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Total Number of Pages : 02

B.Tech
PCI8J001

8th Semester Regular Examination 2018-19

ENVIRONMENTAL GEOTECHNIQUE

BRANCH : CIVIL

Max Marks : 100

Time : 3 Hours

Q.CODE : F015

Answer Question No.1 (Part-1) which is compulsory, any EIGHT from Part-II and any TWO from Part-III.

The figures in the right hand margin indicate marks.

Part- I

Q1 Only Short Answer Type Questions (Answer All-10) (2 x 10)

- What are the characteristic of waste for soil replacement?
- What is Geo synthetic clay liner? Show with diagram.
- What are the sources of subsurface contamination?
- Write down the techniques used for bioremediation of contaminated soil
- What are the properties of Geosynthetics which are desired for geo environmental engineering?
- What are the strategies adopted for control of subsurface contamination?
- Define Geochemical attenuation capacity of soil.
- Write down the types of landfill depending upon the nature of waste.
- What type of top layer will be used for landfill covers in dry arid regions where vegetative growth is difficult?
- What are the factors affecting tailing characteristics?

Part- II

Q2 Only Focused-Short Answer Type Questions- (Answer Any EIGHT out of TWELVE) (6 x 8)

- Explain the importance and scope of geo environmental engineering.
- What are the different types of flow process of leachate found in subsurface contamination?
- What is the difference between the spigot disposal and single point disposal of mine tailing?
- Liquid waste is being discharged into a shallow injection well. The subsoil constricts of medium sand with coefficient of permeability of 2×10^{-40} m/sec and porosity of 35 %. The ground water table is located 5 m below the ground surface and hydraulic gradient causing ground water flow is 0.007. A drinking water table tube well is located 1.5 km away from the injection well on the downstream side. Once the liquid waste percolates vertically down to the ground water table, how much time will it take for the liquid waste to reach the drinking water tube well? Consider only advective flow and assume one dimensional horizontal flow condition.
- What is the role of geosynthetic material in landfill design?
- Briefly explain the different components of solid waste landfill with diagram.
- How to analyze the stability of landfill covered with geomembrane ?
- What are the advantages and disadvantages of using bentonite alone for constructing barrier layer in liners and cut-off walls.
- What is the difference between rigid and flexible landfill liners?
- How does the Electro-kinetic method help in decontaminating a particular site?
- Explain the methods of raising in stages of an ash pond with neat sketch.
- How does the tailings pond and ash pond can impact the local environmental.

Part-III

Only Long Answer Type Questions (Answer Any TWO out of FOUR)

- Q3** Explain the engineering properties of waste with its range. **(16)**
- Q4** With the help of a neat sketch explain the landfill construction and operation method. **(16)**
- Q5** Describe the operation process of slurry deposition of pond ash with diagram. **(16)**
- Q6** Discuss the processes involved in the planning of contaminated site remediation. **(16)**