

Paper 15- Business Strategy & Strategic Cost Management

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Full Marks: 100

Time allowed: 3 Hours

Section - A

Answer Question No. 1 which is compulsory and Carries 20 Marks.

1. (a) What is Strategic decision? What are its characteristics? [8]

Answer: 1. (a)

Strategic decisions are the decisions that are concerned with whole environment in which the firm operates the entire resources and the people who form the company and the interface between the two.

The characteristics of strategic decision are as follows:

- (i) Strategic decisions are likely to affect the long-term direction of an organisation.
- (ii) Strategic decisions are normally about trying to achieve some advantage for the organisation.
- (iii) Strategic decisions are likely to be concerned with the scope of an organisation's activities: Does (and should) the organisation concentrate on one area of activity, or does it have many? The issue of scope of activity is fundamental to strategic decisions because it concerns the way in which those responsible for managing the organisation conceive its boundaries. It is to do with what they want the organisation to be like and to be about.
- (iv) Strategy is to do with the matching of the activities of an organisation to the environment in which it operates.
- (v) Strategy can also be seen as 'stretching' an organisation's resources and competences to create opportunities or capitalise on them. It is not just about countering environmental threats and taking advantage of environmental opportunities; it is also about matching organisational resources to these threats and opportunities. There would be little point in trying to take advantage of some new opportunity if the resources needed were not available or could not be made available, or if the strategy was rooted in an inadequate resource-base.
- (vi) Strategic decisions therefore often have major resource implications for an organisation. In the 1980s a number of UK retail firms had attempted to develop overseas with little success and one of the major reasons was that they had underestimated the extent to which their resource commitments would rise and how the need to control them would take on quite different proportions. Strategies, then, need to be considered not only in terms of the extent to which the existing resource-base of the organisation is suited to the environmental opportunities but also in terms of the extent to which resources can be obtained and controlled to develop a strategy for the future.
- (vii) Strategic decisions are therefore likely to affect operational decisions, to 'set off waves of lesser decisions'.
- (viii) The strategy of an organisation will be affected not only by environmental forces and resource availability, but also by the values and expectations of those who have power in and around the organisation. In some respects, strategy can be thought of as a reflection of the attitudes and beliefs of those who have the most influence on the organisation. Whether a company is expansionist or more concerned with consolidation, and where the boundaries are drawn for a company's activities, may say much about the values and attitudes of those who influence strategy -- the stakeholders of the organisation. The beliefs and values of these stakeholders will have a more or less direct influence on the organisation.

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- (b) A Factory manufactured a Tape Recorder, the estimate costs of which are as follows:

Direct Material	₹ 20 each
Direct wages	10 hours at ₹1.00 per hour
Overhead absorption Rate	₹ 2.00 per hour. (50% fixed overhead included)

During this period 10,000 units will be produced and sold as follows:-

9,000 units of first at	₹60 each
500 units of second at	₹50 each
500 units of third at	₹30 each

Present information to management showing the loss due to the production of inferior units.

By reprocessing the inferior units, taking the full re-processing time of a further 3 hours and adding further materials, costing ₹14 per unit, these 'seconds' and 'third' can be converted into 'firsts' Present information to the management. [3]

Answer: 1(b)

Present position (Based on 10,000 units production) Cost per unit:

		₹
Direct material		20
Direct wages	(10 hrs. @ ₹1.00)	10
Overheads	(10 hrs. @ ₹2.00)	20
Total		50

Particulars	Per unit		Units	Total	
	Sales price (₹)	Profit/Loss (₹)		Profit (₹)	Loss (₹)
First	60	10	9,000	90,000	
Seconds	50	-	500	-	
Thirds	30	(20)	500	-	10,000
				90,000	10,000
				Net profit	80,000

Reprocessing of Inferior units

(a) Additional expenditure for reprocessing per unit

	(₹)
Direct material	14
Direct wages 3 hrs.	3
Variable overhead @ ₹ 1.00	3
Total	20

Total expenditure for 100 units = $100 \times ₹20 = ₹2,000$

(b) Additional revenue

		(₹)
Seconds	$(₹60 - ₹50) \times 500$ units	5,000
Thirds	$(₹60 - ₹30) \times 500$	15,000
		20,000

Note: No change in the profit position hence this need not be considered.

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- (c) A company has the capacity of production of 80,000 units and presently sells 20,000 units at ₹100 each. The demand is sensitive to selling price and it has been observed that with every reduction of ₹10 in selling price the demand is doubled. What should be the target cost at full capacity if profit margin on sale is taken as 25%? [3]

Answer: 1(c)

Demand	Price
20,000	100
40,000	90
80,000	80

∴ Target Cost = $80 \times 75\% = 60$

(Since target Cost = Selling Price – Profit)

- (d) The data of running costs per year and resale price of equipments A whose purchase price is ₹ 2,00,000 are as follows:

Year	I	II	III	IV	V	VI	VII
Running cost (₹'000)	30	38	46	58	75	90	110
Resale value (₹'000)	100	50	25	12	8	8	8

What is the optimum period of replacement?

[3]

Answer: 1(d)

The calculations of average cost per year during the life of the Equipment A:

Year	Running cost (₹)	Cumulative Running cost	Resale price	Cumulative Dep. cost	Cumulative Total Cost	Average cost per year
1	30,000	30,000	1,00,000	1,00,000	1,30,000	1,30,000
2	38,000	68,000	50,000	1,50,000	2,18,000	1,09,000
3	46,000	1,14,000	25,000	1,75,000	2,89,000	96,333
4	58,000	1,72,000	12,000	1,88,000	3,60,000	90,000
5	72,000	2,44,000	8,000	1,92,000	4,36,000	87,200
6	90,000	3,34,000	8,000	1,92,000	5,26,000	87,667
7	1,10,000	4,44,000	8,000	1,92,000	6,36,000	90,857

As average cost per year of ₹87,200 is minimum in 5th year so Equipment A should be replaced at the end of the 5th year.

(e) What are the objectives of JIT production methods?

[3]

Answer: 1(e)

Just in time (JIT) is a production strategy that strives to improve a business return on investment by reducing in-process inventory and associated carrying costs. The philosophy of JIT is simple: inventory is waste. JIT inventory systems expose hidden cost of keeping inventory, and are therefore not a simple solution for a company to adopt.

The objectives of JIT are as follows:

- (1) Produce only the products the customer wants.
- (2) Produce products only at the rate that the customer wants them.
- (3) Produce with perfect quality.

- (4) Produce with minimum lead time.
- (5) Produce products with only those features the customer wants.
- (6) Produce with no waste of labor, material or equipment — every movement must have a purpose so that there is zero idle inventory.
- (7) Produce with methods that allow for the development of people.

Section - B

Answer any five questions from the following and each question carries 16 marks.

2. (a) "Choice of strategy is influenced by some factors" – State the factors that influence the choice of strategy.
(b) What are the problems of strategy evaluation? [8 + 8]

Answer: 2(a)

Choice of strategy is a decision making process of a choice from among alternative strategies. It is the process of comparing the impact of the possible strategies on the firm and it implies trade off between courses of action. These decisions involve focusing on a few alternatives, considering the selection factors, evaluating the alternatives and making the actual choice.

Choice of strategy is influenced by following factors:-

- **External Constraints:-** Choice of strategy is governed by the extent and degree of the firm's dependence on owners, customers, suppliers, and the govt.
- **Infra-Organizational Forces:-** Decisions are influenced by the power play among different interest groups and by the degree of uncertainty.
- **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.
- **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.
- **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.

Answer: 2(b)

Task of strategy evaluation suffers from the problems arising out of misinterpretation of environmental forces and corporate resources. The evaluator may not always be correct when he questions the validity of the on-going strategy. This is because of the fact that determination of opportunities and threats is often of a function the perception and the attitude of the person making such exercise as it is of the factor itself. For instance, a dynamic and enterprising planner may perceive abundant opportunities emerging due to economic and technological developments and formulate expansion strategy. This approach may not be appreciated by an evaluator with a conservative attitude and closed cognitive style that holds the view that the enterprise should continue to maintain its present product-market posture owing to disquieting political developments.

Inaccurate assessment of financial, marketing, managerial and other resources of the enterprise and existence of synergistic benefits poses another obstacle to the appraisal of strategy. Thus, for instance, a corporate planner chooses a

diversification strategy because in his view the firm has adequate financial and managerial resources to support this plan. But the evaluator questions the utility of such a strategy because he doubts the skill and competence of the senior executives of the firm.

Another obstacle that is inherent in strategy appraisal is identification, evaluation and choice of strategic alternatives. In the real world, it has been noted that some organisations without making independent appraisal of opportunities choose a course of action because others in the same line of business have done so. This type of approach renders the product-market strategy weak.

Another source of difficulty involved in appraisal of strategy is misinterpretation of current results. Generally, the central chief executive, without digging deep into the problem, regards the current strategy as unsound if the performance has not been satisfactory and directs the corporate planner to re-examine it. In the same vein, he labels the strategy as sound because of the excellent operating results. But such type of hurried judgment may, at times, be erroneous. Poor results may have been due to improper execution of strategy or outstanding profits were due to certain other factors such as war and product rationing. The management swayed by good results may not take serious note of implications of impending environmental changes and accordingly remain indifferent to any modification in the current plan for the future.

3. (a) Discuss Contingency Planning and its seven steps process.

(b) Describe about the internal and competitive bench marking.

[8 + 8]

Answer: 3(a)

Contingency Planning

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

Step 1 - Identify the beneficial and unfavourable 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.

Answer: 3(b)

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.

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.

4. (a) "The various PEST Analysis factors that a firm needs to consider and research in order to enter the restaurant business"- Discuss the various factors.

(b) Distinguish between Cost Reduction and Cost Management.

[10 + 6]

Answer: 4(a)

The various PEST Analysis factors that a firm needs to consider and research in order to enter the restaurant business in a new environment may be depicted as follows:-

Political Factors:

- Government regulations regarding hygiene, health and food regulations, food standards, etc.
- Economic policies of government regarding the restaurant industry and running eating joints; these may include licenses, inspections by Health and Food Ministry departments, etc.

Economic Factors:

- Interest rate would impact the cost of capital, the rate of interest being directly proportionate to the cost of capital.
- Rate of inflation determines the rate of remuneration of employees and directly affects the price of the restaurant's products. Again, the proportion between the inflation rate and wages/prices is direct.
- Economic trends act as an indicator of the sustenance and profitability of your business in the chosen region and help you in deciding your marketing strategy.

Social Factors:

- Certain cultures abhor certain foods. For instance, Hindus will not eat beef and Muslims would not even touch pork. Therefore knowledge of these cultural facts about your business environment will help you decide whether or not you'll be able to do any business there.
- Eating habits of the people in your chosen business environment may, and certainly will, affect your marketing decisions.
- Ratio of people preferring to eat out regularly.

Technological Factors:

- A good technical infrastructure would lead to better production, procurement and distribution logistics, resulting in reduced wastage and lower costs.
- Sound technology may be a decisive factor for food technology innovation, better presentation, more effective business marketing, etc.

That was a sample PEST report. Hotel and food processing businesses would also have a similar PEST structure with some changes here and there. All in all, PEST analysis is a great way of getting to know the battlefield environment before you jump headlong into it.

Answer: 4(b)

Difference between Cost Reduction and Cost Management

Particulars	Cost Reduction	Cost Management
Meaning	It is the permanent reduction in the unit cost of goods or services without affecting their quality or suitability for their intended use.	It is a system that establishes linkages between costs and revenues and relates them with the product to maximize Firm's profits.
Objective	Critical examination of each aspect of business and their analysis and review to improve the efficiency and effectiveness so as to reduce costs through techniques of Value Analysis, Work Study, Standardization etc.	Optimal utilization of resources to enhance the operating income of the business entity.
Nature of process	It presumes the existence of concealed potential savings in norms or standards and therefore it is a corrective process.	It does not focus on costs independent of revenue nor considers product attributes as given. It is a wholistic control process.

5. (a) Discuss the benefits of Strategic Alliance. [8]

(b) The data on the running costs per year and resale price of equipment A whose purchase prices is ₹2,00,000 are as follows :

Year	1	2	3	4	5	6	7
Running cost (₹)	30,000	38,000	46,000	58,000	72,000	90,000	1,10,000
Resale value (₹)	1,00,000	50,000	25,000	12,000	8,000	8,000	8,000

- (i) What is the optimum period of replacement?
- (ii) When equipment A is two years old, equipment B which is a new model for the same usage is available. The optimum period for replacement is 4 years with an average cost of ₹72,000. Should equipment A be changed with equipment B? If so, when? [8]

Answer: 5(a)

Benefits of Strategic Alliance

Nowadays, strategic alliance has become a common strategy to businesses. Two or more enterprises choose to form a partnership and work cooperatively to achieve their mutually beneficial objectives.

In a plain view, strategic alliance just reflects the desire of enterprises to achieve their independent business objectives cooperatively. But, in the true fact of today's globalized and complex market place, there is the need to make such a business arrangement in order to gain competitive advantages among the fierce competitors in the market place. Enterprises that enter into strategic alliance usually expect to benefit in one or more ways. Some of the potential benefits that enterprises could achieve are such as:

Gaining capabilities

An enterprise may want to produce something or to enquire certain resources that it lacks in the knowledge, technology and expertise. It may need to share those capabilities that the other firms have. Thus, strategic alliance is the opportunity for the enterprise to achieve its objectives in this aspect. Further to that, in later time the enterprise also could then use the newly acquired capabilities by itself and for its own purposes.

Easier access to target markets

Introducing the product into a new market can be complicated and costly. It may expose the enterprise to several obstacles such as entrenched competition, hostile government regulations and additional operating complexity. There are also the risks of opportunity costs and direct financial losses due to improper assessment of the market situations. Choosing a strategic alliance as the entry mode will overcome some of those problems and help reduce the entry cost. For example, an enterprise can license a product to its alliance to widen the market of that particular product.

Sharing the financial risk

Enterprises can make use of the strategic arrangement to reduce their individual enterprise's financial risk. For example, when two firms jointly invested with equal share on a project, the greatest potential that each of them stand to lose is only half of the total project cost in case the venture failed.

Winning the political obstacle

Bringing a product into another country might confront the enterprise with political factors and strict regulations imposed by the national government. Some countries are politically restrictive while some are highly concerned about the influence of foreign firms on their economics that they require foreign enterprises to engage in the joint venture with local firms. In this circumstance, strategic alliance will enable enterprises to penetrate the local markets of the targeted country.

Achieving synergy and competitive advantage

Synergy and competitive advantage are elements that lead businesses to greater success. An enterprise may not be strong enough to attain these elements by itself, but it might possible by joint efforts with another enterprise. The combination of individual strengths will enable it to compete more effectively and achieve better than if it attempts on its own.

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Answer: 5(b)

(i) The calculations of average cost per year during the life of the machine :-

Year of service (1)	Running cost (₹) (2)	Cumulative running cost (₹)(3)	Resale price (₹)(4)	Cumulative Depreciation cost (₹) (5) = ₹2 Lakh - (4)	Cumulative Total cost (₹) (6) = (3) + (5)	Average cost per year (7) = (6)/(1)
1	30,000	30,000	1,00,000	1,00,000	1,30,000	1,30,000
2	38,000	68,000	50,000	1,50,000	2,18,000	1,09,000
3	46,000	1,14,000	25,000	1,75,000	2,89,000	96,333
4	58,000	1,72,000	12,000	1,88,000	3,60,000	90,000
5	72,000	2,44,000	8,000	1,92,000	4,36,000	87,200
6	90,000	3,34,000	8,000	1,92,000	5,26,000	87,667
7	1,10,000	4,44,000	8,000	1,92,000	6,36,000	90,857

As average cost per year of ₹87,200 is minimum in 5th year, so A should be replaced at the end of 5th year.

(ii) Given, the optimum period for replacement of B is 4 years with an average cost of ₹72,000.

As Minimum average cost of B is lower than minimum average cost of A, so A should be replaced by B.

As A is two years old, so total cost per year of A from 3rd year are as follows:-

Year of service	Total cost per year
3	2,89,000 - 2,18,000 = 71,000
4	3,60,000 - 2,89,000 = 71,000
5	4,36,000 - 3,60,000 = 76,000
6	5,26,000 - 4,36,000 = 90,000
7	6,36,000 - 5,26,000 = 1,10,000

As total cost per year of A is higher in 5th year than the minimum average cost of B (72,000) so A should be replaced at the end of 4th year.

6. (a) What do you mean by Kaizen Costing. [8]

(b) An automobile production line turns out about 100 cars a day, but deviations occur owing to many causes. The production is more accurately described by the probability distribution given below:

Production/Day	Prob.	Production/Day	Prob.
95	0.03	101	0.15
96	0.05	102	0.10
97	0.07	103	0.07
98	0.10	104	0.05
99	0.15	105	0.03
100	0.20		
		Total	1.00

Finished cars are transported across the bay, at the end of each day, by ferry. If the ferry has space for only 101 cars. Using the Random numbers viz. 20, 63, 46, 16, 45, 41, 44, 66, 87, 26, 78, 40, 29, 92, 21 what will be the average number of cars waiting to be shipped, and what will be the average number of empty space on the boat? [8]

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Answer: 6(a)

KAIZEN costing is a cost-reduction system that is applied to a product in production. It comes from the combination of the Japanese characters "kai" and "zen" which mean "change" and "good", respectively. The word "Kaizen" translates to "continuous improvement" or "change for the better" and aims to improve productivity by making gradual changes to the entire manufacturing process. Some of the cost-reduction strategies employed involve producing cheaper re-designs, eliminating waste and reducing process costs. Ensuring quality control, using more efficient equipment, utilizing new technological advances and standardizing work are additional elements.

To understand Kaizen costing, one first needs to grasp standard costing methodology. The typical standard costing approach works by designing a product first, and computing costs by taking into account material, labor and overhead. The resulting figure is set as the product cost. The standard cost is set and revised on a yearly basis. Cost deviation analysis involves checking to see whether the projected cost estimates tally with the final figures. Manufacturing procedures are assumed to be static.

In contrast, Kaizen costing is based around improving the manufacturing process on a continual basis, with changes being implemented throughout the year. Cost-reduction targets are set on a monthly basis. The goal here is to reduce the difference between profit estimates and target profits. The cost deviation analysis done in Kaizen costing examines the difference between the target Kaizen costs and the actual cost reduction achieved. The basic idea here is to make tiny incremental cost reductions on a continual basis in a product's life cycle.

Answer: 6(b)

Simulation of data of an Automobile Production line

Production/day	Probability	Cumulative Probability	Random No. Range
95	0.03	0.03	0-2
96	0.05	0.08	3-7
97	0.07	0.15	8-14
98	0.10	0.25	15-24
99	0.15	0.40	25-39
100	0.20	0.60	40-59
101	0.15	0.75	60-74
102	0.10	0.85	75-84
103	0.07	0.92	85-91
104	0.05	0.97	92-96
105	0.03	1.00	97-99
	1.00		

Stimulated data

Day	Random No.	Production	No. of cars waiting to be shipped	No. of empty space on the boat
1	20	98	-	3
2	63	101	-	-
3	46	100	-	1
4	16	98	-	3

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5	45	100	-	1
6	41	100	-	1
7	44	100	-	1
8	66	101	-	-
9	87	103	2	-
10	26	99	-	2
11	78	102	1	-
12	40	100	-	1
13	29	99	-	2
14	92	104	3	-
15	21	98	-	3
Total			6	18

Average no. of cars waiting to be shipped = $6/15 = 0.40$

Average no. of empty space on the boat = $18/15 = 1.2$

7. (a) Evenkeel Ltd. manufactures and sells as single product X whose price is ₹ 40 per unit and the variable cost is ₹ 16 per unit.
- (i) If the fixed costs for this year are ₹ 4,80,000 and the annual sales are at 60% margin of safety, calculate the rate of net return on sales, assuming an income tax level of 40%.
 - (ii) For the next year, it is proposed to add another product line Y whose selling price would be ₹50 per unit and the variable cost ₹ 10 per unit. The total fixed costs are estimated at ₹ 6,66,600. The sales mix of X : Y would be 7:3. At what level of sales next year, would Evenkeel Ltd. break even? Give separately for both X and Y the break even sales in rupees and quantities. [8]

- (b) Shiplon Products Ltd. manufacturing 3 different products. The relevant data of these products are as under:

Name of the product :	Cream	Pomed	Jelly
Production capacity (units)	5,000	7,000	8,100
Machine hours per unit	1	3	4
Variable cost per unit (₹)	3.00	2.50	3.50
Selling prices (₹ /unit)	4.00	5.50	6.00

The total fixed overheads at current capacity level are ₹40,000 per annum.

The company have various alternatives for improving profitability as given below.

- (i) To stop the production of Jelly and use the released capacity for producing Pomed. The machines for both the products are common. However cream is produced on a special purpose machine.
- (ii) To export the total production of Jelly at current price. On export the following additional revenue is expected.
 - (A) 8% Duty Drawback on export price,
 - (B) 12% Cash Compensatory Support against an export scheme of government.
 - (C) 5% Replacement Licence which can be sold in market at a premium of 80%.
- (iii) To replace the conventional machine used for Jelly by a special purpose machine which will reduce the production time from 4 hour to 3 hour per unit. Due to these changes the variable cost of Jelly will be

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reduced by ₹0.50 per unit. The released machine will be used for producing pomed. This proposal will entail an additional burden of fixed cost to the tune of ₹ 32,000 per annum.

Please advise the management about the right choice of an alternative so as to maximise profits. [8]

Answer: 7(a)

$$(a) \text{ BEP (Sales)} = \frac{\text{Fixed Cost}}{\text{Pv Ratio}} = \frac{₹4,80,000}{60\%} = ₹8,00,000$$

According to the problem this is equal to 40%

$$\text{Total Sales} = 8,00,000 \times \frac{100}{40} = ₹20,00,000$$

Statement showing calculation of return on sales:

		₹
I	Sales	20,00,000
II	Variable Cost	8,00,000
III	Contribution (I – II)	12,00,000
IV	Fixed Cost	480,000
V	Profit before tax	7,20,000
VI	Profit after tax (60% of PBT)	4,32,000

$$\text{Return on sales} = \frac{\text{PAT}}{\text{Sales}} \times 100 = \frac{₹4,32,000}{₹20,00,000} \times 100 = 21.6\%$$

Let BEP units of product X and Y be 7a and 3a respectively. In order to find Break even total. Contribution must equal to Fixed Cost.

$$7a \times 24 + 3a \times 40 = 6,66,600$$

$$a = 2314.583.$$

Break even units of

$$X = 7 \times 2314.583 = 16,202 \text{ units.}$$

$$Y = 3 \times 2314.583 = 6,944 \text{ units.}$$

$$\text{BE sales} = 16,202 \times 40 + 6,944 \times 50 = 9,95,280$$

Answer: 7(b)

Present situation:

	Cream	Pomed	Jelly	Total
No of Units	5,000	7,000	8,100	
Price per unit (₹)	4.00	5.50	6.00	
Sales Value (₹)	20,000	38,500	48,600	1,07,100
Less: Variable cost (₹)	15,000	17,500	28,350	60,850
Contribution (₹)	5,000	21,000	20,250	46,250
Less: Fixed Cost (₹)				40,000
Current profit (₹)				6,250

Proposal (i)

	Cream	Pomed	Total
No. of Units	5,000	17,800*	
Contribution per unit (₹)	1.00	3.00	
Total Contribution (₹)	5,000	53,400	58,400
Less: Fixed Cost (₹)			40,000
Profit (₹)			18,400

* $(8.100 \times 4) \div 3 = 10,800$ [10,800 + 7,000 = 17,800]

Proposal (ii)

Calculation of revised price and contribution of Jelly:

	Jelly ₹
Export price	6.00
Duty drawback at 8% of 6	0.48
Cash Assistance at 12% of 6	0.72
Replenishment benefit 80% of 5% of 6	0.24
Revised revenue	7.44
Less: variable cost	3.50
Contribution	3.94

Calculation of revised profit:

	Cream	Pomed	Jelly	Total
No. of Units	5,000	7,000	8,100	
Contribution - per unit (₹)	1.00	3.00	3.94	
Contribution (₹)	5,000	21,000	31,914	57,914
Less: Fixed Cost (₹)				40,000
Current profit ₹				17,914

Proposal (iii)

	Cream	Pomed	Jelly	Total
No. of Units	5,000	17,800	10,800	
Contribution - per unit (₹)	1.00	3.00	3.00	
Contribution (₹)	5,000	53,400	32,400	90,800
Less: Fixed Cost (₹)				72,000
Current profit ₹				18,800

The contribution calculation of Proposal (iii) has been calculating on the assumption that (i) new machine will increase the production capacity of Jelly to the extent of 8,100 hours (1 hour per unit) and within this time further $8,100/3 = 2,700$ units of Jelly could be produced (ii) the old machine can be used wholly to produced Pomed to achieve total production of 17,800 units.

8. (a) M/s. N.C.Ltd. has received an enquiry from a reputed cigarette factory for the supply of 20 million shells per month. Capacity exists for the same but a balancing equipment costing ₹ 50,000 has to be installed.

The cost details are as follows:

Duplex board	50 tonnes @ ₹ 5.50 per kg.
Printing ink and gum	₹ 2 per 1000 shells
Packing cost	₹ 7.50 per one lakh shells
Labour hours	1,600 hours of which 500 hours will be overtime.
Labour rate	₹4 per hour with double the rate for overtime.
Overheads	₹ 16,300 per month
Selling and distribution expenses	₹ 16,300 per month

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Since duplex board is in short supply, procurement is made on cash basis. Working capital to the extent of 50% of the sales value will be required.

The company expects a net return of 20% on the additional capital required for undertaking this order.

Prepare a cost estimate and indicate the price to be quoted to the customer. [6]

- (b) Country preserves produce jams, marmalade and preserves. All products are produced in a similar fashion — the fruits are low temperature cooked in vacuum process and then blended with glucose syrup with added citric acid and pectin to help setting.

Margins are tight and the firm operates a system of standard costing for each batch of jam.

The standard cost data for batch of raspberry jam are

Fruit extract	400 kg @ ₹ 0.16 per kg
Glucose Syrup	700 kg @ ₹ 0.10 per kg
Pectin	99 kg @ ₹ 0.332 per kg
Citric acid	1kg @ ₹2.00 per kg
Labour	18 hrs @ ₹3.25 per hour

Standard processing loss 3%

The summer of 2013 proved disastrous for the raspberry crop with a late frost and cool, cloudy conditions at the ripening period, resulting in low national yield. As a consequence, normal prices in the trade were ₹ 0.19 per kg. for fruit extracts although good buying could achieve some savings. The impact of exchange rates on imports of sugar has caused the price of syrup to increase by 20%

The actual results for the batch were:

Fruit Extracts	428 kg. @ ₹ 0.18 per kg
Glucose syrup	742 kg. @ ₹ 0.12 per kg
Pectin	125 kg @ ₹ 0.328 per kg
Citric acid	1 kg @ ₹ 0.95 per kg
Labour	20 hrs @ ₹3.00 per hour

Actual output was 1,164 kg raspberry jam. You are required to:

- Calculate the ingredients planning variances that are deemed uncontrollable
- Calculate the ingredients operating variances that are deemed controllable.
- Calculate the mixture and yield variances.
- Calculate the total variance for batch. [10]

Answer: 8(a)

Statement showing Computation of Cost and Price to be quoted to the Customers –

Duplex board =	$50 \times 1,000 \times 5.5$	= 2,75,000
Printing ink and gum =	$\frac{2,00,00,000}{1,000} \times 2$	= 40,000
Packing Cost =	$\frac{200 \text{ lakhs}}{1 \text{ lakhs}} \times 7.5$	= 1,500
Labour =	$1,100 \times 4 + 500 \times 8$	= 8,400
Fixed Overhead		= 16,300
Selling & distributions		= 16,300
	Total Cost	3,57,500

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	Profit (b/d)	45,750
	Sales	4,03,250

Let 'S' be the sales

Capital employed = 50,000 + (0.5) S

Required Profit = 20% of [50,000 + 0.5 s]

= 10,000 + 0.10 s

Sales = 3,57,500 + 10,000 + 0.10 s

Sales = 3,67,500 + 0.10 × 357,500

Sales = 4,03,250

Answer: 8(b)

Workings

Statement showing original, revised and actual data

Original Standard			Revised Standard			Actual		
(1)	(2)	(3)=(1)×(2)	(4)	(5)	(6)=(4)×(5)	(7)	(8)	(9)=(7)×(9)
400	₹0.16	₹ 64.000	400	₹0.19	₹ 76.000	428	₹0.18	₹ 77.04
700	₹0.10	₹ 70.000	700	₹0.12	₹84.000	742	₹0.12	₹89.04
99	₹0.332	₹ 32.868	99	₹0.332	₹32.868	125	₹0.328	₹41.00
1	₹2.000	₹2.000	1	₹2.0	₹2.000	1	₹0.95	₹ 0.95
1,200		₹ 168.868	1,200		₹194.868	1,296		₹ 208.03
	Labour	₹ 58.500		Labour	₹58.500		Labour	₹60.00
1,200		₹ 227.368	1,200		₹253.368	1,296		₹268.03
36	Loss 3%		36	Loss 3%		132		
1,164			1,164			1,164		

(a) Planning Variance = Original cost – Revised cost

Fruit Extract	₹64 - ₹76	₹12(A)
Glucose syrup	₹70 - ₹84	₹14 (A)
Total	₹227.368 - ₹253.368	₹26 (A)

(b) Ingredients Operating Variances: Revised- Actual = ₹194.868 - ₹208.03 = ₹13.162 (A)
For calculation of variances

M ₁	Actual cost of actual material	₹208.03
M ₂	Standard cost of material used	
	428 × 0.19	₹81.32
	742 × 0.12	₹89.04
	125 × 0.332	₹41.50
	1 × 2.0	₹2.00
		₹213.86
M ₃	Standard cost of material if it had been used in standard proportion	
	(400 ÷ 1,200) × 1,296 × 0.19	₹82.080
	(700 ÷ 1,200) × 1,296 × 0.12	₹90.720
	(99 ÷ 1,200) × 1,296 × 0.332	₹35.497
	(1 ÷ 1,200) × 1,296 × 2	₹2.160
		₹210.457
M ₄	Standard material cost of output	
	(1,94.868 ÷ 1,164) × 1,164	₹ 194.868

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- (1) Material price variance = $M_1 - M_2 = ₹208.03 - ₹213.86 = 5.83$ (F)
- (2) Material usage variance = $M_2 - M_4 = ₹213.86 - ₹194.868 = ₹18.992$ (A)
- (3) Labour Cost variance = Actual cost - Standard cost = $₹60 - ₹58.50 = ₹1.50$ (A)
- (c) (1) Mixture variance = $M_2 - M_3 = ₹213.86 - ₹210.457 = ₹3.403$ (A)
- (2) Yield variance = $M_3 - M_4 = ₹210.457 - ₹194.868 = ₹15.589$ (A)
- (3) Usage variance = $3.403(A) + 15.589(A) = ₹18.992(A)$ (Checked)
- (d) Total variance = Original Standard Cost - Actual cost = $₹227.368 - ₹268.03 = ₹40.662$ (A)

Note: Planning variance is the difference between an original and revised standard cost. It arises when an interim adjustment of a standard cost made without adjusting the budget and is required to allow full analysis of the difference between budget and actual profit. By ingredients and operating variance, the effort has made to ask for constituent variance like material and labour in broad category. The detailed usage variance has been asked in (c).