FACULTY OF SCIENCE & TECHNOLOGY

#### MIDLANDS STATE UNIVERSITY



**Mining and Mineral Processing Engineering Department**

**MINERAL ECONOMICS**

**CODE: HMIE322**

### SESSIONAL EXAMINATIONS

**DECEMBER 2016**

**EXAMINER: MR P. MUGAYI**

**DURATION: 3 HOURS**

## INSTRUCTIONS

1. *Answer* ***All*** *questions*
2. *Total marks 100*

**Question 1**

1. A miner needs to make the following payments against a loan on his equipment as follows $ 10 000 after 6 months , $ 20 000 after 1 year , $ 40 000 after 2 years due to drought on his mine, the miner could not pay the first 2 payments. After 18 months the miner has an unforeseen positive yield and immediately makes a down payment of $ 50 000 against his loan. What single size payment should he make after 2 years from now to settle his debt if simple interest of 17% per year is charged on all amounts? **[10]**
2. If a price change of gold from $29.00 per gram to $34.00 per gram results in a change in quantity purchased from 170 tons to 90 tons, what is the responsiveness of the market? **[5]**
3. Define the following in mining economics terms
4. Net cash flow
5. Discount rate
6. Duration of cash flows
7. Present value
8. Net present value **[5]**

**Question 2**

Discuss the 3 merits and 3 demerits of the following central budgeting techniques:

1. Net Present Value **[8]**
2. IRR method **[6]**
3. Payback Period Method **[6]**

**Question 3**

1. A prospective miner needs to understand the different exchange rate regimes that exist. Explain to the miner the meaning of:
   1. Fixed exchange rate
   2. Floating exchange rate and their impact on the prospective investor **[10]**
2. A survey indicated that Zimbabwe’s diamond contributes to 3% of GDP. For each of the following, indicate the possible effects on demand, supply, or both as well as equilibrium price and quantity of diamonds:
   1. A change in international policy which calls for value addition prior to selling of all gems.
   2. The discovery of cheaper rhinestones made from silicon dioxide in Zimbabwe.
   3. New technology for extracting diamonds that lowers the manufacturers’ costs. **[10]**

**Question 4**

1. A platinum mine in Zimbabwe is trying to decide whether to buy a machine for $80 000 which will bring in $20 000 a year for 5 years with an annual depreciation of $ 14 000 and which will have a resale value of $ 10 000 at the end of year 5. What would the IRR of the investment project be? **[12]**
2. Advise the company on the implications of your result. **[3]**

A project has an initial investment outlay of 1 million dollars and annual net receipts of $250 000 for 10 years. Assuming depreciation is $100 000 per year , calculate the ARR **[4]**

1. Criticize the ARR. **[3]**

**Question 5**

1. As a mining economist, what is the importance of understanding market structures. **[8]**
2. The mining sector like all other sectors in Zimbabwe, is affected by the macro-environmental factors. Citing specific examples discuss these factors and show how the firms have responded to them. **[12]**

**END OF PAPER**