



JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF ENGINEERING AND TECHNOLOGY

**UNIVERSITY EXAMINATIONS FOR THE DIPLOMA IN MARINE ENGINEERING
(TVET)**

1ST YEAR 2ND SEMESTER 2023/2024 ACADEMIC YEAR

CENTRE: MAIN CAMPUS

COURSE CODE: TDM 2123

COURSE TITLE: FLUID MECHANICS PRINCIPLES

EXAM VENUE: STREAM: Dip Marine Eng

DATE: ../04/2024 EXAM SESSION:

DURATION: 2 HOURS

Instructions

- 1. Answer question 1 (Compulsory) in Section A and ANY other three questions in Section B**
- 2. Candidates are advised not to write on question paper**
- 3. Candidates must hand in their answer booklets to the invigilator while in the examination room**

SECTION A

QUESTION ONE (Compulsory) (40 Marks)

- a) Define the term fluid mechanics. (2 Marks)
- b) State two types of fluid mechanics. (2 Marks)
- c) Describe two divisions of fluid material. (4 Marks)
- d) State five basic dimensions in fluid mechanics. (10 Marks)

Property	Symbol	SI unit	English unit
1.			
2.			
3.			
4.			
5.			

- e) State three main conversions of factor in fluid mechanics. (3 Marks)
- f) State the derived units in fluid mechanics (any 10 units). (10 Marks)
- g) State and explain six characteristics of flow and fluid property. (9 Marks)

SECTION B

ANSWER ANY THREE QUESTIONS (60 Marks)

QUESTION TWO

- a) State four flow characteristics. (4 Marks)
- b) Briefly explain the dimensional analysis and state example. (4 Marks)
- c) How to derive the law of viscosity (μ): flow rate (Q) appropriate with viscosity coefficient and the radius (r) of the tube and the ratio between the pressure change and the length of the tube. (12 Marks)

QUESTION THREE

- a) State and explain static fluid. (4 Marks)

b) State and explain the standard pressure and absolute pressure by giving four examples of pressure gauges. (6 Marks)

c) Measured pressure fluid tank by monometer simple open and be shaped (μ) and connect tank containing fluid to be measured, pressure is being in the tube and touching mercury in monometer and the advantage of mercury high and specific weight is calculated pressure after it gets balance ends of monometer and (a-a). (10 Marks)

QUESTION FOUR

Simple monometer containing mercury was used to measure the pressure in the tank (A) which contain water either side of the monometer open to the normal atmospheric pressure. Sketch and find the value of the pressure inside the tank units. (20 Marks)

QUESTION FIVE

Calculate mass flow rate of water in tube diameter, velocity 10m/sec and find velocity in change tube diameter to 20cm³. (20 Marks)

