

Name:
Enrolment No:



UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, Aug 2020

Course: Renewable Energy Technology & Cogeneration
Program: B. Tech PSE and B. Tech Electrical
Course Code: PSEG-471
Instructions: Attempt all questions.

Semester: VIII
Time: 03 hrs.
Max. Marks: 100

SECTION A (30Marks)

S. No.	Multiple Choice	Marks	CO
Q1	Solar Flat plate collectors operates at the temperature range. a. 40-90°C b. 90-150°C c. 150-200°C d. 200°C and above	2	CO1
Q2	Fill factor is a. Directly proportional to the product of V_m and I_m b. Inversely proportional to the product of V_m and I_m c. Squared time directly proportional to the product of V_m and I_m d. Squared time inversely proportional to the product of V_m and I_m	2	CO2
Q3	Which is the third generation solar PV technology a. Silicon wafer b. Amorphous c. Bio cells d. Germanium	2	CO3
Q4	Wind shear is maximum a. Near earth surface b. Height between 20m – 50m c. Height between 50m-100m d. Height more than 200m	2	CO4
Q5	Which force helps in producing the actual work output from wind turbine a. Drift Force b. Drag Force c. Stochastic Force d. Transient Force	2	CO2
Q6	The optimum Carbon to Nitrogen ratio on feedstock for complete digestion must be a. 10:1 b. 20:1	2	CO2

	c. 30:1 d. 1:1		
Q7.	Biomass energy conversion system affects the environment through a. Deforestation b. Land Use c. Public health d. Use of hazardous materials	2	CO1
Q8	Factor which impact the biogas production by anaerobic digestion is a. Digester size b. Fixed Dome c. Seeding d. Wind speed	2	CO2
Q9	Which among the following type of Tidal Power Plant has the maximum plant size a. Single Basin Arrangement b. Double Basin Arrangement	2	CO3
Q10	Polarization in fuel cells means a. rate of fuel supply b. Rate of heat generation c. Difference in theoretical and practical output voltage d. Difference in theoretical and practical output current	2	CO2
Q11	The incident beam of sun light has power density of 0.7 kW/m^2 in the direction of beam. The angle of incidence θ is 60° . Calculate power collected by the surface having total flat area of 100m^2 . a. 0.166 b. 0.119 c. 0.035 d. 0.049	5	CO2
Q12	The basin area of a tidal power plant is $20 \times 10^6 \text{m}^2$. Tidal range is 8m then the energy generated in kWh is _____?	5	CO4
SECTION B (50Marks)			
Q13	Discuss the principle of solar PV power generation.	10	CO2
Q14	List down the advantages and disadvantages of concentrating collectors over flat plate collectors.	10	CO3
Q15	Discuss the principle of Co-Generation and classify co-generation systems.	10	CO1
Q16	Discuss in detail potential environment impacts of harnessing wind energy source.	10	CO2
Q17	Classify low temperature thermal storage system and list any four advantages of phase change energy storage system.	10	CO4

SECTION-C (20Marks)

Q18	i) Discuss the methodology of conducting performance test on CO-Generation system.	5	C01
	ii) Discuss the possible sources of Geothermal Pollution and suggest suitable solutions to avoid the possibility of pollution.	5	C02
	iii) Differentiate between wet and dry fermentation.	5	C03
	iv) Differentiate between pyrolysis and gasification process.	5	C04