



JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY
SCHOOL OF PUBLIC HEALTH
UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF PUBLIC
HEALTH
3RD YEAR 2ND SEMESTER 2020/2021 ACADEMIC YEAR

COURSE CODE: HPB 3316

COURSE TITLE: LIQUID WASTE MANAGEMENT

EXAM VENUE:

STREAM: (BSC)

DATE:1/12/20

EXAM SESSION: 3-6 PM

TIME: 3 HOURS

Instructions:

1. Answer Question ONE (COMPULSORY) and ANY other 2 questions

- 1. Candidates are advised to write on the text editor provided, or to write on a foolscap, scan and upload alongside the question.**
 - 2. Candidates must ensure that they submit their work by clicking 'FINISH AND SUBMIT ATTEMPT' button at the end.**
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Question One -30mks

- (A) Define and explain examples of industrial wastewater -3mks
- (b) Explain any three physical characteristics of wastewater -3mks
- (c) What is an appurtenance? explain any three types of appurtenances involved in wastewater management -3mks
- (d) Differentiate combined and separate sewer system by giving advantages and disadvantages of each -3mks
- (e) What is a flush toilet? briefly explain its working mechanism -3mks
- (f) Explain the following drain materials and their applications -3mks
 - Polyvinyl chloride (PVC)
 - Pitch fibre
 - Asbestos cement
- (g) Briefly explain waste stabilization ponds -3mks
- (h) Explain any three types of sampling methods in the quality of waste water-3mks
- (i) Explain aerated lagoons-3mks
- (j) Explain the working mechanism of trickling filter-3mks

PART B-40mks

Answer any TWO questions

1. Discuss in detail the design of wastewater drainage system -20 mks
2. Discuss in detail the design and operation of treatment units -20 mks
3. Discuss in detail the conventional waste water treatment -20mks
4. Discuss the public health and environmental impacts of improper management of liquid wastes (wastewater). (20 Marks)