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**Question Paper Code: 97A03**

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2023

Seventh Semester

Agricultural Engineering

19UAG703 - INTRODUCTION TO GREEN ENERGY

(Regulations 2019)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

- Hydroelectric energy provides about \_\_\_\_\_ of the energy consumed annually in the United States CO2 - App  
(a) 4% (b) 12% (c) 30% (d) 65%
- Which source of energy is most likely to be depleted? CO1- U  
(a) Geothermal (b) Hydropower (c) Wind (d) Nuclear
- Which types of solar cell gives the highest efficiency? CO2- U  
(a) Mono crystalline (b) Poly crystalline (c) Thin film (d) All of these
- What is the solar constant value? CO2-App  
(a)  $S = 1.4 \times 10^2 \text{ W/m}^2$  (b)  $S = 1.4 \times 10^3 \text{ W/m}^2$  (c)  $S = 1.4 \times 10^4 \text{ W/m}^2$  (d)  $S = 1.5 \times 10^9 \text{ W}$
- What is the diameter of wind turbine blades? CO2 - App  
(a) 220 feet (b) 500 feet (c) 100 feet (d) 300 feet
- Winds having following speed are suitable to operate wind turbines? CO1-U  
(a) 5 – 25m/s (b) 10 – 35m/s (c) 20 – 45m/s (d) 10 – 15m/s
- Which of the following is an alcoholic that can be blended with petrol \_\_\_\_\_ CO1-U  
(a) ethanol (b) methanol (c) butanol (d) all the above
- Factors affecting bigas production CO1 -U  
(a) Temperature (b) pH value (c) Nutrients (a) Temperature

9. The floating gas holder digester which is used in India is known as \_\_\_\_\_ CO2 - App  
 (a) PRAD (b) Deenbandhu (c) KVIC (d) none of the above
10. Biogas is produced through \_\_\_\_\_ of organic CO1 - U  
 (a) anaerobic digestion (b) thermo (c) both (a) & (b) (d) none of the above

PART – B (5 x 2= 10Marks)

11. List out the merits of floating gas holder? CO1- U
12. List out the steps implementing a Clean development mechanism? CO2-App
13. Design and illustrate solar photovoltaic system? CO2-App
14. What are the characteristics suitable for wind power site? CO1- U
15. List the types of pyrolysis? CO1-U

PART – C (5 x 16= 80Marks)

16. (a) Explain the introduction of energy and its classification of energy source? CO1 - U (16)  
 Or  
 (b) What is global warming and explain the role of renewable energy for mitigation of global warming? CO1 - U (16)
17. (a) Design process of solar cooker and explain the types of solar cooker with neat sketch? CO2 -App (16)  
 Or  
 (b) Briefly explain about design and types of flat plate type solar collector? CO2- App (16)
18. (a) Briefly explain about wind energy conversion system? CO1- U (16)  
 Or  
 (b) Explain about wind velocity and direction measuring instruments? CO1-U (16)
19. (a) Explain in detail about down-draft gasifier system and also mention its merits and demerits? CO1- U (16)  
 Or  
 (b) Explain in detail about physical properties & thermal properties of biomass? CO1-U (16)

20. (a) Briefly explain about production of bioethanol and alcohol ? CO1- U (16)
- Or
- (b) What are the different between fixed dome and floating drum CO1-U (16)  
models and explain deenbandhu biogasplant?

