

2012/11

B.E. (All Branches) 1st Semester Final Examination, 2011

CE-101 Environment and Ecology

Full Marks: 35

Time: 2 Hours

Answer any five questions

1. (a) What are sound power and root mean square sound pressure? What is sound pressure level? Determine the resultant sound pressure level if three sound sources of 55 dB, 65 dB and 70 dB are emitting sound simultaneously.

(b) How the equivalent continuous level (L_{eq}) is defined for a fluctuating noise situation? If an industrial fan generates a noise level of 65 dB for 10 minutes out of every hour. Compute the L_{eq} .
(5+2)

2. (a) Classify the materials comprising municipal solid wastes indicating their characteristics. On what factors the generation rate of municipal solid waste will depend?

(b) Describe the process of sanitary landfilling as a disposal system of municipal solid waste. How this process is an improvement over open dumping?
(3+4)

3. (a) Why excess iron is considered problematic for drinking water supply? Why nitrate is considered a contaminant in drinking water?

(b) What are indicator bacteria? Name one waterborne pathogenic bacterium.

(c) What is BOD of a wastewater sample? Why BOD is considered problematic for discharge of wastewater to a surface water body?
(2+2+3)

4. (a) Distinguish between primary and secondary air pollutants, citing examples. Name an air pollutant indicating its harmful effect on any material. Name one constituent of photochemical smog.

(b) What is PM_{10} ?

(c) Briefly explain the principle of operation of electrostatic precipitator.
(4+1+2)

5. (a) How some of the gases cause greenhouse effect? Name some greenhouse gases. How CFC can be very destructive to the stratospheric ozone layer?

(b) Name two gases that may cause acid rain. What are the harmful effects of acid rain?
(4+3)

6. Enumerate the causes and effects of eutrophication. How this can be controlled?
(7)

7. What kinds of diversity are known as biodiversity? How do we benefit from biodiversity? What factors threaten biodiversity?
(7)

8. (a) Which are the common trophic levels in a food chain? Why the biomass content at each successive trophic level gradually decreases?

(b) What are bioconcentration and biomagnifications of contaminants?
(4+3)

9. (a) What is 'biogeochemical cycle'?

(b) Briefly explain the carbon cycle with neat sketch. Mention the major human interferences to the cycle.
(3+4)