

Full Marks: 100

Time: Three hours

- All questions are to be attempted.
- Show computations, where necessary.
- Answer must be brief, relevant, neat and clean.
- Start answering each question from a fresh sheet.

Q. No. 1

(a) The Management Accountant plays an important role in the modern business environment and his/her activities may be categorized as providing information under the key headings of planning, control and decision making.

You have just been appointed to a new role as Management Accountant in Akwaba Ltd, a large engineering company producing a wide range of parts for the automobile industry. This new role has been created following a majority decision of the Board of Directors based on the advice of the company's auditors. However, the Managing Director comes from a marketing background and does not understand why the company needs another accountant as there is already a Financial Accountant employed on a full time basis. She voted against the creation of the new position and considers the cost of your remuneration to be an unwelcome burden which will only serve to reduce the company's reported profits. According to her the equation Y=a - bx which management accountant always uses are not relevant in modern day business environment.

You are aware of the strong opinion of the Managing Director and as your first task, you decide to attempt to convince her of the importance of Management Accounting in the modern business environment and also suggest some ways that you can ensure your future role in Akwaba Ltd is financially viable.

Required:

Prepare a Memorandum to the Managing Director in which you address her concerns using the following guidelines:

- (i) For each of the THREE key headings of planning, control and decision making; outline one Management Accounting technique and how it would lead to stronger commercial success for the company.
- (ii) Identify any FIVE qualitative (non-financial) issues that you should consider as a Management Accountant when providing information for decision making in Akwaba Ltd.
- (b) The use of relevant information is key to managerial successes. Describe relevant, irrelevant and sunk costs with examples to your newly appointed Managing Director who will be negotiating a new contract.
- (c) Explain the following concepts and describe their application in responsibility accounting:
 - (i) The controllability principle;
 - (ii) Budgetary slacks.
- (d) Describe the balanced score card-BSC approach to performance measurement.

[Marks: (10+5+5+5) = 25]

Q. No. 2

- (a) "Managers should be rewarded only on the basis of their performance measures. They should be paid no salary." Do you agree? Explain.
- (b) The Outdoor Sports Company produces a wide variety of outdoor sports equipment. Its newest division, Golf Technology, manufactures and sells a single product— AccuDriver, a golf club that uses global positioning satellite technology to improve the accuracy of golfers' shots. The demand for AccuDriver is relatively insensitive to price changes.

Q. No. 2(cont'd...)

The following data are available for Golf Technology, which is an investment center for Outdoor Sports:

Total annual fixed costs	\$30,000,000
Variable cost per AccuDriver	\$ 500
Number of AccuDrivers sold each year	150,000
Average operating assets invested in the division	\$48,000,000

Required:

- (i) Compute Golf Technology's ROI if the selling price of AccuDrivers is \$720 per club.
- (ii) If management requires an ROI of at least 25% from the division, what is the minimum selling price that the Golf Technology Division should charge per AccuDriver club?
- (iii) Assume that Outdoor Sports judges the performance of its investment centers on the basis of RI rather than ROI. What is the minimum selling price that Golf Technology should charge per AccuDriver if the company's required rate of return is 20%?
- (c) The Slate Company manufactures and sells television sets. Its assembly division (AD) buys television screens from the screen division (SD) and assembles the TV sets. The SD, which is operating at capacity, incurs an incremental manufacturing cost of \$65 per screen. The SD can sell all its output to the outside market at a price of \$100 per screen, after incurring a variable marketing and distribution cost of \$8 per screen. If the AD purchases screens from outside suppliers at a price of \$100 per screen, it will incur a variable purchasing cost of \$7 per screen. Slate's division managers can act autonomously to maximize their own division's operating income.

Required:

- (i) What is the minimum transfer price at which the SD manager would be willing to sell screens to the AD?
- (ii) What is the maximum transfer price at which the AD manager would be willing to purchase screens from the SD?
- (iii) Now suppose that the SD can sell only 70% of its output capacity of 20,000 screens per month on the open market. Capacity cannot be reduced in the short run. The AD can assemble and sell more than 20,000 TV sets per month.
 - (a) What is the minimum transfer price at which the SD manager would be willing to sell screens to the AD?
 - (b) From the point of view of Slate's management, how much of the SD output should be transferred to the AD?
 - (c) If Slate mandates the SD and AD managers to "split the difference" on the minimum and maximum transfer prices they would be willing to negotiate over, what would be the resulting transfer price? Does this price achieve the outcome desired in requirement 3b?

[Marks: 4+6+(4+2+3+3+3) = 25]

Q. No. 3

(a) Scott Company's quality report for October 2000 showed the following information:

Total defective units	2,000
Number of units reworked	1,400
Number of customer units returned	650
Profit for a good unit	\$38
Profit for a defective unit	\$22
Cost to rework a defective unit	\$7
Cost to process a returned unit	\$10
Total prevention cost	\$27,000
Total appraisal cost	\$16,000
Litigation related to product failure	\$70,000

Q. No. 3(cont'd...)

The company also estimated an opportunity cost of lost customers of \$50,000 while the litigation was being settled.

Required: Compute the following:

- (i) Profit lost by selling un-reworked defects;
- (ii) Total rework cost;
- (iii) Cost of processing customer returns;
- (iv) Total failure cost;
- (v) Total quality cost.
- (b) "If we can get that new robot to combine with our other automated equipment, we'll have a complete flexible manufacturing system (FMS) in place in our Northridge plant," said Hal Swain, production manager for Diller Products.

"Let's just hope that reduced labor and inventory costs can justify its acquisition," replied Linda Wycoff, the controller. "Otherwise, we'll never get it. You know how the president feels about equipment paying for itself out of reduced costs."

Selected data relating to the robot are provided below:

Cost of the robot\$	1,600,000
Software and installation	\$700,000
Annual savings in labor costs	. ?
Annual savings in inventory carrying costs	\$190,000
Monthly increase in power and maintenance costs	\$2,500
Salvage value in 12 years	\$90,000
Useful life	12 years

Engineering studies suggest that use of the robot will result in a savings of 20,000 direct labor hours each year. The labor rate is \$16 per hour. Also, the smoother work flow made possible by the FMS will allow the company to reduce the amount of inventory on hand by \$300,000.

The released funds will be available for use elsewhere in the company. This inventory reduction will take place in the first year of operation. The company's required rate of return is 20%.

Required:

(Ignore income taxes.)

- (i) Determine the net *annual* cost savings if the robot is purchased. (Do not include the \$300,000 inventory reduction or the salvage value in this computation.)
- (ii) Compute the net present value of the proposed investment in the robot. Based on these data, would you recommend that the robot be purchased? Explain.
- (iii) Assume that the robot is purchased. At the end of the first year, Linda Wycoff has found that some items didn't work out as planned. Due to unforeseen problems, software and installation costs were \$125,000 more than estimated, and direct labor has been reduced by only 17,500 hours per year, rather than by 20,000 hours. Assuming that all other cost data were accurate, does it appear that the company made a wise investment? Show computations, using the net present value format as in (ii) above.
- (iv) Upon seeing your analysis in (iii) above, the president stated, "That robot is the worst investment we've ever made. And here we'll be stuck with it for years."Compute for the president the dollar amount of cash inflow that would be needed each year from the benefits *in* (a) above *in* order for the equipment to yield a 20% rate of return.

[Marks: 10+ (3+4+6+2) = 25]

Q. No. 4

- (a) How do materials requirements planning (MRP) systems differ from just-in-time (JIT) production systems?
- (b) Birmingham Hardwood Frames makes picture frames. During November 2018, managers compiled the following data:

Total frames manufactured	1,850,000
Good frames produced and sold	1,731,000
Total processing time (minutes)	21,120
Value-added processing time (minutes	s) 6,920

Required:

- (i) Calculate the manufacturing cycle efficiency (MCE).
- (ii) Calculate the process productivity (PP).
- (iii) Calculate the process quality yield (PQY).
- (iv) Calculate throughput using one ratio.
- (v) Confirm your answer to (iv) using the results of (i), (ii), and (iii).
- (c) Global Tunes Corp. produces J-Pods, music players that can download thousands of songs. Global Tunes forecasts that demand in 2011 will be 48,000 J-Pods. The variable production cost of each J-Pod is \$54. Due to the large \$10,000 cost per setup, Global Tunes plans to produce J-Pods once a month in batches of 4,000 each. The carrying cost of a unit in inventory is \$17 per year.

Required

- (i) Using an MRP system, what is the annual cost of producing and carrying J-Pods in inventory? (Assume that, on average, half of the units produced in a month are in inventory.)
- (ii) A new manager at Global Tunes has suggested that the company use the EOQ model to determine the optimal batch size to produce. (To use the EOQ model, Global Tunes needs to treat the setup cost in the same way it would treat ordering cost in a traditional EOQ model.) Determine the optimal batch size and number of batches. Round up the number of batches to the nearest whole number. What would be the annual cost of producing and carrying J-Pods in inventory if it uses the optimal batch size? Compare this cost to the cost calculated in requirement 1. Comment briefly.
- (iii) Global Tunes is also considering switching from an MRP system to a JIT system. This will result in producing J-Pods in batch sizes of 600 J-Pods and will reduce obsolescence, improve quality, and result in a higher selling price. The frequency of production batches will force Global Tunes to reduce setup time and will result in a reduction in setup cost. The new setup cost will be \$500 per setup. What is the annual cost of producing and carrying J-Pods in inventory under the JIT system?
- (iv) Compare the models analyzed in the previous parts of the problem. What are the advantages and disadvantages of each?

[Marks: 3+10+(3+3+3+3) = 25]

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