PROGRAM	:	BACCALAUUREUS TECHNOLOGIAE EXTRACTION METALLURGY
SUBJECT	:	**PROCESS ECONOMICS**
CODE	:	**MPI11-1**
DATE	:	WINTER EXAMINATION 07 JUNE 2016.
DURATION	:	(SESSION 1) 08:30 - 11:30
WEIGHT	:	40: 60
TOTAL MARKS	:	100

ASSESSOR	:	MR.T.SHEKEDE	
MODERATOR	:	MR.E MUZENDA	5176
NUMBER OF PAGES	:	6 PAGES	

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

1. PLEASE ANSWER ALL QUESTIONS.SECTION A

2. CHOOSE FOUR QUESTIONS FROM SECTION B

SECTION A

1.1 With an aid of a diagram explain the Pareto analysis in an inventory control system. (3)

1.2 Explain briefly five factors that affect production. (4)

2.1 A company borrows money from the bank at an interest rate of 15% every month. The company agrees to pay back the R2000 every month for 3 years, and a final payment of R6000.What is the company's debt. (3)

2.1.1. A Metallurgical company has two options to buy new equipment. It can both buy it now and pay R50 000(including financing charges) per month for the next 5 years or it can save R80 000 per month and buy the plant in 5 years' time. Money is worth 10% compounded quarterly and the inflation rate is 12%.The quoted price of the plant today is R1 500 000.Which option should they choose? (5)

3.0 Find the present value of an annuity of R150 per month for 4.5 years, if money is worth 7% compounded half yearly. (2)

4.0(a) Sales for November and December was 1200 and 1700 respectively. The selling price is R24 per unit whilst the variable cost is R18per unit, of which R10 was material. The material was paid for 30days in arrears but the labour component was paid for in the month of production. The fixed costs is R6000 per month .If the expected sales for January is 800 units and 10%of the sales is for cash,30% on 30 day credit and the rest paid for after 60 days, determine the expected cash position at the end of January. They started the year with R5000 cash (4)

4.0(b) Determine the profit for January. (3)

4.0(c) Explain why there is a difference between the two values in (a) and (b) (1)

5.0 Product Z has a profit volume ratio of 28%.Fixed operating costs directly attributable to product Z during the quarter two of the financial year 2015-16 will be R280 000.Calculate the sales revenue required to achieve a quarterly profit of R70 000. (3)

6.0 With an aid of a diagram explain briefly how price of goods and services fluctuate in a market economy. (2)

6.1 Explain briefly three budgeting strategies and how they can be used to achieve the company's objectives in a production environment. (3)

6.2 Draw a diagram of an inventory control model of your choice and explain briefly where it's applicable. (3)

6.3 State and explain the theory of labor. (2)

6.4 Explain the difference between total absorption costing and marginal costing. (2)

[40 marks]

SECTION B

QUESTION1

The following figures are related to LM Limited for the year ending 31st March:
Sales-24 000 units at R200 per unit. The P/V ratio is 25% and the even point is 50% of the sales.

Your are required to calculate :
(a) Fixed cost for the year. (3)
(b) Profit earned per year. (3)
(c) Units to be sold to earn a target net profit of R1 100 000 for the year. (3)
(d) Number of units to be sold to earn a net profit income of 25% on the cost. (4)
(e) Selling price per unit if the break-even point is to be brought down by 4000 Units (3)
(f) Illustrate the above by drawing a diagram. (2)
(g) State the assumptions of the CVP analysis. (2)

[20]

QUESTION 2

2.0 By investing R4 million now, a plant can be established and start producing within one year. The output is estimated at 80 000toones/year.At present, the product sells at R15, 50 per ton and the selling price will increase yearly by 8%,9.05%,10.11%,12% and 12.05% respectively for 5 years. The company will start selling the product exactly one year after the investment was made. Assume the increase will happen yearly on anniversary of investment. If the Company has the following targets for their proposal, are they likely to accept the proposal? Money is worth 11%.

If the company has the following targets for their proposals, are they likely to accept the proposal or not ?

- Pay –back period : 2-3 years.
- ROCE : 12.5-16%.
- IRR :>10%.
- NPV which is positive. (15)

2.1 Explain the three financial and non finacial models that can used to select a
project.   (5)

[20]

QUESTION 3

A company manufactures three products (X, Y and Z).All direct operatives are the same
Grade and are paid at R11 per hour.It is anticipated that there will be shortage of the direct
Operatives in the following period, which will prevent the company from achieving
the following sales target.

Product X   3600 units.
Product Y   8000 units.
Product Z   5700 units.

Selling price	Product RX/unit	Product RY/unit	Product R/unit
Variable costs :	100	69.00	85.00
Production	512.60	35.00	42.40
Non production	5.00	3.95	4.25
Fixed costs :			
Production	27.20	19.80	21.00
Non production	7.10	5.90	6.20
Direct operatives	24.20	16.50	17.60

Required :
Determine the production plan that would maximise profit in the following period, if the
available direct operatives hours is 26 400hrs.   (15)

3.1Explain the difference between marginal costing and absorption costing in terms of
inventories and why the profit figures are different when applying these costing stratégies. (3)

3.2 Explain why it is important to do costing in a production environment.   (2)

[20]

QUESTION 4

4.0 Mhangula copper mine generated the following revenue for the months January to June.
Generate a cash flow statement for the first and second quarter of the period:

Amount brought forward for January: R10 000
Sales forecast at R10/unit .The Company wishes to maintain R10000 in cash all the times,
and will borrow to achieve this. The client takes two months to pay her account:

Months	Sales forecasts(Units)
November(previous year)	3000

December(previous year)	1500
January	1100
February	2200
March	2900
April	2500
May	2700
June	2700

Cost of Sales:

1. Overheads are R3500 per month.
2. Material costs are R2.50 per unit. Supplier gives one month credit.
3. Labor costs are R3.50 per unit. This is paid in the month of use.
4. 15% of sales are cash sales and 30% are collected in 30days and the rest in 60days arrears.
5. A dividend is paid of R3500 is to be paid in April.
6. Tax of R4000 is due February.
7. New equipment to be bought I June for R6000
8. Rent every month is R3500
9. Previous loan is being paid every month of R5000.

Loan repayment schedule:
10. Bank charges 11% interest per year, calculated on the monthly balance of the borrowings.

(15)

4.1 Give five reasons why cash flow is important for the mine.   (5)

[20]

QUESTION 5

Construction of a slimes pretreatment plant generated the following activities given below :

Activity	Time (weeks)	Immediate precedence
Laboratory trials	15	-
Pilot plant design	5	1
Pilot tenders	5	1
Erection	3	1
Commissioning	2	2
Pilot plant trial.	15	3,4
Evaluation	4	4,6
Slimes pretreatment plant design	5	4
Tenders and awarding	4	7,8

5.1 Construct a network diagram using earliest and latest due date scheduling technique and Determine the critical path i.e. the shortest possible time of completion.   (10)

5.2 Draw a simple bar chart using the earliest due date scheduling technique and show the floats.   (5)

5.3 Why is it important to use the earliest due date scheduling when planning your project.   (1)

5.4 With an aid of a diagram explain briefly the project control technique. (4)

[20]

QUESTION 6

6.0 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 10 minutes of assembly time and each unit of B taking 20 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).Technological constraints means that for every five units of product A produced at most 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)

6.1 Prepare a production budget for Ostrich Gold Mine for January to March.
The company anticipates the following sales:

Month.	January.	February.	March
Sales in kg.	52300	60000	51400

The opening stock on January was 30100.The company wishes to maintain the following closing stock positions.

Month.	January.	February.	March.
Stock in kg.	3300	2500	3500

(5)

[20]