

**SARDAR PATEL UNIVERSITY****M. Sc. -Integrated Biotechnology – Ninth Semester Examination**

[A-22/A-23]

**Tuesday, 24<sup>th</sup> April 2018****Time: 02:00 pm to 05:00 pm****PS09CIGIB2: Waste Management****Total Marks – 70****Q.1 Mark the right answer of following questions.****[08]**

1. In the best of all words, the best strategy for managing municipal solid waste is \_\_\_\_\_.  
a. Burn it    b. Reduce it at source    c. Recycle it    d. Landfill it    f. All of these
2. Hazardous wastes could be incinerated in \_\_\_\_\_.  
a. Paper-pulp industry    b. Electroplating industry    c. Cement Industry    d. Petrochemical industry
3. Which of the following is not a source reduction activity?  
a. Products package reuse    c. Saving energy by using recycled materials  
b. Reducing use by modifying practices    d. Product design that reduces material toxicity
4. Spent nuclear fuel and any liquid contains radioactivity is an example of \_\_\_\_\_>  
a. HWL    b. ILW    c. LLW    d. MLW    e. None of these
5. Needles, syringes, scalpels and blades are included in \_\_\_\_\_ category of BMW.  
a. Cat 3    b. Cat 6    c. Cat 5    d. Cat 4    e. Cat 7
6. The most serious environmental effect posed by hazardous wastes is \_\_\_\_\_.  
a. Air pollution    c. Destruction of habitat  
b. Increase use of land for landfilling    d. Contamination of ground water
7. \_\_\_\_\_ treatment method is suitable for biological waste containing radioactivity.  
a. Wet oxidation    b. Incineration    c. Emulsification    d. Ion-exchange    e. None of these
8. Radioactive waste management in our country is governed under: \_\_\_\_\_.  
a. Hazardous waste (M & H) rules    c. Atomic Energy Act, 1962  
b. Environment Protection Act, 1986    d. Biomedical waste (M & H) rules, 1998

**Q.2 Answer the following questions. (ANY SEVEN OUT OF NINE)****[14]**

1. Write advantages and disadvantages of fluidized bed incinerators used for HW management.
2. Enlist physical properties of municipal solid waste.
3. How characterization of hazardous waste is done?
4. Define universal waste. Write categories of universal wastes.
5. How E-waste is different from general MSW?
6. Write applications of syngases.
7. Write basic steps of radioactive wastes management.
8. What is waste minimization? Explain it by giving specific example.
9. Which pollutants are produced from paper-pulp industrial processes?

- Q.3 A. Summarize collection and transportation of solid waste management. [06]  
B. What are the objectives of MRF? Outline material recovery processes for SWM. [06]
- OR**
- B. Write importance, methods and advantages of refused derive fuel. [06]
- Q.4 A. Give account on disposal methods used for management of hazardous wastes. [06]  
B. Describe chemical methods used for treatment of hazardous wastes. [06]
- OR**
- B. Discuss any six general treatment processes used for treatment of hazardous wastes. [06]
- Q.5 A. Give a brief account on composition and impacts of E-wastes. [06]  
B. Outline recycling and treatment of E-waste management system. [06]
- OR**
- B. Briefly explain pollutants production and recycling of leather industrial wastes. [06]
- Q.6 A. Write a brief note on different types of biomedical wastes produced at various sources. [06]  
B. Illustrate any six methods used for management of radioactive wastes. [06]
- OR**
- B. Write a note on collection, segregation and handling of BMW management. [06]

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