



KENYATTA UNIVERSITY

UNIVERSITY EXAMINATIONS 2020/2021

FIRST SEMESTER EXAMINATIONS FOR THE DEGREE OF BACHELOR OF ENVIRONMENTAL SCIENCE

ENS 130: ENVIRONMENTAL PHYSICS

DATE: Monday 15th March 2021

TIME: 2.00p.m - 4.00p.m

INSTRUCTIONS: Answer question 1 and any THREE

[Constants: $c = 3 \times 10^8$ m/s (speed of light in vacuum) $h = 6.626 \times 10^{-34}$ J.s. (Planck's constant)]

1.
 - a) Citing suitable examples, differentiated between physical and chemical properties. [8 marks]
 - b) Evaluate the various states of the matter. [6 marks]
 - b) Using suitable equation describe the universal law of gravitation. [3 marks]
 - c) Explain the various ways by which energy transfers occur on the earth. [8 marks]
2. Write short notes on the following terms in environmental physics:
 - i) Boyle's law [3 marks]
 - ii) Longitudinal waves [3 marks]
 - iii) Frictional forces [3 marks]
 - iv) Wien's law [3 marks]
 - v) The consequences of exposure to radioactive substances. [3 marks]
3. Discuss urbanization and its environmental impacts. [15 marks]
4.
 - a) A photon has energy of 48.8×10^{-14} J. Calculate the following:
 - i) Frequency [2 marks]
 - ii) Wavelength [2 marks]
 - iii) Momentum [2 marks]

- b) Describe the energy balance in an environment. [9 marks]
5. a) Using suitable equations, describe the concept and properties of the Electromagnetic Spectrum. [9 marks]
- b) Selenium-75 has a half-life of 120 days. How much of a 48 g sample of ^{75}Se will be left after;
- i) 960 days [3 marks]
- ii) 1920 days [3 marks]