

FINAL EXAMINATION

GROUP IV

(SYLLABUS 2012)

SUGGESTED ANSWERS TO QUESTIONS

DECEMBER 2017

Paper-17 : STRATEGIC PERFORMANCE MANAGEMENT

Time Allowed : 3 Hours

Full Marks : 100

The figures in the margin on the right side indicate full marks.

This Question paper has been divided into 2 parts

Section-A (20 marks, &Section-B (80 marks)

SECTION A (20 Marks)

1. Answer the following questions. 4×5 =20

- (a) The cost function is $C = 100 + q$, where q = Quantity of the product. The product is sold at ₹5 per unit. Determine the break-even sales and profit when 125 units are sold.
- (b) The following information relates to budgeted operation of Division X of a manufacturing company:

Particulars	Amount (₹)
Sales: (50000 units of ₹8)	4,00,000
Less : Variable cost @ ₹ 6 per unit	3,00,000
Contribution Margin	1,00,000
Less : Fixed Costs	75,000
Divisional Profit	25,000

The amount of divisional investment is ₹1,50,000 and the minimum desired rate of return on the investment is the cost of capital of 20%.

- (i) Calculate divisional expected ROI;
(ii) Calculate divisional expected RI;
(iii) Comment on the results of (i) and (ii).
- (c) The cost function 'C' for the commodity 'q' is given by $C = 2q^3 - 8q^2 + 10q$. Find the average variable cost and also the value of q for which average variable cost is minimum.
- (d) Describe the term 'Business Process Re-engineering'.
- (e) Explain the terms the 'Exchange Rate Risk' and 'Liquidity Risk'.

Answer: 1

- (a) Let the Total Revenue (TR) = $P \times q$, where P = Selling Price per unit of the product

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q = Quantity of the product.

$$\therefore TR = 5q \text{ and } C = 100 + q$$

For Break-even, $TR = C \rightarrow 5q = 100 + q$ or $q = 25$.

For Break-even Sales $= 5 \times 25 = ₹125$.

Again, say, Profit = $TT = TR - C$

$$\text{Or } 5q - 100 - q = 4q - 100$$

By Question, $q = 125$, $TT = 4 \times 125 - 100 = 400$

Therefore Break-even Sales is ₹125 and the Break-even profit is ₹400.

(b) $ROI = (\text{₹}25,000 / \text{₹}1,50,000) \times 100 = 16.7\%$

RI = Residual Income = Divisional Profit - Minimum desired rate of return

$$= \text{₹}25,000 - (20\% \times \text{₹}1,50,000) = (\text{₹}5,000). (\text{Negative}).$$

Comment on the results of (i) and (ii):

The desired rate of return is 20% but the division X is expecting to achieve an ROI of 16.7%. The expected profit of ₹25,000 is less than the ₹30,000 minimum return required, resulting in the negative of ₹5,000 residual income.

(c) $\text{Cost} = 2q^3 - 8q^2 + 10q$

Average Variable Cost $= C/Q = 2q^2 - 8q + 10$ ('y' say)

$$= d/dq(2q^2 - 8q + 10) = 0$$

$$= 4q - 8 = 0$$

$$\text{Therefore } q = 8/4 = 2.$$

$$d^2y/dq^2 = 2 > 0, \text{ positive.}$$

Therefore Average Cost is minimum at $q = 2$.

- (d) Business Process Re-engineering (BPR) involves changes in structures and in processes within the business environment. The entire technological, human and organizational dimensions may be changed in BPR.

Information Technology plays a major role in BPR as it provides office automation. It allows the business to be conducted in different locations. It provides flexibility in manufacturing. It permits quicker delivery to customers and supports rapid and paperless transactions. In general, it allows an efficient and effective change in the manner in which work is performed. BPR is fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical contemporary measures of performance such as cost, quality, service and speed.

- (e) **Exchange Rate Risk** : Exchange Rate Risk Management through asset-liability management: At a particular exchange rate assets and liabilities of a financial institution match exactly. As the exchange rate fluctuates this balance gets disturbed. A simple solution to correct this risk is to match assets and liabilities of the same currency. Many financial institutions do not have foreign exchange exposure as all their assets and liabilities are in rupee currency. The risk of foreign exchange borrowings of these institutions are passed on to the lenders through dollar denominator loans. The uncovered loans are hedged at the time of contracting them through forward covers for the entire amount.

Liquidity Risk: is that portion of an asset's total variability of return, which results from price discounts given or sales commissions paid in order to sell the asset without delay. It is a situation, wherein it may not be possible to sell the asset. Assets are disposed off at great inconvenience and cost in terms of money and time. Any asset that can be bought or sold quickly is said to be liquid. Failure to realize with minimum discount to its value of an asset is called liquidity risk.

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Section-B (80 Marks)

Five Questions are to be answered out of Seven Questions.
(Each question carrying total 16 marks)

2. (a) A Company has to replace one of its machines, which has become unserviceable. Two options are available:
- A more expensive machine (EM) with 12 years of life;
 - A less expensive machine (LM) with 6 years of life.

If machine LM is chosen, it will be replaced at the end of 6 years by another LM machine. The pattern of maintenance, running costs and prices are as under:

Particulars	EM(₹)	LM(₹)
Purchase Price	10,00,000	7,00,000
Scrap value at the end of life	1,50,000	1,50,000
Overhauling is due at the end of	8th year	4th year
Overhauling costs	2,00,000	1,00,000
Annual Repairs	1,00,000	1,40,000

Cost of Capital - 14%.

You are required to recommend with supporting calculations, which of the machine should be purchased.

Discounting factor

End of 4th year	0.5921
End of 6th year	0.4556
End of 8th year	0.3506
End of 12th year	0.2076
Years 1-6	3.8890
Years 1-12	5.660

- (b) Discuss briefly about the myths regarding BPR.

10
6

Answer: 2 (a)

Machine EM-12 Years Life:

Particulars	Year	Cost(₹)	Discount factor	Present Value(₹)
Purchase Price	0	10,00,000	1.0000	10,00,000
Overhauling Costs	8	2,00,000	0.3506	70,120
Annual Repairs	1-12	1,00,000	5.6600	5,66,000
Scrap Value	12	1,50,000	0.2076	(31,140)
Total NPV of Outflows				16,04,980

Machine LM – 6 Years Life:

Particulars	Year	Cost (₹)	Discount factor	Present Value (₹)
	0	7,00,000	1.0000	7,00,000
Overhauling Costs	4	1,00,000	0.5921	59,210
Annual Repairs-	1-6	1,40,000	3.8890	5,44,460
Scrap Value	6	1,50,000	0.4556	(68,340)
Total NPV of Outflows				12,35,330

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Annualized Value:

Name of Machine	Calculation	Amount (₹)
EM	16,04,980/5.6600	2,83,565
LM	12,35,330/3.8890	3,17,647

Hence EM is recommended, as its cost is lower

Answer: 2 (b)

The following are some of the myths re: BPR

Myth- 1: "Re-engineering is a radical one-time approach" is changing as many firms are not willing to invest the money and time to implement change from a "clean state".

Myth- 2: "Reengineering involves breakthrough performance gains" is being challenged as benchmarking and measurement of these gains can prove elusive.

Myth- 3: "Reengineering enables change primarily through IT" is being moderated by the numerous organizational innovations involving people, jobs, skills and structures that facilitate process-oriented behaviours.

Myth-4: "Reengineering should focus on cross-functional core business processes" is fine but many piecemeal improvements within functions can also add up to significant change and have proved very successful.

Myth-5: "Reengineering enhances individual capacities through empowerment and teams" is all well and good but many process-change projects are being defended based on cost objectives achieved through downsizing with few opportunities for retraining.

Myth-6: "Reengineering can use a standardized set of methods touted by armies of consultants" is being questioned given that no standardized approach exists to date.

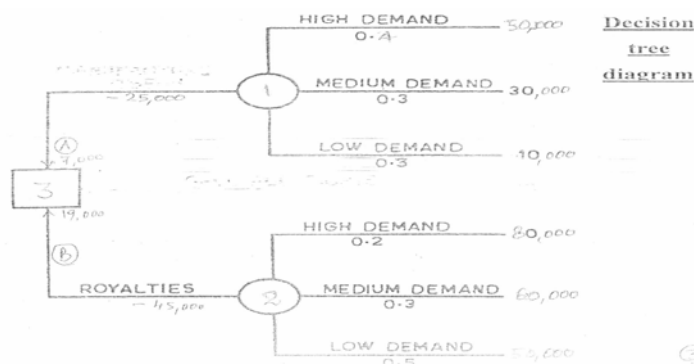
3. (a) A manufacturing company has to select one of the two products A or B for manufacturing. Product A requires investment of ₹25,000 and product B ₹45,000. Market research survey shows high, medium and low demands with corresponding probabilities and returns from sales, in ₹ thousand for the two products, in the following table:

Market Demand	Probability		Return from Sales (T000)	
	A	B	A	B
High	0.4	0.3	50	80
Medium	0.3	0.5	30	60
Low	0.3	0.2	10	50

Construct an appropriate Decision tree. What decision the company should take? 10

(b) Discuss briefly the issues addressed by Lean Management. 6

Answer: 3 (a)



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Market Demand	A			B		
	X	P	PX	X	P	PX
HIGH	50,000	0.4	20,000	80,000	0.3	24,000
MEDIUM	30,000	0.3	9,000	60,000	0.5	30,000
LOW	10,000	0.3	3,000	50,000	0.2	10,000
Total			32,000	Total		64,000

Product	Returns (₹)	Investment (₹)	Profit (₹)
A	32,000	25,000	7,000
B	64,000	45,000	19,000

The company should take decision in favor of B since the profit is high.

Answer: 3 (b)

In any organization the following five major problems are being addressed when lean management is being implemented:

1. **Low Productivity:**

In the general sense, productivity means volume. It may be the number of calls handled in a call center, the number of products manufactured in a factory, the number of transactions resolved in a support group. Whatever kind of productivity it is, implementing lean management will help increase yields; enabling the organization to generate more satisfied customers and higher profit.

2. **Prolonged Cycle Time:**

A complaint resolved beyond timeline gives birth to another complaint. It is integral for the organization to manage the handling time to any problem for resolution.

3. **Costly Organization:**

Organizational expense must be carefully allotted to where it must be. Profit and Loss management must be clearly-defined. Even if you have an increasing customer base but your company expenses are also increasing, you will not achieve a favorable cost report. You can reduce cost by maximizing the talents and saving resources.

4. **Rampant Wastage:**

Time, resources, manpower, and cost are all subject to be wasted if not managed properly. Reducing or eliminating wastes will aid an organization to focus on the critical few. Focusing on essential things will create more room for improvement.

5. **Dissatisfied Customers and Employees:**

The heart of the organization is in the employees and the soul is the customers. Companies must always have a program called "WOCAS" or What Our Customers Are Saying. It is also vital to capture the voice of the workforce via regular town hall cascades or focus group discussions.

4. (a) **Amit Ltd., provides the following details on its new product.**

Years 1 and 2: R&D Costs: ₹2,40,000, Design Costs ₹1,60,000.

Years 3 to 6: Other Functional Costs:

Function	One-time Costs (₹)	Costs per unit (₹)
Production	1,00,000	25
Marketing	70,000	24

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Distribution	50,000	16
Customer Service	80,000	30

The sale quantities during the Product Life Cycle at various selling prices are:

Selling Price per unit (₹)	400	480	600
Sale Quantity in units	5,000	4,000	2,500

Ignoring the time value of money, compute the Net Incomes generated over the Product Life Cycle of various prices. Which price should the company select?

Assume the R&D Costs and Design Costs represent the Total Costs incurred in 2 years. 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 the profit is maximum. 6

Answer: 4 (a)

Income Statement

Particulars	Option-1	Option-II	Option-III
1. Life Cycle Sales Quantity (units)	5,000	4,000	2,500
2. Life Cycle Selling Price p.u.(₹)	400	480	600
3. Life Cycle Sales Revenue (1 × 2)(₹)	20,00,000	19,20,000	15,00,000
4. Life Cycle Functional Costs(₹) :			
(i) R&D	2,40,000	2,40,000	2,40,000
(ii) Design	1,60,000	1,60,000	1,60,000
(iii) Production-One time	1,00,000	1,00,000	1,00,000
-Variable (5,000 × 25)	1,25,000	1,00,000	62,500
(iv) Marketing - One time	70,000	70,000	70,000
-Variable(5,000 × 24)	1,20,000	96,000	60,000
(v) Distribution - One time	50,000	50,000	50,000
-Variable(5,000 × 16)	80,000	64,000	40,000
(vi) Customer Service - One time	80,000	80,000	80,000
-Variable(5,000 × 30)	1,50,000	1,20,000	75,000
Life Cycle Total Costs (₹)	11,75,000	10,80,000	9,37,500
5. Life Cycle Net Income	8,25,000	8,40,000	5,62,500

Conclusion: The Company may select Price of ₹480 to maximize profits.

Answer: 4 (b)

$$P = 300 - 4x$$

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

$$C = 500 + 28x$$

$$P = R - C$$

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

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

$$dp/dx = -8x + 272 = 0$$

$$\text{or } x = 272/8 = 34$$

$$d^2p/dx^2 = -8 \text{ which is negative.}$$

Therefore profit is maximum at x = 34 units.

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5. (a) How Government can play an important role in promoting E-Commerce? 8
(b) Data Mining is one of the fastest growing field in Computer industry. Discuss. 8

Answer: 5 (a)

Government can, play an important role in examining the economic and social impact E-commerce technologies and in promoting understanding and application of these technologies throughout Indian industries and communities.

- (i) Facilitating market access and business opportunities, especially) for small, media and micro enterprises (SMMEs), on a national and global scale.
- (ii) Providing educational and skills development resources.
- (iii) Supporting the rapid deployment of necessary infrastructure.
- (iv) Facilitating the development of MPCCs as vibrant seeding points for community knowledge and wealth creation, above and beyond the provision of the latest ICTs.
- (v) Developing "model use" programmes for the dissemination of government information and services using e-commerce platforms, e.g.. for electronic tender processes.
- (vi) Supporting necessary transitions in the labor force due to technological and industrial transformation.
- (vii) Ensuring equity in the availability of opportunities and benefits, in the context of the overall development of Indian rural community.

Answer: 5 (b)

Data mining is one of the fastest growing fields in the computer industry. Once a small interest area within computer science and statistics, it has quickly expanded into a field of its own. One of the greatest strengths of data mining is reflected in its wide range of methodologies and techniques that can be applied to a host of problem sets. Since data mining is a natural activity to be performed on large data sets, one of the largest target markets is the entire data warehousing, data-mart, and decision-support community, encompassing professionals from such industries as retail, manufacturing, telecommunications healthcare, insurance, and transportation. In the business community, data mining can be used to discover new purchasing trends, plan investment strategies, and detect unauthorized expenditures in the accounting system. It can improve marketing campaigns and The outcomes can be used to provide customers with more focused support and attention. Data-Mining' techniques can be applied to problems of business process reengineering, in which the goal is to understand interactions and relationships among business practices and organizations. Many law enforcement and special investigative units, whose mission is to identify fraudulent activities and discover crime trends, have also used data mining successfully.

6. (a) Ruin Theory was basically developed for studying the insurers vulnerability to insolvency. Discuss. 8
(b) "Every Corporate Strategy in a company must have Human Aspects". Comment. 8

Answer: 6 (a)

Ruin theory also known as "collective risk theory" was actually developed by the insurance industry for studying the insurers vulnerability to insolvency using mathematical modeling. It is based on the derivation of many ruin-related measures and quantities and specifically include; the probability of ultimate ruin. This can be also related to the sphere of approvability as the techniques used in the ruin theory as fundamentally arising out of stochastic processes. Many problems in ruin theory relate to real-life actuarial studies but the mathematical aspects of ruin theory have really been of interest to actuarial scientists and

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other business research people.

Normally an insurers' surplus has been computed as the net of two opposing cash flows, namely, cash inflow of premium income collected continuously at the rate of c and the cash outflow due to a series of insurance claims that are mutually independent and identically distributed with a common distribution function $P(y)$. The path of the series of claims is assumed to respond to a Poisson process with intensity rate λ which would mean that the number of claims received $N(t)$ at a time frame of t is controlled by a Poisson distribution with a mean λt . Therefore, the insurer's surplus at any time t is represented by the following formula :

$$X(t) = x + Ct - \sum_{i=0}^{N(t)} Y_i$$

Answer: 6 (b)

Human aspects of corporate strategy:

These continue to be enigmas in the course of corporate history. From the time of the Industrial Revolution until today, many vicissitudes and changes have been observed in the relationship between labour and management. The birth of trade unionism and collective bargaining as a source of strength for labour has also introduced a sea change in labour management thought, Political parties have made inroads into labour movements and their influence has not been appreciated. An increase in unlawful activities by intransigent labour unions has also led to risks in developing strategies that are an amalgam, am of both bottom-up and top down approaches. Different ideologies have also shaped the ways of work as they spread across different countries.

The application of turnaround strategies, restructuring, business process reengineering and the like have faced many risks, in terms of the human component while facing issues such as cutting out dead wood, developing safety nets for retiring employees, and retraining existing employees to help them gain new skills.

Human resources problems, such as resistance to technology upgrades that would cause job losses, affect the course of a corporate strategy due to both external and internal risks arising out of political, technological, and ideological changes.

7. (a) **"Supplier Development Training" and "Supplier Integration in New Product Development are both important aspects of an active management to achieve a sustainable competitive advantage". Describe both the aspects.** 3+3=6
- (b) **Write short notes on the following:** 4+4+2=10
- (i) **Information Sharing;**
 - (ii) **Information Technology; and**
 - (iii) **Insourse vs. Outsource.**

Answer: 7 (a)

(i) Supplier Development Training

Education and training is the most common approach to supplier development and improvement. A purchaser may provide training in statistical process control, quality improvement techniques, just-in-time delivery or any other crucial performance area. In order for purchasing to adequately assess and aid suppliers in improving quality, purchasers need to become familiar with the important components of quality management. In many organizations, purchasing may request the assistance of quality and engineering departments in assisting with the supplier quality training.

Purchasing companies emphasize four areas of quality training with their suppliers:

- 1) Total quality management and quality improvement training,
- 2) Statistical quality control techniques training,

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- 3) training focusing on integrating quality into the design of products and processes to reduce variability, and
- 4) training in problem solving techniques.

(ii) Supplier Integration in New Product Development

Supplier integration into new product/process/service development suggests that suppliers are providing information and directly participating in decision making for purchases used in the new product/process/service. This integration can occur during idea generation, preliminary business/technical assessment, product/process/service concept development, product/process/service design and development and prototype build, test or production ramp up.

Answer: 7 (b)

- (i) A Short Note on Information Sharing: A Strategic partnering relationship between suppliers and buyers is characterized by a willingness to be open and to share forecasted demand and cost data as well as the benefits resulting from the information sharing. Both parties in the relationship generally follow a contentious improvement philosophy towards total cost of material acquisition and ownership along with duality and service. Cost, Quality and schedule information that is confidential is shared both ways between firms during the early and ongoing stages of design and during the production life-cycle of the supplying relationship. This openness exists because of the high degree of trust earned through multiple successful interactions between the two organizations.
- (ii) A Short Note on Information Technology: Information Technology is the technology of computers, telecommunications, and other devices that integrate data, equipment, personnel, and problem-solving methods in planning and controlling business activities. Information technology provides the means for collecting, storing, encoding, processing, analyzing, transmitting, receiving, and printing text, audio, or video information.
Hardware: In the context of information technology, the computer and its peripherals constitute the hardware.
Software: The programs and documentation necessary to make use of a computer constitute the software.
- (iii) A Short Note on In source vs Outsource:
In source and Outsource stands for the act of deciding whether to produce an item internally or buy it from an outside supplier. Factors to consider in the decision include costs, capacity availability, proprietary and/or specialized knowledge, quality considerations, skill requirements, volume, and timing.

8. (a) List major aspects of production that may lead to sickness. Indicate probable causes against each such aspect. 4+4=8
- (b) Write one or two sentences on each of the following topics in the context of Corporate Risk Management: 2× 4 = 8
- (i) Objective of Corporate Risk Management
 - (ii) Risk reporting and review
 - (iii) Relationship between Risk and Strategy
 - (iv) Market volatility

Answer: 8 (a)

- The major aspects of production that may lead to sickness are:
- Increase in the cost of production.
- Decrease in the quantity of production.

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- Quality of product not meeting the standards/customer expectation.
- Producing more quantity than can be sold, leading to accumulation of stock.

Probable causes:

The increase in cost of production: may be due to external factors like increase in the cost of raw materials, increase in the cost of consumables, power, etc., or due to internal factors like improper choice of raw material/raw material-source, wrong choice of production process etc.

Decrease in quantity of production: may be due to defects/under performance of plant and machinery, defects in production process etc.,

Defects in quality of products: may be due to defects in raw material used, or due to unsatisfactory performance of machinery or due to ineffective supervision. In spite of the raw material, machinery and supervision being good, the advent of new technology may bring in product-obsolescence and the product may lose customer preference.

Accumulation of Stocks: Lack of proper planning of product mix and lack of co-ordination between production and marketing departments may lead to piling up of inventory, which will only add to the cost of the product.

Answer: 8 (b)

(i) Objective of Corporate Risk Management:

Corporate Risk Management works to ensure the safety of the business, guarding it from risk of injury or financial loss. It helps to optimize risk taking of an organization

Risk reporting and review:

Besides a detailed review by the executive committee, enterprise risks are reviewed quarterly by the audit committee of the board. Risk owners present status updates on their mitigation plans in front of the committee.

(iii) Relationship between Risk and Strategy:

An entrepreneur who promotes a business entity is aware of the risks that he will encounter during the period of incorporating the entity, establishing Infrastructure, and entering commercial operations in a time bound framework. The entrepreneur tries to formulate a corporate strategy, and then implement, evaluate, and control it to attain the desired goals.

(iv) Market Volatility has always rendered a long-term strategy susceptible to deviation from the desired course, as markets are no longer protected and the whole world has shrunk due to new vistas in communication.

The winds of change that have been blowing across the globe during the last few-decades have brought in many abrupt changes resulting in the diverse business risks of demand-supply imbalances, divergence, unexpected technological obsolescence, price mechanism, customer behavior, and new exigencies in corporate governance.