

## National Test Series – 2

### Test Paper 2 – Solution

#### Subject: Cost and Management Accounting

**Marks:** 100 Marks

**Duration:** 3 Hrs.

**Question 1.**

**(A)** Sree Ajeet Ltd. having fifteen different types of automatic machines furnishes information as under for 20X8-20X9

- i. Overhead expenses: Factory rent ₹ 1,80,000 (Floor area 1,00,000 sq. ft.), Heat and gas ₹ 60,000 and supervision ₹ 1,50,000.
- ii. Wages of the operator are ₹ 200 per day of 8 hours. Operator attends to one machine when it is under set up and two machines while they are under operation.

In respect of machine B (one of the above machines) the following particulars are furnished:

- i. Cost of machine ₹ 1,80,000, Life of machine- 10 years and scrap value at the end of its life ₹ 10,000
- ii. Annual expenses on special equipment attached to the machine are estimated as ₹ 12,000
- iii. Estimated operation time of the machine is 3,600 hours while set up time is 400 hours per annum
- iv. The machine occupies 5,000 sq. ft. of floor area.
- v. Power costs ₹ 5 per hour while machine is in operation.

Estimate the comprehensive machine hour rate of machine B. Also find out machine costs to be absorbed in respect of use of machine B on the following two work orders

	Work order- 1	Work order-2
Machine set up time (Hours)	15	30
Machine operation time (Hours)	100	190

**(5 Marks)**

**Solution:-**

Shree Ajeet Ltd.

Statement showing comprehensive machine hour rate of Machine B

	(₹)
Standing Charges:	
Factory rent $\{(\text{₹ } 1,80,000 / 1,00,000 \text{ sq. ft.}) \times 5,000 \text{ Sq. ft.}\}$	9,000
Heat and Gas (₹ 60,000/15 machines)	4,000
Supervision (₹ 1,50,000/ 15 machines)	10,000
Depreciation $[(\text{₹ } 1,80,000 - \text{₹}10,000) / 10 \text{ years}]$	17,000
Annual expenses on special equipment	12,000

	52,000
Fixed cost per hour (₹ 52,000/ 4,000 hrs.)	13/-

	Set up rate Per hour (₹)	Operational rate Per hour (₹)
Fixed cost	13.00	13.00
Power	--	5.00
Wages	25.00	12.50
Comprehensive machine hour rate per hr.	38.00	30.50

Statement of 'B' machine costs to be absorbed on the two work orders

	Work order-1			Work order-2		
	Hours	Rate	Amount	Hours	Rate	Amount
		₹	₹	₹	₹	₹
Set up time cost	15	38	570	30	38	1,140
Operation time cost	100	30.5	3,050	190	30.5	5,795
Total cost			3,620			6,935

(B) A manufacturing company disclosed a net loss of ₹3,47,000 as per their cost accounts for the year ended March 31,20X8. The financial accounts however disclosed a net loss of ₹ 5,10,000 for the same period. The following information was revealed as a result of scrutiny of the figures of both the sets of accounts.

Particulars	(₹)
(i) Factory Overheads under-absorbed	40,000
(ii) Administration Overheads over-absorbed	60,000
(iii) Depreciation charged in Financial Accounts	3,25,000
(iv) Depreciation charged in Cost Accounts	2,75,000
(v) Interest on investments not included in Cost Accounts	96,000
(vi) Income-tax provided	54,000
(vii) Interest on loan funds in Financial Accounts	2,45,000
(viii) Transfer fees (credit in financial books)	24,000
(ix) Stores adjustment (credit in financial books)	14,000
(x) Dividend received	32,000

Prepare a memorandum Reconciliation Account.

(5 Marks)

**Solution:-**

Memorandum Reconciliation Accounts

Dr.			Cr.
Particulars	(₹)	Particulars	(₹)
To Net Loss as per Costing books	3,47,000	By Administration overheads over recovered in cost accounts	60,000

To Factory overheads under absorbed in Cost Accounts	40,000	By Interest on investment not included in Cost Accounts	96,000
To Depreciation undercharged in Cost Accounts	50,000	By Transfer fees in Financial books	24,000
To Income-Tax not provided in Cost Accounts	54,000	By Stores adjustment (Credit in financial books)	14,000
To Interest on Loan Funds in Financial Accounts	2,45,000	By Dividend received in financial books	32,000
		By Net loss as per Financial books	5,10,000
	7,36,000		7,36,000

(C) A skilled worker in XYZ Ltd. is paid a guaranteed wage rate of ₹ 30 per hour. The standard time per unit for a particular product is 4 hours. Mr. P, a machine man, has been paid wages under the Rowan Incentive Plan and he had earned an effective hourly rate of ₹ 37.50 on the manufacture of that particular product.

What could have been his total earnings and effective hourly rate, had he been put on Halsey Incentive Scheme (50%)?

(5 Marks)

**Solution:-**

Total earnings (under 50% Halsey Scheme) = Hours worked × Rate per hour +  $\frac{1}{2}$  × time saved × Rate per hour

$$= 3 \text{ hours} \times ₹ 30 + \frac{1}{2} \times 1 \text{ hour} \times ₹ 30 = ₹ 105$$

$$\text{Effective hourly rate} = \frac{\text{Total earnings}}{\text{Hourstaken}} = \frac{105}{3 \text{ hours}} = ₹ 35$$

Working Note:

Let T hours be the total time worked in hours by the skilled workers (machine man P), ₹ 30 is the rate per hour; standard time is 4 hours per unit and effective hourly earnings rate is ₹ 37.50 then

Earning (under Rowan plan) =

$$\text{Hour Worked} \times \text{Rate per hour} + \frac{\text{Time Saved}}{\text{Time Allowed}} \times \text{Time Taken} \times \text{Rate per hour}$$

$$₹ 37.5 T = T \times 30 + \frac{(4-T)}{4} \times T \times 30$$

$$₹ 37.5 = ₹ 30 + (4 - T) \times ₹ 7.5$$

$$\text{or, } ₹ 7.5 T = ₹ 22.5$$

$$\text{or, } T = 3 \text{ hours.}$$

**(D)** In an Oil Mill four products emerge from a refining process. The total cost of input during the quarter ending March 20X8 is ₹ 1,48,000. The output, sales and additional processing costs are as under:

Products	Output in Litres	Additional processing cost after split off (₹)	Sales value (₹)
ACH	8,000	43,000	1,72,500
BCH	4,000	9,000	15,000
CSH	2,000	-	6,000
DSH	4,000	1,500	45,000

In case these products were disposed-off at the split off point that is before further processing, the selling price per litre would have been:

ACH (₹)	BCH (₹)	CSH (₹)	DSH (₹)
15.00	6.00	3.00	7.50

Produce a statement of profitability based on:

- If the products are sold after further processing is carried out in the mill.
- If they are sold at the split off point.

**(5 Marks)**

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**Solution:-**

(i) Statement of profitability of the Oil Mill (after carrying out further processing) for the quarter ending 31st March 20X8.

Products	Sales Value after further processing	Share of Joint cost	Additional processing cost	Total cost after processing	Profit (loss)
ACH	1,72,500	98,667	43,000	1,41,667	30,833
BCH	15,000	19,733	9,000	28,733	(13,733)
CSH	6,000	4,933	--	4,933	1,067
DSH	45,000	24,667	1,500	26,167	18,833
	2,38,500	1,48,000	53,500	2,01,500	37,000

(ii) Statement of profitability at the split off point

Products	Selling price of split off	Output in units	Sales value at split off point	share of joint cost	profit at split off point
ACH	15.00	8,000	1,20,000	98,667	21,333
BCH	6.00	4,000	24,000	19,733	4,267
CSH	3.00	2,000	6,000	4,933	1,067
DSH	7.50	4,000	30,000	24,667	5,333
			1,80,000	1,48,000	32,000

Note: Share of Joint Cost has been arrived at by considering the sales value at split off point.

**Question 2.**

**(A)** Ananya Ltd. produces a product 'Exe' using a raw material Dee. To produce one unit of Exe, 2 kg of Dee is required. As per the sales forecast conducted by the company, it will be able to sell 10,000 units of Exe in the coming year. The following is the information regarding the raw material Dee:

- i. The Re-order quantity is 200 kg. less than the Economic Order Quantity (EOQ).
- ii. Maximum consumption per day is 20 kg. more than the average consumption per day.
- iii. There is an opening stock of 1,000 kg.
- iv. Time required to get the raw materials from the suppliers is 4 to 8 days.
- v. The purchase price is ₹ 125 per kg.

There is an opening stock of 900 units of the finished product Exe.

The rate of interest charged by bank on Cash Credit facility is 13.76%.

To place an order company has to incur ₹ 720 on paper and documentation work.

From the above information find out the followings in relation to raw material Dee:

- (a) Re-order Quantity  
 (b) Maximum Stock level  
 (c) Minimum Stock level  
 (d) Calculate the impact on the profitability of the company by not ordering the EOQ.

[Take 364 days for a year]

**(10 Marks)**

**Solution:-**

1. Working Notes:

(i) Computation of Annual consumption & Annual Demand for raw material 'Dee':

Sales forecast of the product 'Exe'	10,000 units
Less: Opening stock of 'Exe'	900 units
Fresh units of 'Exe' to be produced	9,100 units
Raw material required to produce 9,100 units of 'Exe' (9,100 units × 2 kg.)	18,200 kg.
Less: Opening Stock of 'Dee'	1,000 kg
Annual demand for raw material 'Dee'	17,200 kg.

(ii) Computation of Economic Order Quantity (EOQ):

$$\begin{aligned}
 \text{EOQ} &= \sqrt{\frac{2 \times \text{Annual demand of 'Dee'} \times \text{ordering cost}}{\text{Carrying cost per unit per annum}}} \\
 &= \sqrt{\frac{2 \times 17,200 \text{ kg.} \times 720}{125 \times 13.76\%}} = \sqrt{\frac{2 \times 17,200 \text{ kg.} \times 720}{17.2}} = 1,200 \text{ Kg.}
 \end{aligned}$$

(iii) Re- Order level:

= (Maximum consumption per day × Maximum lead time)

$$= \left\{ \left( \frac{\text{Annual Consumption of 'Dee'}}{364 \text{ Days}} \times 20 \text{ Kg.} \right) \times 8 \text{ Days} \right\}$$

$$= \left\{ \left( \frac{18,200}{364 \text{ Days}} \times 20 \text{ Kg.} \right) \times 8 \text{ Days} \right\} = 560 \text{ Kg.}$$

(iv) Minimum consumption per day of raw material 'Dee':

Average Consumption per day = 50 Kg.

Hence, Maximum Consumption per day = 50 kg. + 20 kg. = 70 kg.

So Minimum consumption per day will be

$$\text{Average Consumption} = \frac{\text{Min.consumption} + \text{Max.consumption}}{2}$$

$$\text{or, } 50 \text{ kg} = \frac{\text{Min.consumption} + 70 \text{ kg.}}{2}$$

$$\text{or, Min. consumption} = 100 \text{ kg} - 70 \text{ kg} = 30 \text{ kg}$$

(a) Re-order Quantity :

$$\text{EOQ} - 200 \text{ kg.} = 1,200 \text{ kg.} - 200 \text{ kg.} = 1,000 \text{ kg.}$$

(b) Maximum Stock level:

$$= \text{Re-order level} + \text{Re-order Quantity} - (\text{Min. consumption per day} \times \text{Min. lead time})$$

$$= 560 \text{ kg.} + 1,000 \text{ kg.} - (30 \text{ kg.} \times 4 \text{ days})$$

$$= 1,560 \text{ kg.} - 120 \text{ kg.} = 1,440 \text{ kg.}$$

(c) Minimum Stock level:

$$= \text{Re-order level} - (\text{Average consumption per day} \times \text{Average lead time})$$

$$= 560 \text{ kg.} - (50 \text{ kg.} \times 6 \text{ days}) = 260 \text{ kg.}$$

(d) Impact on the profitability of the company by not ordering the EOQ.

		When purchasing the ROQ	When purchasing the EOQ
I	Order quantity	1,000 kg.	1,200 kg.
II	No. of orders a year	$\frac{17,200 \text{ kg}}{1,000 \text{ kg.}}$ =17.2 or 18 orders	$\frac{17,200 \text{ kg}}{1,200 \text{ kg.}}$ =14.33 or 15 orders
III	Ordering Cost	18 orders $\times$ ₹720 = ₹ 12,960	15 orders $\times$ ₹ 720 = ₹ 10,800
IV	Average Inventory	$\frac{1,000 \text{ kg}}{2}$ = 500 kg.	$\frac{1,200 \text{ kg}}{2}$ = 600 kg.
V	Carrying Cost	500 kg. $\times$ ₹ 17.2 = ₹ 8,600	600 kg. $\times$ ₹ 17.2 = ₹ 10,320

VI	Total Cost	₹ 21,560	₹ 21,120
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Extra Cost incurred due to not ordering EOQ = ₹ 21,560 - ₹ 21,120 = ₹ 440

**(B)** RST Construction Ltd. commenced a contract on April 1, 20X1. The total contract was for ₹ 49,21,875. It was decided to estimate the total profit on the contract and to take to the credit of Costing Profit and Loss A/c that proportion of estimated profit on cash basis, which work completed bore to total contract. Actual expenditure for the period April 1, 20X1 to March 31, 20X2 and estimated expenditure for April 1, 20X2 to September 30, 20X2 are given below :

	April 1, 20X1 to March 31, 20X2 (Actual)  (₹)	April 1, 20X2 to Sept. 30, 20X2 (Estimated)  (₹)
Materials issued	7,76,250	12,99,375
Wages : Paid	5,17,500	6,18,750
Prepaid	37,500	-
Outstanding	12,500	5,750
Plant purchased	4,00,000	-
Expenses : Paid	2,25,000	3,75,000
Outstanding	25,000	10,000
Prepaid	15,000	-
Plant returns to store (historical cost)	1,00,000 (on September 30, 20X1)	3,00,000 (on September 30, 20X2)
Work certified	22,50,000	Full
Work uncertified	25,000	-
Cash received	18,75,000	-
Materials at site	82,500	42,500

The plant is subject to annual depreciation @ 25% on written down value method.

The contract is likely to be completed on September 30, 20X2.

Required: Prepare the Contract A/c for the year ended 31st March, 20X2 and determine the estimated profit on the contract.

**(10 Marks)**

**Solution:-**

Contract A/c (1-4-20X1 to 31-3-20X2)

Particulars	(₹)	Particulars	(₹)
To Materials issued	7,76,250	By Plant returned to Store on 30-9-20X1	1,00,000
To Wages	5,17,500	Less: Depreciation(1/2)	(12,500)
Less : Prepaid	(37,500)		
Add : Outstanding	12,500	By Plant at site on 31.3.X2	3,00,000
To Plant purchased	4,00,000	Less : Depreciation	(75,000)
To Expenses	2,25,000	By Materials at site c/d	82,500
Less : Prepaid	(15,000)	By Work-in-progress c/d	
Add : Outstanding	25,000	Work certified	22,50,000
		Work uncertified	25,000
To Notional profit	7,66,250		
	26,70,000		26,70,000

## Computation of Estimated Profit

Contract A/c (1-4-20X1 to 30-9-20X2)

Particulars	(₹)	Particulars	(₹)
To Materials issued (7,76,250 + 12,99,375)	20,75,625	By Materials at site	42,500
To Wages (5,17,500 - 37,500 + 12,500 + 6,18,750 + 37,500 - 12,500 + 5,750)	11,42,000	By Plant returned to store on 30.9.20X1 (1,00,000 - 12,500)	87,500
To Plant purchased	4,00,000	By Plant returned to store on 30.9.X2 (4,00,000 - 1,00,000 - 1,03,125)	1,96,875
To Expenses (2,25,000 + 25,000 - 15,000 + 3,75,000 - 25,000 + 15,000 + 10,000)	6,10,000	By Contractee A/c	49,21,875
To Estimated profit	10,21,125		
	52,48,750		52,48,750

Workings :

Calculation of written down value of plant as on 30-9-20X2.

Plant purchased on 1-4-20X1	4,00,000
Less: Plant returned to store on 30-9-20X1	1,00,000

(Depreciation on it ₹ 1,00,000 × 25/100 × 6/12 = ₹ 12,500)	
	3,00,000
Less: Depreciation on Balance plant (3,00,000 × 25/100)	75,000
WDV of Plant on 1-4-20X2	2,25,000
Less : Depreciation (2,25,000 × 25/100 × 6/12)	28,125
WDV of plant returned to store on 30-9-20X2	1,96,875

### Question 3.

(A) AP Ltd. received a job order for supply and fitting of plumbing materials. Following are the details related with the job work:

#### Direct Materials

AP Ltd. uses a weighted average method for the pricing of materials issues.

Opening stock of materials as on 12th August 2020:

- 15mm GI Pipe, 12 units of (15 feet size) @ ₹600 each
- 20mm GI Pipe, 10 units of (15 feet size) @ ₹ 660 each
- Other fitting materials, 60 units @ ₹ 26 each
- Stainless Steel Faucet, 6 units @ ₹ 204 each
- Valve, 8 units @ ₹ 404 each

Purchases:

On 16th August 2020:

- 20mm GI Pipe, 30 units of (15 feet size) @ ₹ 610 each
- 10 units of Valve @ ₹ 402 each

On 18th August 2020:

- Other fitting materials, 150 units @ ₹ 28 each
- Stainless Steel Faucet, 15 units @ ₹ 209 each

On 27th August 2020:

- 15mm GI Pipe, 35 units of (15 feet size) @ ₹ 628 each
- 20mm GI Pipe, 20 units of (15 feet size) @ ₹ 660 each
- Valve, 14 units @ ₹ 424 each

Issues for the hostel job:

On 12th August 2020:

- 20mm GI Pipe, 2 units of (15 feet size)
- Other fitting materials, 18 units

On 17th August 2020:

- 15mm GI Pipe, 8 units of (15 feet size)
- Other fitting materials, 30 units

On 28th August 2020:

- 20mm GI Pipe, 2 units of (15 feet size)
- 15mm GI Pipe, 10 units of (15 feet size)
- Other fitting materials, 34 units
- Valve, 6 units

On 30th August 2020:

- Other fitting materials, 60 units
- Stainless Steel Faucet, 15 units

**Direct Labour:**

Plumber: 180 hours @ ₹100 per hour (includes 12 hours overtime)

Helper: 192 hours @ ₹70 per hour (includes 24 hours overtime)

Overtimes are paid at 1.5 times of the normal wage rate.

**Overheads:**

Overheads are applied @ ₹26 per labour hour.

**Pricing policy:**

It is company's policy to price all orders based on achieving a profit margin of 25% on sales price.

You are required to

(a) CALCULATE the total cost of the job.

(b) CALCULATE the price to be charged from the customer.

**(10 Marks)**

**Solution:-**

**(a) Calculation of Total Cost for the Job:**

Particulars	Amount (₹)	Amount (₹)
Direct Material Cost:		
- 15mm GI Pipe (Working Note -1)	11,051.28	
- 20mm GI Pipe (Working note-2)	2,588.28	
- Other fitting materials (working Note-3)	3,866.07	
- Stainless steel faucet 15 Units × $\left(\frac{6 \times 204 + 15 \times 209}{21 \text{Units}}\right)$	3,113.57	
- Valve 6 units × $\left(\frac{6 \times 404 + 10 \times 402 + 14 \times 424}{32 \text{Units}}\right)$	2,472.75	23,091.95
Direct Labour:		
- Plumber [{"(180 hours × ₹100) + (12 Hours × ₹50)}]	18,600.00	
- Helper [{"(192 hours × ₹70)+(24 hours × ₹35)}]	14,280.00	32,880.00
- Overheads [₹26 × (180 + 192) hours]		9,672.00
<b>Total Cost</b>		<b>65,643.95</b>

**(b) Price to be charged for the job work:**

	Amount (₹)
Total cost incurred on the job	65,643.95

Add: 25% profit on job price $\left(\frac{65,643.95}{75\%} \times 25\%\right)$	21,881.32
	<b>87,525.27</b>

**Working Note:**

**1. Cost of 15mm GI Pipe**

Date		Amount (₹)
17-08-2020	8 units × ₹ 600	4,800.00
28-08-2020	10 units × $\left(\frac{4 \times 600 + 35 \times 628}{39 \text{Units}}\right)$	6,251.28
		<b>11,051.28</b>

**2. Cost of 20mm GI Pipe**

Date		Amount (₹)
12-08-2020	2 units × 660	1,320.00
28-08-2020	2 units × $\left(\frac{8 \times 600 + 30 \times 610 + 20 \times 660}{58 \text{Units}}\right)$	1,268.28
		<b>2,588.28</b>

**3. Cost of other fitting materials**

Date		Amount (₹)
12-08-2020	18 units × ₹ 26	468.00
17-08-2020	30 units × ₹ 26	780.00
28-08-2020	34 units × $\left(\frac{12 \times 26 + 150 \times 28}{162 \text{Units}}\right)$	946.96
30-08-2020	60 units × $\left(\frac{12 \times 26 + 150 \times 28}{162 \text{Units}}\right)$	1,671.11
		<b>3,866.07</b>

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**(B)** A lodging home is being run in a small hill station with 100 single rooms. The home offers concessional rates during six off- season months in a year. During this period, half of the full room rent is charged. The management's profit margin is targeted at 20% of the room rent. The following are the cost estimates and other details for the year ending on 31st March 20X7. [Assume a month to be of 30 days].

(i) Occupancy during the season is 80% while in the off- season it is 40% only.

(ii) Total investment in the home is ₹200 lakhs of which 80% relate to buildings and balance for furniture and equipment.

(iii) Expenses:

Staff salary [Excluding room attendants] : ₹5,50, 000

Repairs to building : ₹2,61,000

Laundry charges : ₹ 80, 000

Interior : ₹ 1,75,000

Miscellaneous expenses : ₹ 1,90,800

(iv) Annual depreciation is to be provided for buildings @ 5% and on furniture and equipment @ 15% on straight-line basis.

(v) Room attendants are paid ₹ 10 per room day on the basis of occupancy of the rooms in a month.

(vi) Monthly lighting charges are ₹ 120 per room, except in four months in winter when it is ₹ 30 per room and this cost is on the basis of full occupancy for a month.

You are required to work out the room rent chargeable per day both during the season and the off-season months on the basis of the foregoing information.

**(10 Marks)**

**Solution:-**

Working Notes:

(i) Total Room days in a year

Season	Occupancy (Room days)	Equivalent Full Room charge days
Season – 80% Occupancy	100 Rooms × 80% × 6 months × 30 days in a month = 14,400 Room Days	14,400 Room Days × 100% = 14,400
Off-season – 40% Occupancy	100 Rooms × 40% × 6 months × 30 days in a month = 7,200 Room Days	7,200 Room Days × 50% = 3,600
Total Room Days	14,400+7,200 = 21,600 Room Days	18,000 Full Room days

(ii) Lighting Charges:

It is given in the question that lighting charges for 8 months is ₹120 per month and during winter season of 4 months it is ₹ 30 per month. Further it is also given that peak season is 6 months and off season is 6 months.

It should be noted that – being Hill station, winter season is to be considered as part of Off season. Hence, the non-winter season of 8 months include – Peak season of 6 months and Off season of 2 months.

Accordingly, the lighting charges are calculated as follows:

Season	Occupancy (Room-days)
Season & Non-winter – 80% Occupancy	100 Rooms × 80% × 6 months × ₹120 per month = ₹ 57,600
Off- season & Non-winter – 40% Occupancy (8 – 6 months)	100 Rooms × 40% × 2 months × ₹120 per month = ₹ 9,600
Off- season & -winter – 40% Occupancy months)	100 Rooms × 40% × 4 months × ₹ 30 per month = ₹ 4,800
Total Lighting charges	₹ 57,600+9,600+4,800 = ₹ 72,000

Statement of total cost:

	(₹)
Staff salary	5,50,000
Repairs to building	2,61,000
Laundry & Linen	80,000
Interior	1,75,000
Sundries Expenses	1,90,800
Depreciation on Building (₹ 200 Lakhs × 80% × 5%)	8,00,000
Depreciation on Furniture & Equipment (₹ 200 Lakhs × 20% × 15%)	6,00,000
Room attendant's wages (₹ 10 per Room Day for 21,600 Room Days)	2,16,000
Lighting charges	72,000
Total cost	29,44,800
Add: Profit Margin (20% on Room rent or 25% on Cost)	7,36,200
Total Rent to be charged	36,81,000

Calculation of Room Rent per day :

Total Cost / Equivalent Full Room days = ₹ 36,81,000/18,000 = ₹ 204.50

Room Rent during Season = ₹ 204.50

Room Rent during Off season = ₹ 204.50 × 50% = ₹ 102.25

#### Question 4.

(A) Star Ltd. manufactures chemical solutions for the food processing industry. The manufacturing takes place in a number of processes and the company uses FIFO method to value work-in-process and finished goods. At the end of the last month, a fire occurred in the factory and destroyed some of papers containing records of the process operations for the month.

Star Ltd. needs your help to prepare the process accounts for the month during which the fire occurred. You have been able to gather some information about the month's operating activities but some of the information could not be retrieved due to the damage. The following information was salvaged:

- Opening work-in-process at the beginning of the month was 1,600 litres, 70% complete for labour and 60% complete for overheads. Opening work-in-process was valued at ₹ 1,06,560.
- Closing work-in-process at the end of the month was 320 litres, 30% complete for labour and 20% complete for overheads.
- Normal loss is 10% of input and total losses during the month were 1,200 litres partly due to the fire damage.
- Output sent to finished goods warehouse was 8,400 litres.
- Losses have a scrap value of ₹ 15 per litre.
- All raw materials are added at the commencement of the process.
- The cost per equivalent unit (litre) is ₹ 78 for the month made up as follows:

	(₹)
Raw material	46
Labour	14
Overheads	18
	78

Required:

- (i) CALCULATE the quantity (in litres) of raw material inputs during the month.
- (ii) CALCULATE the quantity (in litres) of normal loss expected from the process and the quantity (in litres) of abnormal loss / gain experienced in the month.
- (iii) CALCULATE the values of raw material, labour and overheads added to the process during the month.
- (iv) PREPARE the process account for the month.

(10 Marks)

**Solution:-**

(i) Calculation of Raw material inputs during the month:

Quantities entering process	Liters	Quantities Leaving Process	Liters
Opening WIP	1,600	Transfer to finished goods	8,400
Raw material input (Balancing figure)	8,320	Process losses	1,200
		Closing WIP	320
	9,920		9,920

(ii) Calculation of value of Raw material, Labor and overheads added to the process:

	Material	Labour	Overheads
Cost per equivalent unit	₹ 46.00	₹ 14.00	₹ 18.00
Equivalent units (litre) (refer the working note)	7,488	7,744	7,872
Cost of equivalent units	₹ 3,44,448	₹ 1,08,416	₹ 1,41,696
Add: scrap value of normal loss (832 units x ₹ 15)	₹ 12,480	-	-
Total value added	₹ 3,56,928	₹ 1,08,416	₹ 1,41,696

Workings:

(i) Statement of Equivalent units (Litre)

Input details	Units	Output Details	Units	Equivalent Production					
				Material		Labour		Overheads	
				Units	(%)	Units	(%)	Units	(%)
Opening WIP	1,600	Units Completed:							
Units introduced	8,320	- Opening WIP	1,600	-	-	480	30	640	40
		- Fresh inputs	6,800	6,800	100	6,800	100	6,800	100
		Normal loss	832	-	-	-	-	-	-
		Abnormal loss	368	368	100	368	100	368	100
		Closing WIP	320	320	100	96	30	64	20
	9,920		9,920	7,488		7,744		7,872	

(ii) Process Account for the month

	Litres	Amount (₹)		Litres	Amount (₹)
To opening WIP	1,600	1,06,560	By Finished goods [8400 x ₹ 78]	8,400	6,55,200
To Raw materials	8,320	3,56,928	By Normal loss [832 x ₹ 15]	832	12,480
To Wages	-	1,08,416	By Abnormal loss [368 x ₹ 78]	368	28,704
To Overheads	-	1,41,696	By closing WIP [(320 x ₹ 46) + (320 x .30 x ₹ 14) + (320 x .20 x ₹ 18)]	320	17,216
	<b>9,920</b>	<b>7,13,600</b>		<b>9,920</b>	<b>7,13,600</b>

**(B)** The information of Z Ltd. for the year ended 31st March 2020 is as below:

	<b>Amount (₹)</b>
Direct materials	17,50,000
Direct wages	12,50,000
Variable factory overhead	9,50,000
Fixed factory overhead	12,00,000
Other variable costs	6,00,000
Other fixed costs	4,00,000
Profit	8,50,000
Sales	70,00,000

During the year, the company manufactured two products, X and Y, and the output and cost were:

	<b>X</b>	<b>Y</b>
Output (units)	8,000	4,000
Selling price per unit (₹)	600	550
Direct material per unit (₹)	140	157.50
Direct wages per unit (₹)	90	132.50

Variable factory overheads are absorbed as a percentage of direct wages and other variable costs are computed as:

Product X – ₹40 per unit and Product Y- ₹70 per unit.

For the FY 2020-21, due to a pandemic, it is expected that demand for product X and Y will fall by 20% & 10% respectively. It is also expected that direct wages cost will raise by 20% and other fixed costs by 10%. Products will be required to be sold at a discount of 20%.

You are required to:

- PREPARE product- wise profitability statement on marginal costing method for the FY 2019-20 and
- PREPARE a budget for the FY 2020-21.

**(10 Marks)**

**Solution:-**

**(i) Product- wise profitability statement for the FY 2019-20:**

<b>Particulars</b>	<b>Product-X (₹)</b>	<b>Product-Y (₹)</b>	<b>Total (₹)</b>
Output (units)	8,000	4,000	
Selling price per unit	600	550	
Sales value	48,00,000	22,00,000	70,00,000
Direct material	11,20,000 (₹140×8,000)	6,30,000 (₹157.50×4,000)	17,50,000
Direct Wages	7,20,000	5,30,000	12,50,000

	(₹90×8,000)	(₹132.5×4,000)	
Variable Factory Overheads	5,48,200 (76% of 7,20,000)	4,02,800 (76% of 5,30,000)	9,50,000
Other variable costs	3,20,000 (₹40×8,000)	2,80,000 (₹70×4,000)	6,00,000
Contribution	20,92,800	3,57,200	24,50,000
Fixed factory overheads	-	-	12,00,000
Other fixed costs	-	-	4,00,000
<b>Profit</b>			<b>8,50,000</b>

**(ii) Preparation of Budget for the FY 2020-21:**

Particulars	Product-X (₹)	Product-Y (₹)	Total (₹)
Output (units)	6,400 (8,000×80%)	3,600 (4,000×90%)	
Selling price per unit	480 (600×80%)	440 (550×80%)	
Sales value	30,72,000	15,84,000	46,56,000
Direct material	8,96,000 (₹140×6,400)	5,67,000 (₹157.50×3,600)	14,63,000
Direct wages per unit	6,91,200 (₹108×6,400)	5,72,400 (₹159×3,600)	12,63,600
Variable factory overheads	5,25,312 (76% of 6,91,200)	4,35,024 (76% of 5,72,400)	9,60,336
Other variable costs	2,56,000 (₹40×6,400)	2,52,000 (₹70×3,600)	5,08,000
Contribution	7,03,488	(2,42,424)	4,61,064
Fixed factory overheads	-	-	12,00,000
Other fixed costs (110% of ₹ 4,00,000)	-	-	4,40,000
<b>Profit/ (Loss)</b>			<b>(11,78,936)</b>

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**Question 5.**

(A) The following standards have been set to manufacture a product:

Direct materials	(₹)
2 units of X at ₹40 per unit	80.00
3 units of Y at ₹ 30 per unit	90.00
15 units of Z at ₹10 per unit	150.00
	320.00
Direct labour 3 hours @ ₹ 55 per hour	165.00
Total standard prime cost	485.00

The company manufactured and sold 6,000 units of the product during the year 20X8.

Direct material costs were as follows:

12,500 units of X at ₹ 44 per unit.

18,000 units of Y at ₹ 28 per unit.

88,500 units of Z at ₹12 per unit.

The company worked 17,500 direct labour hours during the year 20X8. For 2,500 of these hours the company paid at ₹ 58 per hour while for the remaining hours the wages were paid at the standard rate.

Required:

Compute the following variances:

Material Price, Material Usage, Material Mix, Material Yield, Labour Rate and Labour Efficiency.

**(10 Marks)**

**Solution:-**

Material Price Variance = Actual Quantity (Std. Price – Actual Price)

X = 12,500 units (₹40 – ₹44) = 50,000 (A)

Y = 18,000 units (₹30 – ₹28) = 36,000 (F)

Z = 88,500 units (₹10 – ₹12) = 1,77,000 (A)                      1,91,000 (A)

Material Usage Variance = Std. Price (Std. Qty – Actual Qty.)

X = ₹40 (6,000 × 2 – 12,500) = 20,000 (A)

Y = ₹30 (6,000 × 3 – 18,000) = Nil

Z = ₹10 (6,000 × 15 – 88,500) = 15,000 (F)                      5,000 (A)

Material Mix Variance = Std. Price (Revised Std. Qty. – Actual Qty.)

$$X = 40 \left( \frac{1,19,000 \times 2}{20} - 12,500 \right) = 24,000 (A)$$

$$Y = 30 \left( \frac{1,19,000 \times 3}{20} - 18,000 \right) = 4,500 (A)$$

$$Z = 10 \left( \frac{1,19,000 \times 15}{20} - 88,500 \right) = 7,500 (F)$$

21,000 (A)

Material Yield Variance = Std. Price (Std. Qty. – Revised Std. Qty.)

$$X = 40 \left( 6,000 \times 2 - \frac{1,19,000 \times 2}{20} \right) = 4,000 (F)$$

$$Y = 30 \left( 6,000 \times 3 - \frac{1,19,000 \times 3}{20} \right) = 4,500 (F)$$

$$Z = 10 \left( 6,000 \times 15 - \frac{1,19,000 \times 15}{20} \right) = 7,500 (F)$$

16,000 (F)

Labour Rate Variance = Actual Hours (Std. Rate – Actual Rate)

$$= 2,500 \text{ hours } (\text{₹}55 - \text{₹}58) = 7,500 (A)$$

Labour Efficiency Variance = Std. Rate (Std. Hours – Actual Hours)

$$= \text{₹}55 (6,000 \times 3 - 17,500) = 27,500 (F)$$

**(B)** XYZ Ltd. has a production capacity of 2,00,000 units per year. Normal capacity utilisation is reckoned as 90%. Standard variable production costs are ₹ 11 per unit. The fixed costs are ₹ 3,60,000 per year. Variable selling costs are ₹ 3 per unit and fixed selling costs are ₹ 2,70,000 per year. The unit selling price is ₹ 20.

In the year just ended on 30th June, 20X4, the production was 1,60,000 units and sales were 1,50,000 units. The closing inventory on 30th June was 20,000 units.

The actual variable production costs for the year were ₹ 35,000 higher than the standard.

(i) Calculate the profit for the year

(a) by absorption costing method and

(b) by marginal costing method.

(ii) Explain the difference in the profits.

(10 Marks)

**Solution:-**

Income Statement (Absorption Costing) for the year ending 30th June 20X4

Particulars	(₹)	(₹)
Sales (1,50,000 units @ ₹ 20)		30,00,000
Production Costs:		
Variable (1,60,000 units @ ₹ 11)	17,60,000	
Add: Increase	35,000	17,95,000
Fixed (1,60,000 units @ ₹ 2*)		3,20,000
Cost of Goods Produced		21,15,000
Add: Opening stock (10,000 units @ ₹ 13) *		1,30,000
		22,45,000
Less : Closing stock $\left(\frac{21,15,000}{1,60,000} \times 20,000 \text{ units}\right)$		2,64,375
Cost of Goods Sold		19,80,625
Add : Under absorbed fixed production overhead		40,000
(3,60,000 - 3,20,000)		
		20,20,625
Add : Non-production costs:		
Variable selling costs (1,50,000 units @ ₹ 3)		4,50,000
Fixed selling costs		2,70,000
Total cost		27,40,625
Profit (Sales - Total Cost)		2,59,375

\* Working Notes :

1. Fixed production overhead are absorbed at a pre-determined rate based on normal capacity, i.e. ₹ 3,60,000 ÷ 1,80,000 units = ₹ 2.

2. Opening stock is 10,000 units, i.e., 1,50,000 units + 20,000 units - 1,60,000 units. It is valued at ₹13 per unit, i.e., ₹ 11 + ₹ 2 (Variable + fixed).

Income Statement (Marginal Costing) for the year ended 30th June, 20X4

Particulars	(₹)	(₹)
Sales (1,50,000 units @ ₹ 20)		30,00,000
Variable production cost (1,60,000 units @ ₹ 11 + ₹ 35,000)		17,95,000
Variable selling cost (1,50,000 units @ ₹ 3)		4,50,000
		22,45,000
Add : Opening Stock (10,000 units @ ₹ 11)		1,10,000
		23,55,000
Less : Closing stock $\left(\frac{17,95,000}{1,60,000} \times 20,000 \text{ units}\right)$		2,24,375

Variable cost of goods sold		21,30,625
Contribution (Sales – Variable cost of goods sold)		8,69,375
Less : Fixed cost – Production – Selling	3,60,000	
	2,70,000	6,30,000
Profit		2,39,375

Reasons for Difference in Profit:		(₹)
Profit as per absorption costing		2,59,375
Add : Op. stock under –valued in marginal costing (₹ 1,30,000 – 1,10,000)		20,000
		2,79,375
Less : Cl. Stock under –valued in marginal closing (₹ 2,64,375 – 2,24,375)		40,000
Profit as per marginal costing		2,39,375

### Question 6.

(A) Write short notes on any three of the following:

- (i) Re-order quantity
- (ii) Re-order level
- (iii) Maximum stock level
- (iv) Minimum stock level

(4 Marks)

### Solution:-

(i) Re-Order Quantity : Re-order quantity is the quantity of materials for which purchase requisition is made by the store department. While setting the quantity to be re-ordered, consideration is given to the maintenance of minimum level of stock, re-order level, minimum delivery time and the most important the cost. Hence, the quantity should be where, the total of carrying cost and ordering cost be at minimum. For this purpose, an economic order quantity should be calculated.

(ii) Re-order Stock Level (ROL) : This level lies between minimum and the maximum levels in such a way that before the material ordered is received into the stores, there is sufficient quantity on hand to cover both normal and abnormal consumption situations. In other words, it is the level at which fresh order should be placed for replenishment of stock.

It is calculated as :

$ROL = \text{Maximum Consumption} \times \text{Maximum Re-order Period}$

Maximum Consumption = The maximum rate of material consumption in production activity

Maximum Re-order period = The maximum time to get order from supplier to the stores

(iii) Maximum Stock Level : It is the highest level of quantity for any material which can be held in stock at any time. Any quantity beyond this level cause extra amount of expenditure due to engagement of fund, cost of storage, obsolescence etc.

It can be calculated as below :

Maximum stock level= Re-order level + Re-order quantity - (Minimum consumption rate × Minimum re-order period)

(iv) Minimum Stock Level : It is lowest level of material stock, which must be maintained in hand at all times, so that there is no stoppage of production due to non-availability of inventory.

It is calculated as below :

Minimum stock level = re-order stock level - (average consumption rate × average re-order period)

**(B) DISCUSS** the treatment of by-product cost in cost accounting.

**(4 Marks)**

**Solution:-**

**By-product cost can be dealt in cost accounting in the following ways:**

**(i) When they are of small total value:** When the by-products are of small total value, the amount realised from their sale may be dealt in any one the following two ways:

1. The sales value of the by-products may be credited to the Costing Profit and Loss Account and no credit be given in the Cost Accounts. The credit to the Costing Profit and Loss Account here is treated either as miscellaneous income or as additional sales revenue.
2. The sale proceeds of the by-product may be treated as deductions from the total costs. The sale proceeds in fact should be deducted either from the production cost or from the cost of sales.

**(ii) When the by-products are of considerable total value:** Where by-products are of considerable total value, they may be regarded as joint products rather than as by-products. To determine exact cost of by-products the costs incurred upto the point of separation, should be apportioned over by-products and joint products by using a logical basis. In this case, the joint costs may be divided over joint products and by-products by using relative market values; physical output method (at the point of split off) or ultimate selling prices (if sold).

**(iii) Where they require further processing:** In this case, the net realisable value of the by-product at the split-off point may be arrived at by subtracting the further processing cost from the realisable value of by-products.

If total sales value of by-products at split-off point is small, it may be treated as per the provisions discussed above under (i).

In the contrary case, the amount realised from the sale of by-products will be considerable and thus it may be treated as discussed under (ii).

**(C) Describe Unit Costing and Batch Costing giving example of industries where these are used?**

**(4 Marks)**

**Solution:-**

Unit Costing:

Unit costing is a method of costing used where the output produced by an entity is identical and each unit of output require identical cost. Unit costing is synonymously known as single or output costing but these are sub-division of unit costing method. This method of costing is followed by industries which produces single output or few variants of a single output. Under this method costs are collected and analysed element wise and then total cost per unit is ascertained by dividing the total cost by number of units produced.

It therefore finds application in industries like paper, cement, steel works, mining, breweries. These industries produce identical products and therefore have identical costs.

Batch Costing:

Batch Costing is a type of specific order costing where articles are manufactured in predetermined lots, known as batch. Under this costing method the cost object for cost determination is a batch for production rather output as seen in unit costing method. A batch consists of certain number of units which are processed simultaneously to be for manufacturing operation. Under this method of manufacturing the inputs are accumulated in the assembly line till it reaches minimum batch size. Soon after a batch size is reached, all inputs in a batch is processed for further operation. Reasons for batch manufacturing may either technical or economical or both. For example, in pen manufacturing industry, it would be too costly to manufacture one pen of a particular design at a time to meet the demand of one customer. On the other hand, the production of say 10,000 pens of the same design will reduce the cost to a sizeable extent.

**(D) What is meant by cost center?**

**(4 Marks)**

**Solution:-**

Cost Centres:

The responsibility centre which is held accountable for incurrence of costs which are under its control. The performance of this responsibility centre is measured against pre-determined standards or budgets. The cost centres are of two types:

(a) Standard Cost Centre and (b) Discretionary Cost Centre

(a) Standards Cost Centres: Cost Centre where output is measurable and input required for the output can be specified. Based on a well-established study, an estimate of standard units of input to produce a unit of output is set. The actual cost for inputs is compared with the standard cost. Any deviation (variance) in cost

is measured and analysed into controllable and uncontrollable cost. The manager of the cost centre is supposed to comply with the standard and held responsible for adverse cost variances. The input-output ratio for a standard cost centre is clearly identifiable.

(b) Discretionary Cost Centre: The cost centre whose output cannot be measured in financial terms, thus input-output ratio cannot be defined. The cost of input is compared with allocated budget for the activity. Example of discretionary cost centres are Research & Development department, Advertisement department where output of these department cannot be measured with certainty and co-related with cost incurred on inputs.

**(E)** Explain 'Just In Time' (JIT) approach of inventory management.

**(4 Marks)**

**Solution:-**

Just in Time (JIT) Inventory Management

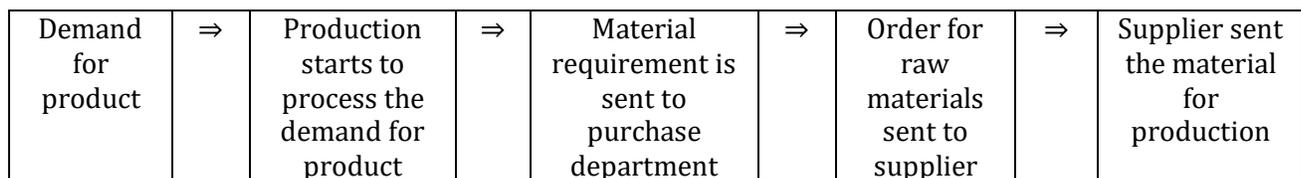
JIT is a system of inventory management with an approach to have a zero inventories in stores. According to this approach material should only be purchased when it is actually required for production.

JIT is based on two principles

(i) Produce goods only when it is required and

(ii) the products should be delivered to customers at the time only when they want.

It is also known as 'Demand pull' or 'Pull through' system of production. In this system, production process actually starts after the order for the products is received. Based on the demand, production process starts and the requirement for raw materials is sent to the purchase department for purchase. This can be understood with the help of the following diagram:



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