FINAL
GROUP-II PAPER-5
ADVANCED MANAGEMENT ACCOUNTING

Roll No. .....

MAY 2011

Total No. of Questions – **7**

Total No. of Printed Pages – **12**

Time Allowed – **3** Hours

Maximum Marks – **100**

# MCB

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 answers in Hindi will not be valued.

Working Notes should form part of the answer.

(No graph paper or statistical table is to be distributed with this question paper)

Question No. **1** is compulsory.

Answer any **five** out of the remaining **six** questions.

**Marks**

1. (a) A company actually sold 8000 units of A and 10,000 units of B at ₹ 12 and ₹ 16 per unit respectively against a budgeted sale of 6000 units of A at ₹ 14 per unit and 9000 units of B at ₹ 13 per unit. The standard costs of A and B are ₹ 8 and ₹ 10 per unit respectively and the corresponding actual costs are ₹ 5.5 and ₹ 14.5 per unit. **5**

Compute the productwise sales margin mix and sales margin price variances, indicating clearly, whether the variances are favourable or adverse.

(b) A company makes a single product which sells at ₹ 800 per unit and whose variable cost of production is ₹ 500 per unit. Production and sales are 1000 units per month. Production is running to full capacity and there is market enough to absorb an additional 20% of output each month. **5**

The company has two options :

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Option – I

Inspect finished goods at ₹ 10,000 per month. 4% of production is detected as defectives and scrapped at no value. There will be no warranty replacement, since every defect is detected. A small spare part which wears out due to defective material is required to be replaced at ₹ 2,000 per spare for every 20 units of scrap generated. This repair cost is not included in the manufacturing cost mentioned above.

Option – II

Shift the finished goods inspection at no extra cost, to raw material inspection, (since defective raw materials are entitled to free replacement by the supplier), take up machine set-up tuning and machine inspection at an additional cost of ₹ 8,000 per month, so that scrap of finished goods is completely eliminated. However, delivery of uninspected finished products may result in 1% of the quantity sold to be replaced under free warranty due to minor variation in dimensions, which does not result in the wearing out of the spare as stated in Option – I.

(i) Using monthly figures relevant for decision making, advise which option is more beneficial to the company from a financial perspective.

(ii) Identify the quality costs that can be classified as

(a) appraisal costs and

(b) external failure costs.

(c) Pick out from each of the following items, costs that can be classified under 'committed fixed costs' or 'discretionary fixed costs'. 5

(i) Annual increase of salary and wages of administrative staff by 5% as per agreement.

(ii) New advertisement for existing products is recommended by the Marketing Department for achieving sales quantities that were budgeted for at the beginning of the year.

Marks

(iii) Rents paid for the factory premises for the past 6 months and the rents payable for the next six months. Production is going on in the factory.

(iv) Research costs on a product that has reached 'maturity' phase in its life cycle and the research costs which may be needed on introducing a cheaper substitute into the market for facing competition.

(v) Legal consultancy fees payable for patent rights on a new product. Patenting rights have been applied for.

(d) The following matrix is a minimization problem for transportation costs. The unit transportation costs are given at the right hand corners of the cells and the $\Delta_{ij}$ values are encircled. **5**

| | $D_1$ | $D_2$ | $D_3$ | Supply |
|---|---|---|---|---|
| $F_1$ | 3 | 4 | 4 | 500 |
| $F_2$ | 9 (8) | 6 | 7 (2) | 300 |
| $F_3$ | 4 (0) | 6 (2) | 5 | 200 |
| Demand | 300 | 400 | 300 | 1000 |

Find the optimum solution (s) and the minimum cost.

2. (a) During the last 20 years, KL Ltd.'s manufacturing operation has become increasingly automated with computer-controlled robots replacing operators. KL currently manufactures over 100 products of varying levels of design complexity. A single plant wise overhead absorption rate, based on direct labour hours is used to absorb overhead costs. **8**

Marks

In the quarter ended March, KL's manufacturing overhead costs were :

| | (₹ '000) |
|---|---|
| Equipment operation expenses | 125 |
| Equipment maintenance expenses | 25 |
| Wages paid to technicians | 85 |
| Wages paid to component stores staff | 35 |
| Wages paid to despatch staff | 40 |
| **Total** | 310 |

During the quarter, the company reviewed the Cost Accounting System and concluded that absorbing overhead costs to individual products on a labour hour absorption basis was meaningless and that overhead costs should be attributed to products using an Activity Based Costing (ABC) system. The following are identified as the most significant activities :

(i) Receiving component consignments from suppliers.

(ii) Setting up equipment for production runs

(iii) Quality inspections

(iv) Despatching goods as per customers' orders.

Equipment operation and maintenance expenses are apportioned as :

- Component stores 15%, production runs 70% and despatch 15%

Technicians' wages are apportioned as :

- Equipment maintenance 30%, set up equipment for production runs 40% and quality inspections 30%.

During the quarter :

(i) 980 component consignments were received from suppliers.

(ii) 1020 production runs were set up

(iii) 640 quality inspections were carried out.

(iv) 420 orders were despatched to customers.

Marks

KL's production during the quarter included component R. The following information is available :

| | Component R |
|---|---|
| Component Consignments received | 45 |
| Production runs | 16 |
| Quality Inspections | 10 |
| Orders (goods) despatched | 22 |
| Quantity produced | 560 |

Calculate the unit manufacturing overhead cost of component R using ABC system.

(b) State any three differences between PERT and CPM. **3**

(c) What are the disadvantages of Cost Plus Pricing ? **5**

3. (a) A manager was asked to assign tasks to operators (one task per operator only) so as to minimize the time taken. He was given the matrix showing the hours taken by the operators for the tasks. **10**

First, he preformed the row minimum operation. Secondly, he did the column minimum operation. Then, he realized that there were 4 tasks and 5 operators. At the third step he introduced the dummy row and continued with his fourth step of drawing lines to cover zeros. He drew 2 vertical lines (under operator III and operator IV) and two horizontal lines (aside task $T_4$ and dummy task $T_5$). At step 5, he performed the necessary operation with the uncovered element, since the number of lines was less than the order of the matrix. After this, his matrix appeared as follows :

| | Operators | | | | |
|---|---|---|---|---|---|
| Tasks | I | II | III | IV | V |
| $T_1$ | 4 | 2 | 5 | 0 | 0 |
| $T_2$ | 6 | 3 | 3 | 0 | 3 |
| $T_3$ | 4 | 0 | 0 | 0 | 1 |
| $T_4$ | 0 | 0 | 5 | 3 | 0 |
| $T_5$ (dummy) | 0 | 0 | 3 | 3 | 0 |

Marks

(i) What was the matrix after step II ? Based on such matrix, ascertain (ii) and (iii) given below.

(ii) What was the most difficult task for operators I, II and V ?

(iii) Who was the most efficient operator ?

(iv) If you are not told anything about the manager's errors, which operator would be denied any task ? Why ?

(v) Can the manager go ahead with his assignment to correctly arrive at the optional assignment, or should he start afresh after introducing the dummy task at the beginning ?

(b) Classify the following measures under appropriate categories in a balanced score card for a banking company which excels in its home loan products : 3

(i) A new product related to life insurance is being considered for a tie up with the successful housing loan disbursements.
e.g. every housing loan applicant to be advised to take a life policy or compelled to take a fire insurance policy.

(ii) How different sectors of housing loans with different interest rates have been sanctioned, their volumes of growth in the past 4 quarters.

(iii) How many days are taken to service a loan, how many loans have taken longer, what additional loans are to be released soon, etc.

(Students are not required to copy these statements into their answer books)

(c) A company can make any one of the 3 products X, Y or Z in a year. It can exercise its option only at the beginning of each year. 3

Relevant information about the products for the next year is given below :

| | X | Y | Z | |
|---|---|---|---|---|
| Selling Price (₹/u) | 10 | 12 | 12 | |
| Variable costs (₹/u) | 6 | 9 | 7 | |
| Market Demand (units) | 3000 | 2000 | 1000 | |
| Production capacity (units) | 2000 | 3000 | 900 | |
| Fixed costs (₹) | | | | 30,000 |

You are required to compute the opportunity costs for each of the products.

Marks

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

(a) 6000 pen drives of 2 GB are to be sold in a perfectly competitive market to earn ₹ 1,06,000 profit, whereas in a monopoly market only 1200 units are required to be sold to earn the same profit. The fixed costs for the period are ₹ 74,000. The contribution per unit in the monopoly market is as high as three fourths its variable cost. Determine the target selling price per unit under each market condition. **4**

(b) In a company, factory overheads are applied on the basis of direct labour hours. The following information is given : **4**

| | Department | |
|---|---|---|
| | **A** | **B** |
| Fixed factory overheads (₹) | 3,36,000 | 1,26,000 |
| Variable overheads per labour hour (₹ per hour) | 0.50 | 1.50 |
| Direct labour hours required as per direct labour hour budget | | |
| For product X | 1,40,000 | 70,000 |
| For product Y | 28,000 | 56,000 |

Prepare the productwise budget for fixed and variable overhead costs.

(c) Classify the following items under the three measures used in the theory of constraints : **4**

(i) Research and Development Cost

(ii) Rent/Utilities

(iii) Raw materials used for production

(iv) Depreciation

(v) Labour Cost

(vi) Stock of raw materials

(vii) Sales

(viii) Cost of equipments and buildings.

Marks

(d) Will the initial solution for a minimization transportation problem obtained by Vogel's Approximation Method and the Least Cost Method be the same ? Why ? 4

(e) Name any four stages in the process of bench marking. 4

5. (a) A company has two manufacturing divisions X and Y. X has a capacity of 96000 hours per annum. It manufactures two products, 'Gears' and 'Engines' as per the following details : 11

| | Gears ₹/unit | Engines ₹/unit |
|---|---|---|
| Direct Materials | 240 | 34 |
| Variable costs at ₹ 64/hour | 256 | 64 |
| Selling price in the outside market | 640 | 128 |

Division 'Y' produces product 'Wheels', as per the following details :

| | ₹/unit |
|---|---|
| Imported components | 640 |
| Direct Materials | 96 |
| Variable cost at ₹ 40 per hour | 320 |
| Selling price in the outside market | 1,160 |

The fixed overheads for X and Y are ₹ 24 lakhs and ₹ 4 lakhs respectively. With a view to minimizing dependence on the imported component, the company has explored a possibility of Division Y using product 'Gears' instead of the imported component. This is possible provided Division Y spends 2 machine hours entailing an additional expenditure of ₹ 64 per component on modification of product 'Gears' to fit into 'Wheels'. Production and sales of 'Wheels' in Division Y is limited to 5000 units per annum.

Marks

(i) What will be the maximum transfer price per unit that Y will offer ?

(ii) In each of the following independent situations, state with supporting calculations, the minimum transfer price per unit that X will demand from Y, if 5000 units are required by Y.

| | | Gears | Engines |
|---|---|---|---|
| | | (no. of units) | |
| (a) | Market demand is limited to | 20,000 | 20,000 |
| (b) | Market demand is limited to | 15,000 | 10,000 |
| (c) | Market demand is limited to | 18,000 | 24,000 |

(iii) In which of the above situations in (ii) will the Management step in and compel X to sell to Y in the interest of overall company's profits ?

(b) A company manufactures two products X and Y involving three departments, Machining, Fabrication and Assembly which have limitations on the hours as 720 hours, 1800 hours and 900 hours respectively. X and Y require 1 and 2 hours of machining time per unit, 5 hours and 4 hours of fabrication time per unit and 3 hours and 1 hour of assembly time per unit respectively. X and Y fetch ₹ 80 and ₹ 100 as respective unit contributions. **5**

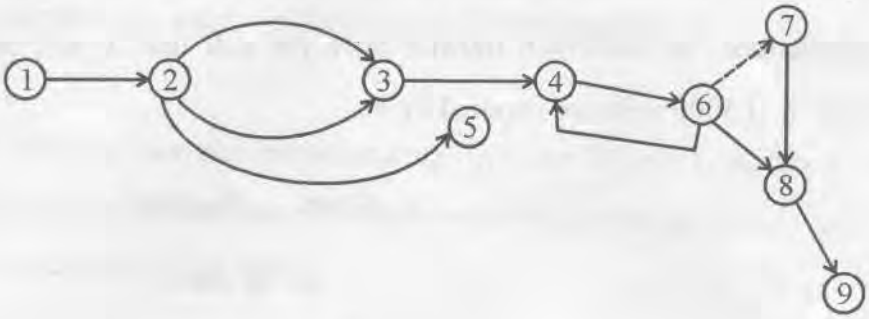
(i) Write the linear program to maximize contribution.

(ii) Introducing appropriate variables, restate the problem as linear equations fit to be incorporated in the simplex tableau.

6. (a) Explain the pre-requisites for successful operation of material requirement planning. **5**

Mark

(b) Point out the errors in the network given below, going by the usual conventions while drawing a network to use CPM. 5




(c) Maruthi Agencies has received an order from a valuable client for supplying 3,00,000 pieces of a component at ₹ 550 per unit at a uniform rate of 25000 units a month. 6

Variable manufacturing costs amount to ₹ 404.70 per unit, of which direct materials is ₹ 355 per unit. Fixed production overheads amount to ₹ 30 lacs per annum, excluding depreciation. There is a penalty/reward clause of ₹ 30 per unit for supplying less/more than 25000 units per month. To adhere to the schedule of supply, the company procured a machine worth ₹ 14.20 lacs which will wear out by the end of the year and will fetch ₹ 3.55 lakhs at the year end. After this supply of machine, the supplier offers another advanced machine which will cost ₹ 10.65 lakhs, will wear out by the year end and not have any resale value. If the advanced machine is purchased immediately, the purchaser will exchange the earlier machine supplied at the price of the new machine. Fixed costs of maintaining the advanced machine will increase by ₹ 14,200/- per month for the whole year. While the old machine had the capacity to complete the production in 1 year, the new machine can complete the entire job in 10 months. The new machine will have material wastage of 0.5%. Assume uniform production throughout the year for both the machines.

Using incremental cost / revenue approach, decide whether the company should opt for the advanced version.

Marks

(a) A car rental agency has collected the following data on the demand for five-seater vehicles over the past 50 days. **5**

| Daily Demand | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|
| No. of Days | 4 | 10 | 16 | 14 | 6 |

The agency has only 6 cars currently.

(i) Use the following 5 random numbers to generate 5 days of demand for the rental agency.

Random Nos : 15, 48, 71, 56, 90

(ii) What is the average number of cars rented per day for the 5 days ?

(iii) How many rentals will be lost over the 5 days ?

(b) Entertain U Ltd. hires an air-conditioned theatre to stage plays on weekend evenings. One play is staged per evening. The following are the seating arrangements : **11**

VIP rows – the first 3 rows of 30 seats per row, priced at ₹ 320 per seat.

Middle level – the next 18 rows of 20 seats per row, priced at ₹ 220 per seat.

Last level – 6 rows of 30 seats per row, priced at ₹ 120 per seat.

For each evening, a drama troupe has to be hired at ₹ 71,000, rent has to be paid for the theatre at ₹ 14,000 per evening and air conditioning and other stage arrangement charges work out to ₹ 7,400 per evening. Every time a play is staged, the drama troupe's friends and guests occupy the first row of the VIP class, free of charge, by virtue of passes granted to these guests. The troupe ensures that 50% of the remaining seats of the VIP class and 50% of the seats of the other two classes are sold to outsiders in advance and the money is passed on to Entertain U. The troupe also finds for every evening, a sponsor who puts up his advertisement banner near the stage and pays Entertain U a sum of ₹ 9,000 per evening . Entertain U supplies snacks during the interval,

Marks

free of charge to all the guests in the hall, including the VIP free guests. The snacks cost Entertain U ₹ 20 per person. Entertain U sells the remaining tickets and observes that for every one seat demanded from the last level, there are 3 seats demanded from the middle level and 1 seat demanded from the VIP level. You may assume that in case any level is filled, the visitor buys the next higher or lower level, subject to availability.

(i) You are required to calculate the number of seats that Entertain U has to sell in order to break-even and give the categorywise total seat occupancy at BEP.

(ii) Instead of the given pattern of demand, if Entertain U finds that the demand for VIP, Middle and Last level is in the ratio 2 : 2 : 5, how many seats in each category will Entertain U have to sell in order to break-even ?

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