

Centre for Rural Development and Technology, IIT Delhi

Name and Number of Course: Rural Energy Systems (RDL722)

Name of Exam: Minor - Online

Date: 11/November/2020 (01:00 PM–02:30 PM)

[Question paper is being provided through E-mail at RDL722@courses.iitd.ac.in at 01:00 PM on 11-11-2020 and answers script file shall be submitted at E-mail: ram.chandra6dec@gmail.com for its evaluation by 02.45 PM on the same day (**file should be named as RDL722 – YOUR NAME**)]

Time: 1.5 h		Maximum Marks: 30.0
Q1.	Describe the differences between rural and urban energy?	2.0
Q2.	How cooking energy requirement is to be estimated for the fuels (firewood and LPG)?	2.0
Q3.	What is difference between LHV and HHV of a fuel?	2.0
Q4.	What methods are used for characterization of biomass?	2.0
Q5.	If fuel formula is $C_1H_{1.35}N_{0.0079}S_{0.004}O_{0.6}$, then determine its molecular weight?	2.0
Q6.	What is thermochemical conversion of biomass? What are various processes under this? Describe them in brief?	2.0
Q7.	What is the impact of equivalence ratio on various biomass thermochemical conversion processes?	2.0
Q8.	What are the combustible products of producer gas and how much is the range for them?	2.0
Q9.	What is acetoclastic and hydrogenotrophic methanogenesis?	2.0
Q10.	What is the density of biogas, if methane and carbon dioxide contents in the gas are 70% and 30%, respectively?	2.0
Q11.	What is the LHV of biogas, if methane content in the gas is 55%?	2.0
Q12.	What is the role of C/N ratio of feed material on biogas production?	2.0

Q13.	Describe the need of biogas upgradation. What are the methods for biogas enrichments?	2.0
Q14.	How the mass flow rate of wind passing through a turbine blade is calculated?	1.0
Q15.	What does it represents; [33 kV/ 690V]?	1.0
Q16.	What is cut-in speed? What happen if its value decreases and increases with respect to its threshold value? What is Bitz Limit?	2.0

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