Roll No. .....

FINAL
GROUP-II PAPER-5
ADVANCED MANAGEMENT
ACCOUNTING

MAY 2018

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 who 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)/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 question(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.

Marks

1. (a) X Company manufactures Key Rings that are printed with the logos of the various companies. Each Ring is priced at ₹ 10. The costs are as follows : **5**

Cost Driver	Unit Variable Cost (₹)	Level of Cost Driver
Direct cost	5.00	–
Setups	450.00	40
Engineering hours	10.00	500

Marks

Other Data :

Total fixed cost (conventional) ₹ 96,000

Total fixed cost (ABC) ₹ 73,000

Required :

(i) To compute the Break-even-point in units using activity-based analysis.

(ii) Suppose that company could reduce the setup cost by ₹ 150 per setup and could reduce the number of engineering hours needed to 430. How many units must be sold to break-even in this situation ?

(b) GTC Limited, manufacturer of 'ORA' a leading brand of hair dye are planning the media mix for the next year with-in their advertisement budget of ₹ 45 lakhs. The characteristics of target audience for 'ORA' and weightage for each are as follows : **5**

	Characteristics	**Weightage (%)**
Age	Over 40 years	45
Monthly income	Over ₹ 25,000	30
Education	Graduate & above	25

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The audience characteristics for the three magazines under considerations, cost per insertion and total readership are as under :

	Characteristics	**Magazine A (%)**	**Magazine B (%)**	**Magazine C (%)**
Age	Over 40 years	50	60	30
Monthly income	Over ₹ 25,000	45	50	40
Education	Graduate & above	40	35	50
Cost per insertion (₹)		75,000	1,25,000	45,000
Readership (in lakhs)		18	25	12

The company has already decided that at least 12 insertions in Magazine A, 18 insertions in magazine B are necessary to create an impact whereas Magazine C should have not more than 8 insertions.

Formulate a linear programming model for the given problem to maximize the expected effective exposure.

Marks

(c) Nova Limited manufactures two products 'Super' and 'Bright'. The selling price and cost data are as under : 5

	Super	Bright
Selling price per unit (₹)	384	525
Direct material per unit (₹)	158	240
Direct labour @ ₹ 40 per hour		
Department A	60	80
Department B	–	100
Department C	80	–
Variable overhead per unit (₹)	32	45

The company operates a single shift of 8 hours/day for 300 days in a year and the number of workers in each department are as under :

Department A 78 workers

Department B 54 workers

Department C 48 workers

The employees cannot be increased nor can they be transferred from one department to another.

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Required :

Calculate the number of units of each product that can be manufactured to yield maximum profit.

(d) Century Electrical Company manufactures fans. As a first step to focus on quality improvements, the company has compiled the following operating data for the year ending 31.03.2018 : 5

Cost of Quality	Amount in ₹
Re-inspecting Rework	3,25,600
Training	3,75,500
Warranty Repairs	8,62,500
Line Inspection	2,12,500
Downtime	1,84,000
Design Engineering	3,62,800

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Product Testing Equipment	4,15,800
Litigation costs to defend allegations of defective products	2,90,500
Recording and reporting defects	2,67,600
Supplier evaluation	2,96,800
Storing and disposing waste	1,72,000
Product liability insurance	1,08,000
Expediting	3,27,000
Procedure verification	2,54,000
Recalls	3,42,000

Required :

Classify the costs into cost of quality categories and determine the total amount being spent on each category.

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2. (a) A division of XY Company produces two types of products, whose selling price and cost data are as follows : **8**

	Product A	**Product B**
Selling price (₹ per unit)	200	280
Material cost (₹ per unit)	80	100
Variable conversion cost (₹ per unit)	20	60
Maximum Sales Potential (units)	75,000	35,000
Production per Machine hours (units)	3.125	2.5

Maximum capacity hours are 30,000. Total fixed overheads are ₹ 42 lakhs.

The stock of work-in-progress and finished goods are negligible because the company uses just-in-time system.

Required :

(i) Determine the optimal product mix using marginal costing.

(ii) Calculate the throughput accounting ratio for each product and rank the products for manufacture.

(iii) Based on the concept of throughput accounting, compute the product mix to yield maximum profit.

Show calculations up to two decimal points.

Marks

(b) Joy Limited a toy manufacturing company is going to launch two new battery operated toys in the market. Both the products will be manufactured in Division BT. The estimated data are as under : **8**

	Toy A	Toy B
Annual Production (units)	48000	72000
Direct Material (₹ per unit)	126	158
Direct labour (₹ 60 per hour)	30	40

Factory overheads (60% variable) are 80% of direct wages. Administrative overheads (100% fixed) are 10% of factory cost. Selling overheads (50% fixed) are ₹ 12 and ₹ 18 per unit of Toy A and Toy B respectively.

The fixed capital investment in the Division BT is ₹ 30 lakhs. Gross working capital requirement is equivalent to 20% of cost of sales and current liabilities are 10 % of total cost of production. 15% return on capital employed is expected.

Required :

Fix selling price of Toy A and Toy B so that contribution per labour hour is same for both the products.

Show amount to the nearest Rupee.

Marks

3. (a) There are two profit centres namely Division A and Division B in XY Ltd.. Division A produces four products P, Q, R and S. Each product is sold in the external market also. The relevant data for Division A are as follows : **8**

	P	Q	R	S
Market price per unit (₹)	700	690	560	460
Variable cost of production per unit (₹)	660	620	360	370
Labour hours required per unit (Hours)	6	8	4	6

The maximum sales in the external market are :

P : 3,000 units

Q : 3,500 units

R : 2,800 units

S : 1,800 units

Product S can be transferred to Division B also but the maximum quantity that might be required for transfer is 2,200 units of S.

Division B can also purchase the same product at a price of ₹ 420 per unit from market instead of receiving transfers of product S from Division A.

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(a) You are required to calculate the transfer price for each unit for 2,200 units of product S, if the total labour hours available in Division A are :

(i) 48,000 hours

(ii) 64,000 hours

(b) Whether is it profitable for Division B to get transfer 2,200 units of products S from Division A in above (a) situation ?

Show calculation of units to nearest unit and rest up to two decimal points.

(b) JK Limited manufactures three Products D, E and F each requiring similar material, labour and production facilities. Trading results of the company for the year ending March, 2018 are as under : **8**

(Amount in ₹)

	D	E	F	Total
Sales	38,50,000	13,90,000	30,20,000	82,60,000
Variable Cost :				
Material	10,78,000	6,25,500	9,06,000	26,09,500
Labour	9,24,000	4,86,500	6,04,000	20,14,500
Overheads	7,39,200	2,91,900	4,83,200	15,14,300
Total variable cost	27,41,200	14,03,900	19,93,200	61,38,300
Contribution	11,08,800	(13,900)	10,26,800	21,21,700
Fixed overheads				12,60,000
Profit				8,61,700

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Product E, despite best efforts, does not show any good prospect to yield reasonable margins and it is not possible to raise its price so as to make it profitable. The company has decided to discontinue its production w.e.f. 1st April 2018. Products D and F have good potential to grow and the market can easily absorb the increased production. The company has decided to raise the production of Products D and F by diverting the 60% labour of Product E to Product D and balance 40% to Product F.

Following additional information is available for the year beginning April 2018 :

(A) Total Direct wage bill for the year would be at the same level as for the year ending 31.03.2018. Material cost per unit will increase by 5%, however variable overheads per unit will remain same. Fixed overheads would increase by ₹ 96,500.

(B) Selling price per unit of Product D will increase by 4% and of Product F by 5%.

Required :

(i) Prepare budget for the next year beginning April 2018 in the format as detailed above.

(ii) Compare and analyse the budget for the year 2018 and 2019 highlighting main features. Show calculation of Amount to the nearest Rupee.

(iii) To advise the management on comparative contribution/ profitability if 60% labour of Product E is transferred to Product F instead of Product D as above and balance 40 % to Product D instead of Product F. Show calculations up to three decimal points. Give detailed reasoning for your advice.

Marks

4. (a) A company is manufacturing 50 products of various types. For the year ended 31st March 2018, the manufacturing overheads, for all the products are as follows : **10**

	₹
Machine operating expenses	1,00,000
Machine maintenance expenses	20,000
Wages of technicians	68,000
Wages of store receiving men	28,000
Wages of dispatch staff	32,000
	2,48,000

Total 2,000 direct labour hours were worked and paid @ ₹ 9.60 per hour in the Company during the year.

Traditionally, The company was absorbing the overheads on the basis of direct labour hours. Now the company is going to change the distribution system of overheads on the basis of Activity Based Costing (ABC) and the following significant activities were identified :

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(i) Receiving material consignments from suppliers.

(ii) Setting up machines for production runs.

(iii) Quality inspections and

(iv) Dispatching goods to customers.

(A) Machine operating and machine maintenance are apportioned as :

Material Stores 15%, Manufacturing Setup 70% and Goods dispatched 15%.

(B) Amount of Technician's wages was apportioned as :

Machine maintenance 30% with break-up as (A) above and balance 70% Technician's wages between Machine for Production Runs and Quality Inspection in the ratio of 4 : 3.

Show calculations up to two decimal points.

During the year the following Cost Drivers were identified for all products :

(i) 980 materials consignments were received from suppliers

(ii) 1,020 production runs were setup.

(iii) 640 Quality inspections were carried out and

(iv) 420 orders were dispatched to customers.

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The following information is available for X, Y and Z products only for the year :

	Product X	**Product Y**	**Product Z**
Direct Materials (₹)	960	2,320	1,440
Direct labour hours worked	25	480	50
Materials consignments received	42	24	28
Production Runs	16	18	12
Quality inspections	10	8	18
Orders (goods) dispatched	22	85	46
Quantity produced	560	12,800	2,400

Required :

(a) (i) Calculate per unit cost of product X, Y and Z, using Direct Labour hour absorption rate of overheads.

(ii) Calculate per unit cost of product X, Y and Z using ABC system for rate of overheads.

Show calculations up to two decimal points.

Marks

(b) Brown Limited has decided to analyse the profitability of its four retail customers. It buys product 'Jelly' at ₹ 218 per case and sells to them at list price less discount. The data pertaining to four customers are : 6

	Customers			
	A	B	C	D
No. of cases sold	7,580	38,350	78,520	15,560
List selling price	₹ 250	₹ 250	₹ 250	₹ 250
Actual selling price	₹ 245	₹ 236	₹ 228	₹ 232
No. of sale visits	6	12	16	10
No. of purchase orders	12	18	35	24
No. of delivery Kilometres	280	350	450	400

It's four activities and cost drivers are :

Activity	Cost driver rate
Sale visits	₹ 750 per sale visit
Order taking	₹ 800 per purchase order
Deliveries	₹ 10.50 per delivery km travelled
Product handling cost	₹ 2.50 per case sold

Required :

Compute the customer level operating income of each of four customers. Comment on the results and discount policy.

Marks

5. (a) RFH Limited produces a product LEO for which the company has an assured market. The output for 2018 has been budgeted at 2,10,000 units at 80 % capacity utilization. The cost sheet based on budgeted output (per unit) is as follows : **10**

	(₹)
Selling price	500
Less : Direct material	205
Component X	54
Direct labour @ ₹ 48 per hour	96
Factory overheads (60% fixed)	65
Selling overheads (70% variable)	30
Administrative overheads (100% fixed)	10

Factory overheads are absorbed on direct labour hour basis.

Marks

RFH Limited at present manufactures component X, two units of which is required for the manufacture of one unit of product LEO. The cost details for 1,000 units of component X are as follows :

Direct material	₹ 12,200
Direct labour	₹ 9,600
Variable overheads	₹ 3,200
Fixed overheads	₹ 2,000

Component X can be brought from outside market at ₹ 26 per unit with minimum order of 78,000 units per annum.

To utilize the idle capacity and improve the profitability of the company, the following independent proposals were put up before the board of directors of the company :

(A) An order has been received from abroad for 48,000 units of product RIO at a price of ₹ 466 per unit. Order can not be accepted partly. The cost data are : Direct material ₹ 239 per unit, direct labour 3 hours per unit, variable factory overheads are chargeable on the basis of direct labour hours. Variable selling overheads will increase by ₹ 2 per unit.

Marks

(B) Rent out the released capacity at ₹ 6 per hour.

(C) Manufacture component Z which has an assured market. Company can sell any number of units produced. Each unit of component Z requires 0.40 direct labour hour and will generate a contribution of ₹ 2.50 per unit.

Required :

(i) Prepare a statement of profitability under marginal costing. Show amount in Lakhs of Rs. with two decimal points.

(ii) Whether the component X should be manufactured or purchased from outside assuming there is no use of idle capacity.

(iii) Assuming Company has decided to buy component X from outside; which proposal for the use of idle/spare capacity will you select ? Find out the increase in profits due to acceptance of those proposals.

(b) A company trading in motor vehicles spare parts wishes to determine the level of stock, it should carry for one of its costly item Z. Demand is not certain and lead time for stock replenishment is 2 days. (i.e. order is placed at the end of the day one, will arrive at the end of day three and will be available for day four) The probabilities of demand are given below : **6**

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Demand (Units/day)	Probability
15	0.25
16	0.20
17	0.15
18	0.18
19	0.12
20	0.10

Carrying cost (per unit per day) ₹ 2.40

Ordering cost (per order) ₹ 150

Stock out cost (per unit) ₹ 125

Inventory carrying cost is calculated on the basis of average stock held per day. Stock in hand at the beginning of the simulation exercise was 52 units. Manager wants to order 50 units when present inventory plus any outstanding order falls below 50 units.

Required :

Using monte carlo simulation for 10 days, find out the total cost of inventory for the simulated period taking the following sequence of random numbers :

49	39	94	16	81	60	92	63	13	73

Marks

6. (a) The time and cost estimate and precedence relationship of the different activities constituting a project are given below : **8**

Activity	Immediate Predecessor	Normal		Crash	
		Time (days)	Cost (₹)	Time (days)	Cost (₹)
A	None	8	50,000	7	62,500
B	None	8	90,000	6	1,20,000
C	B	10	1,50,000	8	1,85,000
D	B	12	1,80,000	10	2,20,000
E	A	14	1,96,000	14	1,96,000
F	A	11	1,08,000	9	1,29,000
G	F	5	96,000	3	1,16,000
H	C, E, G	9	1,25,000	8	1,40,000
I	F	10	75,500	8	99,500

The contract includes a penalty of ₹ 12,500 per day over 30 days. The indirect cost per day of project is ₹ 10,500.

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Required :

(i) Draw the project network and indicate the critical path,

(ii) Find the normal duration and cost of the project.

(iii) Optimum duration and associated cost.

(iv) Lowest time and associated cost.

(b) Given below is an iteration in a simplex table for a maximization objective linear programming product mix problem for products X, Y and Z. Each of these products is processed in three machines KA-07, KB-27 and KC-49 and each machine has limited available hours. 8

$C_j \rightarrow$			30	40	20	0	0	0
C_B	Basis Variable (B)	Value of basic Variables $b(=X_B)$	X	Y	Z	S_1	S_2	S_3
30	X	250	1	0	–26/16	10/16	–12/16	0
40	Y	625	0	1	31/16	–7/16	10/16	0
0	S_3	125	0	0	11/16	–3/16	1/8	1

S_1, S_2 and S_3 are slack variables for machine KA-07, KB-27 and KC-49 respectively.

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Answer the following questions, giving appropriate reasons in brief :

(i) Does the above table give an 'Optimal Solution' ?

(ii) Is there more than one 'Optimal Solution'/ 'Alternative optimal Solution' ?

(iii) Is this solution feasible ?

(iv) Is this solution 'degenerate' ?

(v) Write down the 'objective function' of the problem.

(vi) Write the 'optimal product mix' and 'profit' shown by the above solution.

(vii) Which of these machines are being used to the full capacity when producing according to this solution ?

(viii) If the company wishes to expand the production capacity, which of three resources should be given priority ?

(ix) What happens if 16 machine hours are lost due to some mechanical problems in Machine KB-27 ?

(x) A customer would like to have one unit of product Z and is willing to pay higher price for Z in order to get it. How much should the price be increased so that the company's profit remains unchanged ?

Marks

7. Answer any **four** out of the following **five** questions : **4×4 =16**

(a) YAM Ltd. a manufacturing company is going to implement JIT system. You are required to state with reasons whether the following recommendations are valid or invalid :

(i) Introduction of piece rate system of payment of wages to workers.

(ii) It has been decided to introduce Kanban Card and Machine cells together in order to reduce the defective products.

(iii) Use of highly automated and costly machines to the full capacity.

(iv) Employ those workers who can operate and maintain single machine so that the work can be done effectively.

(b) Define Degeneracy and Prohibited routes.

(c) Discuss the role of central body in inter firm comparison.

(d) What are the essential requirements for implementing performance budgeting ?

(e) Explain the various standards and their significance. (Any four)
