

MI - Surface Mine Environment

P. Pages : 2

Time : Three Hours



GUG/W/16/6632

Max. Marks : 80

- Notes :
1. Due credit will be given to neatness and adequate dimensions.
 2. Assume suitable data wherever necessary.
 3. Illustrate your answers wherever necessary with the help of neat sketches.
 4. Marks are indicated in the right margin.

1. a) Define the term 'Environment'. Also state the essential elements of Environment. **6**
- b) Discuss the role of following agencies in protection and conservation of environment. **10**
- i) SPCB
 - ii) Research Institutions
 - iii) NGO's

OR

2. a) Discuss the following global environmental issues **10**
- i) Ozone layer depletion
 - ii) Global warming
 - iii) Acid rain
- b) State various Acts related to protection of environment in India. Also state the objective and importance of Environmental Protection Act 1986. **6**
3. a) Discuss the sources and physiological effects of various air pollutant on human beings and material. **8**
- b) What is air quality monitoring? State in brief various techniques used in monitoring of dust particulate matter. **8**

OR

4. a) Estimate the dust concentration in the sample collected by RDS. (High Volume) **10**
- Av. Barometric pressure – 712 mm of Hg
Av. Temperature – 28°C
Total sampling time – 8 hrs.
Initial flow rate – 1.25 m³/min.
Final flow rate – 1.15 m³/min
Initial wt. of filter – 2.7845 gm
Final wt. of filter – 2.8239 gm
Assume additional data if required.
- b) Explain following technique used in Industry for controlling gaseous pollutant in air. **6**
- i) Flame Incinerator (Combustion)
 - ii) Packed Bed Tower (Adsorption)

5. a) Find the ultimate BOD of waste water if BOD₅ is 600 mg/ℓ given, rate reaction constant K₂₀ = 0.1
Sampling time t = 5 days 6
- b) State the purpose of secondary treatment of waste water. Also explain any one secondary water treatment technique. 10

OR

6. a) Give a classification of characteristics of waste water. Also explain any four characteristics of waste water. 10
- b) State various sources of water pollution in mining. What measures are to be taken to control water pollution due to mining? 6
7. a) Explain the following terms 8
 i) Peak particle velocity
 ii) Scaled distance
 iii) Frequency
 iv) Air Blast over pressure
- b) Calculate equivalent noise level for 50 minutes duration if the source generates 50 dB sound for 30 minutes duration and 70 dB sound level for 20 minutes duration afterwards. 8

OR

8. a) The following predictor equation is obtained based on monitoring data of blast events in a mine. 10

$$PPV = 690.77 \times \left(\frac{D}{\sqrt{Q}} \right)^{-1.507}$$

Where K = 690.77 and b = 1.507 are site constants. Calculate maximum charge weight per delay for 200 m and 500 m distance for PPV 5.00 and 10.00 mm/sec

- b) Discuss the physiological effect of Noise pollution on miner. 6
9. a) State various provision of R & R policy with respect to displaced population due to mining project. 8
- b) Discuss various components of EMP. 8

OR

10. Write short Note on 16
 i) Impact on Land use pattern due to mining.
 ii) Techniques of EIA
 iii) ISO 14000
