



**PRESIDENCY UNIVERSITY
BENGALURU**

SCHOOL OF ENGINEERING

MAKEUP EXAMINATION – JAN 2023

Course Code : MEC-3070

Course Name: Electronic Waste Management

Program : B.Tech

Date: 25-JAN-2023

Time: 09.30 AM – 12.30 PM

Max Marks: 100

Weightage: 50%

Instructions:

- (i) *Read the question carefully and answer all the questions*
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Part A [Memory Recall Questions]

Answer the following Questions. Each Question carries FIVE marks (6Qx5M= 30)

1. A significantly large number of elements is used in the manufacturing of any Electronic product. Some of the elements present are very toxic in nature and have significant effect on the human health. List any four toxic elements present in the E-Waste.

C.O.NO 2 [Knowledge]

2. E-waste as per united nation report is becoming a global problem, because most of the country is not having sufficient infrastructure to recycle even one-tenth of the E-waste that they generate annually. In respect to India figure out the other two factor which leads to poor E-waste recycling in India.

C.O.NO 2 [Knowledge]

3. The major problem with E-Waste is because of hazardous elements present in it. The list of top 20 hazardous element list is prepared in every 2 year by ATSDR. Write the full form of the ATSDR and also name the element which is at the first rank in the latest list.

C.O.NO 2 [Knowledge]

4. This is already established that toxic elements present in the E-waste has significant effect on the health of the human being. There are different ways in which human body gets exposed to the toxic elements. Name the different exposure media and also the part of the body where it gets exposed.

C.O.NO 2 [Knowledge]

5. State and justify the statement that 'E-waste recycling is very important for developing countries' like India.

C.O.NO 3 [Knowledge]

6. List the different steps involved in the recycling of E-waste.

C.O.NO 3 [Knowledge]

Part B [Thought Provoking Questions]

Answer the following Questions. Each Question carries EIGHT marks (5Qx8M= 40)

7. MinaMata disease was first discovered in Minamata city, Japan in 1956. It was caused by the release of methyl mercury in the industrial wastewater from the Chisso Corporations chemical factory which continued from 1932 to 1968. Draw the life cycle of Mercury from its point of generation to the point when it enters the human body.

C.O.NO 3 [Comprehension]

8. Draw the flowsheet showing the steps for the recovery of metals from the E-waste.

C.O.NO 3 [Comprehension]

9. List the different existing technique available for recycling of E-waste.

C.O.NO 3 [Knowledge]

10. Explain the concept involves in the extraction of gold through cyanide leaching process.

C.O.NO 3 [Knowledge]

11. Write the chemical reaction involved in the halide leaching process and list the reason that why halide leaching is more difficult to apply in industry as compared to cyanide leaching process.

C.O.NO 3 [Knowledge]

Part C [Problem Solving Questions]

Answer the following Questions.The Question carries FIFTEEN marks (2Qx15M= 30)

12. A young entrepreneur installed a small capacity E-Waste recycling plant as a part time business in his town to recycle the E-waste generated in his town. The number of different E-waste collected by him annually is shown in the table below.

Electronic Equipment	Number of Units
Mobile phones	200000
Head phones	30000
Refrigerator	2000
Laptop	40000

Since his plant is of low budget so he can only take out gold, Silver and Aluminum from the different E-waste. The amount of above element present in a single unit of different E-waste is given in table below.

Electronic Equipment	Gold in (gram)	Silver in (gram)	Aluminum in (gram)
Mobile phones	0.01	10	10
Head phones	0	5	10
Refrigerator	1	50	500
Laptop	0.1	20	50

Calculate the total worth generated by the entrepreneur annually.

Note: Assume the appropriate market price of the elements.

C.O.NO 3 [Application]

13. Explain in detail thiosulphate leaching process. Write the various steps involved in thiosulphate process and list its advantage and disadvantage.

C.O.NO 3 [Application]