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#### MANICALAND STATE UNIVERSITY OF APPLIED SCIENCES

FACULTY OF ENGINEERING

**DEPARTMENT: MINING AND MINERAL PROCESSING ENGINEERING**

**MODULE: MARKETING AND TRANSPORTATION OF MINERALS**

**CODE: HMIE 516**

### SESSIONAL EXAMINATIONS

**JUNE 2023**

**DURATION: 3 HOURS**

**EXAMINER: T.F.K. NGOROYEMOTO**

## INSTRUCTIONS

1. *Answer* ***Any five (5)*** *questions.*
2. *Each question carries 20 marks*
3. *Total marks 100*

**QUESTION 1**

1. Outline the challenges associated with cut and fill of roads with preexisting material at mine sites **[2]**
2. Evaluate the impact of the Frank Todd Act on International Markets and how it relates to the disposal of ore. **[4]**
3. Discuss the causes of illegal mineral marketing **[14]**

**QUESTION 2**

1. Outline the principal requirement of railroad application. **[2]**
2. What are the main drawbacks of trolley assisted trucks **[2]**
3. Examine the role of auction systems in none precious minerals in artisanal and small-scale mining with reference to examples. **[4]**
4. The trend within trucks in the mining industry is towards using automated truck systems with Global Positioning Systems (GPS) installed in them. Discuss the main challenges on the use of GPS within truck using properly annotated diagrams. **[12]**

**QUESTION 3**

1. Explore measures that are being applied towards responsible mining with reference to 3 TG minerals. **[4]**
2. Discuss the importance having contracts within the mining industry. **[4]**
3. Discuss salient factors in sizing a belt conveyor **[12]**

**QUESTION 4**

1. Under what conditions would you recommend other forms of transport other than truck haulage. **[2]**
2. Discuss measures that can be implemented for minimizing spillage and reducing belt wear in belt conveyors. **[3]**
3. Outline the principal influences on the cost of trucking **[3]**
4. Outline the ideal conditions for the applications of a rigid frame dump truck and articulated frame dump trucks **[12]**

**QUESTION 5**

1. Which truck would you recommend for moving a soil overburden that is free of large rocks **[2]**
2. Outline surface mining applications of belt conveyors  **[4]**
3. Discuss the outstanding features of articulated frame dump trucks **[14]**

**QUESTION 6**

1. Discuss important considerations when selecting a truck **[3]**
2. What is the importance of high quality roads in mines **[3]**
3. Outline the rational why new mines use truck haulage exclusively. **[6]**
4. Evaluate the potential benefits and limitations of rail haulage. **[8]**

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**END OF EXAMINATION**