



## ANNA UNIVERSITY (UNIVERSITY DEPARTMENTS)

B.E. /B.Tech / B. Arch (Full Time) - END SEMESTER EXAMINATIONS, APRIL / MAY 2024

## Biomedical Engineering

VI<sup>th</sup> SemesterBM5691 & Management of Wastes in Hospitals  
(Regulation 2019)

Time:3hrs

Max.Marks: 100

CO1	Describe the importance of handling wastes and proper disposal.
CO2	Explain about regulatory requirements of waste management.
CO3	Comprehend the Challenges against the infectious waste.
CO4	Apply various waste disposal methods.
CO5	Describe the importance of safety and risk assessment techniques.

BL – Bloom's Taxonomy Levels

(L1-Remembering, L2-Understanding, L3-Applying, L4-Analysing, L5-Evaluating, L6-Creating)

**PART- A (10x2=20Marks)**  
(Answer all Questions)

Q. No.	Questions	Marks	CO	BL
1	Define Health care waste?	2	1	L1
2	Compare Genotoxic waste and Cytotoxic waste	2	1	L2
3	Enumerate any two guidelines given by BARC and CPCB.	2	2	L2
4	Write short notes on transboundary movements.	2	2	L1
5	List out the significance of Thermal and Microwave irradiation.	2	3	L2
6	What is in need for sterilization and disinfectants within hospitals?	2	3	L1
7	Enlist various methods involved in Liquid waste disposal.	2	4	L1
8	Difference between Incinerator and crematories.	2	4	L2
9	State the term hazard identification.	2	5	L1
10	Distinguish between Litigation and Mitigation.	2	5	L2

**PART- B (5x 13=65Marks)**  
(Restrict to a maximum of 2 subdivisions)

Q. No.	Questions	Marks	CO	BL
11 (a)(i).	Explain with neat tabular representation about the different categories of hospital waste schedule.	7	1	L1
(ii).	Classify different types of medical waste with colour coding.	6	1	L2
OR				
11 (b)(i).	Enumerate different types of segregation process involved in hospital waste management.	7	1	L1
(ii).	Discuss about Elements of solid waste Management.	6	1	L2
OR				
12 (a)	What are the various legislations and policies followed by EPA and waste regulations 2016 in India with regard to handle of Medical waste?	13	2	L1
12 (b)(i).	Ensure various guidelines given by WHO, CPCB and BARC to be followed and established effectively over large hospitals in India.	8	2	L2
(ii).	Write short notes on Basel convention techniques.	5	2	L2

13 (a)(i).	Describe transmission of disease related to pathogens, causes of infections, need for sterilization and disinfectant agents used in hospitals.	5	3	L2
(ii).	Discuss the essential parameters of steam sterilization and Microwave sterilization.	8	3	L1
<b>OR</b>				
13 (b)(i).	Briefly discuss about ETO/EO sterilization and dry heat sterilization techniques.	7	3	L1
(ii).	Write short notes on Autoclave method and thermal irradiation methods.	6	3	L2
14 (a)	Discuss various current treatment technologies available for solid waste disposal system including vermicomposting, deep burial, land deep well leach let dumping methods.	13	4	L1
<b>OR</b>				
14 (b)	Mention the various waste destruction and reduction methods involved in handling of hazardous waste and radioactive decay in hospitals.	13	4	L2
15 (a)	Elaborate the approaches of risk quantification matrix with probability of risk assessment and risk analysis in super specialty hospitals all over country.	13	5	L3
<b>OR</b>				
15 (b)	Explain risk management in multi specialty hospital based on the principle behind environmental issues, physical hazard and safety issues in India.	13	5	L4

**PART- C (1x 15=15Marks)**  
(Q.No.16 is compulsory)

Q. No.	Questions	Marks	CO	BL
16. (i).	How is Biomedical waste disposed of safely by Private and Public hospitals? What are the measures by which advanced nations handled such waste management efficiently and effectively?	8	1	L6
(ii).	Discuss the composition of biomedical waste and the role of occupational health program and emergency practices followed in our country.	7	5	L4

