

(A-g) Seat No: \_\_\_\_\_

**SARDAR PATEL UNIVERSITY****M. Sc. -Integrated Biotechnology – Ninth Semester Examination****Wednesday, 19<sup>th</sup> October 2016****Time: 10:00 am to 01:00 pm****PS09CIGIB2: Waste Management****Total Marks – 70**

- Q.1 Mark the right answer of following questions. [08]**
- Typical modern municipal landfill contains which of the following?  
a. Monitoring wells b. CH<sub>4</sub> retrieval system c. Impermeable barriers d. b & c f. All of these
  - Basal convection on trans-boundary movement of hazardous waste was implemented in the year of \_\_\_\_\_  
a. 1969 b. 1979 c. 1989 d. 1999 e. 2009
  - Which one of the following is the category five (V) of biomedical waste in India?  
a. Waste Sharpe c. Plaster casts  
b. Discarded Medicine d. Contaminated cotton & dressings
  - Which of the following is the most stable, economical reliable & environmental safe disposal technique for radioactive wastes?  
a. Ocean dumping b. Geological dumping c. Sub-seabed disposal d. Sub-ductive disposal
  - What is the color coding used in hospital to dispose of plaster casts?  
a. Yellow b. Black c. Red d. Blue e. White f. Green
  - From the following, which of the material is the least to get recycled?  
a. Old synthetic carpet c. Copper wire  
b. Glossy Paper d. Corrugated cardboard
  - What is the most valuable recycled component of a circuit board?  
a. Copper b. Silver c. Gold d. Platinum e. Zirconium f. Nickel
  - Which of the following is not a source reduction activity?  
a. Products package reuse c. Saving energy using recycled material  
b. Raw material reduction by modifying practices d. Change in package design that reduce material toxicity

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

- Define E-waste. Which factors determine the efficiency of E-waste collection systems?
- Discuss categories of radioactive wastes.
- Write advantages and disadvantages of on-site and off-site treatment of biomedical wastes.
- How to waste minimization? Explain it with giving appropriate examples.
- Describe examples and advantages of syngases.
- Explain chemical precipitation and hydrolysis processes for hazardous waste management.
- Why analysis and quantification of solid wastes are essential?
- What are the advantages and disadvantages of incineration processes for waste management?
- Define hazardous waste. Write the types of hazardous wastes.

(P.T.O.)

Q.3 A. Enlist stages involved in designing a MRF system. Give a detailed account on material recovery facilities for municipal waste management. [06]

B. Write short notes on: 1. Risk assessment concept for solid wastes [06]  
2. Inverted hierarchy of MSW management options with justification

OR

B. Summarize the types, collection and transportation of municipal waste management. [06]

Q.4 A. What are the fundamental approaches of solidification processes for HW? Discuss process, advantages and disadvantages of any three disposal techniques of hazardous wastes. [06]

B. Define RCRA. Outline the physical treatment processes used for HW management. [06]

OR

B. Write regulatory aspects of hazardous wastes. Discuss the guidelines of transportation for hazardous wastes. [06]

Q.5 A. Write categories of E-waste based on recycled potential. Summarize E-waste management processes. [06]

B. What are the human health effects of radioactive wastes? Describe treatment and disposal methods of radioactive wastes. [06]

OR

B. What are the sources of metals in wastes? Outline various metal recovery processes from waste materials. [06]

Q.6 A. What are the advantages of waste minimization? Write a detailed note on segregation and collection of biomedical wastes. [06]

B. Write short notes on: 1. Categories of BMW 2. Land filling [06]

OR

B. Write classification of BMW based on nature of waste. Describe biomedical waste disposal techniques. [06]