FINAL
GROUP-II PAPER-5
ADVANCED MANAGEMENT ACCOUNTING

NOV 2017

Roll No. .....

Total No. of Questions – 7 Total No. of Printed Pages – 23

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 has not opted for Hindi Medium, his/her answers in Hindi will not be valued.

Question **No. 1** is compulsory.

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

In case, any candidate answers extra question(s) or sub-question(s) over and above the required number, then only the requisite number of questions first answered in the answer book shall be valued and subsequent extra questions(s) answered shall be ignored.

Working notes should form part of the respective answers.

Wherever necessary, candidates may make appropriate assumptions and clearly state them.

No statistical or other table will be provided with this question paper.

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1. (a) AB company produces three products X, Y and Z by using Indigenous and Imported raw materials. The relevant information available from the records of the Company is as under : **5**

	Product X	**Product Y**	**Product Z**
Selling price in ₹ per unit	425	380	500
Direct materials in ₹ per unit	180	160	190
Direct Labour @ ₹ 40 per hour	100	80	120
Variable Overheads @ ₹ 12 per labour hour	30	24	36
Maximum Sales Potential (in units)	1,500	2,500	2,500

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The Company also has an agreement to supply 1,000 units of Product X to a vendor which has to be executed. Out of direct materials, 60 % is imported raw material and it is purchased at ₹ 24 per kg.

Prepare a statement showing Contribution of these three products assuming availability of imported raw materials is restricted to 24,000 kgs per year.

(b) The simplex tableau for a maximization problem of linear programming is given below : 4

c_j	Product Mix	x_1	x_2	s_1	s_2	Quantity
5	x_2	1	1	1	0	10
0	s_2	1	0	–1	1	3
	c_j	4	5	0	0	
	z_j	5	5	5	0	50
	$c_j - z_j$	–1	0	–5	0	

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Answer the following questions giving reasons in brief :

(i) If s_1 is slack in machine A (in hours/week) and s_2 is slack in machine B (in hours/week), which of these machines is being used to the fullest capacity ?

(ii) A customer would like have to one unit of product x_1 and is willing to pay more than the normal price in order to get it. How much should the price be increased in order to maintain same level of profit ?

(iii) Machine A (associated with slack s_1 in hours/week) has to be shut down for repairs for 2 hours next week. What will be the effect on profits ?

(iv) How much would you be prepared to pay for another hour (per week) of machine A and machine B ?

(c) RST Co. manufactures products purely carried out by labour. It has 25 direct workers who work for 25 days a month of 8 hours a day. However, the company may resort to overtime if required, at one and half the normal rate of wages. The company has received an order of 8,000 units of a new product at a price of ₹ 160 to be executed within 30 days. The contract stipulates a penalty of ₹ 10,000 per day for 5

Marks

delivery beyond 30 days. It is estimated that at the current level of efficiency, each unit requires one hour for the first 2,000 units. Company expects 90% learning curve for this type of work. The cost data is as under :

Direct materials	₹ 75 per unit
Direct labour (1 hour/unit)	₹ 30 per unit
Variable overhead	₹ 12 per direct labour hour
Fixed overhead	₹ 1,20,000 per month
	(Fixed overheads are to be incurred evenly throughout the month)

Calculate :

(i) Overtime hours if the option of overtime is exercised to avoid the penalty.

(ii) The cost and profit under both the options i.e. to pay the penalty by working in normal hours or to work overtime to avoid penalty.

(d) MK international Ltd. has developed a new product 'RIO' which is to be launched soon. The company anticipates to sell 1,25,000 of these units at a sale price of ₹ 400 per unit over the product life cycle of three years. The other data pertaining to Product RIO are as under : 6

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Research and development cost	₹ 32,50,000
Manufacturing cost per unit Fixed manufacturing cost per year	₹ 175 ₹ 12,75,000
Marketing cost per unit (including 4% commission on sales) Fixed marketing cost per year	₹ 90 ₹ 6,72,000
Administration cost	₹ 6,60,000 per year
Warranty expenses	4 replacement parts per 50 units at ₹ 30 per part

Calculate :

(i) The life cycle cost of the product 'RIO'

(ii) The revised life cycle cost if the MK international Ltd. increases sales by 12% through 5% reduction in sale price along with increase in fixed manufacturing cost by ₹ 1,20,000 per year.

(iii) Should the company go for reduction in sale price ?

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2. (a) XYZ chemical company has three plants located in a state. The daily chemical production at each plant is as follows : **6**

Plant-I : 12 million litres

Plant-II : 2 million litres

Plant-III : 20 million litres

Each day, company must fulfil the needs of its four distribution centres. Minimum requirements at each centre are as follows :

Distribution centre 1 : 14 million litres

Distribution centre 2 : 10 million litres

Distribution centre 3 : 6 million litres

Distribution centre 4 : 4 million litres

Cost in hundreds of rupees of shipping one million litres from each plant to each distribution centre is given in the following table :

		Distribution Centre			
		D1	**D2**	**D3**	**D4**
Plant	**P1**	2	3	11	7
	P2	1	0	6	1
	P3	5	8	15	9

Marks

Required :

(i) Find initial basic feasible solution for given transportation problem by using Vogel's approximation method if the object is to minimize the total cost.

(ii) Is this the degenerate solution ?

(b) A small project consisting of eight activities has the following characteristics : 10

Activity	Time (Weeks)		
	Optimistic	Pessimistic	Most likely
1 – 2	4	12	8
1 – 3	3	5	4
1 – 4	4	8	6
2 – 5	4	6	5
3 – 5	3	3	3
4 – 6	7	11	9
5 – 6	6	12	9
5 – 7	5	9	7
6 – 7	3	5	4

Marks

Required :

(i) Draw the project network and find out the critical path and expected completion time.

(ii) Calculate the standard deviation and variance of the project.

(iii) What is the probability of the project completion at least 2 weeks earlier than the expected time ?

(iv) If the project due date for completion is 27 weeks, what is the probability of not meeting the due date ?

(v) If the project manager wants to be 90% sure of the completion, how many weeks before the due date should he commence the project ?

Value of $Z_{1.155} = 0.3759$, $Z_{0.58} = 0.2190$, $NT(Z)_{0.40} = 1.28$

3. (a) A Company produces three products P, Q and R for which the standard cost per unit and quantities produced are as under : **10**

Products	P	Q	R
Units produced and sold	36,000	48,000	96,000
Direct material cost per unit (₹)	60	48	45
Direct labour cost per unit (₹)	30	24	18
Machine hours per unit (hours)	0.50	0.40	0.30

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Total production overheads are absorbed on machine hour basis. The rate is ₹ 60 per machine hour.

The Company has analysed its operations and determined that five activities act as cost drivers for overheads. Data relating to five activities are given below :

Activity Area	**Cost driver**	**Cost of each activity as % of total production overhead cost**
Store receiving	Number of requisitions	25 %
Machine set up	Number of set ups	20 %
Machine running	Machine hours worked	25%
Packing	Packing time in hours	16 %
Storage	Area in square metres	14 %

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Marks

The investigation into the production overhead activities for the period revealed the following :

Activity	P	Q	R
Number of requisitions	1,200	1,500	3,900
Number of machine set ups	60	120	320
Packing hours	3,000	4,800	10,200
Storage (Sq metres)	10,800	12,000	19,200

Required :

(i) Calculate total production overheads.

(ii) Prepare product cost statement showing per unit cost under traditional absorption costing method.

(iii) Calculate the cost driver rates.

(iv) Prepare product cost statement showing per unit cost under activity based costing method.

(v) What is the difference in costs due to adoption of traditional absorption costing method and activity based costing method ?

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(b) MN Ltd. is a confectionery company and it sells confectionery items. 6

Past data of demand per day with frequency is given below :

Demand (in kgs)	0	5	10	15	20	25
No. of days	4	22	16	42	10	6

The company has scope to meet 12 kg demand per day. The life of the product is one day. It will be produced according to demand. It cannot hold as inventory. The contribution is ₹ 10 per kg.

Using the following random numbers, simulate 10 days demand for the confectionery items.

35, 52, 90, 13, 23, 73, 34, 57, 35, 83

Required :

(i) Allocate random numbers and simulate for 10 days.

(ii) Calculate average demand of confectionery items per day fulfilled.

(iii) Calculate amount of loss (Due to not fulfilling the demand).

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4. (a) UV Limited manufactures a product ZED. It currently operates at 70% capacity. It has received an export order which will utilize 50% of the capacity of the factory. The order has to be either taken in full or rejected totally. The order has to be executed at a price of ₹ 86 per unit and company has to incur additional cost of packing and forwarding of ₹ 2.50 per unit on the goods exported. Commission @ 3% will be payable to overseas agent. **8**

Other information available is as under :

Sale value 63,000 units @ ₹ 95 per unit	₹ 59,85,000
Direct materials @ ₹ 42.10 per unit	₹ 26,52,300
Variable manufacturing overheads	₹ 4,41,000
Variable selling & distribution overheads (including 2% commission on domestic sales)	₹ 4,34,700
Fixed overheads	₹ 6,75,000
P/V ratio	20 %

Following three alternatives are available to the management :

(i) Continue with the current domestic sale and reject the export order.

(ii) Accept the export order by reducing the domestic sale.

(iii) Increase the capacity by 10% by installing a new machine costing ₹ 2,50,000. Fixed overheads will increase by ₹ 96,000. Opportunity cost of investment is 15%.

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Overtime is to be paid at one and a half time the normal rate to meet the balance of the required capacity.

Required :

(i) Prepare Statement of profitability for each of the above three alternatives.

(ii) Which is the best alternative in terms of profitability ?

(b) MH hotel has a capacity of 50 rooms, each of which can accommodate one or two guests. Guests staying in hotel are provided with free facilities like sports centre, kids zone, swimming pool etc. The details in the budget for the year ending 31-3-2018 are narrated below : **8**

(i) Standard room rent of ₹ 3,500 per night during high season i.e. May, June, July, December and January and for the remaining months (low season) standard room rent of 1,800 per night will be charged.

(ii) Average room occupancy per night during high season is 80% and during low season is 50%.

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(iii) The hotel is registered with number of internet based hotel providers. It is expected that subject to capacity available, an average of 15 rooms per night can be sold through them. These bookings will be in addition to the occupancy level stated in point (ii). The internet service provider will pay 60% of the standard booking rate.

(iv) Variable cost per room night will be ₹ 1,075 per room night.

(v) Fixed cost will be ₹ 12,00,000 per month. However, when occupancy is 100%, fixed cost will increase by ₹ 9,000 per night.

Prepare budgeted profitability statement for the year ending 31-03-2018 showing the details of revenue, costs and profits.

5. (a) S. Ltd. produces and sells a single product. The product is manufactured by mixing two raw materials Q and R. The standard cost data of the product is as follows : 8

Raw material input : Q 3kg @ ₹ 18.00 per kg	₹ 54.00
R 7Kg @ ₹ 6.00 per kg	₹ 42.00
Raw material cost per kg of input	₹ 96.00
Yield	96%
Raw material cost per kg of output	₹ 100
Fixed production overheads per kg of output	₹ 8.00
Total standard cost per kg of output	₹ 108.00

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The budgeted and actual data are as follows :

Budgeted data		**Actual data**	
Sales	72,000 kg	Sales	71,000 kg
Production	70,000 kg	Production	69,000 kg
Opening Inventory	2,000 kg (valued at standard cost)	Cost per kg of Q Cost per kg of R	₹ 18.10 ₹ 5.80
Selling price per kg	₹ 200	Selling price per kg	₹ 203.00
Fixed production overheads	₹ 5,60,000	Fixed production overheads incurred	₹ 5,08,000
		Input of Q Input of R	2,21,000 kg 4,79,000 kg

The fixed production overhead absorption rate is based on the budgeted production.

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Calculate Sales price variance, Sales volume variance, Material price variance, Material mix variance, Material yield variance, Fixed overhead expenditure variance and Fixed overhead volume variance.

(b) A company manufactures two products X and Y. The current pattern of sales of Product X and Product Y is in the ratio of 5 : 3. The budgeted data for the quarter ending 30-09-2017 is as under : **8**

Particulars	Product X	Product Y
Direct material cost per unit	₹ 161	₹ 176
Direct labour cost per unit	₹ 75	₹ 90
Variable overheads per unit	₹ 30	₹ 50
Commission on sales	4% of selling price	5% of selling price
P/V ratio	20%	16%
Stock as on 1-7-2017	1,400 units	1,050 units

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The annual fixed overheads amounts to ₹ 25,36,000 and it is assumed to be occurred evenly throughout the year. The Company desires profit of ₹ 4,50,000 per quarter.

Closing stock is to be maintained at 20% of the budgeted sales.

Required :

(i) Calculate sales quantity to be sold during quarter ending 30-09-2017.

(ii) Prepare production budget in units for the quarter ending 30-09-2017.

6. (a) ABC miners operates two divisions, one in Japan and other in United Kingdom (U.K.). Mining Division is operated in Japan which is rich in raw emerald. **8**

The other division is United Kingdom Processing Division. It processes the raw emerald into polished stone fit for human wearing.

The cost details of these divisions are as follows :

Division	**Japan Mining Division**	**United Kingdom Processing Division**
	Per carat of raw emerald	Per carat of polished emerald
Variable Cost	2,500 Yen	150 Pound
Fixed Cost	5,000 Yen	350 Pound

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Several polishing companies in Japan buy raw emerald from other local Mining Companies at 9,000 Yen per carat. Current Foreign Exchange Rate is 50 yen = 1 Pound. Income Tax rates are 20% and 30% in Japan and the United Kingdom respectively.

It takes 2 carats of Raw Yellow emerald to yield 1 carat of Polished Stone. Polished emerald sell for 3,000 Pounds per carat.

Required :

(i) Compute the transfer price for 1 carat of raw emerald transferred from Mining Division to the Processing Division under two methods – (a) 200% of Full Costs and (b) Market Price.

(ii) 1,000 carats of raw emerald are mined by the Japan Mining Division and then processed and sold by the U.K. Processing Division. Compute the after tax operating income for each division under both the Transfer Pricing Methods stated above in (i).

(b) JC Company produces electronic product and factory is working in Special Economic Zone (SEZ). The expected capacity utilization is 60% and turnover for the year 2016-17 is ₹ 660 lakh. If the company works at 100% capacity, the sales cost relationship will be as follows : 8

Factory cost	:	65 per cent of sales value
Prime cost	:	75 per cent of factory cost

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Selling and administrative cost : 20% of sales value and being 80% variable

The factory overheads will vary according to operating capacity in the following manner :

Operating capacity	60%	80%	100%	120%
Factory overheads (₹ in lakhs)	155.25	164.00	178.75	214.50

The Government of India gives 10% subsidy on the export order amount and it is expected that currency fluctuation trends will be positive by 8% in next financial year.

The Company receives an offer from abroad for a value of ₹ 150 lakhs. The prime cost of this order is estimated at ₹ 96 lakhs and selling and administrative expenses applicable to this order is ₹ 7,20,000. The order will occupy 40% of the capacity of the plant. To complete the export order, quality maintenance cost of ₹ 1,20,000 will also be incurred.

The Marketing Director estimates that the company's own sales will increase to 80% of the capacity by the time of materialization of new order. The factory overheads will increase by ₹ 50.50 lakhs (for increase from 80% to 120% capacity).

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The maximum demand in local market can be extended up to **120%** with export order. The export order cannot accepted partly.

Required :

(i) Prepared a profitability statement at the capacity level of 60%, 80% and 100%.

(ii) Should the company accept the export order ?

7. Answer any **Four** out of the following **Five** questions : **4×4 =16**

(a) (i) Define Pricing Strategy.

(ii) State the Market Entry Strategies of pricing applicable in the following situations :

(1) Inelastic demand

(2) Mass Production

(3) Assured profit

(4) Elastic demand

(b) Explain the following terms in relation to Simplex method of Linear Programming problem :

(i) Multiple optimal solution

(ii) Infeasible solution.

(iii) Degeneracy

(iv) Unbounded solution

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(c) Identify the type of cost in each of the following independent situations. Also state whether it is relevant or irrelevant.

(i) A company has invested ₹ 50 lakh in a project. Company could have earned ₹ 4 lakh by investing the amount in Government securities.

(ii) Company has purchased a new machine for ₹ 50 lakh and entered into three year maintenance contract at ₹ 25,000 per year.

(iii) A special drilling machine has to be hired on monthly charges of ₹ 50,000 for two months for the Construction project.

(iv) There are 15 skilled workers in the production department of X Ltd. currently under utilized. It is the policy of the company to continue to pay skilled workers at ₹ 15,000 per month in full. Acceptance of the new project will reduce the idle time of skilled workers.

(d) State with reason whether the following statements are true or false in relation to assignment problem :

(i) There cannot be multiple optimal solutions in an assignment problem.

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(ii) In 4×6 minimisation problem, we can solve it by introducing one dummy row in given matrix.

(iii) In a problem relating to sales maximization, we have to convert the given matrix into minimization by subtracting lowest element among all the elements of given matrix from all the elements of that matrix.

(iv) When there is a restriction of assignment in a particular cell, then we put M to avoid assignment in that cell.

(e) Classify the following items under appropriate categories of quality costs viz. Prevention cost, Appraisal cost, Internal failure cost and External failure cost.

(i) Reinspection of product reworked.

(ii) Testing of material of special nature from outside laboratory.

(iii) Employee time spent on reviewing and assessing the quality of output regarding material supplied.

(iv) Customer survey for assessing the feedback on quality of product sold.

(v) Calibration of testing equipment

Marks

(vi) Warranty claim processing

(vii) Repurchase of components to create replacements

(viii) Loss of customer due to supply of low quality product.
