹6,000/2,000 kg) giving a tp of ₹10.50 (₹7.50 variable cost + ₹3 opportunity cost). The remaining 1,000 kg for which there is an external market at ₹13.50.

7.

- (a) A Multinational Company runs a public Medical Health Centre. For this purpose, it has hired a building at a rent of ₹10,000 per month with 5% of total taking. The Health Centre has 3 types of wards for its patients namely- General ward, Cottage ward, and Deluxe ward. State the rent to be charged to each bed-day for different type of ward on the basis of the following information.

- (i) The number of beds of each type is general ward 100, Cottage ward 50, Delux ward 30.  
 (ii) The rent of cottage ward bed is to be fixed at 2.5 times of the general ward bed and that of Deluxe ward bed as twice of the Cottage ward bed.  
 (iii) The Occupancy of each type of ward is as follows-  
 General ward 100%, Cottage ward 80% and Deluxe ward 60%. But, in General ward, there were occasions when beds are full, extra beds were hired at charges of ₹20 per bed. The total hire charges for the extra beds incurred for the whole year amount to ₹12,000.  
 (iv) The Health Centre engaged a Heart Specialist from outside and on an average fees paid to him was ₹15,000 per trip. He makes three trips in the whole year.  
 (v) The other expenses for the year were as under-

Salary of Supervisors, Nurses, Ward Boys	4,25,000
Repairs and maintenance	90,000
Salary of Doctors	13,50,000
Food supplied to patients	40,000
Laundry charges for their bed linens	80,500
Medicines supplied	74,000
Cost of Oxygen, X-ray etc. other than directly borne for treatment of patients	49,500
General Administration Charges	63,000

- (vi) Provide profit at 20% on total taking.  
 (vii) The Health Centre imposes 8% Service Tax on rent received.  
 (viii) 360 days may be taken in a year. [4+4+4]

**Answer:**

**(i) Statement of operating cost per annum**

Particulars	₹
Rent (Fixed Element) at ₹10,000 for 12 months	1,20,000

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Hire Charges of Additional beds	12,000
Fees paid to Heart Specialist (₹15,000 x 3 trips)	45,000
Salary of Supervisors, Nurses, Ward boys	4,25,000
Repair and Maintenance	90,000
Salary of Doctors	13,50,000
Food Supplied to patients	40,000
Laundry charges for their bed linens	80,500
Medicine supplied	74,000
Cost of Oxygen, X-ray etc. other than directly borne for treatment of patients	49,500
General Administration charges	63,000
<b>Total Cost as above</b>	<b>23,49,000</b>

### (ii) Computation of Desired Rent Collection

Particulars	%	₹
Gross rent collections (including service tax of 8%)	108%	33,82,560
<b>Less:</b> Service tax at 8% rent collections	8%	2,50,560
Rent Collections (taken as base=100%)	100%	23,49,000 ÷ 75% = 31,32,000
<b>Less:</b> Desired Profit Margin (on Revenue excluding Service Tax)	20%	6,26,400
Balance being total operating costs	80%	25,05,600
<b>Less:</b> Variable rent share (on Revenue Excluding Service tax)	5%	1,56,600
Net balance Operating Costs (amount as per WN 1)	75%	(as per WN 1) = 23,49,000

**Note:** Other figures in the amount column are derived by pro-rata calculations.

### (iii) Computation of rent per Bed-Day

Ward	General	Cottage	Deluxe	Total
<b>a.</b> Number of beds	100	50	30	
<b>b.</b> Occupancy	100%	80%	60%	
<b>c.</b> Number of days in a year	360	360	360	
<b>d.</b> Effective bed-days p.a (ax b x c)	36,600	14,400	6,480	57,480
<b>e.</b> Rent per bed-days ratio	1 time	2.5 times	5 times	
<b>f.</b> Total Bed Days for Rent purposes(d x e)	36,600	36,000	32,400	1,05,000
<b>g.</b> Rent colln apportioned in ratio of (f)	10,91,726	10,73,828	9,66,446	31,32,000
<b>h.</b> Rent per bed-day (g ÷ d) (excluding ST 8%)	₹29.83	₹74.57	₹149.14	

**Note:** In General Ward, Total Bed Days = 100 x 100% x 360 = 36,000 days. However, additional bed charges = ₹12,000 at ₹20 per bed (given). Hence extra bed-days = ₹12,000 ÷ ₹20 = 600. This has also been included in the column above, in Row d.

**(b) Write down the role of a Firm's suppliers in its Value Engineering or Cost Reduction drive.**

**[4]**

**Answer:**

Value Engineering also involves calling on the services of a Company's suppliers to assist in the cost reduction efforts. Suppliers of materials can have significant role in value engineering due to the following reasons:-

- (i)** Suppliers can contribute information on enhanced types of technology of materials.
- (ii)** Supplier specialize in areas that a Company has no information about and can share product expertise.

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- (iii) They may have also conducted extensive value engineering for the components they manufacture, resulting in advanced designed that a Company may be able to incorporate into its new products.
- (iv) Suppliers may have also redesigned their production process, or can be assisted by a Company's engineers in doing so, producing cost reductions or decreased production waste that can be translated into lower component costs for the Company.

**(c) "Kaizen Costing is an approach that explicitly incorporates continuous improvement during the budget period" Discuss the statement. [4]**

**Answer:**

'Kaizen' is a Japanese term for making improvement to a process through small incremental amounts, rather than through large innovation. Kaizen Costing focuses on the production process and the cost reductions are derived primarily through the efficiency of the production process. As the products are already in the manufacturing stage of their life cycles, the potential cost reductions are smaller- the aim of Kaizen costing being to reduce the cost of components and products by a pre-specified amount.

For example, each plant in a manufacturing unit may be assigned a target cost reduction ratio and this is applied to the previous year's actual costs to determine the target cost reduction. Kaizen Costing relies heavily on employee empowerment. They are assumed to have superior knowledge about how to improve processes because they are closets to the manufacturing processes and customers, and are likely to have greater insights into how costs can be reduced.

**8.**

**(a) An agriculturist has 480 hectares of land on which he grows Onion, tomatoes, Cabbage and carrots. Out of the total area of land, 340 hectares are suitable for all the four vegetables but the remaining 140 hectares of land are suitable only for growing Cabbage and carrots. Labour for all kinds of farm work is available in plenty.**

**The market requirement is that all the four types of vegetables must be produced with a minimum of 5,000 boxes of any one variety. The farmer has decided that the area devoted to any crop should be in terms of complete hectares and not in fractions of a hectare. The only other limitation is that not more than 1,13,750 boxes of any one vegetable should be produced.**

**The relevant data concerning production, market prices and costs are as under:**

	Onion	Cabbage	Carrots	Tomatoes
<b>Annual yield:</b>				
<b>Boxes per hectare</b>	350	100	70	180
	₹	₹	₹	₹
<b>Costs:</b>				
<b>Direct material per hectare</b>	952	432	384	624
<b>Direct Labour:</b>				
<b>Growing per hectare</b>	1792	1216	744	1056
<b>Harvesting and packing per box</b>	7.20	6.56	8.80	10.40
<b>Transport per box</b>	10.40	10.40	8.00	19.20
<b>Market price per box</b>	30.76	31.74	36.80	44.55

<b>Fixed expenses per annum:</b>	₹
<b>Growing</b>	1,24,000
<b>Harvesting</b>	75,000
<b>Transport</b>	75,000
<b>General administration</b>	1,50,000

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It is possible to make the land presently suitable for Cabbage and carrots, viable for growing Onion and tomatoes if certain land development work is undertaken. This work will involve a capital expenditure of ₹6,000 per hectare which a bank is prepared to finance at the rate of interest of 20% p.a. If such improvement is undertaken, the harvesting cost of the entire crop of tomatoes will decrease on an average by ₹2.60 per box.

Required:

- (i) Calculate, within the given constraint, the area to be cultivated in respect of each crop to achieve the largest total profit and the amount of such total profit before land development work is undertaken.
- (ii) Assuming that the other constraints continue, advice the grower whether the land development schemes should be undertaken and if so the maximum total profit that would be achieved after the said development schemes is undertaken. [8+8]

Answer:

- (i) Calculation showing area to be cultivated in respect of each crop to achieve the largest total profit.

	Hectares
Land available for all four vegetables	340
Land available for Cabbage and carrots	140
Total	480
Minimum requirement of each variety	5,000 boxes
Maximum requirement of each variety	1,13,750 boxes

	Onion	Cabbage	Carrots	Tomatoes
Boxes per hectare	350	100	70	180
Cost per hectare	₹	₹	₹	₹
Direct Materials	952	432	384	624
Direct Labour:				
Growing	1,792	1,216	744	1,056
Harvesting and Packing	2,520	656	616	1,872
Transport	3,640	1,040	560	3,456
Total V. Costs	8,904	3,344	2,304	7,008
Selling price per hectare	10,766	3,174	2,576	8,019
Contribution per hectare	1,862	(170)	272	1,011
Ranking	I	IV	III	II

Cabbage: Minimum 5,000 Boxes=5,000/100=50 hectares

Carrots Balance land of 140-50= 90 hectares

Tomatoes minimum 5,000 boxes= 5,000/180= 28 hectares

Onion Balance land of 340-28=312 hectares

Cultivation plan to achieve largest profit before land development:

	Onion	Cabbage	Carrots	Tomatoes
Hectares	312	50	90	28
	₹	₹	₹	₹
Contribution per hectare	1,862	(170)	272	1,011
Contribution	5,80,944	(8,500)	24,480	28,308
Total Contribution		6,25,232		
Fixed expenses		4,24,000		

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Profit	2,01,232
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- (ii) Carrots yield a low contribution and this crop is grown in excess of the requirement 5000 boxes. The land that could be released from this crop is  $90-72=18$  hectares (5000 boxes need 72 hectares only). This land could be utilized for growing Onion which yield the largest contribution.

Analysis to show whether land development to be undertaken

**After land development the contribution per hectare of tomatoes will be as under:**

Present contribution per hectare

Saving in harvesting @ 2.60 per box

Revised contribution

Allocation of 18 hectares of land

Crop	Max sale	Present production	Addl. Reqt.	Yield per hectare	Additional Hectares to
Onion	1,13,750	1,09,200#	4,550	350	13
Tomatoes	1,13,750	5,000	900	180	5*

# Onion =  $312 \text{ hectares} \times 350 \text{ boxes} = 1,09,200$

\*Balance Land

Revised Cultivation Plan

	Onion	Cabbage	Carrots	Tomatoes	Total
Hectares	325	50	72	33	480
	₹	₹	₹	₹	₹
Contribution/hectare	1,862	(170)	272	1,479	
Total Contribution	6,05,150	(8,500)	19,584	48,807	6,65,041
Fixed Expenses (Revised)					4,45,600
Profit					2,19,441

Capital Expenditure: 18 hectares x 6,000	=₹1,08,000
Interest $1,08,000 \times 20/100$	=21,600
Existing fixed expenses	=4,24,000
Total	4,45,600

### Conclusion

Since the profit after land development is greater, the company should implement the proposal to develop 18 hectare of land.

**(b) List out the assumptions on which cost-volume profit analysis is based?**

**[4]**

**Answer:**

It is essential that while preparing or interpreting CVP information, one must be aware of the underlying assumptions on which the information has been prepared. The important assumptions are:-

- (i) All other variables remain constant.
- (ii) A single product or constant sales mix.
- (iii) Total cost and total revenue are linear functions of output.
- (iv) Profits are calculated on a variable costing basis.
- (v) The analysis applies only to the relevant range only.
- (vi) Costs can be accurately divided into their fixed and variable elements.
- (vii) The analysis applies only to a short term time horizon.
- (viii) Complexity related fixed costs do not change.

If these assumptions are not recognized, serious error may result incorrect conclusions may be drawn from the analysis.

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9.

**(a) What is Product Life Cycle Costing? State its characteristics and benefits.**

**[1+2+2]**

**Answer:**

Product Life Cycle Costing (PLCC) is an approach used to provide a long term picture of product line, profitability, feedback on the effectiveness of the life cycle planning and cost data to clarify the economic impact on the alternative, chosen in the design, engineering phase etc.,

**Characteristics: PLCC-**

- (i)** Involve tracing of costs and revenues of each product over the several calendar periods throughout their entire life cycle. And assists report generation for costs and revenues.
- (ii)** Traces research, design and development costs and total magnitude of these costs for each individual product and compared with product revenue.

**Benefits: PLCC-**

- (i)** Results in earlier actions to generate revenue or to lower costs than otherwise might be considered.
- (ii)** Ensures better decision from a more accurate and realistic assessment of revenues and costs, atleast within a particular life cycle stage.
- (iii)** Promotes long-term rewarding.
- (iv)** Provides an overall framework for considering total incremental costs over the life span of the product.

**(b) Whirlpool India Ltd. assembles washing machines at its Auburn plant. In December 2013, 60 tumbler units that cost ₹ 44 each (from a new supplier who subsequently went bankrupt) were defective and had to be disposed of at zero disposal value. Whirlpool India Limited was able to rework all 60 washing machines by substituting new tumbler units purchased from one of its existing suppliers. Each replacement tumbler cost ₹ 50.**

**Required**

- (i) What alternative approaches are there to account for the material costs of reworked units?**
- (ii) Should Whirlpool India Limited use the ₹ 44 tumbler or ₹ 50 tumbler to calculate the costs of materials reworked? Explain.**
- (iii) What other costs might Whirlpool India Limited include in its analysis of the total costs of rework due to the tumbler units purchased from the (now) bankrupt supplier? [2+1+2]**

**Answer:**

Reworked Units, costs of rework

- (i)** The two alternative approaches to account for the materials costs of reworked units are:
  - a.** To charge the costs of rework to the current period as separate expense item as abnormal rework. This approach would highlight to whirlpool India Ltd. the costs of the supplier problem.
  - b.** To charge the costs of rework to manufacturing overhead as normal rework.
- (ii)** The ₹ 50 tumbler cost is the cost of the actual tumblers included in the washing machines. The ₹ 44 tumbler units from the new supplier were eventually never used in any Washing Machine and that supplier is now bankrupt. The units must now be disposed of at zero disposal value.
- (iii)** The total cost of rework due to defective tumbler units include:
  - (a)** The labour and other conversion costs spent on substituting the new tumbler units.
  - (b)** The cost of any extra negotiations to obtain the replacement tumbler units.
  - (c)** Any higher price the existing supplier may have charged to do a rush order for the replacement tumbler units.
  - (d)** Ordering costs for the replacement tumbler units.



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(c) Four Products A, B, C and D have ₹5, ₹7, ₹3 and ₹9 profitability respectively.

First type of material (limited supply of 800 kgs.) is required by A, B, C and D at 4 kgs., 3 kgs., 8 kgs., and 2 kgs., respectively per unit.

Second type of material has a limited supply of 300 kgs., and is for A, B, C and D at 1 kgs., 2 kgs., 0 kgs and 1 kg. per unit. Supply of other type of materials consumed is not limited. Machine hrs. available are 500 hrs and the requirements are 8, 5, 0, 4 hours for A, B, C and D each per unit.

Labour hours are limited to 900 hours and requirements are 3, 2, 1 and 5 hours for A, B, C and D respectively.

Formulate this as a linear programming problem. You are not required to solve the LPP.

[5]

**Answer:**

### Linear Programming Problem

The given information is tabulated below:

Products	A	B	C	D
Profitability/Unit (₹)	5	7	3	9
Material requirement/unit (kg)				
First type (Total 800 kg.)	4	3	8	2
Second type (Total 300 kg.)	1	2	0	1
M/c Hrs. requirement/unit (Total 500 Hrs.)	8	5	0	4
Labour hrs. requirement/ unit (Total 900 Hrs.)	3	2	1	5

Taking  $X_1$ ,  $X_2$ ,  $X_3$  and  $X_4$  as optimal of A, B, C and D respectively.

### Linear Programming Problem (LPP)

Maximize Objective Function (Total Profit):

$$Z = 5X_1 + 7X_2 + 3X_3 + 9X_4$$

Subject to

$$4X_1 + 3X_2 + 8X_3 + 2X_4 \leq 800 \text{ (Material No-1 constraint)}$$

$$1X_1 + 2X_2 + 0X_3 + 1X_4 \leq 300 \text{ (Material No-2 constraint)}$$

$$8X_1 + 5X_2 + 0X_3 + 4X_4 \leq 500 \text{ (M/c Hrs. constraints)}$$

$$3X_1 + 2X_2 + 1X_3 + 5X_4 \leq 900 \text{ (Labour Hrs. constraints)}$$

$$X_1, X_2, X_3 \text{ and } X_4 \geq 0 \text{ (Non-negativity constraints)}$$

(d) List out ten steps of quality improvement as has been conceptualized by Philip Crosby.

[5]

**Answer:**

The following are the ten steps of Quality Improvement, as per Philip Crosby:

- (i) Management is committed to quality and this is clear to all.
- (ii) Create quality improvement teams, with representatives from all departments.
- (iii) Measure processes to determine current & potential quality issues.
- (iv) Calculate the cost of poor quality.
- (v) Raise quality awareness of all employees.
- (vi) Take action to correct quality issues.
- (vii) Monitor progress of quality improvement-establish a zero-defect committee.
- (viii) Train supervisors in Quality improvement.
- (ix) Encourage employees to create their own quality improvement goals.
- (x) Recognize participants' efforts.