

**Paper 17 - Strategic Performance Management**

# Answer\_MTP\_Final\_Syllabus 2012\_Dec2017\_Set 2

## Paper 17 - Strategic Performance Management

Time Allowed: 3 Hours

Full Marks: 100

### Section - A

Question No 1 which is compulsory and carries 20 Marks

1. (a) The Demand function is  $x = 100 + 4p + 10p^2$ , where  $x$  is demand for the commodity at price ' $p$ ' compute marginal quantity demand, average quantity demand and hence elasticity of demand, at  $p = 4$  4

Answer: 1(a)

$$X = 100 + 4p + 10P^2$$

$$\text{Marginal quantity demand} = \frac{dx}{dp}$$

$$\frac{dx}{dp} = 4 + 20P \rightarrow (1)$$

$$\text{Average Quantity demand} = \frac{x}{p} = \frac{100}{p} + 4 + 10p \rightarrow (2)$$

$$E_p = \frac{dx}{dp} \div \frac{x}{p} = \frac{4 + 20p}{\frac{100}{p} + 10p + 4} = \frac{(4 + 20p)p}{100 + 10p^2 + 4p}$$

at  $P = 4$

$$= \frac{(4 + 80)4}{100 + 160 + 16} = \frac{28}{23}$$

- (b) The Best Industries Ltd has two divisions, A and B. Division A manufactures product X which it sells in outside market as well as to division B which processes it to manufacture Z. The manager of division B has expressed the opinion that the transfer price is too high.

The two divisional managers are about to enter into discussions to resolve the conflict, and the manager of division to supply him with some information prior to the discussions.

Division A has been selling 40000 units to outsiders and 10000 units to division B, all at ₹ 20 per unit. It is not anticipated that these demand will change. The variable cost is ₹12 per unit and the fixed costs are ₹2 lakh.

The manager of division A anticipates that division B will want a transfer price of ₹18. If he does not sell to division B ₹ 30000 of fixed costs and ₹175000 of assets can be avoided. The manager of division A would have no control over the proceeds from the sale of the assets and is judged primarily on his rate of return.

- (i) Should the manager of division A transfer its products at ₹18 to division B?  
(ii) What is the lowest price that the division A should accept? Support your decision.

[2+2]

Answer: 1(b)

## Answer\_MTP\_Final\_Syllabus 2012\_Dec2017\_Set 2

(i) Comparative statement of Profit of Division A

Particulars	Alternative situations		
	Sell at ₹20	Sell at ₹18	Do not transfer
<b>Sales revenue:</b>	8,00,000	8,00,000	8,00,000
Market sales (40,000 units × ₹20)			
Transfer to division B (10,000 units)	2,00,000	1,80,000	-
<b>Total (a)</b>	10,00,000	9,80,000	8,00,000
Variable cost ₹12 per unit	6,00,000	6,00,000	4,80,000
Fixed cost	2,00,000	2,00,000	1,70,000
<b>Total (b)</b>	8,00,000	8,00,000	6,50,000
<b>Total profit (a-b)</b>	2,00,000	1,80,000	1,50,000
<b>Total assets</b>	8,00,000	8,00,000	6,25,000
<b>ROI (percentage)</b>	25 %	22.50 %	24 %

The manager of division A should not agree to sell at ₹18 per unit as it lowers down its rate of return.

- (ii) The lowest transfer price acceptable to division A is one, which maintains its rate of return of 24% (the ROI without selling to division B):

$$= \frac{\text{Total sales revenue} - \text{Total cost}}{\text{Total assets}}$$

$$= \frac{(8,00,000 + 10,000 \text{ TP} - 8,00,000)}{8,00,000} = 0.24$$

Where TP is transfer price per unit

$$10,000 \text{ TP} = 1,92,000$$

$$\text{TP} = ₹19.20$$

The lowest transfer price acceptable to division A is ₹19.20 per unit.

- (c) Write a note on Contractual Terms in the context of Interaction of Transfer pricing and Taxation. 4

Answer: 1(c)

### Contractual terms

Contractual arrangements are the starting point for determining which party to a transaction bears the risk associated with it. Accordingly, it would be a good practice for associated enterprises to document in writing their decisions to allocate or transfer significant risks before the transactions with respect to which the risks will be borne or transferred occur, and to document the evaluation of the consequences on profit potential of significant risk reallocations. Where no written terms exist, the contractual relationships of the parties must be deduced from their conduct and the economic principles that generally govern relationships between independent enterprises.

A tax administration is entitled to challenge the purported contractual allocation of risk between associated enterprises if it is not consistent with the economic substance of the transaction. Therefore, in examining the risk allocation between associated enterprises and its transfer pricing consequences, it is important to review not only the contractual terms but also the following additional questions:

- Whether the conduct of the associated enterprises conforms to the contractual allocation of risks,
- Whether the allocation of risks in the controlled transaction is arm's length, and
- What the consequences of the risk allocation are.

(d) Describe Recurrent Artificial Neural Network.

4

Answer: 1(d)

**Recurrent Artificial Neural Network:**

Artificial neural network with the recurrent topology is called Recurrent Artificial neural network. It is similar to feed-forward neural network with no limitations regarding back-loops. In these cases information is no longer transmitted only in one direction but it is also transmitted backwards. This creates an internal state of the network which allows it to exhibit dynamic temporal behaviour.

Recurrent artificial neural networks can use their internal memory to process any sequence of inputs. The following figure shows small Fully Recurrent artificial neural network and complexity of its artificial neuron interconnections. The most basic topology of recurrent artificial neural network is fully recurrent artificial network where every basic building block (artificial neuron) is directly connected to every other basic building block in all direction. Other recurrent artificial neural networks such as Hopfield, Elman, Jordan, bi-directional and other networks are just special cases of recurrent artificial neural networks.

(e) Discuss the Benefits of Risk Mapping.

4

Answer: 1(e)

- Promotes awareness of significant risks through priority ranking, facilitating the efficient planning of resources.
- Enables the delivery of solutions and services across the entire risk management value chain.
- Serves as a powerful aid to strategic business planning.
- Aids the development of an action plan for the effective management of significant risks.
- Assigns clear responsibilities to individuals for the management of particular risk areas.
- Provides an opportunity to leverage risk management as a competitive advantage.
- Facilitates the development of a strategic approach to insurance programme design.
- Supports the design of the client's risk financing and insurance programmes, through the development of effective/optimal retention levels and scope of coverage etc.

## Section – B

Answer any five questions, each question carries 16 Marks

2. (a) The operation costs of a product produced by ABC Ltd are ₹53. Presently, the company produces only 600 units p.a. to sell at ₹55 per unit due to hard competition in the market. But with existing facilities, production can be increased to 1,000 units if additional production can be sold in the market. The company accordingly introduced target costing on market research, new design for the product and changes in the process so that costs are brought down substantially and market share can be increased. The estimates for the next year are:

## Answer\_MTP\_Final\_Syllabus 2012\_Dec2017\_Set 2

Target selling price	₹ 50 per unit
Target profit margin	10% on sales
Target volume	900 units

Required:

- i) Calculate target costs per unit and target costs for the expected volume; and
- ii) Compare existing profit with target profit.

10

- (b) There are different recommendations to reduce the Risk of the corporate failures. Mention the recommendations. 6

Answer: 2(a)

### Statement of Target Costs

Particulars	Per Unit (₹)	For 900 units (₹)
Target selling price	50	45,000
<b>Less:</b> Target profit margin (10% of sales)	5	4,500
Target costs	45	40,500

### Comparative Profit Statement

Particulars	Existing Position		Proposed Position	
	Per unit (₹)	600 units (₹)	Per unit (₹)	900 units (₹)
Sales	55	33,000	50	45,000
Less: Costs	53	31,800	45	40,500
Profit	2	1,200	5	4,500

Answer: 2(b)

### Preventing corporate failures

It is a fact that some companies perform well and that some underperform and some fails. In many, if not most cases, these companies are led by executives that are quite experienced. Below are some recommendations that can help to reduce the risk of failures of organizations:

#### Appointment of non-executive directors

The non-executive directors will bring their special expertise and knowledge on strategies, innovative ideas and business planning of the organization. They will monitor the work of the executive management and will help to resolve situations where conflict of interest arises. Overall, the non-executive directors will act as a Cross Check.

#### Audit committees

Very often, there is occurrence of fraud in management and financial reporting. The presence of the audit committees will help to resolve this problem. Audit committees have the potential to reduce the occurrence of fraud by creating an environment where there is both discipline and control.

#### Development of environment learning mechanism

Some organizations fail because they lose touch with their environment. Therefore, to counter this problem, there is a need to develop the environmental learning mechanism. Through it, new information can be brought on continuous basis. This is mainly done by carrying customer-feedback surveys. In this way, the organization can realign itself with the new needs and challenges.

## Answer\_MTP\_Final\_Syllabus 2012\_Dec2017\_Set 2

### Focus on research and development

Organizations can generate new knowledge by investing and focusing more on research and development. Thus, there will be more ideas how to make the products much better than that of their competitors.

### Conclusion

It can be deducted that a director has a big responsibility that he has to assume there commendations mentioned above can help directors to reduce corporate failure.

3. (a) IGF Ltd. supports the concept of the terotechnology or life cycle costing for new investment decisions covering its engineering activities.

The company is to replace a number of its machines and the Production Manager is to run between the 'X' machine, a more expensive machine with a life of 12 years, and the 'W' machine with an estimated life of 6 years. If the 'W' machines chosen it is likely that it would be replaced at the end of 6 years by another 'W' machine. The pattern of maintenance and running costs differs between the two types of machine and relevant data are shown below:

(₹ in '000)		
Particulars	X	Y
Purchase Price	7,600	5,200
Trade in Value	1,200	1,200
Annual Repair Costs	800	1,040
Overhaul costs (p.a.)	1,600	800
Estimated Financing Costs averaged over machine life (p.a.)	10%	10%

You are required to recommend, with supporting figures, which machine to purchases, stating any assumptions made. 10

- (b) The price (P) per unit at which company can sell all that it produces is given by the function  $p(x) = 300 - 4x$ . The cost function is  $500 + 28x$ , where 'x' is the number of units, find x, so that profit is maximum. 6

Answer: 3(a)

#### Machine X- Life 12 years

Particulars	Year	Cost (₹)	Discount factor	Discounted cost
Purchase Price	0	7,600	1.00	7,600
Overhaul Cost	8	1,600	0.47	752
Trade in value	12	(1,200)	0.32	(384)
Annual Repair Cost	1-12	800	6.81	5,448
				13,416

**Annualized Equivalent Cost:** ₹13,416/6.81 = ₹ 1,970

#### Machine W - Life 16 years

Particulars	Year	Cost (₹)	Discount factor	Discounted cost
Purchase Price	0	5,200	1.00	5,200
Overhaul Cost	4	800	0.68	544
Trade in value	6	(1,200)	0.56	(672)
Annual Repair Cost	1-6	1,040	4.36	4,534
				9,606

**Annualized Equivalent Cost:** ₹9,606/4.36 = ₹2,203

**Recommendation:** Purchase Machine 'X' Assumptions:

- a) Same performance, capacity and speed.
- b) No inflation.

## Answer\_MTP\_Final\_Syllabus 2012\_Dec2017\_Set 2

- c) 12 year-estimates are as accurate as 6-year estimates.  
 d) Cash flow at the year end.

**Answer: 3(b)**

$$P = 300 - 4x$$

$$R = P(x) = 300x - 4x^2$$

$$C = 500 + 28x$$

$$P = R - C$$

$$\text{Profit} = 300x - 4x^2 - 500 - 28x$$

$$= -4x^2 + 272x - 500$$

$$\frac{dp}{dx} = -8x + 272 = 0$$

$$dx$$

$$X = 272/8 = 34$$

$$\frac{d^2p}{dx^2} = -8, \text{ which is Negative}$$

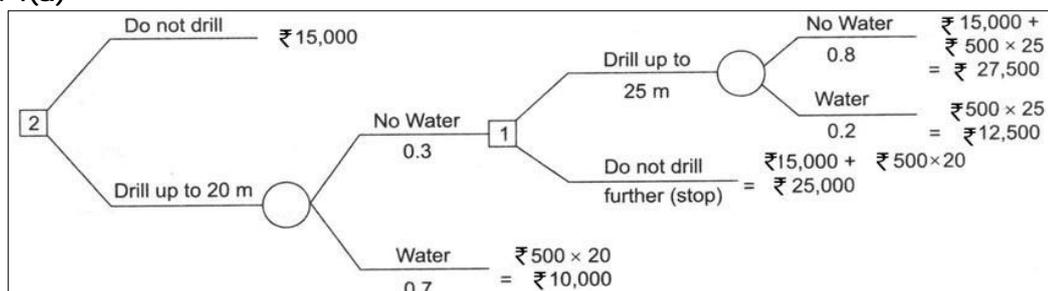
Profit is maximum at  $x = 34$  units.

4. (a) A Finance Manager is considering drilling a well. In the past, only 70% of wells drilled were successful at 20 meters depth in that area. Moreover, on finding no water at 20 meters, some persons in that area drilled it further up to 25 meters but only 20% struck water at that level. The prevailing cost of drilling is ₹ 500 per meters. The finance manager estimated that in case he does not get water in his own well, he will have to pay ₹15,000 to buy water from outside for the same period of getting water from the well. The following decisions are considered:
- (i) Do not drill any well;
  - (ii) Drill up to 20 meters, and
  - (iii) If no water is found at 20 meters, drill further up to 25 meters.

Draw an appropriate decision tree and determine the Finance Manager's optimal strategy. 12

- (b) List the steps of Business process Re-Engineering. 4

**Answer: 4(a)**



**Analysis Table: Decision Tree**

Decision Node	Options	Expected Cost	Decision
1	Drill up to 25 metres	$0.8 \times 27,500 + 0.2 \times 12,500 = ₹24,500$	Drill up to 25 metres

## Answer\_MTP\_Final\_Syllabus 2012\_Dec2017\_Set 2

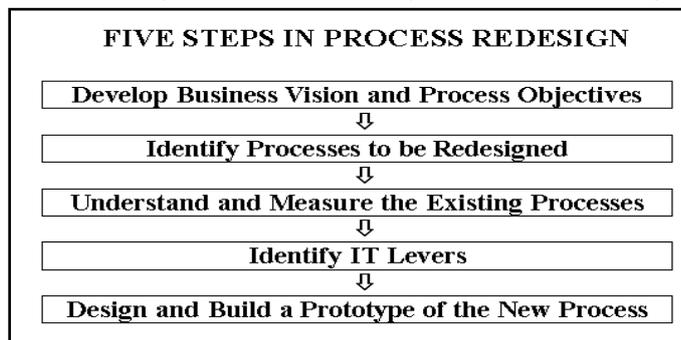
	Stop	₹ 25,000	
2	Do not drill Drill up to 20 metres	₹ 15,000 $0.3 \times 24,500 + 0.7 \times 10,000 = ₹14,350$	Drill up to 20 metres

From the analysis table, it may be observed that decision at node 2 implies that if it is decided to drill up to 20 metres and water is not found, then drilling up to 25 metres should be done. At node 1, the decision taken is to drill up to 20 metres as it involved lower expected cost. Thus, the optimal strategy is to drill up to 20 metres and if water is not struck then drill further to 25 metres.

**Answer: 4(b)**

### Steps of Business process Re- Engineering:

Assuming that a company has decided its processes are inefficient or ineffective, and therefore in need of redesign, how should it proceed? This is a straight forward activity, but Davenport & Short (1990) prescribe a five-step approach to BPR:



**(i) Develop Business Vision and Process Objectives:**

BPR is driven by a business vision which implies specific business objectives such as Cost Reduction, Time Reduction, Output Quality Improvement, Quality of Work life (QWL)/Learning/Empowerment.

**(ii) Identify Processes to be Redesigned:**

Most firms use the *High-Impact* approach which focuses on the most important processes or those that conflict most with the business vision. Lesser number of firms use the *Exhaustive* approach that attempts to identify all the processes within an organization and then prioritize them in order of redesign urgency.

**(iii) Understand and Measure the Existing Processes:**

Understanding and measuring the existing processes before redesigning them is especially important, because problems must be understood so that they are not repeated. On the other hand, accurate measurement can serve as a baseline for future improvements.

**(iv) Identify IT Levers:**

In the broadest sense, all of IT's capabilities involve improving coordination and information access across organizational units, thereby allowing for more effective management of task interdependence. An awareness of IT capabilities can –and should influence process design. Therefore, the role of IT in a process should be considered in the early stages of its redesign.

**(v) Design and Build a Prototype of the New Process:**

The actual design should not be viewed as the end of the BPR process. Rather, it should be viewed as a prototype, with successive iterations expected and managed. Key factors and tactics to consider in process design and prototype

## Answer\_MTP\_Final\_Syllabus 2012\_Dec2017\_Set 2

---

generation include using IT as a design tool, understanding generic design criteria, and creating organizational prototypes.

These prototypes of business process changes and organizational redesign initiatives, after agreement by owners and stakeholders, would be implemented on a pilot basis, examined regularly for problems and objective achievement, and modified as necessary. As the process approached final acceptance, it would be phased into full implementation.

5. (a) List the steps to start of Total productivity Management. 8
- (b) Define the following terms in the context of supply chain Management:
- (i) Activity Based Management;
  - (ii) Capacity Management;
  - (iii) Customer Relationship management;
  - (iv) Lean Manufacturing. 8

Answer: 5(a)

**Total Productivity Management:** Total Productive Management (TPM) provides a system for coordinating all the various improvement activities for the company so that they contribute to the achievement of corporate objective. Starting with a corporate vision and broad goals, these activities are developed into supporting objectives, or targets, throughout the organization. The targets are specifically and quantitatively defined. This seminar therefore emphasizes how to improve the competitiveness of products and services in quality, price, cost and customer responsiveness, thereby increasing the profitability, market share, and return on investment in human, material, capital, and technology resources.

**Steps to start TPM are:**

- Identifying the key people
- Management should learn the philosophy.
- Management must promote the philosophy.
- Training for all the employees.
- Identify the areas where improvements are needed.
- Make an implementation plan.
- Form an autonomous group.

Answer: 5(b)

(i) **Activity-Based Management (ABM)**

The use of activity-based costing information about cost pools and drivers, activity analysis, and business processes to identify business strategies; improve product design, manufacturing, and distribution; and remove waste from operations.

(ii) **Capacity Management**

The function of establishing, measuring, monitoring, and adjusting limits or levels of capacity in order to execute all manufacturing schedules; i.e., the production plan, master production schedule, material requirements plan, and dispatch list. Capacity management is executed at four levels: resource requirements planning, rough-cut capacity planning, capacity requirements planning, and input/output control.

## Answer\_MTP\_Final\_Syllabus 2012\_Dec2017\_Set 2

---

### (iii) Customer Relationship Management (CRM)

A marketing philosophy based on putting the customer first. It involves the collection and analysis of information designed for sales and marketing decision support to understand and support existing and potential customer needs. It includes account management, catalog and order entry, payment processing, credits and adjustments, and other functions.

### (vi) Lean Manufacturing

A philosophy of production that emphasizes the minimization of the amount of all the resources (including time) used in the various activities of the enterprise. It involves identifying and eliminating non-value-adding activities in design, production, supply chain management, and dealing with the customers. Lean producers employ teams of multi skilled workers at all levels of the organization and use highly flexible, increasingly automated machines to produce volumes of products in potentially enormous variety. It contains a set of principles and practices to reduce cost through the relentless removal of waste and through the simplification of all manufacturing and support processes.

6. (a) Discuss the steps to be taken for preventing the Corporate Failures. 8
- (b) Describe about the Partial Adjustment Process under the Corporate Bankruptcy Prediction Models. 8

#### Answer: 6(a)

It is a fact that some companies perform well and that some underperform and some fails. In many, if not most cases, these companies are led by executives that are quite experienced. Below are some recommendations that can help to reduce the risk of failures of organizations:

#### (i) Appointment of non-executive directors:

The non-executive directors will bring their special expertise and knowledge on strategies, innovative ideas and business planning of the organization. They will monitor the work of the executive management and will help to resolve situations where conflict of interest arises. Overall, the non-executive directors will act as a Cross Check.

#### (ii) Audit committees:

Very often, there is occurrence of fraud in management and financial reporting. The presence of the audit committees will help to resolve this problem. Audit committees have the potential to reduce the occurrence of fraud by creating an environment where there is both discipline and control.

#### (iii) Development of environment learning mechanism:

Some organizations fail because they lose touch with their environment. Therefore, to counter this problem, there is a need to develop the environmental learning mechanism. Through it, new information can be brought on continuous basis. This is mainly done by carrying customer- feedback surveys. In this way, the organization can realign itself with the new needs and challenges.

#### (iv) Focus on research and development:

Organizations can generate new knowledge by investing and focusing more on research and development. Thus, there will be more ideas how to make the products much better than that of their competitors. It can be deducted that a director has a big responsibility that he has to assume there commendations mentioned above can help directors to reduce corporate failure, provided that the directors abide. Proper planning also is critical to the success of a business.

Answer: 6(b)

## Partial Adjustment Process

Partial adjustment models are a theoretic rationale of famous Koyck approach to estimate distributed-lag models. Application of partial adjustment model in bankruptcy prediction can best be explained by using cash management behaviour of the firms as an example.

According to Laitinen and Laitinen (1998), cash management refers to the management of cash from the time it starts its transit to the firm until it leaves the firm in payments. Failure of the cash management can be defined as an imbalance between cash inflows and outflows. This leads to failure usually defined as the inability of the firm to pay its financial obligations as they mature.

Traditionally, cash management behaviour of a firm is described by different models of demand for money, e.g., the quantity theory of demand for money, which assumes that the demand for money does not differ from the demand for any funds in the firm. The most popular and simple approach to the demand for money in this framework is that followed by the inventory cash management approach, where demand for money by a firm is assumed to depend on the volume of transactions. The idea may be summarized as follows.

The actual cash balance of a firm in period  $t$  is a multiplicative function of  $S$  and  $i$  as follows:

$$\ln M(t) = \ln D + e_s \ln S(t) + e_i \ln i(t) + u(t) \dots \dots \dots [1]$$

Where;

$\ln$ : natural logarithm

$M(t)$ : actual cash balance in period  $t$

$D$ : a scale constant

$S(t)$ : the volume of transactions

$i(t)$ : the opportunity cost

$e_s$ : the elasticity of cash balance with respect to  $S$

$e_i$ : the elasticity of cash balance with respect to  $i$

$u(t)$ : a random error variable with standard autoregressive property

Equation [1] is static in nature whose dynamic version presented in partial adjustment form is as below:

$$\ln M(t) = y \{ \ln D + e_s \ln S(t) + e_i \ln i(t) + u(t) \} + (1-y)M(t-1) + y u(t) \dots \dots \dots [2]$$

Where  $y$  and  $(1-y)$  are the weights representing adjustment rate.

The overall classification and prediction process, in this particular example of partial adjustment model, follows the following criterion:

- For a failing firm, absolute values of the elasticity's of cash balance with respect to the motive factors (volume of transactions and the opportunity cost here) will be smaller than for a similar healthy firm;
- For a failing firm, the rate of adjustment  $y$  may be even greater than unity and will certainly exceed the rate for healthy firm;
- Validity of the results can be tested by any appropriate technique like Lachenbruch procedure.

## Answer\_MTP\_Final\_Syllabus 2012\_Dec2017\_Set 2

---

7. (a) Explain any eight productivity improvement techniques. 8
- (b) Describe the objectives of Management information systems. 8

Answer: 7(a)

Productivity improvement techniques are explained as follows:

- (i) **Value Engineering (VE):** Value Engineering (VE) is the process of improving the value of a product at every stage of the product life cycle. At the development stage, VE improves the value of a product by reducing the cost without reducing quality. At the maturity stage, VE reduces the cost by replacing the costly components (parts) by cheaper components. VE also tries to improve the value and quality of the product. Value is the satisfaction which the consumer gets by using the product. VE tries to give maximum value for a lowest price.
- (ii) **Quality Circles (QC):** The concept of Quality Circles (QC) was introduced in 1960 in Japan. QC is a small group of employees who meet regularly to identify, analyse, and solve problems in their department. The QC members advise the management to implement new methods to solve work-related problems. QC increases the productivity.
- (iii) **Financial and Non-Financial Incentives:** The organisation must motivate the employees by providing financial and non-financial incentives. The financial incentives include better wages and salaries, bonus, etc. The non-financial incentives include better working conditions, welfare facilities, worker's participation in management, etc.
- (iv) **Operations Research (OR):** Operations Research (OR) uses mathematical and scientific methods to solve management problems, including problems of productivity. OR technique uses a scientific method to study the alternative courses of actions and to select the best alternative. OR uses techniques such as linear programming, game theory, etc., to make the right decision. Thus, OR helps to improve productivity.
- (v) **Training:** Training is a process of increasing the knowledge and skills of the employees. Training is a must, for new employees and experienced employees. Training increases the efficiency of the employee. Thus, training results in high productivity.
- (vi) **Job Enlargement:** Job Enlargement is a horizontal expansion of a job. It is done to make jobs more interesting and satisfying. It involves increasing the variety of duties. For e.g. a typist may be given the job of accounts writing in addition to the typing work. This technique is used for lower level jobs.
- (vii) **Job Enrichment:** Job Enrichment is a vertical expansion of a job. It makes routine jobs more meaningful and satisfying. It involves providing more challenging tasks, and responsibilities. For e.g. a manager who prepares performance reports is asked to make plans for his department. Job Enrichment technique is used for higher-level jobs.
- (viii) **Inventory Control:** There must be a proper level of inventory. Overstocking and under stocking of inventories must be avoided. Overstocking of inventories will result in blocking of funds and there are chances of spoilage or misuse of materials. Under stocking of inventories will result in shortages. This will block the smooth flow of production, and so the delivery schedules will be affected.
- (ix) **Materials 'management:** Materials' management deals with optimum utilization of materials in the manufacturing process. It involves scientific purchasing, systematic store keeping, proper inventory control, etc. The main objective of materials'

## Answer\_MTP\_Final\_Syllabus 2012\_Dec2017\_Set 2

---

management is to purchase the right quantity and quality materials, at the right prices, at the right time, to maintain favourable relations with suppliers, to reduce the cost of production, etc.

- (x) **Quality Control:** The main objective of quality control is to produce good quality goods at reasonable prices, to reduce wastages, to locate causes of quality deviation and to correct such deviations, to make the employees quality conscious, etc.
- (xi) **Job Evaluation:** Job Evaluation is a process of fixing the value of each job in the organisation. It is done to fix the wage rate for each job. A proper job evaluation increases the moral of the employees. This increases the productivity.
- (xii) **Human factor engineering:** Human factor engineering refers to the man-machine relationship. It is designed to match the technology to a human requirement. The term Ergonomics has originated from the Greek word 'ergos' meaning 'Work' and 'nomikos' meaning 'Law'. So, it means 'Law of Work'. It tells us how to fit a job to a man's psychological and physiological characteristics to increase human efficiency and well-being.

### Answer: 7(b)

Management Information System (MIS) is a systematic process of providing relevant information in right time in right format to all levels of users in the organization for effective decision making. MIS is also defined to be system of collection, processing, retrieving and transmission of data to meet the information requirement of different levels of managers in an organization.

**According to CIMA-** MIS is a set of procedures designed to provide managers at different levels in the organization with information for decision making, and for control of those parts of the business for which they are responsible. MIS comprises of three elements viz., management, information and system.

### Objectives of MIS:

- To provide the managers at all levels with timely and accurate information for control of business activities
- To highlight the critical factors in the operation of the business for appropriate decision making
- To develop a systematic and regular process of communication within the organization on performance in different functional areas
- To use the tools and techniques available under the system for programmed decision making
- To provide best services to customers
- To gain competitive advantage
- To provide information support for business planning for future.

### 8. Answer any four questions below:

[4×4]

- (a) Discuss the Risk Adjusted discount rate Method.
- (b) Discuss about the price Discrimination under the demand oriented pricing.
- (c) Discuss Data Availability.
- (d) Describe various Strategic decisions for Managing Risk.
- (e) Discuss the characteristics of Data Warehouse.

## Answer: 8(a)

### Risk Adjusted Discount Rate Method

This method is very much akin to certainty equivalent method that is more popular. This is due to the fact that quantification of the risk premium is more concrete in this method. Normally when new investments have the same risk as existing operations, the discount rate applied is the average cost of capital of the operations. If the risk of the new project is greater, then a formula is applied for the computation of the risk adjusted discount rate, as follows:

$$r_p = r_f + n + d_p$$

Where,

$r_p$  = Risk Adjusted discount rate for project 'p'

$r_f$  = Risk free rate of interest

$n$  = Premium for normal risk

$d_p$  = Premium for additional risk differential for project 'p'

## Answer: 8(b)

There are many bases on which the open price discrimination is practiced. These are discussed below:

**(i) Time Price Differentials:** It is a general practice to use the expression "the demand for a product or service", but it is important to note that demand also has a time dimension. The demand may shift in fairly short-time intervals. For example, demand for telephone facilities is more in the day time rather than at night.

**(ii) Use Price differentials:** Different buyers have different uses of a product or a service. For example railways can be used for long-haul or short-haul freight traffic. Railways can also be used for transporting different types of commodities. Electricity can similarly, be used for industrial or residential purposes.

**(iii) Quality price Differentials:** If the product caters to that group of consumers who are concerned about its quality, then the quality becomes a significant determinant of demand elasticity. The seller has, therefore, to create differences in quality to sell his product. It must be emphasized here that the differences in quality basically depend upon the buyers' understanding of the quality. Sellers use many devices to create quality differences.

**(iv) Quantity Differentials:** When the seller discriminates on the basis of the quantity of purchase, it is known as quantity differentials. Quantity discounts are price concessions based on the size of the lot purchased at one time and delivered at one location. These discounts are thus related to size of a single purchase. The size of the lot purchased is measured in terms of either physical units or monetary units. Sometimes, discounts are according to the trade status, i.e., wholesaler, retailer, jobber, etc.

## Answer: 8(c)

Data availability is a term used by some computer storage manufacturers and storage service providers (SSPs) to describe products and services that ensure that data continues to be available at a required level of performance in situations ranging from normal through "disastrous." In general, data availability is achieved through redundancy involving where the data is stored and how it can be reached. Some vendors describe the need to have a data center and a storage-centric rather than a server-centric philosophy and environment.

## Answer\_MTP\_Final\_Syllabus 2012\_Dec2017\_Set 2

---

In large enterprise computer systems, computers typically access data over high-speed optical fiber connection to storage devices. Among the best-known systems for access are ESCON and Fibre Channel. Storage devices often are controlled as a Redundant Array of Independent Disks (RAID). Flexibility for adding and reconfiguring a storage system as well as automatically switching to a backup or failover environment is provided by a programmable or manually-controlled switch generally known as a director.

Two increasingly popular approaches to providing data availability are the Storage Area Network (SAN) and Network-Attached Storage (NAS). Data availability can be measured in terms of how often the data is available (one vendor promises 99.999 per cent availability) and how much data can flow at a time (the same vendor promises 3200 megabytes per second).

**Answer: 8(d)**

### **Strategic Decision for Risk Management**

**Risk Handling:** In ideal risk management, a prioritization process is followed whereby risks with the greatest loss and the greatest probability of occurring are handled first, and risks with lower probability loss are handled later.

**Risk Reduction:** This strategy is attempted to decrease the quantum of losses arising out of a risky happening e.g. earthquake, storm, flood etc. It involves methods that reduce severity of the loss arising from risk consequences. Risk reduction can be achieved through (a) loss prevention, and (b) loss control.

**Risk Avoidance:** This is prevention and a proven strategy. This strategy results in complete elimination of exposure to loss due to a specific risk. It may involve avoidance of an activity, which is risky. It includes deliberate attempt on part of the person taking risk decision not to perform an activity or not to accept a proposal, which is risk prone. This strategy can be approached in two ways: (a) Don't assume risk, and (b) Discontinue of an activity to avoid risk.

**Risk Retention:** This strategy is adopted when risk cannot be avoided, reduced or transferred. It involves accepting the loss when it occurs by taking risky proposal or risky assignment where there are no other alternatives to avoid risk. It can be a voluntary or involuntary action. When it is voluntary, it is retained through implied agreements. Involuntary retention occurs when the organization is unaware of the risk and faces it when it comes up.

**Risk Transfer:** It means causing another party to accept the risk, typically by contract. It involves a process of shifting risk responsibility on others. Insurance is one type of risk transfer, which is widely used in common parlance.

**Risk Hedging:** It is a systematic process of reducing risk associated with an investment proposal or in some other assignments where risk is inevitable i.e. the risk is of such nature that it cannot be avoided altogether.

**Risk Diversification:** It involves identifying both systematic and unsystematic risks. Systematic risk is inherent and is peculiar to the type of business/firm and can be reduced or diversified through functional level strategy. The unsystematic risk is external to the organization and is termed as 'market risk'. The identification of characteristics of market risk through statistical correlation 'beta, which is a measure of market risk, lends itself for manipulation through portfolio management. This strategy is followed in reduction of risk of single portfolio by investing in shares, debentures, bonds, treasury bills etc. to reduce overall risk of the portfolio.

**Risk Sharing:** Taking an insurance coverage for the exposure is the common method of sharing risk. By paying insurance premium, the company shares the risk with an insurance company. The insurance company can also share its risk with other insurance companies by doing reinsurance.

## Answer\_MTP\_Final\_Syllabus 2012\_Dec2017\_Set 2

---

**Risk Pooling:** It is the process of identification of separate risks and put them all together in a single blanket, so that the monitoring, integrating or diversifying risk can be implemented.

### Answer: 8(e)

The Data Warehouse is a collection of integrated, subject-oriented databases designed to support the Decision-Support Functions (DSF), where each unit of data is relevant to some moment in time. A Data Warehouse includes the following categories of data, where the classification is accommodated to the time-dependent data sources:

- (i) Old detail data
- (ii) Current (new) detail data
- (iii) Lightly summarized data
- (iv) Highly summarized data
- (v) Metadata (the data directory or guide).

To prepare these five types of elementary or derived data in a Data Warehouse, the fundamental types of data transformation are standardized. There are four main types of transformations, and each has its own characteristics:

**(i) Simple Transformations** - These transformations are the building blocks of all other more complex transformations. This category includes manipulation of data that is focused on one field at a time, without taking into account its values in related fields. Examples include changing the data type of a field or replacing an encoded field value with a decoded value.

**(ii) Cleansing and Scrubbing** - These transformations ensure consistent formatting and usage of a field, or of related groups of fields. This can include a proper formatting of address information, for example. This class of transformations also includes checks for valid values in a particular field, usually checking the range or choosing from an enumerated list.

**(iii) Integration** - This is a process of taking operational data from one or more sources and mapping it, field by field, onto a new data structure in the data warehouse. The common identifier problem is one of the most difficult integration issues in building a data warehouse. Essentially, this situation occurs when there are multiple system sources for the same entities and there is no clear way to identify those entities as the same. This is a challenging problem, and in many cases it cannot be solved in an automated fashion. It frequently requires sophisticated algorithms to pair up probable matches. Another complex data-integration scenario occurs when there are multiple sources for the same data element. In reality, it is common that some of these values are contradictory, and resolving a conflict is not a straightforward process. Just as difficult as having conflicting values is having no value for a data element in a warehouse. All these problems and corresponding automatic or semiautomatic solutions are always domain-dependent.

**(iv) Aggregation and Summarization** - These are methods of condensing instances of data found in the operational environment into fewer instances in the warehouse environment. Although the terms aggregation and summarization are often used interchangeably in the literature, we believe that they do have slightly different meanings in the data-warehouse context. Summarization is a simple addition of values along one or more data dimensions; e.g., adding up daily sales to produce monthly sales. Aggregation refers to the addition of different business elements into a common total; it is highly domain-dependent. For example, aggregation is adding daily product sales and monthly consulting sales to get the combined, monthly total.