PROGRAM	:	BACCALAUREUS TECHNOLOGIAE. *EXTRACTION METALLURGY*
SUBJECT	:	**PROCESS ECONOMICS**
CODE	:	**MPI11-1**
DATE	:	WINTER SSA EXAMINATION 16 JULY 2014
DURATION	:	(SESSION 1) 08:00 - 11:00
WEIGHT	:	40: 60
TOTAL MARKS	:	100

ASSESSOR	:	MR.T.SHEKEDE	
MODERATOR	:	MR.MUZENDA	5176
NUMBER OF PAGES	:	5 PAGES	

INSTRUCTIONS	:	ONLY ONE POCKET CALCULATOR PER CANDIDATE MAY BE USED.
REQUIREMENTS	:	GRAPH PAPER.

INSTRUCTIONS TO STUDENTS

PLEASE ANSWER FIVE QUESTIONS ONLY.

QUESTION 1

1.0 A company manufactures two products (A and B) and the profit per unit sold is R30 and R50 respectively. Each product has to be assembled on particular machine, each unit of product A taking 12 minutes of assembly time and each unit of B of product B 25 minutes of assembly line. The company estimates that the machine used for assembly has an effective working week of only 30 hours.(due to maintenance and breakdown).Technological constraints mean that for every five units of product A produced at least two units of product B must be produced. The company has been offered the chance to hire an extra machine, thereby doubling the effective assembly time available. What is the maximum amount you would be prepared to pay (per week) for the hire of this machine and why. (15)

1.2 State and explain five objectives of budgeting in a production plant. (5)

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QUESTION 2

Zebra Ltd. wants you to examine the effect of changes in sales on their income before tax. The costs that the company incurred last year follows:

Fixed costs:

Depreciation	R1 000 000
Plant maintenance	R170 000
Salaries	R400 000
Office expense	R200 000
Advertising	R30 000
Interest on debt	R200 000
Total	**R2 000 000**

Variable cost per unit output:

Labor	R4
Materials	R 6
Total	**R10**

Assume that Zebra sells its products at R15 per unit.

a) Calculate the break-even volume of sales. (4)

b) Tabulate the variable cost, sales, pre-tax income and net income of Zebra when they produce and sell 10 000, 20 000, 30 000, 40 000, 50 000, 60 000 and 70 000 units. The tax rate is 30%. (8)

c) Illustrate the variables in b) by means of a graph. (4)

QUESTION 3

3.1 ABC company manufactures a "brand" item that has a variable cost of $0.75 per unit and a selling price of $1.25 per unit. Fixed costs are $12,000. Current volume is 50,000 units. ABC can substantially improve the product quality by adding a new piece of equipment at an additional fixed cost of $5,000. Variable cost would increase to $1.00, but their volume should increase to 70,000 units due to the higher quality product. Should the company buy the new equipment? (4)

3.2 What are the break-even points ($ and units) for the two processes considered above. (3)

3.3 You are going to receive $6,000 in each of the next 5 years for sale of used machinery. A bank is willing to lend you the present value of the money in the meantime at discount of 10% per year. How much cash do you receive now? (3)

3.4 Muponengi gold mine has R20 000 cash reserves. Draw up the cash flow for the first and second quarter of 2013. Sales achieved for Nov. were 2000units and Dec.1000units.The sales forecast for the next 6 months are:

Table 1.0

Month	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Sales in Units	2000	1000	1100	2200	2900	2500	2700	2700

Unit sells at R7/Unit with labor cost being R2.50 /Unit, payable in the month of production. Raw materials costs are R2/Unit and is payable on 30 days. All sales are paid in 60 days arrears. Tax of R1000 is due in February. The premises is rented for R4500/Month .A previous loan is being repaid at R5000 /Month. Come up with a cash flow for the first and second quarter of 2013. (10)

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QUESTION 4

4.1 You have been appointed as the project leader of a project to be undertaken by your Company. You have identified the following tasks and made the time estimates for each task as listed in the table below:

Table 2.0

Activity	Preceding("from") activity	Succeeding("to") activity	Estimated duration(work days)
A	-	B,C,D	3
B	A	E	5
C	A	E	3
D	A	F	10

E	B,C	F	8
F	C,D,E	G	14
G	F	-	7

4.1.1 Use the above table to construct a project network diagram with earliest due date date scheduling. (5)

4.1.2 Determine the critical path and its duration. (2)

4.2 A mining company plans to purchase a small loader for R240 000 which will be paid for in 24 equal monthly installments at an annual interest rate of 18%. What will the monthly installment amount be? (3)

4.3 You pay installments of R824 at the end of each year into a savings account yielding 9% interest p.a, compounded annually. What should the future value of the investment be at the end of 23 years? (3)

4.4 State and explain four behavioral aspects of budgeting. (7)

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QUESTION 5

5.1.1 State the laws of supply and demand in a market economy. (2)

5.1.2 Explain with aid of explain the causes of demand pull and cost push inflation. (10)

5.1.3 What is Marginal Revenue Product of labor? (2)

5.1.4 Company A is selling raw material to the refinery. They sell on average 250t of material for the total price of R300; 000.They felt that if they increase the price by 20%, they will sell the same amount. When they increased the price by 20%, the total revenue did not change.

What were their expectations of the elasticity of demand, and what did it turn out to be. (6)

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QUESTION 6

Table 3.0

Year	Project A	Project B	Project C
0	(880000)	(450000)	(1600000)
1	220000	50000	400000
2	220000	100000	450000

3	220000	200000	400000
4	220000	50000	350000
5	220000	50000	320000
6	220000	120000	280000
7	180000	100000	290000

6.1 Calculate the pay back period for all the projects.   (4)

6.2 Determine the return on investment for each project.   (3)

6.3 Calculate the Net Present Value for each project. Use discount factor of 18%.   (3)

6.4 Calculate the IRR for project B.   (3)

6.5 Which project do you select give reasons.   (3)

6.6 Which project/s do you select and why.   (4)

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