Cost and management accounting new syllabus answer key

1a)

(1) A = Annual usage of parts = Monthly demand for monitors × 4 parts × 12 months

= 2,000monitors × 4 parts × 12 months = 96,000units

O = Ordering cost per order = ₹ 1,000/- per order

C_1 = Cost per part =₹ 350/-

$_iC_1$ = Inventory carrying cost per unit per annum

= 20% × ₹ 350 = ₹ 70/- per unit, per annum

Economic order quantity (EOQ):

$$E.O.Q = \sqrt{\frac{2AO}{{}_iC_1}} = \sqrt{\frac{2 \times 96{,}000 \text{ units} \times ₹1{,}000}{₹70}}$$

= 1,656 parts (approx.)

The supplier is willing to supply 30,000 units at a discount of 5%, therefore cost of each part shall be ₹350 – 5% of 350 = ₹332.5

Total cost (when order size is 30,000 units):

= Cost of 96,000 units + Ordering cost + Carrying cost.

$$= (96{,}000 \text{ units} \times ₹ 332.50) + \left(\frac{96{,}000 \text{ units}}{30{,}000 \text{ units}} \times ₹1{,}000\right) + \frac{1}{2}(30{,}000 \text{ units} \times 20\% \times ₹ 332.50)$$

= ₹3,19,20,000 + ₹3,200* + ₹9,97,500= ₹3,29,20,700

Total cost (when order size is 1,656 units):

$$= (96{,}000 \text{ units} \times ₹350) + \left(\frac{96{,}000 \text{ units}}{1{,}656 \text{ units}} \times ₹1{,}000\right) + \frac{1}{2}(1{,}656 \text{ units} \times 20\% \times ₹350)$$

= ₹3,36,00,000 + ₹57,970* + ₹57,960 = ₹3,37,15,930

Since, the total cost under the supply of 30,000 units with 5% discount is lower than that when order size is 1,656 units, therefore the offer should be accepted.

Note: While accepting this offer consideration of capital blocked on order size of 30,000 units has been ignored.

**Order size can also be taken in absolute figure.*

(2) Reorder level

= Maximum consumption × Maximum re-order period

= 710 units × 5 weeks = 3,550 units

(3) Maximum level of stock

= Re-order level + Reorder quantity – (Min. usage × Min. reorder period)

= 3,550 units + 1,656 units – (140 units × 3 weeks) = 4,786 units.

(4) Minimum level of stock

= Re-order level – Normal usage × Average reorder period

= 3,550 units – (425 units × 4 weeks) = 1,850 units.

1b)

(i) Let factory overhead recovery rate, as percentage of direct wages be F and administrative overheads recovery rate, as percentage of factory cost be A.

Factory Cost of Jobs :

Job 101=₹96,000 + ₹42,000F

Job 102=₹67,500 + ₹30,000F

Total Cost of Jobs:

Job 101 = (₹96,000 + ₹42,000F) + (₹96,000+ ₹42,000F)A = ₹ 1,51,500

Job-102 = (₹67,500 + ₹ 30,000F) + (₹67,500+ ₹30,000F)A = ₹ 1,06,875

(Refer to working note)

On solving above relations:F = 0.60 and A = 0.25

Hence, percentage recovery rates of factory overheads and administrative overheads are 60% and 25% respectively.

Working note :

	Job 101	Job 102
Total cost (₹)	1,51,500	1,06,875
$\frac{\text{Selling price}}{(100\% + \text{Percentage of profit})}$	(₹ 1,66,650/110%)	(₹ 1,28,250/120%)

(ii) Statement of jobs, showing amount of factory overheads, administrative overheads and profit

	Job 101	*Job 102*
	(₹)	(₹)
Direct materials	54,000	37,500
Direct wages	42,000	30,000
Prime cost	96,000	67,500
Factory overheads		
60% of direct wages	25,200	18,000
Factory cost	1,21,200	85,500
Administrative overheads		
25% of factory cost	30,300	21,375
Total cost	1,51,500	1,06,875
Profit	15,150	21,375
Selling price	1,66,650	1,28,250

(iii) Selling price of Job 103

	(₹)
Direct materials	24,000
Direct wages	20,000
Prime cost	44,000
Factory overheads (60% of Direct Wages)	12,000
Factory cost	56,000
Administrative overheads (25% of factory cost)	14,000
Total cost	70,000
Profit margin (balancing figure)	10,000
Selling price $\left[\frac{\text{Total Cost}}{87.5\%}\right]$	80,000

1c)

Memorandum Reconciliation Account

Particulars		(₹)	Particulars		(₹)
To	Net loss as per Costing books	2,13,000	By	Administrative overhead over absorbed in costs	3,000
To	Factory overheads under	5,000	By	Depreciation over charged in	10,000

	absorbed			Cost books (₹80,000 – ₹70,000)	
To	Income tax not provided in Cost books	65,000	By	Interest on investments not included in Cost books	20,000
To	Preliminary expenses written off in Financial books	3,000	By	Transfer fees not considered in Cost books	2,000
To	Over-valuation of Closing Stock of finished goods in Cost books	7,000	By	Net loss as per Financial books	2,58,000
		2,93,000			2,93,000

1d)

Time Allowed = 150 hours
Time Taken = 120 hours
Time Saved = 30 hours

(i)	Rowan Premium Plan	(₹)
	Normal wages (₹ 10 x 120 hours)	1,200
	D.A. for 15 days i.e. $\frac{120\text{hours}}{8\text{hours}}$ (₹30 x 15 days)	450
	Bonus : $= \frac{\text{Time saved}}{\text{Time allowed}} \times \text{Time taken} \times \text{Hourly rate}$	
	$= \frac{30\text{hours}}{150\text{hours}} \times 120\text{hours} \times ₹10$	240
	Total Wages	1,890
(ii)	Emersion`s Efficiency Plan	
	Normal wages (120 hours × ₹ 10)	1,200
	D.A. (15 days x ₹ 30)	450
	Bonus * = 45% × ₹1,200	540
	Total Wages	2,190

$$\text{* Efficiency} = \frac{\text{Time Allowed}}{\text{Time Taken}} \times 100 = \frac{150}{120} \times 100 = 125\ \%$$

Rate of Bonus up to 100%	=	20%
From 101% to 125%	=	25%
		45%

2a)

Process- P Account

Particulars	Kg.	Amount (₹)	Particulars	Kg.	Amount (₹)
To Input	10,000	50,000	By Normal wastage (1,000 kg. × ₹ 1)	1,000	1,000
To Direct Material	---	38,000	By Process- Q (9,000 kg. × ₹ 15.50)	9,000	1,39,500
To Direct Labour	---	30,000			
To Production OH (₹ 90,000 × 3/12)	---	22,500			
	10,000	1,40,500		10,000	1,40,500

$$\text{Cost per unit} = \frac{₹1,40,500 - ₹1,000}{10,000\,\text{kg.} - 1,000\,\text{kg.}} = ₹\ 15.50$$

Process- Q Account

Particulars	Kg.	Amount (₹)	Particulars	Kg.	Amount (₹)
To Process-P A/c	9,000	1,39,500	By Normal wastage (900 kg. × ₹ 1)	900	900
To Direct Material	---	42,500	By Process- Q (8,200 kg. × ₹ 31)	8,200	2,54,200
To Direct Labour	---	40,000			
To Production OH (₹ 90,000 × 4/12)	---	30,000			
To Abnormal Gain (100 kg. × ₹ 31)	100	3,100			
	9,100	2,55,100		9,100	2,55,100

$$\text{Cost per unit} = \frac{₹\,2,52,000 - ₹\,900}{9,000\,kg. - 900\,kg.} = ₹\,31$$

Process- R Account

Particulars	Kg.	Amount (₹)	Particulars	Kg.	Amount (₹)
To Process-Q A/c	8,200	2,54,200	By Normal wastage (820 kg. × Re.1)	820	820
To Direct Material	---	42,880	By Abnormal loss (80 kg. × ₹ 52)	80	4,160
To Direct Labour	---	50,000	By Finished Goods (7,300 kg. × ₹52)	7,300	3,79,600
To Production OH (₹ 90,000 × 5/12)	---	37,500			
	8,200	3,84,580		8,200	3,84,580

$$\text{Cost per unit} = \frac{₹3,84,580 - ₹\,820}{8,200\,kg. - 820\,kg.} = ₹\,52$$

Calculation of Selling price per unit of end product:

Cost per unit	₹ 52.00
Add: Profit 25% on selling price i.e. 1/3rd of cost	₹ 17.33
Selling price per unit	₹ 69.33

2b)

(i) Statement Showing Overhead Cost per unit "Traditional Method"

	Gel Pen (₹)	Ball Pen (₹)
Units	5,500	24,000

Overheads (₹) (Refer to W.N.)	4,80,000 (20 x 24,000 hrs.)	10,80,000 (20 x 54,000 hrs.)
Overhead Rate *per unit* (₹)	87.27 (₹ 4,80,000 / 5,500 units)	45 (₹ 10,80,000 /24,000 units)

Working Notes:

Overhead Rate per Machine Hour

$$= \frac{\text{Total Overhead incurred by the Company}}{\text{Total Machine Hours}}$$

$$= \frac{₹\,4,75,020 + 5,79,988 + 5,04,992}{24,000\,\text{hours} + 54,000\,\text{hours}} = \frac{₹15,60,000}{78,000\ \text{hours}}$$

= ₹ 20 *per machine hour*

(ii) **Statement Showing "Activity Based Overhead Cost"**

Activity Cost Pool	Cost Driver	Ratio	Total Amount (₹)	Gel Pen (₹)	Ball Pen (₹)
Volume Related Activity Costs	Machine hours	24:54	4,75,020	1,46,160	3,28,860
Setup Related Costs	No. of Setups	30:56	5,79,988	2,02,321	3,77,667
Purchase Related Costs	No. of Purchase Orders	240:448	5,04,992	1,76,160	3,28,832
Total Cost				5,24,641	10,35,359
Output (units)				5,500	24,000
Unit Cost (Overheads)				95.39	43.13

(iii)

	Gel Pen (₹)	Ball Pen (₹)
Overheads Cost per unit (₹) (Traditional Method)	87.27	45
Overheads Cost per unit (₹) (ABC)	95.39	43.13
Difference *per unit*	-8.12	+1.87

(Volume related activity cost, set up related costs and purchase related cost can also be calculated under Activity Base Costing using Cost driver rate. However, there will be no changes in the final answer.)

3a)

Contract Account for the year ended 31st March, 20X8

	(₹'000)		(₹' 000)
To Material issued to site	5,000	By Material at site	1,800
To Direct wages 3,800		By Material returned	100
Add: Outstanding wages 110	3,910	By Work-in-progress:	
To Plant hire	700	- Value of work certified	10,000
To Site office cost	270	- Work uncertified	230
To Direct expenses	500		
To Depreciation (special plant)	300		
To Notional profit c/d	1,450		
	12,130		12,130

3b)

Let Cx be the Contribution per unit of Product X.
Therefore, Contribution per unit of Product Y =Cy=4/5Cx = 0.8Cx
Given $F_1 + F_2 = 1,50,000$,
$F_1 = 1,800Cx$ (Break even Volume × Contribution per unit)
Therefore, $F_2 = 1,50,000 - 1,800Cx$.
$3,000Cx - F_1 = 3,000 \times 0.8Cx - F_2$ or $3,000Cx - F_1 = 2,400\ Cx - F_2$ (Indifference Point)
i.e., $3,000Cx - 1,800Cx = 2,400Cx - 1,50,000 + 1,800Cx$
i.e., $3,000Cx = 1,50,000$, Therefore, Cx = ₹ 50/- (1,50,000 / 3,000)
Therefore, Contribution per unit of X = ₹ 50
Fixed Cost of X = F_1 = ₹ 90,000 (1,800 × 50)
Therefore, Contribution per unit of Y is ₹ 50 × 0.8 = ₹ 40 and
Fixed Cost of Y = F_2 = ₹ 60,000 (1,50,000 – 90,000)
The Value of F_1 = ₹ 90,000, F_2 = ₹ 60,000 and X = ₹ 50 and Y =₹ 40

4a)

Workings:

(a) Variable Overhead rate per unit

$$= \frac{\text{Difference of Overhead at two level}}{\text{Difference in Production units}}$$

$$= \frac{₹2,10,000 - ₹1,80,000}{10,000 \text{ units} - 8,000 \text{ units}} = ₹15$$

(b) Fixed Overhead = ₹ 1,80,000 – (8,000 units × ₹ 15) = ₹ 60,000

(c) Standard hours per unit of production $= \frac{\text{Std. Overhead Absorption Rate}}{\text{Std. Rate per hour}}$

$$= \frac{₹20}{₹4} = 5 \text{ hours}$$

(d) Standard Variable Overhead Rate per hour $= \frac{\text{Variable Overhead per unit}}{\text{Std. hour per unit}}$

$$= \frac{₹15}{5 \text{ hours}} = ₹3$$

(e) Standard Fixed Overhead Rate per hour = ₹ 4- ₹ 3 = ₹ 1

(f) Actual Variable Overhead = ₹ 2,95,000 – ₹ 62,500= ₹ 2,32,500

(g) Actual Variable Overhead Rate per Hour $= \frac{₹2,32,500}{74,000 \text{ hours}} = ₹3.1419$

(h) Budgeted hours = 12,000 units × 5 hours = 60,000 hours

(i) Standard Hours for Actual Production = 15,560 units × 5 hours = 77,800 hours

(i) Variable Overhead Efficiency and Expenditure Variance:

Variable Overhead Efficiency Variance = Std. Rate per hour (Std. Hours – Actual Hours)

= ₹ 3 (77,800 hours – 74,000 hours)

= ₹ 11,400 (F)

Variable Overhead Expenditure Variance = Actual Hours (Std. Rate - Actual Rate)

= 74,000 hours (₹ 3 - ₹ 3.1419)

= ₹ 10,500 (A)

(ii) Fixed Overhead Efficiency and Capacity Variance:

Fixed Overhead Efficiency Variance	= Std. Rate per Hour (Std. Hours-Actual Hours)
	= ₹ 1(77,800 hours -74,000 hours) = ₹ 3,800 (F)
Fixed Overheads Capacity Variance	= Std. Rate per Hour (Actual Hours -Budgeted Hours)
	= ₹ 1(74,000 hours – 60,000 hours)
	= ₹ 74,000 – ₹ 60,000= ₹ 14,000 (F)

4b)

Calculation of Price of the Delhi-Jaipur-Agra-Delhi tour package

Particulars	Amount (₹)	Amount (₹)
Diesel Cost (Working Note-2)		2,635.00
Servicing Cost $\left(\frac{₹30,000}{50,000\,kms}\times 754\,kms.\right)$		452.40
Chauffeur's meal cost (three 200 km. completed journey × ₹ 50)		150.00
Other Allocable costs:		
Depreciation $\left(\frac{₹12,00,000}{24,00,000\,kms}\times 754\,kms.\right)$	377.00	
Other set-up and office cost $\left(\frac{₹2,400}{30\,days}\times 3\,days\right)$	240.00	
Chauffeur's salary $\left(\frac{₹12,000}{30\,days}\times 3\,days\right)$	1,200.00	1,817.00
Total Cost		5,054.40
Add: Profit (25% of net takings or 1/3rd of total cost)		1,684.80
		6,739.20
Add: Service Tax @12.36%		832.97
Price of the package (inclusive of service tax)		**7,572.17**

Working Notes

(1) Total distance of journey

From	To	Distance (in Km.)
Delhi	Jaipur	274
Jaipur	Agra	238
Agra	Delhi	242
Total Distance		754

(2) Cost of Diesel

From	To	Distance (in Km.)	Price of diesel per litre (₹)	Total diesel Cost (₹)
I	II	III	IV	V= (III ÷ 16 km) × IV
Delhi	Jaipur	274	54	924.75
Jaipur	Agra	238	56	833.00
Agra	Delhi	242	58	877.25
Total cost				2,635.00

5a)

Calculation of Cost of Production of Arnav Metallic for the period.....

Particulars	Amount (₹)
Raw materials purchased	64,00,000
Add: Opening stock	2,88,000
Less: Closing stock	(4,46,000)
Material consumed	62,42,000
Wages paid	23,20,000

Prime cost	85,62,000
Repair and maintenance cost of plant & machinery	9,80,500
Insurance premium paid for inventories	26,000
Insurance premium paid for plant & machinery	96,000
Quality control cost	86,000
Research & development cost	92,600
Administrative overheads related with factory and production	9,00,000
	1,07,43,100
Add: Opening value of W-I-P	4,06,000
Less: Closing value of W-I-P	(6,02,100)
	1,05,47,000
Less: Amount realised by selling scrap	(9,200)
Add: Primary packing cost	10,200
Cost of Production	1,05,48,000

Notes:

(i) Other administrative overhead does not form part of cost of production.

(ii) Salary paid to Director (Technical) is an administrative cost.

5b)

Production Budget of Product Minimax and Heavyhigh (in units)

	April		May		June		Total	
	MM	HH	MM	HH	MM	HH	MM	HH
Sales	8,000	6,000	10,000	8,000	12,000	9,000	30,000	23,000
Add: Closing Stock (25% of next month's sale)	2,500	2,000	3,000	2,250	4,000	3,500	9,500	7,750

Less: Opening Stock	2,000*	1,500*	2,500	2,000	3,000	2,250	7,500	5,750
Production units	8,500	6,500	10,500	8,250	13,000	10,250	32,000	25,000

* Opening stock of April is the closing stock of March, which is as per company's policy 25% of next month'' sale.

Production Cost Budget

Element of cost	Rate (₹)		Amount (₹)	
	MM (32,000 units)	HH (25,000 units)	MM	HH
Direct Material	220	280	70,40,000	70,00,000
Direct Labour	130	120	41,60,000	30,00,000
Manufacturing Overhead				
(4,00,000 ÷ 1,80,000 × 32,000)			71,111	
(5,00,000 ÷ 1,20,000 × 25,000)				1,04,167
			1,12,71,111	1,01,04,167

6a)

Different industries follow different methods of costing because of the differences in the nature of their work. The various methods of costing are as follows:

Methods	Description
Single or Output Costing	Here the cost of a product is ascertained, the product being the only one produce like bricks, coals, etc.
Batch Costing	It is the extension of job costing. A batch may represent a number of small orders passed through the factory in batch. Each batch here is treated as a unit of cost and thus separately costed. Here cost per unit is determined by dividing the cost of the batch by the number of units produced in the batch.
Job Costing	In this method of costing, cost of each job is ascertained separately. It is suitable in all cases where work is undertaken on receiving a customer's order like a printing press, motor workshop, etc.
Contract Costing	Here the cost of each contract is ascertained separately. It is suitable for firms engaged in the construction of bridges, roads, buildings etc.
Process Costing	Here the cost of completing each stage of work is ascertained, like cost of making pulp and cost of making paper from pulp. In mechanical operations, the cost of each operation may be ascertained separately; the name given is operation costing.
Operating Costing	It is used in the case of concerns rendering services like transport, supply of water, retail trade etc.
Multiple Costing	It is a combination of two or more methods of costing outlined above. Suppose a firm manufactures bicycles including its components; the parts will be costed by the system of job or batch costing but the cost of assembling the bicycle will be computed by the Single or output costing method. The whole system of costing is known as multiple costing.

6b)

Working Note:

Apportionment of joint costs on the basis of Net Realisable Value method

Products	Sales Value (₹)	Post separation Cost (₹)	Net Realisable Value (₹)	Apportioned Cost (₹)
A	50,00,000 (2,00,000 units × ₹ 25)	12,50,000	37,50,000	26,25,000
B	5,10,000 (30,000 units × ₹ 17)	1,50,000	3,60,000	2,52,000

C	3,00,000 (25,000 units × ₹ 12)	50,000	2,50,000	1,75,000
D	2,00,000 (20,000 units × ₹ 10)	—	2,00,000	1,40,000
E	15,00,000 (75,000 units × ₹ 20)	1,50,000	13,50,000	9,45,000
			59,10,000	41,37,000

Total joint cost = Raw material costs + Manufacturing expenses
= ₹ 35,90,000 + ₹ 5,47,000 = ₹ 41,37,000

$$\text{Apportioned joint cost} = \frac{\text{Total joint cost}}{\text{Total net realisable value}} \times \text{Net realisable value of each product}$$

$$\text{Apportioned joint cost for Product A} = \frac{₹\ 41,37,000}{₹\ 59,10,000} \times ₹\ 37,50,000 = ₹\ 26,25,000$$

Similarly, the apportioned joint cost for products B, C, D and E are ₹ 2,52,000,₹ 1,75,000,₹ 1,40,000 and ₹ 9,45,000 respectively.

(a) Statement showing income forecast of the company assum¬ing that none of its products are further processed

Products	A (₹)	B (₹)	C (₹)	D (₹)	E (₹)	Total (₹)
Sales revenue	34,00,000 (₹17 × 2,00,000)	3,90,000 (₹13 × 30,000)	2,00,000 (₹8 × 25,000)	2,00,000 (₹10 × 20,000)	10,50,000 (₹14 × 75,000)	52,40,000
Less: Apportioned Costs (Refer Working note)	26,25,000	2,52,000	1,75,000	1,40,000	9,45,000	41,37,000
	7,75,000	1,38,000	25,000	60,000	1,05,000	11,03,000
Less: Fixed Cost						4,73,000
Profit						6,30,000

(b) Statement showing income forecast of the company: assuming that products A, B, C and E are further processed (Refer to working note)

Products	A (₹)	B (₹)	C (₹)	D (₹)	E (₹)	Total (₹)
A. Sales revenue	50,00,000	5,10,000	3,00,000	2,00,000	15,00,000	75,10,000
B. Apportioned Costs	26,25,000	2,52,000	1,75,000	1,40,000	9,45,000	41,37,000
C. Further processing cost	12,50,000	1,50,000	50,000	-	1,50,000	16,00,000

D. Total processing cost (B+ C)	38,75,000	4,02,000	2,25,000	1,40,000	10,95,000	57,37,000
E. Excess of sales revenue (A-D)	11,25,000	1,08,000	75,000	60,000	4,05,000	17,73,000
F. Fixed Cost						4,73,000
G. Profit (E - F)						13,00,000

Suggested production plan for maximising profits:

On comparing the figures of excess of revenue over cost of manu¬facturing in the above statements one observes that the concern is earning more after further processing of A, C and E products but is loosing a sum of ₹ 30,000 in the case of product B (if it is processed further). Hence the best production plan will be to sell A, C and E after further processing and B and D at the point of split off. The profit statement based on this suggested production plan is as below :

Profit statement based on suggested production plan

Products	A (₹)	B (₹)	C (₹)	D (₹)	E (₹)	Total (₹)
A. Sales revenue	50,00,000	3,90,000	3,00,000	2,00,000	15,00,000	73,90,000
B. Apportioned Costs	26,25,000	2,52,000	1,75,000	1,40,000	9,45,000	41,37,000
C. Further processing cost	12,50,000	-	50,000	-	1,50,000	14,50,000
D. Total processing cost (B+ C)	38,75,000	2,52,000	2,25,000	1,40,000	10,95,000	55,87,000
E. Excess of sales revenue (A-D)	11,25,000	1,38,000	75,000	60,000	4,05,000	18,03,000
F. Fixed Cost						4,73,000
G. Profit (E - F)						13,30,000

Hence the profit of the company has increased by ₹ 30,000.

6c)

Distinction between Job and Batch Costing:

Sr. No	Job Costing	Batch Costing
1	Method of costing used for non-standard and non- repetitive products produced as per customer specifications and against specific orders.	Homogeneous products produced in a continuous production flow in lots.
2	Cost determined for each Job	Cost determined in aggregate for the entire Batch and then arrived at on per unit basis.
3	Jobs are different from each other and independent of each other. Each Job is unique.	Products produced in a batch are homogeneous and lack of individuality