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KIBABII UNIVERSITY

2019/2020 ACADEMIC YEAR

FIRST YEAR FIRST SEMESTER

SPECIAL/SUPPLEMENTARY EXAMINATIONS

FOR THE DEGREE OF BACHELOR OF SCIENCE IN RENEWABLE ENERGY AND
BIOFUELS TECHNOLOGY

COURSE CODE: REN111

COURSE TITLE: Survey of Energy Sources

DATE: 01/02/2021 **TIME:** 2:00 - 4:00 Pm

INSTRUCTIONS TO CANDIDATES

Answer question ONE and any other two questions

This paper consists of 3 printed pages. Please Turn over

Question 1

- (a) The sun is the main source of energy on earth. Explain this statement with reference to [4 marks]
- (i) biomass [4 marks]
 - (ii) fossil fuels [4 marks]
 - (iii) wave energy [4 marks]
 - (iv) ocean thermal energy [4 marks]
 - (v) Wind energy [2 marks]
- (b) Define "standard of living" [2 marks]
- (c) Clearly distinguish between the energy categories, giving examples [4 marks]
- (i) Primary and Secondary energy [4 marks]
 - (ii) Commercial and Non-commercial energy [4 marks]

Question Two

- (a) Define "Power Plant" [2 Marks]
- (b) Briefly explain why electricity is the preferred form of energy [2 Marks]
- (c) With the aid of sketches, describe how electricity is generated in the following power plants [4 Marks]
- (i) Coal Power Plant [4 Marks]
 - (ii) Nuclear Power Plant [4 Marks]
 - (iii) Diesel Power Plant [4 Marks]
 - (iv) Wind Turbine Power Plant [4 Marks]

Question Three

- (a) Define Renewable Energy [2 Marks]
- (b) State any **Seven** renewable energy sources [7 Marks]
- (c) (i) State which types of renewable energy are solar in origin [3 Marks]
- (ii) Describe how the energy sources stated in (i) are derived from the sun [8 Marks]

Question Four

- (a) (i) Name the different sources of biomass [4 Marks]
- (ii) With the aid of a diagram explain the carbon cycle [6 Marks]
- (b) With the aid of a sketch explain production of electricity in a nuclear power plant [10 Marks]

Question Five

- (a) "Energy provides services". Explain this statement with reference to
- (i) The built environment [4 Marks]
- (ii) The industry [4 Marks]
- (iii) Transport [4 Marks]
- (b) Explain the following terms
- (i) Photovoltaics [2 Marks]
- (ii) Solar thermal electricity [2 Marks]