Roll No. .....

– NOV 2020

Total No. of Questions – 7

FINAL
GROUP-II PAPER-5
ADVANCED MANAGEMENT
ACCOUNTING

Total No. of Printed Pages – **20**

Time Allowed – **3** Hours

Maximum Marks – **100**

KSK

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

Questions No. **1** is compulsory.

Answer any **five** questions from the remaining **six** questions.

Working notes should form part of the respective answers.

No Statistical or other table will be provided with this questions paper.

Marks

1. (a) Tours & Travels Ltd. is publishing a number of magazines on tours and travels. It will soon begin publication of a weekly magazine on tourism and lifestyle wellness for consumers. The weekly cost of publishing and distributing the magazine are estimated at ₹ 1,00,000 (fixed) plus ₹ 30 per copy printed and sold. **5**

Revenue from advertising in the magazine is estimated at ₹ 55,000 per week irrespective of the number of copies sold.

Market research has indicated that demand for the magazine will depend on its selling price, as follows :

- At a price of ₹ 120, no copies of the magazine would be sold.
- Each subsequent price reduction of ₹ 0.01 would increase demand for the magazine by one unit.

Marks

Required :

(i) Calculate optimal price for each magazine and the number of magazines that would be sold each week at the recommended price.

(ii) Calculate optimum profit per week.

(b) Fast Electronics Ltd., an online game manufacturing company, is planning to introduce a new online game 'FPO 20' with many additional graphic features. The company expects that this online game will have a life cycle of 3 years for which the following have been estimated : 5

	Introductory Stage (Year I)	Growth & Maturity Stage (Year II)	Decline Stage (Year III)
Units to be manufactured and sold	17,500 units	75,000 units	37,500 units
Material Cost	₹ 25,00,000	₹ 1,10,00,000	₹ 55,00,000
Labour Cost	₹ 5,00,000	₹ 36,00,000	₹ 18,33,000
Marketing Cost	₹ 8,15,000	₹ 10,00,000	₹ 1,63,000
Related overheads	₹ 5,00,000	₹ 9,75,000	₹ 7,64,000

Following additional information is provided :

- If the company decides to introduce the product, an amount equal to ₹ 12,50,000 needs to be incurred for product development.

Marks

- New machinery and tools costing ₹ 62,50,000 have to be purchased when the production commences and can be sold at the end of Year 3 for ₹ 2,50,000.
- The company applies life cycle costing for the online games and sets prices at 25% mark-up on the life cycle cost per unit.

Required :

Calculate the selling price per unit of the online game 'FPO 20'.

(c) The Z division of MCX Ltd. produces a component which it sells externally and can also be transferred to division X. Division Z has set a performance target for the coming financial year of residual income of ₹ 50,00,000. The following budgeted information relating to Z division has been prepared for the coming financial year : **5**

- Maximum production / sales capacity is 8,00,000 units.
- Sales to external customers 5,00,000 units at ₹ 37 per unit.
- Variable cost per component is ₹ 25.
- Fixed cost directly attributable to the division is ₹ 14,00,000.
- Capital employed in the division is ₹ 2,00,00,000 with cost of capital of 13%.

The X division of MCX Ltd. has asked Z division to quote a transfer price for 3,00,000 units of the component.

Marks

Calculate the transfer price for the component which Z division should quote to X division so that its residual income target is achieved.

(Residual Income is the excess of net divisional income over cost of capital on the investment made in the division).

(d) DL Transport Company ships truckload of wheat from three storehouses to four flour mills. The transportation costs per ton of wheat from the different storehouse to the flour mills, supply capacity of each storehouse and the demand of different flour mills are given in the following cost matrix table : 5

		Flour Mills				Supply (Ton)
Storehouse		1	2	3	4	
	1	1000	200	2000	1100	15
	2	1200	700	900	2000	25
	3	400	1400	1600	1800	10
Demand (Ton)		5	15	15	15	

Required :

(i) Using Vogel's Approximation Method (VAM) and Least Cost Method, determine initial feasible solution.

(ii) Explain, why the same amount of transportation cost arrived in both VAM and Least Cost Method ?

Marks

2. (a) J Limited is a consumer electronics company that specializes in manufacturing portable routers. It manufactures its own processor, which forms an integral part of the portable router. The following information pertains to the cost of manufacturing the processor : 8

	Current Costs (2020) ₹	Expected future cost (2021) ₹
Variable manufacturing costs :		
Direct material cost (per unit)	450	425
Direct manufacturing labour cost (per unit)	125	110
Variable manufacturing cost for setups, materials handling and quality control (per batch)	4,000	3,720
Fixed manufacturing cost :		
Fixed manufacturing overhead costs that can be avoided if manufacturing ceases	7,92,000	7,92,000
Fixed manufacturing overhead costs of plant depreciation, insurance and administration that cannot be avoided even if manufacturing ceases	20,01,600	20,01,600

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J manufactured 6,000 units of processors in 2020 in 30 batches of 200 each. In 2021, the company anticipates requirement of 7,200 units of processors. The processors would be produced in 60 batches of 120 each.

Amber Limited another trader has approached J Ltd. for supplying processors in 2021 at ₹ 750 per unit, as per the requirement of J Ltd.

If J Ltd. purchases processors from Amber Ltd., the currently available capacity can be used for manufacturing and sell memory card to a loyal customer resulting in the following incremental revenues and costs in 2021:

Total expected incremental future revenues	₹ 53,75,000
Total expected incremental future costs	₹ 50,00,000

Required :

(i) Calculate the total expected manufacturing cost per unit of processor in 2021, if the product is produced in-house,

(ii) Evaluate whether J Ltd. should make the processors or buy them from Amber Limited, if the capacity currently used for processors is :

(a) Left Idle.

(b) Used to make memory card.

(iii) Explain, at which point of incremental revenue from processors, the decision to make or buy the processors would change from one to the other.

Marks

(b) Given below are the objective function, constraints and the final simplex tableau for a linear programming product mix problem : 8

Maximize $Z = 5x + 4y$

Subject to the constraints

$6x + 4y \leq 24$ (Raw material A)

$x + 2y \leq 6$ (Raw material B)

$-x + y \leq 1$ (Market limit)

$y \leq 2$ (Demand limit)

$x, y \geq 0$

Final Simplex Tableau

C_B	Basic variables	Solution Values	$C_j \rightarrow 5$	4	0	0	0	0
			x	y	S_1	S_2	S_3	S_4
5	x	3	1	0	1/4	–1/2	0	0
4	y	3/2	0	1	–1/8	3/4	0	0
0	S_3	5/2	0	0	3/8	–5/4	1	0
0	S_4	1/2	0	0	1/8	–3/4	0	1
		Z_j	5	4	3/4	1/2	0	0
		$C_j - Z_j$	0	0	–3/4	–1/2	0	0

Z is expressed in rupees in lakh, while x and y are expressed in tons. The variables S_1, S_2, S_3 and S_4 are the slack variables associated with the respective constraints raw materials A, B market limit and demand limit.

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Required :

(i) Is the above solution optimal ? Give brief reason.

(ii) Is the solution degenerate ? Give brief reason.

(iii) Determine the optimal product mix and the profit contribution shown by the above solution.

(iv) Discuss the status of each resource (scare or abundant) as per the above solution.

(v) Does the LPP have any alternative optimal solution ?

(vi) In case of an LPP having multiple optimal solutions, will the value of the objective function change ?

3. (a) QRS Limited produces two products 'ALX' and 'BMY' from different quantities of the same resources. The selling price and resource requirement of each of the products is as follows : **8**

Product	**'ALX'** (₹)	**'BMY'** (₹)
Selling Price per unit	330	423
Resources per unit -		
Material X (₹ 12 per kg)	60	48
Direct Labour (₹ 25 per hour)	75	125
Machine Hours (₹ 40 per hour)	120	160

Marks

Market research shows that the maximum demand for products 'ALX' and 'BMY', during the month of October 2020 is 1200 units and 1920 units respectively. This does not include an order that the company has agreed with a commercial customer for the supply of 600 units of 'ALX' and 840 units of 'BMY' at selling prices of ₹ 280 and ₹ 387 per unit respectively. Although the customer will accept part of the order, failure by QRS Limited to deliver the order in full by the end of October 2020 will cause the company to incur a financial penalty of ₹ 20,000.

At a recent meeting of the purchasing and production managers to discuss the production plans of the company for the month of October 2020, the following resource restrictions were identified :

Material X	20,400 kgs
Direct labour hours	18,000 hours
Machine hours	18, 000 hours

Required :

(i) Assuming that QRS Limited completes the order with the commercial customer. From a financial perspective, prepare the optimum production plan for October, 2020 and calculate the contribution that would result from adopting this plan.

(ii) From a financial perspective, whether the company should complete the order for the commercial customer ?

Marks

(b) The following objectives belong to one of the four perspectives of the Balanced Score Card : **8**

(i) Growth in free cash flow

(ii) Employee engagement score

(iii) Improve complaint resolution service

(iv) Increase market share

(v) Brand Identity

(vi) Asset utilization

(vii) Increase process capability

(viii) Responsive service

Required :

Classify each objective by perspective and suggest a possible measure that might be associated with the objective.

4. (a) Bfine is the leading provider of inpatient transition care facilities that enables individuals to be healthy and fine. The center runs two programs : transition care and after care (which includes counselling, maintenance and support of patients after discharge from the center). **8**

Marks

Following is the budgeted cost of running the center for the year :

Professional Salaries	₹	₹
Doctors (8 doctors × ₹ 9,00,000)	72,00,000	
Physiotherapists (16 Physiotherapists × ₹ 2,40,000)	38,40,000	
Counsellors (8 counsellors × ₹ 1,80,000)	14,40,000	
Nurses (16 × ₹ 1,20,000)	19,20,000	1,44,00,000
Medical supplies (medicines and other pharmaceutical items)		12,01,200
Administrative costs (managing patient charts, food, laundry etc)		24,02,400
Rent and clinic maintenance		7,05,600
Laboratory services		4,66,200
Total		**1,91,75,400**

The CFO of the center wants to ascertain the cost of each program.

Following data describing employee allocations to individual programs has been compiled :

	Transition care	**After care**	**Total Employees**
Doctors	8		8
Physiotherapists	6	10	16
Counsellors	3	5	8
Nurses	6	10	16

KSK **Marks**

Further, the CFO has decided to use activity based costing for cost analysis. The following budgeted information has been gathered for the year.

	Transition care	After care	Total
Square feet of space occupied by each program	10,800	14,400	25,200
Number of patient - years	60	72	132
Number of laboratory tests	1,680	840	2,520

Required :

(i) Select appropriate cost allocation bases for allocating indirect costs to programs and calculate the budgeted indirect cost rates for medical supplies; administrative costs (managing patient charts, food, laundry, etc); rent and clinic maintenance and laboratory services.

(ii) Using an activity based approach to cost analysis, calculate the budgeted cost of each program and the budgeted cost per-patient year of the transition care program.

Marks

(b) The following is budgeted and actual cost data of Star Limited for the period April 2020 to September 2020 : 8

Particulars	Budget	Actual
Production	20,000 units	17,500 units
Material cost	₹ 40,00,000 (2,000 kgs @ ₹ 2,000)	₹ 37,44,000 (@ ₹ 2,080)
Labour cost	₹ 25,00,000 (@ ₹ 50 per hour)	₹ 24,99,750 (@ ₹ 55 per hour)
Variable overhead	₹ 3,75,000	₹ 3,50,000
Fixed overhead	₹ 5,75,000	₹ 7,87,500

In the second half of financial year October 2020 to March 2021, production is budgeted for 37,500 units, material cost will increase from last half year's actual by ₹ 220 per kg and however, it is proposed to maintain the material consumption efficiency of the second half period as given in the budget of first half period. Labour efficiency lowered in first half of actual production will be continued and further lowered 2% in budgeted production of second half (October 2020 to March 2021). Labour rate will be ₹ 55 per hour. Variable and fixed overheads will go up by 20% over actual incurred during the half year period April to September 2020.

Required :

Prepare the production cost budget for the period October 2020 to March 2021.

Marks

5. (a) Sportswear Ltd. produces and sells two types of Track suits - synthetic and cotton. The market for synthetic track suits is large and competitive, but traditionally the cotton track suits market has been small with only a few competing manufacturers. **10**

The operating budget and actual results for the year 2019-2020 were as follows :

Particulars	BUDGET		ACTUAL	
	Synthetic Track	Cotton Track	Synthetic Track	Cotton Track
Sales (units)	18,000	2,000	16,500	6,000
Sales Revenue (₹)	54,00,000	12,00,000	54,45,000	35,40,000
Total variable cost (₹)	36,00,000	8,40,000	33,00,000	25,20,000
Contribution margin (₹)	18,00,000	3,60,000	21,45,000	10,20,000
Market size (units) in 2019-20	90,000	5,000	75,000	10,000

No inventories of direct materials or finished goods are held. A standard marginal costing system is used.

Marks

Required :

(i) Analyse the sales and marketing variances into sales price, sales quantity, sales mix, market size and market share variance. Clearly indicate each variance as favourable or unfavourable / adverse.

(ii) Reconcile the budgeted contribution and actual contribution.

(iii) Comment on the performance of the marketing department.

(b) The performance reporting system of PXZ Ltd. does not highlight quality costs. The following information is available in respect of the year ended 31st March, 2020 : **6**

Production data

Units reworked	2,000
Units repaired under warranty service	2,400
Design engineering hours	80,000
Inspection hours (manufacturing)	2,40,000

Cost data :

	₹
Design engineering cost per hour	120
Inspection cost per hour (manufacturing)	60
Rework cost per heating and welding system unit reworked (manufacturing)	4,000
Customer support cost per repaired unit (marketing)	250
Transportation costs per repaired unit (distribution)	300
Warranty repair costs per repaired unit	4,500

Marks

Staff training costs amounted to ₹ 1,80,000 and additional testing costs were ₹ 1,50,000. The marketing manager has estimated that sales of 1,000 units were lost due to bad publicity in trade journals and social media. The average contribution per unit of sales lost is estimated to be ₹ 12,000.

Required :

Prepare a 'Cost of Quality' report for PXZ Ltd. using appropriate headings for the year ended 31st March, 2020.

6. (a) Covers & Wrappers Ltd. manufactures sofa covers in a range of designs using high quality fabrics. Sales are made exclusively online and the company's website allows for customisation of covers based on buyer preferences. The company operates an activity based costing (ABC) system. **10**

When an order is received for sofa cover, the requisitions department reserves the material and labour required to produce it. The design costs and production scheduling costs both relate to the customer preferences. The more detailed design in the sofa cover, the more machines involved and the more machine set ups required.

The sofa covers are subject to inspection during the production process to ensure that they are as per the customisation and meet quality standards. A margin of 45% on the selling price is kept on each cover sold.

Marks

Cost and activity information for the first half of the financial year 2020-2021 are given below :

Requisition costs	₹ 2,70,000
Design costs	₹ 7,66,500
Production scheduling costs	₹ 6,57,000
Quality control costs	₹ 2,64,000
Finishing costs	₹ 1,50,000
Finishing department labour hours	12,500 labour hours
Number of machine setups	36,500 setups
Number of inspections	52,800 inspections
Number of order received online	18,000 orders

Details relating to two orders are as follows :

	Order No. 3S4512	**Order No. 2S1809**
Direct materials	₹ 1,000	₹ 795
Direct labour	₹ 563	₹ 426
Number of machine setups	5	3
Number of inspections	4	2
Finishing labour hours	15 minutes	20 minutes
Number of orders	1	1

A discount of 20% and 25% was offered on Order No. 3S4512 and 2S1809 respectively on their respective normal selling price on the occasion of "Independence Day Grand Sale Offer".

Marks

Required :

(i) Using the company's policy and the discount offered to the customers, compute the selling price that would be charged for the above two orders.

(ii) Calculate the percentage of profit earned on selling price in these two orders.

(b) The following table lists the jobs of a network with their estimates. **6**

Activity	Duration (Days)		
	Optimistic	Most likely	Pessimistic
1-2	3	6	15
1-6	2	5	14
2-3	6	12	30
2-4	2	5	8
3-5	5	11	17
4-5	3	6	15
6-7	3	9	27
5-8	1	4	7
7-8	4	19	28

Required :

(i) Draw the network diagram.

(ii) Calculate the expected time and variance of each activity.

(iii) Find out the expected length and standard deviation of the critical path.

Marks

7. Answer any **four** out of the following **five** questions :

(a) Explain, how the implementation of JIT approach to manufacturing can be a major source of competitive advantage. **4**

(b) State the importance of random numbers in Monte Carlo Simulation method. **4**

(c) How will you solve an assignment problem where (Consider each situation independently) **4**

(i) A particular assignment is prohibited.

(ii) Maximize an objective function.

(d) Autocare Ltd. is about to launch a new product into the market with a marginal cost of ₹ 100 per unit. A market research was carried out at a cost of ₹ 50,000 to test the feasibility of the launch. The results were as follows : **4**

Selling price per unit	**Demand for the new product**
₹ 150	30,000 units
₹ 250	25,000 units
₹ 300	20,000 units

The current capacity is 20,000 units but additional capacity can be made available using resources of another product line. If this is done, the lost contribution from the other product line will be ₹ 1,50,000 for each additional 5,000 units of new product produced. What would be the best launch price ?

Marks

(e) The research and development wing of Electronics Ltd. has developed a new kind of energy efficient inverter motor with 5 star rating from Bureau of Standards of Energy for use in industrial generator. The initial trials noted that it would take 10 hours for the first motor, which is subject to learning curve of 80%. The cost of material per motor would be ₹ 2,500, labour charges ₹ 175 per hour and overheads amount to 125% of labour cost. **4**

The first order received is for delivery of eight motors.

What price should the company quote to have a profit margin of 20% on sales ?
