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GIET UNIVERSITY, GUNUPUR – 765022

B. Tech (Eight Semester – Regular) Examinations, April– 2024

BPECV8020 - Environmental Geo- Techniques

(Civil)



Time: 3 hrs

Maximum: 70 Marks

The figures in the right hand margin indicate marks.

PART – A: (Multiple Choice Questions)

(1 x 10 = 10 Marks)

Q.1. Answer *ALL* questions

- | | [CO#] | [PO#] |
|---|-------|-------|
| a. Waste removal system was established in which of the following cities for the first time?
(i) Athens (ii) Paris
(iii) Lahore (iv) London | CO1 | PO3 |
| b. Which of the following solid wastes describes the term ‘Municipal Solid Waste’?
(i) Toxic (ii) Hazardous
(iii) Non-toxic (iv) Non-hazardous | CO1 | PO2 |
| c. The organic material of the solid waste will decompose
(i) By the flow of water (ii) By the soil particles
(iii) By the action of microorganisms (iv) By oxidation | CO1 | PO1 |
| d. The process of burning municipal solid wastes under suitable temperature and conditions in a specific furnace is called _____.
(i) Landfill (ii) Incineration
(iii) Recycling (iv) Vermicomposting | CO2 | PO3 |
| e. How many main components are there in integrated waste management?
(i) Two (ii) Three
(iii) Seven (iv) Eleven | CO2 | PO2 |
| f. The most serious environmental effect posed by hazardous wastes is
(i) Air pollution (ii) Contamination of groundwater
(iii) Increased use of land for landfills (iv) None of these | CO2 | PO1 |
| g. _____ can be considered as a three-dimensional grid that can be used to confine unbound low cohesion materials.
(i) Geo dim (ii) Geocell
(iii) Geo plane (iv) Geo cone | CO3 | PO1 |
| h. Which of the below is not a type of geo composite?
(i) Geogrid (ii) Geonet
(iii) Geo shell (iv) Geo web | CO3 | PO3 |
| i. The use of geosynthetics in the hot mix asphalt overlays is to reduce the _____.
(i) Cracking (ii) Block cracking
(iii) Reflective cracking (iv) Joint cracking | CO4 | PO2 |
| j. What is the name of the product that has a geosynthetic as well as another material in it?
(i) Geopolymer (ii) Geo composite
(iii) Geo blend (iv) Geo amalgam | CO4 | PO1 |

PART – B: (Short Answer Questions)**(2 x 10 = 20 Marks)**Q.2. Answer ALL questions

	[CO#]	[PO#]
a. What factors to be considered for the selection of site for landfill?	CO1	PO2
b. What are the advantages of compacted clay liners?	CO1	PO1
c. List out and explain various waste management strategies.	CO2	PO2
d. Write a short note on municipal solid waste.	CO2	PO4
e. How will you evaluate the capacity of a landfill?	CO2	PO3
f. List out the important points to be kept in mind for contamination assessment.	CO3	PO2
g. What are the various types of Phyto remediation?	CO3	PO3
h. List out the geotechnical applications of Fly ash.	CO4	PO1
i. Define Pyrolysis.	CO4	PO1
j. What are the applications of geosynthetics in a landfill?	CO4	PO3

PART – C: (Long Answer Questions)**(10 x 4 = 40 Marks)**Answer ALL questions

	Marks	[CO#]	[PO#]
3. a. Explain with neat sketch the various components of a sanitary landfill and its functions?	5	CO1	PO2
b. Explain the soil- water-environmental interaction on geotechnical problems.	5	CO1	PO3
(OR)			
c. In relation to soil – water – contaminant interaction explain the possible variations of geotechnical properties given below i. Permeability characteristics ii. Atterberg limits iii. Shear Strength	5	CO1	PO1
d. Soil washing is not an effective method for treating soils with high fines content. Comment whether the statement is true or false. Give explanation.	5	CO1	PO3
4. a. How can we dispose leachate collected from a landfill? Explain it.	5	CO2	PO2
b. Explain the ill-effects of uncontrolled dumping of wastes.	5	CO2	PO2
(OR)			
c. Discuss the various solid waste management mechanisms practiced in India.	5	CO2	PO3
d. Explain about the geotechnical properties of solid waste.	5	CO2	PO1
5. a. Explain in detail the various contaminant retention and transport mechanisms in soil.	5	CO3	PO1
b. Explain the issues to be overcome by an efficient sanitary landfill.	5	CO3	PO3
(OR)			
c. What is clay liner? Explain it.	5	CO3	PO2
d. Explain with neat sketches the classification of landfill liners based on type of material.	5	CO3	PO4
6. a. What are the advantages and disadvantages of ex-situ and in-situ remediation approaches?	5	CO4	PO1
b. Explain the different methods of in-situ thermal desorption.	5	CO4	PO2
(OR)			
c. Discuss in detail Electro kinetic remediation of contaminated soil.	5	CO4	PO1
d. Write in detail the approach for planning and implementing a successful remediation process.	5	CO4	PO2

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