

FINAL EXAMINATION

June 2023

P-15(SCMD)

Syllabus 2016

STRATEGIC COST MANAGEMENT-DECISION MAKING

Time Allowed: 3 hours

Full Marks: 100

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

Working Notes should form part of the respective answers.

Wherever necessary, Candidates may make appropriate assumptions and clearly state them in answer.

Section-A is compulsory and contains Question No. 1 for 20 marks.

Section-B contains Question Nos. 2 to 8, each carries 16 marks.

SECTION-A

Answer all the questions. Each question carries two marks.

1. Choose the most appropriate answer to the following questions giving justification/ reasonable workings. (One mark is for the correct choice and one mark is for the justification/workings.): 2×10=20
- (i) X LTD. has annual turnover of ₹ 200 lakhs and an average C/S ratio of 40%. It makes 10% profit on sales before charging depreciation and interest which amount to ₹ 10 lakhs and ₹ 15 lakhs respectively. The fixed cost of X LTD. will be
- (A) ₹ 70 lakhs
(B) ₹ 85 lakhs
(C) ₹ 90 lakhs
(D) ₹ 60 lakhs
- (ii) TOTA LTD. has 200 units of an obsolete item which are carried in inventory at the original price of ₹ 36,000. If these items are reworked for ₹ 12,000, they can be sold for ₹ 21,600. Alternatively they can be sold as scrap for ₹ 3,600 in the market. In a decision model used to analyse the reworking proposal, the opportunity cost should be taken as
- (A) ₹ 4,000
(B) ₹ 3,600
(C) ₹ 3,000
(D) None of the above

- (iii) SOX LTD. manufactures a product-Z whose time for the first unit is 80 hours. If it experiences a learning curve of 80% what will be the time to be taken to complete the 8th unit of a 12 unit batch involved in the Assembly line?

(A) 43.50 hours
 (B) 42.71 hours
 (C) 40.96 hours
 (D) 38.50 hours

- (iv) DYAM LTD. operates Throughput Accounting System. The details of product-D per unit are as under:

Selling Price	₹ 60
Material Cost	₹ 24
Conversion Cost	₹ 18
Time on Bottleneck resources	10 minutes

The return per hour for the product-D will be-

(A) ₹ 180
 (B) ₹ 210
 (C) ₹ 216
 (D) ₹ 300

- (v) WYE LTD. is using the target cost approach. The following data has been collected:

Expected sales revenue: ₹ 75,00,000 (₹ 15 per unit)

Projected selling and distribution cost: ₹ 3,00,000

Projected Variable Cost per unit : ₹ 10

Desired Profit: ₹ 9,50,000

What will be the target cost per unit?

(A) ₹ 14.40
 (B) ₹ 13.10
 (C) ₹ 12.50
 (D) None of the above

- (vi) The expected time for an activity of BS Project (t_e) is 19 days. If the Optimistic (t_o) and the most likely (t_m) times are 15 days and 18 days the pessimistic (t_p) time estimate will be

(A) 17 days
 (B) 21 days
 (C) 27 days
 (D) 28 days

(vii) In a factory of BIVU LTD., where standard costing system is followed, the production department allowed 1,200 hours of standard labour hours @ ₹ 16 per labour hour for the Actual Production of 1,000 units of Product-AMU resulting in Labour rate variance of ₹ 15,000 (FAV). The Actual Labour rate per hour was ₹ 14.50. How many actual labour hours were worked during the month for BIVU LTD.?

- (A) 20,000 hours
- (B) 12,000 hours
- (C) 10,000 hours
- (D) 9,000 hours

(viii) ASH LTD. a manufacturing company produced 300 units of product-HB and sold 240 units @ ₹ 600 per unit during the year. The following information pertains to production and sale for the year:

Variable cost per unit ₹ 330

Fixed costs for the year:

Manufacturing overheads ₹ 21,000

Selling and Administration Overheads ₹ 30,000

There was no beginning inventory.

What will be the income under absorption costing for the year?

- (A) ₹ 24,000
- (B) ₹ 18,000
- (C) ₹ 15,000
- (D) None of the above

(ix) OABIS LTD. operates an Activity Based Costing (ABC) system to attribute its overhead costs to cost objects. At this company, the cost of the personnel department has always been charged to production departments based upon number of employees. Recently, opinions gathered from the departmental heads indicate that the number of new hires might be a better predictor of personnel costs. Total personnel department costs are ₹ 3,00,000.

Particulars	Department		
	MP	BP	ZD
Number of Employees	20	200	80
Number of New hires	10	15	5

If number of new hires is considered the cost driver, the amount of personnel costs to be allocated to department BP to be

- (A) ₹ 2,00,000
- (B) ₹ 1,50,000
- (C) ₹ 1,00,000
- (D) None of the above

- (x) In a transportation matrix (where R_i are rows and C_j are columns), the second allocation under the North West Corner Rule can be
- (A) R1C2
(B) R1C3
(C) R2C3
(D) None of the above

SECTION-B

(Answer any five questions)

16×5=80

2. (a) AVONA LTD. a pharmaceutical company has developed a new product RAZOVIT (Capsule) which is about to be launched into the market. The company is preparing a product life cycle budget for this new type of capsule. Estimates for the new product-RAZOVIT are as follows:

Life cycle units to be manufactured and sold	3,00,000
Selling price per Razovit (Capsule)	₹ 52
Life Cycle Costs:	
R&D and design Cost	₹ 10,00,000
Manufacturing :	
Variable Cost per Capsule	₹ 20
Variable Cost per Batch	₹ 400
Capsule per batch	200
Fixed Costs	₹ 15,00,000
Marketing:	
Variable cost per capsule	₹ 5
Fixed Costs	₹ 10,00,000
Distribution:	
Variable cost per batch	₹ 200
Capsule per batch	100
Fixed Costs	₹ 7,00,000
Customer Service cost per capsule (variable)	₹ 3

Ignore the time value of money:

Required:

- (i) Calculate the budgeted life cycle operating income for the new product Razovit (Capsule).
- (ii) Company's market research department estimates that reducing selling price by 5% will increase life cycle unit sales by 10%. If unit sale increase by 10%, the company plans to increase manufacturing and distribution batch sizes by 10% as well. Assume that all variable costs per capsule, per batch and fixed costs will remain the same. Should the company choose reduced selling price of product Razovit? Show your calculations. 4+6=10
- (b) Krishna Rice Stores have been approached by the authorities of a local Temple for the supply of different grades of rice for the Annual Temple Festival. The festival will be celebrated for ten days. It is expected that on an average One thousand people will be fed per day. The Temple requires 30 bags of rice with each bag containing 100 kgs. Each bag would consist of the following: Grade A 50 kgs, Grade B 30 kgs and Grade C 20 kgs. The Stores employs 5 labourers in its shop and each of them works for 8 hours a day and 25 days in a month. For this order they worked for five days. The general fixed cost per month is ₹ 50,000. The Stores normally sells the rice at a profit of 20% on the selling price. The stores provide the following information:

GRADES OF RICE	Stock on hand Quantity	Actual Purchase Price/ kg	Current Market Price/kg
	kgs	₹	₹
GRADE A	1,000	80	100
GRADE B	500	70	80
GRADE C	600	50	60
GRADE D	500	50	24

GRADES A,B & C are regularly used by the stores in the normal course of business. The stock of GRADE D represents purchases of another order which was cancelled. They can be substituted for GRADE C without any objection from the Temple. Otherwise with no alternative use they can be sold in the market for ₹ 12,000. Variable overheads are 50% of labour. The current cost of this labour is ₹ 200 per hour.

Compute the Minimum price per bag assuming the special order is a Onetime order. 6

3. AGROCAM LTD. in manufacturing agricultural machinery, is preparing its annual budget for the year 2023-24. The company has a metal pressing capacity of 20,000 hours, which will be insufficient for manufacture of all requirements of components A, B, C and D. The company has the following choices:

- (i) Buy the components entirely from outside suppliers.
- (ii) Buy from outside suppliers and/or use a partial second shift

The data for the year 2022-23 are given below:

Standard productions cost per unit

Component	A	B	C	D
	₹	₹	₹	₹
Variable Cost:				
Direct Materials	37	27	25	44
Direct Wages	10	8	22	40
Direct Expenses	10	20	10	60
Fixed overhead	5	4	11	20
Total Product cost p.u.	62	59	68	164
Requirements in units	2,000	3,500	1,500	2,800

Direct expenses relate the use of the metal presses which cost ₹ 10 per hour, to operate. Fixed overheads are absorbed as a percentage of direct wages.

Supply of all or any part of the total requirement can be obtained at following prices, each delivered to the factory:

Component	₹
A	60
B	59
C	52
D	168

Second shift operations would increase direct wages by 25 percent over the normal shift and fixed overhead by ₹ 500 for each 1,000 (or part thereof) second shift hours worked. You are required to present the following:

- (i) Which component, and in how much quantities should it be manufactured in the 20,000 hours of press time available?
- (ii) Whether it would be profitable to make any of the balance of components required on a second shift basis instead of buying them from outside suppliers. 9+7=16

4. (a) OASIS Ltd. has furnished the following information:

Standard overhead absorption rate per unit ₹ 20

Standard rate per hour ₹ 4

Budgeted production 12,000 units

Actual production 15,560 units

Actual working hours 74,000

Actual overheads amounted to ₹ 2,95,000 out of which ₹ 62,500 are fixed. Overheads are based on the following flexible budget:

Production units	8,000	10,000	14,000
Total overheads (₹)	1,80,000	2,10,000	2,70,000

Calculate the following overhead variances on the basis of hours:

- (i) Variable overhead efficiency variance
- (ii) Variable overhead expenditure variance
- (iii) Fixed overhead efficiency variance
- (iv) Fixed overhead capacity variance 12
- (b) Enumerate what are the limitations of inter-firm comparison. 4

5. (a) Transferor Ltd. has two processes, Preparing and Finishing. The normal output per week is 7,500 units (Completed) at a capacity of 75%. Transferee Ltd. had production problems in preparing and requires 2,000 units per week of prepared material for their finishing processes.

The existing cost structure of one prepared unit of Transferor Ltd. at existing capacity is as follows:

Material	₹ 2.00 (Variable 100%)
Labour	₹ 2.00 (Variable 50%)
Overhead	₹ 4.00 (Variable 25%)

Construct the effect on the profits of Transferor Ltd., for six months (25 weeks) of supplying units to Transferee Ltd. with the following alternative transfer prices per unit if there is no increase in the fixed cost:

- (i) Marginal Cost
- (ii) Marginal Cost + 25%
- (iii) Existing Cost
- (iv) At an agreed market price of ₹ 8.50

(b) XY provides accountancy services and has three different categories of client: limited companies, self employed individuals, and employed individuals requiring taxation advice. XY currently charges its clients a fee by adding a 20% mark-up to total costs. Currently the costs are attributed to each client based on the hours spent on preparing accounts and providing advice.

XY is considering changing to an activity based costing system. The annual costs and the causes of these costs have been analysed as follows:

Particulars	₹
Accounts preparation and advice	7,20,000
Requesting missing information	50,000
Issuing fee payment reminders	30,000
Holding client meetings	60,000
Travelling to clients	40,000
	9,00,000

The following details relate to three of XY's clients and to XY as a whole:

	Client			XY
	A	B	C	
Hours spent on preparing accounts and providing advice	1,000	250	340	18,000
Requests for missing information	4	10	6	250
Payment reminders sent	2	8	10	400
Client meetings held	4	1	2	250
Kms. travelled to meet clients	150	600	0	10,000

Based on the above information, answer the following questions:

- (i) Calculate cost driver rates
- (ii) Total cost under ABC method for A, B and C
- (iii) Client fees for A, B and C under original and ABC method
- (iv) Calculate the effect on fees charged to each of these three clients for changing to the new costing system.

2+3+3+2=10

6. (a) S-MART, a retailer deals in a perishable commodity. The daily demand and supply are variable. The data for the past 500 days show the following demand and supply:

Supply:

Availability (kgs.)	No. of days
10	40
20	50
30	190
40	150
50	70

Demand:

Demand(kgs.)	No. of days
10	50
20	110
30	200
40	100
50	40

S-MART buys the commodity at ₹ 40 per kg and sells at ₹ 60 per kg. Any commodity remains at the end of the day has no saleable value. Moreover the loss(unearned profit) on any unsatisfied demand is ₹ 16 per kg.

Required:

Given the following pair of random numbers, simulate 6 days sales, demand and profit:

(31, 18) (63, 84) (15, 79) (07, 32) (43, 75) (81, 27)

The first random number in the pair is for supply and the second random number is for demand viz. in the first pair (31, 18), use 31 to simulate supply and 18 to simulate demand.

- (b) ABN CITY Corporation has decided to carry out road repairs on main four arteries of the city. The Government has agreed to make a Special grant of ₹ 65 lakh towards the cost with a condition that the repairs must be done at the lowest cost and quickest time. The corporation has floated tenders and 5 contractors have sent in their bids. In order to expedite work, one road will be awarded to only one contractor.

Cost of repairs (₹ In lakh)

Contractors	Roads			
	L	P	M	S
C1	50	40	60	20
C2	40	30	40	30
C3	60	20	30	20
C4	30	30	20	30
C5	10	20	10	30

Required:

Find the best way of assigning the repair work to the contractors and their costs. 8

7. (a) Anand Builders have been approached by Bharat Secondary School to build a computer room for the students. Work is going to start on 1st August, 2023. The cost of the project is estimated at ₹ 1,00,000 and the work is to be completed by 25th August, 2023. Following details pertain to the project.

Activity	A	B	C	D	E	F	G
Preceding Activity	-	-	-	A	A	B & E	C
Planned time original (Days)	12	14	8	5	4	9	10
Original Cost (₹ '000)	16	10	24	12	10	18	10

Before the work begins, the school approached the builders and requested them to complete the work by 20th August, 2023 and were willing to pay an escalation of 10% of the Normal cost. The Engineer of Anand Builders reworked the duration and cost as follows:

Activity	A	B	C	D	E	F	G
Revised time (Days)	8	10	8	3	3	8	8
Revised cost (₹ '000)	24	15	24	16	14	24	16

You are required:

- Draw the network diagram and check whether it is possible to complete the work by 25th August as originally planned.
- Will it be possible to accept the request to complete the work by 20th August?

How much additional amount Anand Builders should ask from the School? 10

- (b) In a processing industry two products A and B are made involving two operations. The production of B also results in a by-product C. The product A can be sold at a profit of ₹ 60 per unit and B at a profit of ₹ 90 per unit. The by-product C has a profit of ₹ 25 per unit. Forecasts show that upto 6 units can be sold. The company gets 2 units of C for each unit of B produced. The manufacturing times are 3 hours per unit for A on each of the operation one and two and 4 hours and 5 hours per unit for B on operation one and two respectively. Because the product C results from product B, no time is used in producing C. The available times are 18 hours and 21 hours for operation one and two respectively. The company desires to know that how much A and B should be produced keeping C in mind to make the highest profit. Formulate L P model for this problem. 6

8. Write short notes on *any four* out of the following five questions: 4×4=16
- (a) Opportunity cost transfer pricing
 - (b) Principles of Business Process Re-engineering (BPR)
 - (c) Six Sigma process in Quality Control Process
 - (d) Explain the algorithm involved under Northwest corner rule with regard to a Transportation problem
 - (e) State what Enterprise resource planning (ERP) can do for the Business system
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SUGGESTED ANSWERS TO QUESTIONS

SECTION – A

1.

- (i) (B)
- (ii) (B)
- (iii) (C)
- (iv) (C)
- (v) (B)
- (vi) (C)
- (vii) (C)
- (viii) (B)
- (ix) (B)
- (x) (A)

SECTION – B

2. (a)

(i) Budgeted Life Cycle Operating Income = ₹ 1800 (in thousand)

(ii) Revised Budgeted Life Cycle Operating Income = ₹ 1662 (in thousand)

Decision: Reducing the Selling price by 10% will decrease the Profit by Rs. 138000. Therefore, AVONA Ltd. should not cut the selling price.

2. (b)

Minimum Price per bag = ₹ 10,000

3.

(i) Components and their quantities to be manufactured in 20,000 hours of press time available (single shift operation)

	Hours
First produce D hours required	16800
Second, produce A hours required	2000
Third, produce B hours required	1200

So, in 20000 hours of press time available all the requirements of components D and A and only 600 units of component B can be manufactured. The balance requirement of component B i.e. 2900 (3500 – 600) unit will have to be bought out or manufactured in the second shift.

(ii) Total cost for producing 2900 units of B in second shift: ₹ 168300
Brought outside price for 2900 units of B will be 2900 units x Rs59: ₹ 171100
Disadvantage in buying: ₹ (2800)

Since the Cost of Manufacturing Balance quantity of Component B i.e. 2900 in Second Shift is less by Rs. 2800, it is profitable to make it on a Second Shift basis instead of buying it from outside suppliers.

4. (a)

- i) Variable overhead efficiency variance = Rs. 11400 (F)
- ii) Variable overhead expenditure variance = Rs. 10500 (A)
- iii) Fixed overhead efficiency variance = Rs. 3800 (F)
- iv) Fixed overhead capacity variance = Rs. 14000 (F)

4. (b)**Limitations of Inter-firm Comparison are enumerated below :**

- (i) The top management may not be convinced of the utility of inter firm comparison.
- (ii) Reluctance to disclose data which a concern considers to be confidential.
- (iii) A sense of complacency on the part of the management who may be satisfied with the present level of profits.
- (iv) Absence of a proper system of cost accounting so that the costing figures supplied may not be relied upon for comparison purpose.
- (v) Non availability of a suitable base for comparison.

5. (a)

- (i) No effect on Profit if units are transferred at Marginal Cost.
- (ii) If units are transferred at Marginal Cost + 25% then the profit will increase by ₹ 50,000
- (iii) If units are transferred at the Existing Cost then the increase in profit will be = ₹ 2,00,000
- (iv) If units are transferred at the agreed price of ₹ 8.50 then the increase in profit will be = ₹ 2,25,000

5. (b)

- (i)

Cost driver rates:	
Accounts preparation and advice	= Rs. 40 per hour
Requesting missing information	= Rs. 200 per request
Issuing fee payment reminders	= Rs. 75 per reminder
Holding client meetings	= Rs. 240 per meeting
Travelling to clients	= Rs. 4 per km

- (ii), (iii) & (iv)

	A	B	C
	Rs.	Rs.	Rs.
Total costs	42,510	15,240	16,030
Total costs on original basis	50,000	12,500	17,000
Client fees - new basis	51,012	18,288	19,236
Client fees - original basis	60,000	15,000	20,400
Increase / (Decrease)	-8,988	3,288	-1,164

6. (a)

Simulation Table:

Day	Random Nos.	Supply	Random Nos.	Demand	Buying cost	Selling cost	Loss for unsatisfied demand	Profit (Rs.)
1	31	30	18	20	1200	1200		-
2	63	40	84	40	1600	2400		800
3	15	20	79	40	800	1200	320	80
4	07	10	32	30	400	600	320	-120
5	43	30	75	40	1200	1800	160	440
6	81	40	27	20	1600	1200	-	-400

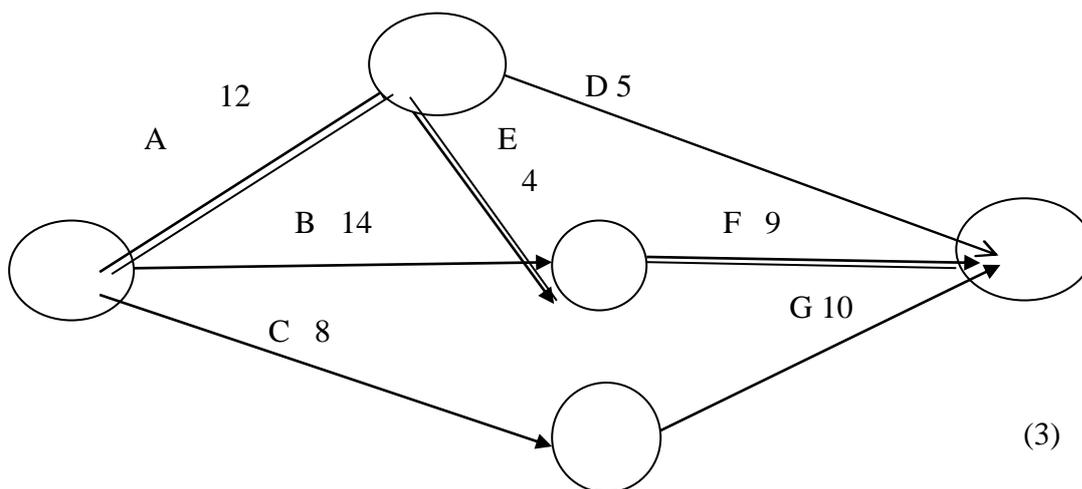
During the simulated period of six days, the net profit of S- MART= Rs.800

6. (b)

Allotments are as follows:

Road	Contractor	Cost (Rs. In Lakhs)
L	C5	10
P	C3	20
M	C4	20
S	C1	20
TOTAL		70

7. (a)



Critical path is A-E-F = 25 days. Hence it is possible to complete the work by 25th August 2023.

Sequence	Activity to be crashed	No of days crashed	Cost	Total no of days
1	A	2	4000	23
2	A & B	2	6500	21
3	B, & E	1	5250	20
			15750	

The work can be completed by 20th August 2023. The additional cost would be Rs.15750.

7. (b)

By designating the no. of units of products A,B, C to be produced as decision variables x_1, x_2 and x_3 , The appropriate mathematical formulation of the given problem as LP model is as follows:

Objective function = Maximize (Total Profit) $Z = 60x_1 + 90x_2 + 25x_3$

Subject to the constraints

$$3x_1 + 4x_2 \leq 18$$

$$3x_1 + 5x_2 \leq 21$$

$$x_2 = 2x_3$$

$$x_3 \leq 6$$

$$x_1, x_2, x_3 \geq 0$$

8. (a) Opportunity cost transfer pricing

This pricing recognizes the minimum price that the selling division is ready to accept and the maximum price that the buying division is ready to pay. The final price may be based on these minimum expectations of both the divisions. The most ideal situation will be when the minimum price expected by the selling division is less than the maximum price accepted by the buying division.

However in practice it may happen rarely and there is a possibility of conflicts over the opportunity cost. Overall interests of the organization should be taken into consideration and overall goal congruence should be given utmost importance rather than interests of the selling and buying division.

8. (b) Principles of Business Process Re-engineering (BPR):

Business Process Re-engineering (BPR) refers to the fundamental rethinking and redesign of business processes to achieve improvement in critical measures of performance such as costs, quality, efficiency, service, speed and customer satisfaction. It (BPR) is the practice of rethinking and redesigning the process to support an organization's mission and reduce costs.

The stepwise process of BPR consists of:

- (i) Creation of Vision
- (ii) Selection of Team
- (iii) Analysis of the Existing Process
- (iv) Development of a New Process
- (v) Implementation of the New Process
- (vi) Evaluation

The key benefits include:

- (i) Reduction in Costs and Cycle Times
- (ii) Improvement in Quality
- (iii) Customer Focus Business Process Reengineering is a strategic tool towards cost reduction as also for increased customer focus and enhanced competitive advantage.

8. (c) Six sigma process in Quality Control Process

Six Sigma is a set of practices originally developed by Motorola to Systematically improve process by eliminating defects. A defect is defined as non-conformity of a product or service to its specifications.

Six Sigma consists of the following :

- (i) Continuous efforts to reduce variation in process outputs is key to business success.
- (ii) Manufacturing and business process can be measured, analyzed, improved and controlled.
- (iii) Succeeding at achieving sustained quality improvement requires commitment from the entire organization, particularly from top-level management.

8. (d) Algorithm involved under North-West Corner Rule:

Before allocation ensure that the total on demand & supply of availability and requirement are equal. If not then make same equal.

The first allocation is made in the cell occupying the upper left hand corner of the matrix.

The assignment is made in such a way that either the resource availability is exhausted or the demand at the first destination is satisfied.

If the resource availability of the row one is exhausted first, we move down the second row and first column to make another allocation which is either exhausts the resource availability of row two or satisfies the remaining destination demand of column one.

If the first allocation completely satisfies the destination demand of column one, we move to column two in row one, and make a second allocation which either exhausts the remaining resource availability of row one or satisfies the destination requirement under column two.

8. (e) What Enterprise Resource Planning can do for the Business System :

- (i) ERP facilitates company-wide Integrated Information System covering all functional areas like manufacturing, selling and distribution, payables, receivables, inventory, accounts, human resources, purchases etc.,
- (ii) ERP perform core activities and increases customers service, thereby augmenting the corporate image.
- (iii) ERP bridge the information gap across organisations.

- (iv) ERP provides complete integration of system not only across departments but also across companies under the same management.
 - (v) ERP is the solution for better project management.
 - (vi) ERP allows automatic introduction of the latest technologies like Electronic Fund Transfer (EFT), Electronic Data Interchange (EDI), Internet, Intranet, Video conferencing, E-commerce etc.
 - (vii) ERP eliminates most business problems like materials shortages, productivity enhancements, customer service, cash management, inventory problems, quality problems, prompt delivery etc.
 - (viii) ERP not only addresses the current requirement of the company but also provide the opportunity of continually improving and refining business Processes.
-