

B.E. (MIN) Part-III 6th Semester Examination, 2010

Environmental Science and Engineering
(MN-603)

Time : 3 hours

Full Marks : 70

Answer any FIVE questions.

1. Elucidate the concept of Sustainable Development. What is Environmental Carrying Capacity? Explain the concept of Carrying Capacity based development planning. [6+3+5=14]
2. Give an outline of the global hydrological cycle. What are the specific water pollution problems related to mining? Explain the causes and consequences of cultural eutrophication. [5+3+6=14]
3. Analysis reports of run-off water samples from a mine indicate significant presence of heavy metals. What are the possible reasons? Chalk out an appropriate strategy for mitigating the problems of heavy metal pollution in a sulphide bearing mining complex. Assume your own conditions. [3+11 = 14]
3. Name five important Acts related to environmental pollution control in India. What procedure is to be followed by the Central Government for prohibiting or restricting the location of industries and carrying on of processes and operations in an area under the Environment (Protection) Rules 1986? Under what circumstance the procedural aspects can be bypassed? [3+8+3=14]
4. Define the term Environmental Impact Assessment (EIA) from a project perspective. With the help of a flow diagram explain the procedural steps to be followed for carrying out an EIA study of a proposed surface mining Project. [4+10=14]
5. In relation to a strip mine what is reclamation? What are the common methods used for physical stabilization of mine dumps? Discuss the procedure you would follow for grading a backfilled dump. [2+6+6= 14]
6. Discuss in an outline form the environmental problems commonly associated with disposal of mine tailings. What are the distinctive features of upstream method of embankment construction for tailings dams? [8+6= 14]
7. Explain how environmental lapse rate is related to atmospheric stability in lower troposphere. How does atmospheric stability influence pollutant dispersion? [8+6=14]
8. With the help of an explanatory sketch explain the Gaussian Plume Equation for estimating air pollutant concentration at a point downstream from a source of emission. What simplifying assumptions are made in Gaussian Plume Equation? What is the expression for maximum ground level concentration and where is it expected to occur? [7+3+4=14]
9. What is the difference between environmental noise and workplace noise? Explain the concept of equivalent noise exposure. Discuss a noise abatement strategy for a small scale limestone quarry using shovel-dumper combination with drilling and blasting. [3+3+8=14]