

B.E EndSemester Examinations, 2012

6th Semester Mining Engineering
Session 2011-12

Subject: Environmental Science and Engineering

Subject Code: MN 603

Full Marks: 70

Time: 3 hours

1st Half

Question No. 1 and any two from the rest

1. Briefly describe the environmental impact on land, water, air and vegetation due to mining. (15)
2. a) Briefly discuss the potential threat of acid mine drainage (AMD).
b) Write down the mechanism of AMD treatment by wetlands. (3+7=10)
3. a) How do you categorize mine wastes?
b) Briefly enumerate the factors influencing the rate of pyrite oxidation. (4+6=10)
4. a) Write down the basic steps for developing a scientific reclamation plan.
b) Describe briefly, the reclamation procedure of a mine site. (4+6=10)
5. a) Enumerate the characteristics of mine tailings.
b) What are the environmental concerns for tailings dam?
c) Write down the causes of tailings dam failure. (2+4+4=10)

Second Half

Answer Question no. 6 and any two from the rest.

6. Write short notes on:

a) Phon b) ILO code of practice on noise c) Atmospheric Stability d) DGMS guideline for maximum vibration level (2+4+3+4)

7. (a) Name five important Acts related to environmental pollution control in India. What are the rule making provisions of the Environment (Protection) Act 1986? Under what Rules the EIA Notifications 2006 was issued?

(b) Through a flowchart describe the process to be followed for getting environmental clearance for a proposed mining project to be located in a forest area. The ore to be mined is iron ore and the mining lease sought is 64 ha. (2+2+1+6)

8. (a) What do you understand by the term Environmental Impact Assessment (EIA)? Enumerate the procedural steps to be followed for carrying out an EIA study.

(b) Compare between 'Ad hoc', 'Checklist', and 'Matrix' methodology of EIA. (2+4+5)

9. Calculate the equivalent noise level over an entire shift at the site office of a mine from the following information regarding working of different machinery:

<u>Machine</u>	<u>Distance</u>	<u>Duration</u>	<u>SPL at 15 meters</u>	
Drill 1	300 m	7 hours	80 dB	
Drill 2	350 m	6.5 hours	84 dB	
Dozer	150 m	7 hours	90 dB	
Shovel 1	300 m	5 hours	82 dB	
Shovel 2	350 m	6 hours	84 dB	(11)

10. What information does a Gaussian plume equation give? Derive its formulation taking into account the ground reflection effect. (2+9)