



**KERALA AGRICULTURAL UNIVERSITY**

**B.Sc. (Hons.) Ag.**

**Re-examination- July -2019**

**2015 and previous admission**

**Engg.3204**

**Renewable Energy ( 1+0 )**

**Marks: 50**

**Time: 2 hours**

**I Fill in the blanks (10x1=10)**

- 1 Yaw control mechanism used in.....
- 2 Gasification is used to convert biomass into gaseous fuel under .....supply.
- 3 Biodiesel can be used in .....engines.
- 4 KVIC model biogas plant is an example for ..... type of biogas plant.
- 5 The percentage of CO<sub>2</sub> content present in the biogas is..... % .

**State True or False**

- 6 Solar PV technology uses solar heat energy for electricity generation.
- 7 Wind speed is directly proportional to height.
- 8 Example for liquid biofuel is biogas.
- 9 Glycerol is one of the byproducts during transesterification process.
- 10 Pyrolysis takes place in the absence of air/oxygen.

**II Write Short notes on ANY FIVE of the following (5x2=10)**

- 1 Give the relationship between wind velocity and power available in the wind.
- 2 Write a short note on solar pond.
- 3 What do you meant by anaerobic digestion?
- 4 Write a short note on biomass gasification.
- 5 Enumerate the components of biogas plants.
- 6 List out the different solar thermal devices and their application.
- 7 Discuss about technology used for conversion of biomass into
  - i) gaseous biofuel
  - ii) solid biofuel

**III Answer ANY FIVE of the following (5x4=20)**

- 1 Discuss about the solar energy based gadgets used in agriculture sector.
- 2 Briefly explain about the working of solar refrigeration system.
- 3 Discuss about constructional details of KVIC model biogas plant .
- 4 Distinguish between vertical and horizontal axis wind mill.
- 5 Briefly explain about bioethanol production agro waste with neat process flow chart.
- 6 How much quantity of fresh cow dung required for 4 m<sup>3</sup> capacity biogas plant. Suggest a low cost biogas plant model for this capacity biogas plant with justification.
- 7 Explain the process used for biodiesel production from vegetable oils with neat process flowchart.

**IV Write an essay on ANY ONE of the following (1x10=10)**

- 1 Briefly explain about the various components of wind energy conversion system.
- 2 Distinguish between conventional and non conventional sources of energy.

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