

Roll No.....

Total No. of Questions—6]

[Total No. of Printed Pages—10

Time Allowed—3 Hours

Maximum Marks—100

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Answers to questions are to be given only in English except in the case of candidates who have opted for Hindi medium. If a candidate who has not opted for Hindi medium, answers in Hindi, his answers in Hindi will not be valued.

Question No. 1 is compulsory.

Answer any **four** questions from the rest.

Working notes should form part of the answer.

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1. (a) TQM Limited makes engines for motor cars for its parent company and for two other motor car manufacturers. 11

On 31st December, the company has sufficient work order for January and one further order for 21,000 engines. Due to recession in the economy, no further order are expected until May when it is hoped economic prospect for the motor car industry will have improved. Recently factory has been working at only 75% of full capacity and the order for 21,000 engines represents about one month production at this level of activity.

The board of directors are currently considering following two options :

- (i) Complete the order in February and close the factory in March and April.

OR

- (ii) Operate at 25 per cent of full capacity for each of three months of February, March and April.

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The costs per month at different levels of activities are as follows :

	At 75% (Rs.)	At 25% (Rs.)	Idle (Rs.)
Direct material	5,25,000	1,75,000	—
Direct labour	5,23,600	1,73,250	—
Factory overhead :			
Indirect material	8,400	4,900	4,900
Indirect labour	1,01,500	59,500	—
Indirect expenses :			
Repairs and maintenance	28,000	28,000	—
Others expenses	52,500	34,300	26,600
Office overheads :			
Staff salaries	1,48,400	98,000	67,550
Other overheads	28,000	19,950	11,200

Other information is as follows :

- Material cost and labour cost will not be incurred where there is no production.
- On the reopening of the factory, one time cost of training and engagement of new personnel would be Rs. 65,800 and overhauling cost of plant would be Rs. 14,000.
- Parent company can purchase engines from open market at reasonable price.

Required :

- (i) To express your opinion, along with calculations, as to whether the plant should be shut down during the month of March and April or operate 25% of full capacity for three months.
- (ii) To list and comment on cost and non-costs factors which might be relevant to the discussion.

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(b) The following are Product Nova Shaft's data for next year budget :

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Activity	Cost Driver	Cost Driver volume/year	Cost pool
Purchasing	Purchase orders	1,500	Rs. 75,000
Setting	Batches produced	2,800	Rs. 1,12,000
Materials handling	Materials movements	8,000	Rs. 96,000
Inspection	Batches produced	2,800	Rs. 70,000
Machining costs	Machine hours	50,000	Rs. 1,50,000
Purchase orders	25		
Output	15,000 units		
Production batch size	100 units		
Materials movements per batch	6		
Machine hours per unit	0.1		

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Required :

- Calculate the budgeted overhead costs using activity based costing principles.
 - Calculate the budgeted overhead costs using absorption costing (absorb overhead using machine hours).
 - How can the company reduce the ABC for Product Nova Shaft ?
- (c) Explain goals and performance measure for each perspective of Balance Score Card.
- (a) A company is organized on decentralized lines, with each manufacturing division operating as a separate profit centre. Each division manager has full authority to decide on sale of division's output to outsiders or to other divisions. Division AB manufactures a single standardised product. Some output is sold

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externally and remaining is transferred to division XY where it is a sub-assembly in the manufacture of the division product. The unit cost of division AB product and division XY is as follows :

	Division AB (Rs.)	Division XY (Rs.)
Transfer from division AB to XY	—	42.00
Direct material	6.00	35.00
Direct labour	3.00	4.50
Direct expenses	3.00	—
Variable manufacturing overheads	3.00	18.00
Fixed manufacturing overheads	6.00	18.00
Variable selling and packing expenses	3.00	2.50
	24.00	120.00

Division AB sold 40,000 units annually at the standard price of Rs. 45 in external market. In additions to the external sales, 10,000 units are transferred annually to division XY at internal price of Rupees 42 per unit. Variable selling and packing expenses are not incurred by supplying division for the internal transfer of the product. Division XY incorporates the transferred goods into more advance product. The manager of division XY disagrees with the basis used to set the transfer price. He argues that transfer price should be made at variable cost since he claims that his division is taking output that division AB should be unable to sell at price Rs. 45.

He also submitted a report of the relationship between selling price and demand to support of his disagreement. The report of customer demand at various selling prices for division AB and for division XY is as follows :

Division AB

Selling price per unit (Rs.)	30	45	60
Demand (Units)	60,000	40,000	20,000

Division XY

Selling price per unit (Rs.)	120	135	150
Demand (Units)	15,000	10,000	5,000

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The company has sufficient capacity to meet demand at various selling prices. Internal transfer demanded units will be decided by XY division.

Required :

- (i) To calculate divisional profitability and overall profitability of company if division AB transfers demanded units to XY at price of Rs. 42.
- (ii) To calculate divisional profitability and overall profitability of company if division AB transfers demanded units to XY at variable cost.
- (iii) In place of internal transfers, AB division can sell 10,000 units of their product in new external market without effecting existing market, at price Rs. 32 per unit and XY division can purchase these units at the rate of Rs. 31 in open market. Calculate company's profit by following above strategies.
- (b) Define the term 'value-chain'. Mention three useful strategic frameworks of the value-chain analysis. 4
- (c) Meena is a news reporter and feature writer for an economic daily. Her assignment is to develop a feature article on 'Product Life-cycle Costing', including interviews with the Chief Financial Officers (CFO) and operating managers. Meena has been given a liberal budget for travel so as to research into company's history, operations, and market analysis for the firm she selects for the article. 3

Required :

- (i) Meena has asked you to recommend industries and firms that would be good candidates for the article. What would you advice ? Explain your recommendations.
 - 3. (a) JBC Limited, a manufacturing company having a capacity of 60,000 units has prepared a following cost sheet : 9
- | | |
|--|-------------------------------------|
| Direct material (per unit) | Rs. 12.50 |
| Direct wages (per unit) | Rs. 5.00 |
| Semi-variable cost | Rs. 30,000 fixed plus 0.50 per unit |
| Factory overhead (per unit) | Rs. 10.00 (50% fixed) |
| Selling and administration overhead (per unit) | Rs. 8.00 (25% variable) |
| Selling price (per unit) | Rs. 40 |

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During the year 2008, the sales volume achieved by the company was 50,000 units.

The company has launched an expansion program as under :

- (a) The capacity will be increased to 1,00,000 units.
- (b) The cost of investment on expansion is Rs. 5 lakhs which is proposed to be financed through financial institution at 12 per cent per annum.
- (c) The depreciation rate on new investment is 10 per cent based on straight line.
- (d) The additional fixed overheads will amount to Rs. 2.00 lakhs up to 80,000 units and will increase by Rs. 80,000 more beyond 80,000 units.

After the expansion, the company has two alternatives for operating the expanded plant as under :

- (i) Sales can be increased up to 80,000 units by spending Rs. 50,000 on special advertisement campaign to explore new market.
- (ii) Sales can be increased up to 1,00,000 units subject to the following :
 - (a) Reduction of selling price by Rs. 4 per unit on all the units sold.
 - (b) The direct material cost would go down by 4 per cent due to discount on bulk buying.
 - (c) By increasing the variable selling and administration expenses by 4 per cent.

Required :

- (i) Construct a flexible budget at the level 50,000 units, 80,000 units and 1,00,000 units of production and select best profitable level of operation.
- (ii) Calculate break even point both before and after expansion.
- (b) State major reason for using simulation technique to solve a problem and also describe basic steps in a general simulation process. 5
- (c) What is penetrating pricing ? What are the circumstances in which this policy can be adopted ? 5

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4. (a) A project with normal duration and cost along with crash duration and cost for each activity is given below : 12

Activity	Normal time (Hrs.)	Normal cost (Rs.)	Crash time (Hrs.)	Crash cost (Rs.)
1-2	5	200	4	300
2-3	5	30	5	30
2-4	9	320	7	480
2-5	12	620	10	710
3-5	6	150	5	200
4-5	0	0	0	0
5-6	8	220	6	310
6-7	6	300	5	370

Indirect cost Rs. 50 per hour.

Required :

- Draw network diagram and identify the critical path.
 - Find out the total float associated with each activity.
 - Crash the relevant activities systematically and determine the optimum project completion time and corresponding cost.
- (b) A factory is going to modify of a plant layout to install four new machines M1, M2, M3 and M4. There are 5 vacant places J, K, L, M and N available. Because of limited space machine M2 cannot be placed at L and M3 cannot be placed at J. The cost of locating machine to place in Rupees is shown below :

	J	K	L	M	(Rs.) N
M1	18	22	30	20	22
M2	24	18	—	20	18
M3	—	22	28	22	14
M4	28	16	24	14	16

Required :

Determine the optimal assignment schedule in such a manner that the total costs are kept at a minimum.

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5. (a) Global Limited uses standard and marginal costing system. It provides the following details for the year 2007-08 relating to its production, cost and sales : 9

Particulars	(in Rs.)	
	Budget	Actual
Sales units	24,000	25,600
Sales value	6,000	6,784
Materials	960	1,080
Labour	1,440	1,664
Variable overheads	2,400	2,592
Total variable cost	4,800	5,336

The sales budget is based on the expectation of the company's estimate of market share of 12%. The entire industry's sales of the same product for the year 2007-08 is 2,40,000 units. Further details are as follows :

Particulars	(in Rs.)	
	Standard	Actual
Material price per kg.	8.00	7.50
Labour rate per hour	6.00	6.40

You are required to :

- (a) Prepare a statement reconciling the budgeted contribution with actual contribution on the basis of important material variances, labour variances, variable overhead variances and sales variances.
- (b) Compute market size variance and market share variance.
- (b) Fairbilt Furniture Ltd. manufactures three products : Tables, Chairs and Cabinets. The company is in the process of finalizing the plans for the coming year; hence the executives thought it would be prudent to have a look at the 10

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product-wise performance during the current year. The following information is furnished :

	Tables	Chairs	Cabinets
Unit selling price	80	60	36
Direct material	28	24	16
Direct labour	20	12	12
Factory overheads :			
Variable	8	6	4
Fixed	8	6	1.28
Cost of production	64	48	33.28
Selling, distribution and general administration expenses :			
Variable	4	2	2
Fixed	4	6	1.52
Unit cost (I)	72	56	36.80
Unit profit (loss) (II)	8	4	(0.80)
Sales volume (units)	10,000	15,000	15,000
Profit (loss)	80,000	60,000	(12,000)

For the coming period, the selling prices and the cost of three products are expected to remain unchanged. There will be an increase in the sales of tables by 1,000 units and the increase in sales of cabinets is expected to be 8,000 units. The sales of chairs will remain to be unchanged. Sufficient additional capacity exists to enable the increased demands to be met without incurring additional fixed costs. Some among the executives contend that it will be unwise to go for additional production and sale of cabinets, since it is already making losses at Rs. 0.80 per unit. The suggestion is that cabinets should be eliminated altogether.

Do you agree ? Substantiate with necessary analysis and determine the product-wise and overall profits for the coming year.

6. (a) What do you mean by back-flushing in JIT system ? What are the problems that must be corrected before it will work properly ? 5
- (b) Explain the main characteristics of Service sector costing. 5

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- (c) X is a multiple product manufacturer. One product line consists of motors and the company produces three different models. X is currently considering a proposal from a supplier who wants to sell the company blades for the motors line. 9

The company currently produces all the blades it requires. In order to meet customer's needs, X currently produces three different blades for each motor model (nine different blades).

The supplier would charge Rs. 25 per blade, regardless of blade type. For the next year X has projected the costs of its own blade production as follows (based on projected volume of 10,000 units) :

Direct materials	Rs. 75,000
Direct labour	65,000
Variable overhead	55,000
Fixed overhead :	
Factory supervision	35,000
Other fixed cost	65,000
Total production costs	<u>2,95,000</u>

Assume (1) the equipment utilized to produce the blades has no alternative use and no market value, (2) the space occupied by blade production will remain idle if the company purchases rather than makes the blades, and (3) factory supervision costs reflect the salary of a production supervisor who would be dismissed from the firm if blade production ceased.

- Determine the net profit or loss of purchasing (rather than manufacturing) the blades required for motor production in the next year.
- Determine the level of motor production where X would be indifferent between buying and producing the blades. If the future volume level were predicted to decrease, would that influence the decision ?
- For this part only, assume that the space presently occupied by blade production could be leased to another firm for Rs. 45,000 per year. How would this affect the make or buy decision ?

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