

B.Sc. (Ag.) Honours Semester-VI Examination, 2018

Course No: AEG-321 (Renewable Energy)

Signature of Centre Superintendent

Roll No. : (in figure) _____ (in words) _____

Student Index No. _____ Regn. No. _____ of _____

Time : 2 Hours

Full marks : 40

Questions are of value as indicated in the margin

Part - I
(Objective and Short Answer Type)
(Use only ball point pen)

Time : 20 minutes

Full marks : 10

- Note:** 1. Answer in question paper itself.
2. Striking, rewriting or overwriting are not allowed in the objective type questions.

1. **State True (T) or False (F) for the following statements:** 5×0.5=2.5

- (a) KVIC plant is a fixed dome type biogas plant.
- (b) Solar cells are made of silicon.
- (c) Flat plate collectors are suitable for temperature below 90⁰C.
- (d) Concentration ratio of flat plate collectors is higher than the focusing type collectors.
- (e) Ester is filtered to produce biodiesel.

2. **Fill in the blanks with appropriate phrases or number:** 10×0.5=5

- (a) The percentage of methane in biogas is _____%.
- (b) For working a windmill, the minimum speed of wind should be _____ kmph.
- (c) The proportion of wet cow dung and water in slurry feed to the digester is _____.
- (d) Refraction type focusing collector is _____ collector.
- (e) Blower is used in _____ convection solar dryer.
- (f) The upper limit of coefficient of performance or power coefficient of wind turbine is _____%.
- (g) _____ is the retention time for fast pyrolysis.
- (h) For optimum biogas production, pH value is maintained _____.
- (i) Small size gasifiers have output upto _____ kW.
- (j) _____ is cetane number of biodiesel.

3. **Match the following groups:** 5×0.5=2.5

Column-A	Column-B	Column-C
a) Parabolic disc concentrator	i) Fermentation	()
b) Briquettes	ii) Trans-esterification	()
c) Bioalcohol	iii) Wind mill	()
d) Biodiesel	iv) Solar Cooker	()
e) Dutch	v) Gasifier	()

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Part - II
(Descriptive Type)

Time : 100 minutes

Full marks : 30

Questions are of value as indicated in the margin

Answer *any four* questions

4. (a) What are the different sources of energy? Write the advantages and disadvantages of these sources. 5
- (b) What is the principle of solar photovoltaic power generation in solar cell? 2.5
5. (a) What is the composition of producer gas on percentage basis obtained from wood gasification? 1.5
- (b) Briefly explain about the different types of Gasifier with diagram. 6
6. (a) How the biodiesel is produced from Jatropha seeds explain. 3.5
- (b) Briefly explain two quality parameters for biodiesel. 2
- (c) What is the pretreatment of Cellulosic material? 2
7. (a) Explain the Anaerobic digestion process for Biogas production. 3.5
- (b) With line diagram describe the constructional details of Deenbandhu biogas plant. 4
8. (a) Classify the different types of Wind mills. 1.5
- (b) Briefly explain the principle of wind energy conversion in wind mill. 2
- (c) With neat sketch describe the different components of geothermal energy production system. 4
9. Write short note on the following (*any three*): 3×2.5=7.5
- (a) Solar fencing (b) Box type Solar cooker (c) a-silicon (d) Auger reactor
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