THE INSTITUTE OF COST AND MANAGEMENT ACCOUNTANTS OF BANGLADESH
CMA JUNE, 2018 EXAMINATION
PROFESSIONAL LEVEL-IV
SUBJECT: 402. STRATEGIC MANAGEMENT ACCOUNTING

ICMAB
THE INSTITUTE OF COST AND MANAGEMENT ACCOUNTANTS OF BANGLADESH

Solution to the question No. 1 (a)

The balanced scorecard is a framework organizations use to report on a diverse set of performance measures. Organizations that use a balanced scorecard recognize that focusing strictly on financial measures can limit their view. The balanced scorecard balances financial and nonfinancial measures so that managers focus on long-term drivers of performance and organizational sustainability.

- **Financial measures:** Traditional financial measures such as profit and loss, operating margins, utilization of capital, return on investment, and return on assets are needed to ensure that the organization manages its BDTtom line effectively.
- **Internal business processes:** Product and service quality, efficiency and productivity, conformance with standards, and cycle times can be measured to ensure that the operation tuns smoothly and efficiently.
- **Customer relations:** Customer satisfaction, loyally, and retention are important to ensure that the organization is meeting customer expectations and can depend on repeat business from its customers.
- **Learning and growth activities**: Employee training and development, mentoring programs, succession planning, and knowledge creation and sharing provide the necessary talent and human capital pool to ensure the future of the organization.

Solution to the question No. 1 (b)

(i) Profit before interest and tax/Capital employed: TK48m + TK192m = 25%

(ii) Profit before interest and tax/Sales revenue: TK48m + TK480m = 10%

(iii) Sales revenue/capital employed = TK480m + 192m = 2·5

(iv) Average number of telephones unrepaired at the end of each day/Number of telephones returned for repair: (804 + 10,000)*365 days= 29·3 days

(v) Percentage of customers lost per annum = number of customers lost + total number of customers x 100% = 117,600 + 1,960,000 = 6% and
Percentage of sales attributable to new products = Sales attributable to new products/total sales x 100% = TK8m + TK480m = 1·67%

(c) (i)

	Service	Irrigation	Total
Units	8,000	250	
Service Fee/Selling Price	TK50	TK5,000	
Total Revenue	TK400,000	TK1,250,000	TK1,650,000

Total Expenses	280,000	1,000,000	1,280,000
Operating Income	TK120,000	TK250,000	TK370,000
Investment	TK400,000	TK1,000,000	TK1,400,000
ROI:	30%	25%	27.4%

(ii) Service Division had the better performance with a higher ROI.

Solution to the question No. 2

(a) The relevant discount rate can be calculated using the capital asset pricing model:

Ko = Krf +b(Km -Krf)

where: *Ko* = the required return for investors

Krf = the risk-free rate

b = beta of the share

Km = the expected returns to the market

Ko = 3% + 1.4(8%- 3%)

=10%

The net present value of the image scanner is calculated as follows:

Year to 31 May	2014	2015	2016	2017	2018
	TKOOO	TKOOO	TKOOO	TKOOO	TKOOO
Sales		12,600	16,000	11,200	5,500
Rent foregone		(120)	(120)	(120)	(120)
Equipment	(9,500)				1,000
Wages		(2,460)	(2,460)	(2,460)	(2,460)
Severance					(900)
Materials		(1,180)	(5,000)	(4,375)	(2,500)
Working capital	(5,000)				5,000
Overheads		(2,175)	(2,175)	(2,175)	(2,175)
Net cash flows	(14,500)	6,665	6,245	2,070	3,345
Discount rate (10%}	1.00	0.909	0.826	0.751	0.683
Present values	(14,500)	6,058	5,158	1,555	2,285
Net Present value 556					

Notes:

(1) Overheads relate specifically to the project and ignore any depreciation charge for equipment. (That is, TK4,425,000- TK2,250,000 = TK2,175,000) where TK9M/4=2.250,000

(2) Rent foregone represents an opportunity cost and so is included in the calculations.

(3) The materials in Year 1 will be the realisable value of the materials already available for 20,000 scanners (TK180,000) plus the cost of new materials required for the remaining 8,000 scanners to be produced in that year. (That is, 8,000 x TK125 =TK10,000).

(4) Working capital will involve an immediate outlay but the amount invested will be released at the end of the project's life.

(5) Development and marketing costs have been ignored as they represent sunk costs.

The calculations reveal that the net present value of the scanner project is positive. Thus, a decision to go ahead would enhance shareholder wealth. We should note however that the net present value is not large in relation to the size of the project and its viability may therefore be sensitive to any forecast inaccuracies. A careful checking of underlying assumptions and estimates should be carried out before a final decision is made. We should also note that, if the net present value calculations had been carried out before the product development and market research had been carried out, the result would have been a negative NPV.

(b) *Briefing paper on risk and the role of scenario analysis in investment decisions.*

To: The senior management of Ishraq Ltd.

From: Cost and Management Accountant

Risk has particular importance for investment decisions because large sums of money are often involved. If things do not turn out as expected, the effect on shareholder wealth and the fortunes of the business can be profound. In addition, investment projects often involve long timescales. This

means that there is plenty of time for unexpected changes to occur. Scenario analysis involves preparing net present value calculations according to different possible 'states of the world'. Unlike sensitivity analysis, it involves changing a number of key variables simultaneously in order to provide each particular state of the world. A common form of scenario analysis is to present three possible states of the world that provide a most likely view, an optimistic view and a pessimistic view. By examining each possible outcome, decision makers may gain a better feel for the 'downside' risk and 'upside' potential of a project, as well as the most likely outcome. A weakness of this approach is that it does not indicate the probability of each state of the world occurring, which is important when evaluating each possible outcome. Furthermore, it does not identify other possible scenarios that may occur.

Solution to the question No. 3 (a)

(a)
The Six Sigma approach to making improvements in existing processes involves a five stage process represented by the acronym DMAIC. The five stages are as follows:

Define an opportunity
A problem with quality is identified and then a problem statement is prepared. This statement will describe the nature of the problem, which must be defined in specific, quantifiable terms.

A 'mission statement' is then prepared. This is a statement of what will be done in order to address the problem. Like the problem statement the mission statement should also be expressed in specific quantifiable terms using the same units of measurement that are used in the problem statement.

A project team is set up and given the required resources in order to address the problem and make an improvement. The team should comprise personnel from each of the areas within the organization that will be affected by the Six Sigma project.

Measure performance
At this stage in the project, the project team should undertake a preliminary analysis in order to measure how the process is working and obtain data that can be analysed in order to identify what seems to be causing the problem. Where there are a number of factors causing the problem the project team should focus their attention on what appear to be the main causes of the quality problem.

Analyze the opportunity
At this stage the project team will investigate the preliminary concerns about what might be causing the quality problem in greater detail. The project team will test different theories in an attempt to discover the main cause (or causes) of the problem. Each theory is then tested in order to establish whether it might be correct. Theories are rejected when it is decided that they cannot be correct.

The 'root' cause (or causes) of the problem is identified when all of the theories has been completed.

Improve performance
The cause (or causes) of the problem will be removed as a consequence of re-designing the process that is causing the problem. Alternative methods of improving the process should be evaluated in order to determine which will be the most effective method to achieve the 'mission

statement' for the project. The chosen improvement is then designed in detail and implemented after being tested to prove its effectiveness.

Control
performance
New controls are designed and implemented to prevent the re-occurrence of the problem and to make sure that the improvements to the process are sustained. Controls will include regular measurements of output from the process, and a comparison of actual performance with targeted performance. The controls should be audited periodically in order to confirm their effectiveness.

Solution to the question No. 3 (b)

From the group's perspective:

For every motor sold externally, Division M generates a profit of BDT 80 (BDT 850- BDT 770} for the group as a whole. For every motor which Division S has to buy from outside of the group, there is an incremental cost of BDT 60 per unit (BDT 800 – [BDT 770 – BDT 30]). Therefore, from a group perspective, as many external sales should be made as possible before any internal sales are made. Consequently, the group's current policy will need to be changed. This does, however, assume that the quality of the motors bought from outside the group is the same as the quality of the motors made by Division M.

Division M's total capacity is 60,000 units. Given that it can make external sales of 30,000 units, it can only supply 30,000 of Division S's demand for 35,000 motors. These 30,000 units should be bought from Division M since, from a group perspective, the cost of supplying these internally is BDT 60 per unit cheaper than buying externally. The remaining 5,000 motors required by Division S should then be bought in from the external supplier at BDT 800 per unit.

In order to work out the transfer price which should be set for the internal sales of 30,000 motors, the perspective of both divisions must be considered.

From Division M's perspective:

Division M's only buyer for these 30,000 motors is Division S, so the lowest price it would be prepared to charge is the marginal cost of making these units, which is BDT 740 per unit. However, it would ideally want to make some profit on these motors too and would consequently expect a significantly higher price than this.

From Division S's perspective

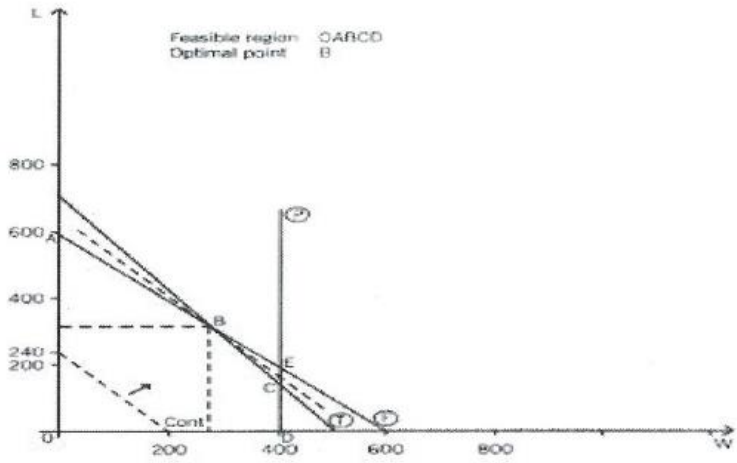
Division S knows that it can buy as many external motors as it needs from outside the group at a price of BDT 800 per unit. Therefore, this will be the maximum price which it is prepared to pay.

Overall:

Therefore, the transfer price should be set somewhere between BDT 740 and BDT 800. From the perspective of the group, the total group profit will be the same irrespective of where in this range the transfer price is set. However, it is important that divisional managers and staff remain motivated. Given the external sales price which Division M can achieve and the fact that Division S would have to pay BDT 800 for each motor bought from outside the group, the transfer price should probably be at the higher end of the range.

Solution to the question No. 4

a)



The optimal production mix can be found by solving the two equations given for F and T.
7W + 5L = 3,500
2W + 2L = 1,200

Multiplying the second equation by 2·5 produces:
7W + 5L = 3,500
5W + 5L = 3,000
2W = 500
W =250

Substituting W = 250 in the fabric equation produces:
2 x 250 + 2L = 1,200
2L = 700
L = 350

The optimal solution is when 250 work suits are produced and 350 lounge suits are produced. The contribution gained is
BDT 26,000:
C = 48W + 40L
C = (48 x 250) + (40 x 350)
C = 26,000

(b)
The shadow prices can be found by adding one unit to each constraint in turn.

Shadow price of T
7W + 5L = 3,501
2W + 2L = 1,200

Again multiplying the second equation by 2·5 produces:
7W + 5L = 3,501

5W + 5L = 3,000
2W = 501
W = 250·5

Substituting W = 250·5 in the fabric equation produces:
(2 x 250·5) + 2L = 1,200
2L = 1,200 - 501
L = 349·5

Contribution earned at this point would be = (48 x 250·5) + (40 x 349·5) = 26,004 which is an increase of BDT 4.
Hence the shadow price of T is BDT 4 per hour.

Shadow price of F
7W + 5L = 3,500
2W + 2L = 1,201

Again multiplying the second equation by 2·5 produces:
7W + 5L = 3,500·0
5W + 5L = 3,002·5
2W = 497·5
W = 248·75

Substituting W = 248·75 in the fabric equation produces:
(2 x 248·75) +2L = 1,201
2L = 1,201 – 497·5
L=351·75

Contribution earned at this point would be= (48 x 248·75) + (40 x 351·75) = 26,010, which is an increase of BDT 10.
Hence the shadow price of F is BDT 10 per metre.

(c)
The shadow price represents the maximum premium above the normal rate a business should be willing to pay for more of a scarce resource. It is equal to the increased contribution that can be gained from gaining that extra resource.

The shadow price of labour here is BDT 4 per hour. The tailors have offered to work for BDT 4·50 – a premium of BDT 3·00 per hour. At first glance the offer seems to be acceptable. However, many businesses pay overtime at the rate of time and a half and some negotiation should be possible to create a win/win situation. Equally some consideration should be given to the quality aspect here. If excessive extra hours are worked then tiredness can reduce the quality of the work produced.

(d)
If maximum demand for W falls to 200 units, the constraint for W will move left to 200 on the x axis of the graph. The new optimum point will then be at the intersection of:
W = 200 and
2W + 2L = 1,200

Solving these equations simultaneously, if:
W = 200, then (2 x 200) + 2L = 1,200
Therefore L = 400.
So, the new production plan will be to make 400L and 200W

=THE END=