



SIR ARTHUR LEWIS COMMUNITY COLLEGE
ACADEMIC YEAR (2024/2025) – SEMESTER TWO
END OF SEMESTER EXAMINATION
ALTERNATE

COURSE CODE : ENV301
COURSE TITLE : Waste Management
LECTURER(S) : Nadia Joseph
DATE :
TIME :
DURATION : 1 hour 30 mins
STUDENT ID # : _____

GENERAL INFORMATION AND INSTRUCTIONS

- Students must sign **IN** and **OUT** on the examination class list.
- Write your ID number on the question paper.
- This paper consists of two sections.
- Section A consist of sixty MCQ and Section B consist of one structure questions.
- Students are required to answer all questions.

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Section A

Instructions: This examination consists of 60 multiple choice questions. Each question has four options A, B, C, and D. You must shade the letter of the option which best suit your answer on the answer sheet provided.

1. Which industrial waste is commonly used in construction industry?
 - A. Fly ash
 - B. Slag
 - C. Sludge
 - D. Red oxide
2. During waste water treatment, large objects like plastic bottles, plastics and cans are removed by
 - A. Bar screen
 - B. Filtration
 - C. Aeration
 - D. Chlorination
3. The rule of three R's to get rid of waste, does not include
 - A. Reuse
 - B. Reduce
 - C. Recycle
 - D. Regenerate
4. Which waste method was traditionally practiced in the rural parts of the Caribbean
 - A. Recycling
 - B. Composting
 - C. Open dumping
 - D. Incineration
5. Which option is used to reduce greenhouse gas emissions from landfills?
 - A. Segregate waste
 - B. Relocate the landfill
 - C. Practice incineration
 - D. Cover refuse on a daily basis
6. The solid waste from hospitals is classified as
 - A. Hazardous
 - B. Recyclable
 - C. Compostable
 - D. Non – hazardous
7. Waste management has been one of the most current issues being tackled at present. Which of the following is a good example?
 - A. Keep parks and roads clean
 - B. Use less water to clean vessels
 - C. Recycle non biodegradable waste
 - D. Bury waste in isolated open fields
8. The process of converting wet waste to manure is called
 - A. Incineration
 - B. Metabolism
 - C. Conservation
 - D. Composting
9. Among the following elements which is typically the most abundant in dried sewage sludge?
 - A. Nitrogen
 - B. Sulphur
 - C. Calcium
 - D. Phosphorus

10. What is the primary goal of sustainable waste management?
 - A. Increase landfill usage
 - B. Reduce waste at the source
 - C. Maximize waste incineration
 - D. Promote open dumping
11. Which of the following is NOT a principle of sustainable waste management?
 - A. Reuse
 - B. Recycling
 - C. Prevention
 - D. Landfilling
12. Hazardous waste can be classified into which of the following categories?
 - A. Organic and Inorganic
 - B. Domestic and Industrial
 - C. Biodegradable and Non-biodegradable
 - D. Biological, Chemical, and Radioactive
13. Which of the following waste treatment methods generates energy?
 - A. Composting
 - B. Incineration
 - C. Landfilling
 - D. Open dumping
14. What is the primary disadvantage of open dumping?
 - A. Food for foraging animals
 - B. Easy access to items
 - C. Environmental pollution
 - D. Reduces waste volume
15. Waste disposal contributes to climate change primarily through:
 - A. Air pollution
 - B. Soil erosion
 - C. Land pollution
 - D. Increase in biodiversity
16. The Waste Framework Directive of 2012 set recycling targets for EU member states at:
 - A. 20%
 - B. 30%
 - C. 50%
 - D. 80%
17. A government is developing legislation for waste management. What **should be prioritized** when defining its approach?
 - A. The best method for waste disposal
 - B. The ability to promote landfill use for long-term storage
 - C. The financial benefits for the waste management industry
 - D. The level of environmental impact the legislation aims to mitigate
18. How do **SMART objectives** support waste prevention initiatives?
 - A. They eliminate the need for waste audits.
 - B. They promote landfill use as a cost-effective solution.
 - C. They provide measurable goals for sustainability targets.
 - D. They mandate all companies to report waste disposal volumes.
19. Which practice best aligns with the **principles of waste prevention**?
 - A. Prioritizing incineration to reduce landfill waste
 - B. Encouraging consumers to purchase disposable plastics
 - C. Designing products for long-term durability and minimal waste
 - D. Expanding landfill capacity to accommodate increasing waste levels

20. Which **evaluation metric** would best assess the success of a waste reduction program?
- A. The total waste tonnage sent to landfills annually
 - B. The annual percentage increase in landfill revenue
 - C. The volume of methane gas emitted from landfills
 - D. The public perception of waste collection services
21. What aspect of **LEED certification** is directly related to waste prevention?
- A. Ensuring all buildings have larger landfill space
 - B. Requiring all employees to separate waste manually
 - C. Mandating the use of nuclear power in commercial buildings
 - D. Reducing construction waste through sustainable material selection
22. A company wants to **reduce packaging waste**. What is the most effective approach?
- A. Expanding landfill disposal sites
 - B. Banning recycled materials from use
 - C. Switching to biodegradable and reusable packaging materials
 - D. Increasing the number of plastic layers for product protection
23. How can businesses **incentivize waste prevention** among consumers?
- A. Increase landfill dumping fees
 - B. Charge a flat fee for waste disposal
 - C. Limit access to recycling facilities
 - D. Offer discounts for customers who bring reusable containers
24. If a city wants to **maximize the recovery of recyclable materials**, which of the following should it prioritize?
- A. Expanding landfill sites
 - B. Investing in clean MRFs
 - C. Increasing the number of waste incinerators
 - D. Transporting waste to developing countries
25. A **major challenge** with dirty MRFs is:
- A. High labor costs
 - B. Low quality of recyclables
 - C. Excessive government regulation
 - D. The inability to process hazardous waste
26. The Basel Convention **primarily aims to**:
- A. Promote the expansion of landfill use
 - B. Prohibit all forms of international waste trade
 - C. Encourage developed nations to recycle more waste
 - D. Regulate the transboundary movement of hazardous waste
27. How does the **circular economy** approach **differ** from the traditional **linear economy**?
- A. A circular economy eliminates all waste through advanced incineration.
 - B. A linear economy focuses on recycling, whereas a circular economy does not.
 - C. A circular economy keeps resources in use for as long as possible, reducing waste generation.
 - D. A linear economy uses only one line of product manufacturing and is more environmentally friendly.
28. What is the **biggest financial loss** when waste is sent to landfills?
- A. The loss of materials of value
 - B. The fees charged to waste haulers
 - C. The cost of emissions control systems
 - D. The direct cost of landfill maintenance
29. Which of the following materials **should NOT** be included in composting?
- A. Meat scraps
 - B. Grass clippings
 - C. Vegetable peels
 - D. Cardboard boxes

30. What is a **key strategy** in transitioning from a **linear to a circular economy**?
- A. Increasing waste incineration
 - B. Expanding landfill capacity
 - C. Encouraging waste pickers
 - D. Designing products for durability and recyclability
31. Which waste-to-energy technology is **most effective for managing organic waste**?
- A. Incineration
 - B. Pyrolysis
 - C. Landfilling
 - D. Anaerobic digestion
32. What is a **primary benefit** of energy recovery from waste?
- A. It promotes more specialised landfills
 - B. It discourages waste reduction initiatives
 - C. It reduces methane emissions from landfills
 - D. It eliminates the need for waste management policies
33. What is a **key drawback** of incineration in waste-to-energy plants?
- A. It is more cost-effective than recycling
 - B. It requires less energy than landfilling
 - C. It eliminates the need for waste collectors
 - D. It produces air pollutants such as dioxins and furans
34. How can modern incinerators **reduce their environmental impact**?
- A. By eliminating waste sorting
 - B. By avoiding the use of filters
 - C. By using flue gas treatment technologies
 - D. By burning all commingled waste together
35. What is the **greatest challenge** facing the expansion of waste-to-energy projects worldwide?
- A. High capital costs
 - B. Lack of waste materials
 - C. No environmental concerns
 - D. Unlimited government funding
36. **What is the main environmental concern associated with co-disposal landfills?**
- A. They produce recyclable materials
 - B. Leachates that may contain heavy metals
 - C. They are more expensive than traditional landfills
 - D. They require minimal environmental regulations
37. **Which waste disposal method should be applied in a country with high levels of hazardous waste?**
- A. Composting
 - B. Open dumping
 - C. Uncontrolled landfilling
 - D. Incineration with energy recovery
38. **If a company wants to monetize its waste products, which waste management approach should they explore?**
- A. Long-term waste storage
 - B. Increased landfill reliance
 - C. Waste-to-energy or material recovery
 - D. Exporting waste to developing countries
39. **Which aspect of sustainable landfills contributes most to long-term waste stability?**
- A. Pre-treatment of waste
 - B. Organic waste segregation
 - C. Increased waste intake capacity
 - D. Landfill expansion without controls

40. **What is the major trade-off in using incineration for waste disposal?**
- A. It removes the need for energy production
 - B. It eliminates the need for waste collection
 - C. It is the cheapest waste management method
 - D. It reduces landfill use but produces air pollutants
41. **A country with limited financial resources wants to improve waste management. What would be the best initial step?**
- A. Expanding landfill sites indefinitely
 - B. Eliminating waste management policies
 - C. Copy initiatives of well – developed zero- waste countries
 - D. Conducting a cost-benefit analysis to determine the most viable waste solutions
42. **What is the main objective of waste management assessment tools?**
- A. To eliminate the need for recycling
 - B. To increase landfill dependency
 - C. To guide decision-making for sustainable waste practices
 - D. To limit technological advancements in waste management
43. **Why is waste segregation important before disposal?**
- A. It minimizes contamination
 - B. It reduces the need for waste collection
 - C. It makes waste management more expensive
 - D. It increases landfill space requirements
44. Which argument best supports the use of cost-effectiveness analysis over cost-benefit analysis in waste management?
- A. Cost-benefit analysis ignores economic impacts
 - B. Cost-effectiveness analysis is only used for landfill projects
 - C. Cost-benefit analysis is not applicable to waste management
 - D. Cost-effectiveness analysis measures efficiency without needing to monetize benefits
45. Why do some countries ban waste imports despite the potential economic benefits?
- A. All waste is biodegradable
 - B. Waste imports generate excess revenue
 - C. Imported waste often leads to health risks
 - D. Waste imports increase earnings from recyclables
46. What role does eco-efficiency analysis (Eco-EFF) play in waste management?
- A. It only focuses on financial cost reduction
 - B. It eliminates waste management costs
 - C. It promotes landfill expansion for environmental sustainability
 - D. It optimizes environmental sustainability while considering economic factors
47. The most serious environmental effect posed by hazardous wastes is
- A. Air pollution
 - B. Contamination of groundwater
 - C. Increased use of land for landfills
 - D. Free access to medical supplies
48. Which of the integrated waste management practice minimises waste on an individual level?
- A. Burning
 - B. Disposal
 - C. Recycle
 - D. Source reduction
49. The average composition of municipal solid waste is:
- A. 41% organic, 40% inert, 19% recyclable
 - B. 20% organic, 60% inert, 20% recyclable
 - C. 30% organic, 20% inert, 50% recyclable
 - D. 19% organic, 41% inert, 40% recyclable

50. Which gas is produced in open dumps from the decomposition of waste?
- A. Ethane
 - B. Methane
 - C. Sulphur dioxide
 - D. Hydrogen sulphide
51. Why is recycled paper banned for use in food containers?
- A. Because it contains contaminants
 - B. Because it takes up a lot of space
 - C. Because paper can only be used once
 - D. Because paper is very thick and covers the food
52. The term Municipal Solid Waste is generally used to describe:
- A. Mining waste
 - B. Demolition waste
 - C. Agricultural waste
 - D. Waste from homes and institutions
53. Which of the following items is biodegradable?
- A. Paper
 - B. Food waste
 - C. Polythene bags
 - D. Synthetic fiber
54. What is the main challenge in waste management in Caribbean islands?
- A. Overpopulation
 - B. High level of industrial waste
 - C. Lack of financial resources
 - D. Large land availability for waste disposal
55. The primary waste management legislation in Saint Lucia is:
- A. Waste Management Act (2004)
 - B. Environmental Protection Act (1996)
 - C. National Integrated Waste Policy (2014)
 - D. Returnable Containers Act (1986)
56. Which of the following is a key strategy for waste minimization?
- A. Buying in bulk
 - B. Increasing landfill space
 - C. Incinerating all organic waste
 - D. Open dumping of recyclable waste
57. What is the greatest challenge in implementing zero-waste policies?
- A. Waste sorting equipment
 - B. Availability of landfill space
 - C. The cost of incineration plants
 - D. Lack of public awareness and participation
58. Which SDGs are directly linked to waste management?
- A. SDG 1 and SDG 6
 - B. SDG 11 and SDG 12
 - C. SDG 14 and SDG 17
 - D. SDG 8 and SDG 10
59. Which one of the following organisations do not monitor waste?
- A. UNEP
 - B. OECD
 - C. US EPA
 - D. US AID

60. Match the following

Colour codes	Methods for disposal
1. Yellow plastic bags	i. Disposal in secured landfill
2. Black plastic bags	ii. Incineration and deep burial
3. Blue/white plastic bags	iii. Autoclaving and chemical treatments
4. Red plastic bags	iv. Microwave treatments and destruction

Choose the correct code from the options below:

- A. 4-i; 3- ii; 2-iii. 1 – iv
- B. 1- i; 4 – ii; 3- iii; 2 – iv
- C. 2- i; 1- ii; 4- iii; 3 – iv
- D. 3 – i; 2 – ii; 1 – iii; 4 – iv

Section B

Instructions: This section has only ONE (1) question. You must answer the question fully.

Question 1

A rural community named Greenfield, home to approximately 2,000 residents, faces growing challenges with waste management. Currently, there is no formal waste disposal system, and residents rely on burning garbage or creating informal dumpsites, both of which have led to environmental pollution and health concerns. Greenfield is surrounded by lush forests, a small river that supports local agriculture, and several eco-tourism attractions. The community leaders are worried that improper waste management might damage the area's natural beauty, impact tourism, and harm public health.

You have been appointed as the lead environmental planner of a team tasked to design a waste management policy for Greenfield.

Draft a waste management policy for Greenfield which is practical, feasible and innovative focusing on the needs of the rural community. In your draft discuss three (3) priority areas.

15 marks