B.E. (Mining) 6th Semester Final Examination 2012
Sub: Opencast Mining Machinery (MN 605)

Time: 3 hours **Full Marks: 70**

Question No 1 is compulsory and answer two questions from the rest

1. a) What are the basic data and mining constraints taken into consideration before selection of an excavator for a opencast mine ?

b) State the geo- mining conditions under which the following surface mining equipments can be deployed

i) Hydraulic excavator
ii) Ripper Dozer combination
iii) BWE
iv) Rope Shovel with mobile inpit crusher
v) Dragline

(8+5)

2. Discuss how GPS technology can be used for automatic tracking of mobile equipments as well as real time data analysis in a mega opencast project. What are additional facilities that can be provided in the system ?

(11)

3. a) Explain with neat sketches the walking mechanism of a dragline.

b) How balancing diagram of a dragline helps in optimum utilization of the excavator ?

(6+5)

4. a) Draw and explain swing mechanism of a rope shovel with a schematic diagram.

b) Discuss about the hydraulic circuit of a hydraulic shovel.

(5+6)

5. Prepare a comparative statement between rope shovel and hydraulic shovel based on their applications , technical aspects and economic considerations

(11)

SECOND HALF

Question number 6 is compulsory and answer two from the rest

6 a) Discuss about the working principles of a Continuous Surface Miner and its distinct advantages over other types of excavators.

b) What are the different types of working systems of a CSM depending on the types of loading equipments on which CSM is unloading?

(6+3)

7 a) Discuss about the basic operations of a BWE

b) What is cross pit system of mining with BWE and what are its advantages over around the pit conveying system of BWE working ?

(2+ 9)

8a) How dozers are classified ?

b) Explain the cycle of operation of a dozer operation with a neat line diagram.

c) Explain the hydraulic system of a dozer.

(2+ 3+ 6)

9 a) Discuss the basic operations of a front end loader

b) Why determination of tipping load is essential in case of a FEL

(8 + 3)

10 a) State the principle of working of a high angle conveyor

b) What is multi module conveying of high angle conveyor?

c) How HAC can remove the disadvantages of increasing dumper fleet size in a deep opencast mine?

(4+5+2)