

M.TECH/REEN/2ND SEM/REEN 5242/2017
ENERGY AND ENVIRONMENTAL IMPACT ANALYSIS
(REEN 5242)

Time Allotted: 3 hrs

Full Marks: 70

Figures out of the right margin indicate full marks.

*Candidates are required to answer Group A and
Any 5 (five) from Group B to E, taking at least one from each group.
Candidates are required to give answer in their own words as far as
practicable.*

Group – A
(Multiple Choice Type Questions)

1. Choose the correct alternative for the following: **10 × 1 = 10**
- (i) As per the CPCB standard for discharge of liquid waste into inland surface water the values of COD in mg/l for treated waste water is
 - (a) 150
 - (b) 0
 - (c) 30
 - (d) >150.
 - (ii) The theme of World Environment Day 2015 is related to
 - (a) Desert & Desertification
 - (b) Think, Eat, Save.
 - (c) Zero Tolerance for the Illegal Wildlife trade
 - (d) Seven Billion Dreams. One Planet -- Consume with Care.
 - (iii) A plant manufacturing Solar PV module is considered as
 - (a) Red Category Industry
 - (b) White Category Industry
 - (c) Green Category Industry
 - (d) Orange Category Industry.
 - (iv) Sullage is also termed as:
 - (a) Grey Water
 - (b) River Water
 - (c) Sewage
 - (d) none of these.
 - (v) Ethylene Glycol Ether used in photolithography process causes
 - (a) Asthma
 - (b) Abortion & Reproductive defects
 - (c) Hypertension
 - (d) Vertigo.
 - (vi) Identify the parameter which need not be considered in EIA report
 - (a) Dow Jones Index
 - (b) Air Quality
 - (c) Water Quality
 - (d) Flora & Fauna

(vii) A permit which allows a country to produce a certain amount of carbon emissions and which can be traded if the full allowance is not used is known as:

- (a) Carbon Footprint (b) Carbon Flip Bond
(c) Carbon Credit (d) None of the above.

(viii) Blue-Light Hazard is associated with

- (a) LED Light (b) CFL
(c) X-ray (d) Nichrome Filament Light.

(ix) Extended Aeration Process does not have any

- (a) Reactor (b) Primary Clarifier
(c) Secondary Clarifier (d) Earthworm.

(x) Identify the oldest Act for protection of Environment in India.

- (a) Water Act (b) Bengal Smoke Nuisance Act
(c) Air Act (d) E-waste (Management) Rules.

Group - B

2. (a) Discuss in brief the significance of Air Act 1981.
(b) Enumerate the steps of obtaining Consent to Operate of a Solar Power Plant.

6 + 6 = 12

3. (a) Discuss the Construction and Operation of a Respirable High Volume Sampler with a neat Sketch.

(b) What is Windrose?

9 + 3 = 12

Group - C

4. A wastewater treatment plant discharges 1.0 m³/s of effluent having an ultimate BOD of 40.0 mg/L, into a stream flowing 10.0 m³/s. Just upstream from the discharge point, the stream has an ultimate BOD of 3.0 mg/L. The deoxygenation rate coefficient is 0.22/day. Assuming complete and instantaneous mixing, find ultimate BOD of the mixture of waste and river just downstream from the outfall. Assuming a constant cross-sectional area for the stream equal to 55 m² what ultimate BOD would you expect to find at a point 10,000 m downstream?

6 + 6 = 12

5. Discuss the construction and operation of a Trickling Filter required to be set up for a medium sized Renewable Energy Industry with a workman force of 1000 per day with a neat sketch.

8 + 4 = 12

Group - D

6. (a) Design a Waste Management plan for Canteen Waste for a medium size industry.

(b) Discuss the efficient use of bio-gas instead of Arc Furnace in Burning Ghats.

6 + 6 = 12

7. Enumerate the Collection and Disposal methods of solid waste management in metropolitan cities.

(6 + 6) = 12

Group - E

8. Delineate a case study on Energy Saving in connection with operation of a Solar Heater.

12

9. "EIA is pre-requisite to Environmental Management Plan" – discuss critically. Enumerate the components those need to be considered for Rapid EIA.

6 + (3 + 3) = 12