UNIVERSITY OF JOHANNESBURG

PROGRAM	:	BACHELOR OF ENGINEERING TECHNOLOGY EXTRACTION & PHYSICAL METALLURGY.
SUBJECT	:	PRINCIPLES OF ECONOMICS & MANAGEMENT
CODE	:	PMEMTB3
DATE	:	SUPPLIMENTARY EXAMINATION X JANUARY 2020
DURATION	:	(SESSION 1) 8:30-11:30 HRS
WEIGHT	:	40: 60
TOTAL MARKS	:	120

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

INSTRUCTIONS	:	ONLY ONE POCKET CALCULATOR PER CANDIDATE MAY BE USED.
REQUIREMENTS	:	NONE.

INSTRUCTIONS TO STUDENTS

1. PLEASE ANSWER ALL QUESTIONS SECTION A.
2. CHOOSE FOUR QUESTIONS FROM SECTION B.

SECTION A
[40 MARKS]

1.1 With an aid of a diagram explain the inflation spiral. (3)

1.2 Explain briefly four factors that cause inflation (3)

2.1 You want to buy an annuity that generates R16430 per year for the next 8 years. How much must be invested if the bank is prepared to pay interest at 18% per annum? Payments are to accrue at the end of each year. (3)

2.1.1. It was planned that a producing shaft will be worked out within 15 years. A new shaft will be sunk 10 years from date, the cost of which will be R50 million. With an average inflation rate of 17% what must be the semi-annual investment to enable the mining company to sink the shaft. (3)

2.1.2 A loan of R6500 was made at the interest rate of 15% payable over three years. Calculate the annual payment, capital redemption and interest paid annually. (3)

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

4.0(a) Sales for November and December was 1100 and 1500 respectively. The selling price is R24 per unit whilst the variable cost is R18 per unit, of which R10 was material. The material was paid for 30 days in arrears but the labour component was paid for in the month of production. The fixed costs is R5000 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 (3)

4.0(b) Determine the profit for January. (2)

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

5.0 Elands(Pty) Ltd.'s fixed costs for the year ended 31 December 2019 were R168950 and its variable costs were R312595.It sold 53 022 units at R525966.

Calculate the following:

5.1 The break-even units. (2)

5.2 The break-even point in terms of rands. (2)

5.3 Profit realized. (1)

6.0 Draw a P.P.F curve of a company producing different products and explain the law of increasing opportunity costs. (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 is applicable. (3)

6.3 State and explain the theory of comparative advantages in production (2)

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

SECTION B

QUESTION1

Product Z has a profit volume ratio of 40%.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.

1.1 What is the break-even ton? (2)

1.2 Calculate the sales revenue required to achieve a quarterly profit of R70 000. (3)

1.3 By what percentage will the sales increase if the current profit is increase by R150000? (3)

1.4 A monthly constant demand for a product in production facility is 900 units. The current cost is R80 per unit but the product is only sold in 5 unit's tins. The cost of placing an order is R50.Inventory holding costs is R5 per unit per year. Lead-time from order to deliver is 5 working days.Re-order point for stock is 7 working day supply.

Calculate:

1.4.1 Most economic order quantity. (4)

1.4.2 Number of orders per year. (2)

1.4.3 Cycle times between orders. (2)

1.4.4 What is economic order quantity? (2)

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QUESTION 2

By spending R21million capital to upgrade the recovery plant during the finacial year, total throughput can be increased by 4 000tons per month and gold recover can be increased from 9.5% to 97.7%. If the current milling rate is 5 000t/m at 8.7g/ton and the gold price is expected to increase by 8% from the current R84 000/kg.Calculate the present value of the increase in profit over four years at an interest of 9.5%. (13)

2.1Will the capital be recovered after four years. (2)

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

QUESTION 3

A company manufactures three products (X, Y and Z). All direct operatives are the same grade and are paid at R12 per hour. Material is to be paid at R10 per kg. The Company has the following sales target.

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

Product	X	Y	Z
	R/unit	R/unit	R/unit
Selling price :	100	69.00	85.00
Variable costs :			
Production	51.60	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	16	20
Direct material	20	15	14

Required :

Determine the production plan that would maximise profit in the following period, if the available direct operatives hours is 26 400hrs and material is 30 000kg. (15)

3.1 Explain 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)

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

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)

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QUESTION 5

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Construct a network diagram (A.O.N) with earliest due date scheduling for the tender of the construction of slimes pretreatment plant.

Activity	Time (days)	Immediate predecessor
A	15	-
B	5	-
C	12	A
D	14	B
E	8	B
F	12	E
G	22	C
H	24	D,F
I	8	F

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 complétion.   (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 State two advantages and two dis-advantages of the two numeric models of your choice in project appraissal.   (4)

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QUESTION 6
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6.0 A gold processor has two sources of gold ore, source A and source B.In order to keep his plant running at least 3 tons of the ore must be processed each day. Ore from source A costs R280 per ton to process, and ore from source B costs R140 per ton to process. Costs must be kept to less than R1120 per day. Moreover; Federal Regulations require that the amount of ore from source B cannot exceed twice the amount of ore from source A.If ore from source A yields 2Oz of gold per ton, and ore from source B yields 3 Oz of gold per ton, how many tons of ore from both sources must be processed each day to maximise the amount of gold extracted subject to the above constraints.   (10)

6.1 U.D.C (Pvt) Company has prepared the following Budget for analysis:

	Standard Cost Per Unit
Standard output	100 units
Selling price per unit	R100
Raw materials 20kgs at R250/kg.	R50
Direct labor 300hrs at R6/hr.	R18
Variable production overheads	R10
Fixed production overheads	R24

	Actual results.
Production.	140 units
Direct material purchase 22kg.	R4300
Direct labor 300hrs.	R2000
Variable production overheads.	R850
Fixed production overheads.	R2500

6.1.1 Calculate all the variances and state at least one cause for each variance.   (6)

6.1.2 Reconcile the actual budget and budget variance.   (4)

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TOTAL MARKS 120