Name: **Enrolment No:**	UPES

End Semester Examination- May 2019

Program/course: MA Economics (With Specialization in Energy Economics) **Semester : II**
Subject: Energy Pricing **Max. Marks : 100**
Code : ECON-7013 **Duration : 3 Hrs**

	Section A (attempt all)		**CO1**
1.	Explain the difference between electricity tariff and electricity price?	**[2]**	
2.	Explain the different concepts of Costs.	**[2]**	
3.	Explain the following concepts: (2.5 Marks each) a) Seaboard Formula b) Coincident Peak Demand c) Load Factor d) Single Part Rate Design	**[10]**	
4.	State whether the following statements are True or False with reasons. **(4 Marks)** 1. Overhead cost is out of pocket cost. 2. Demand charge in electricity tariff is apportioned on the basis of some measurement of use of capacity.	**[4]**	
5.	Explain Trade Parity Concept in Petroleum Pricing.	**[2]**	
	SECTION B (Answer Any Four questions)	**CO3, CO5**	
1.	Explain the concept of Readiness to serve?	**[5]**	
2.	What is dependable energy capacity factor?	**[5]**	
3.	Discuss briefly Utility cost allocation theory?	**[5]**	
4.	A thermal power plant of 210 MW capacity has the maximum load of 160 MW. Its annual load factor is 0.6. The coal consumption is 1kg per kWh of energy generated and the cost of coal is Rs. 450.0 per tonne. Calculate (a) the annual revenue earned if energy is sold at Re.1 per kWh and (b) the capacity factor of the plant.	**[5]**	
5.	Share your understanding on Building Block of Petrol (Gasoline) Price in India .	**[5]**	
	SECTION C (Answer Any Two Questions)	**CO1 to CO4**	
7.	Calculate Cost of power generation from the source of your choice. By using the concept of Cost Sheet with the help hypothetical examples.	**[15]**	
8.	Discuss the California Electricity Crisis and lessons for the future.	**[15]**	
9.	Discuss the elements of rate design?	**[15]**	
10.	Discuss and compare Decreasing, Constant and Increasing Cost Conditions under cost approach to pricing with the help of an example.	**[15]**	

	Section D (Answer all the questions)		
2.	The following table is providing information, as per CERC guidelines, regarding tariff components of Biomass Gasification based power generation project.	**[30]**	**CO2-CO5**

Capacity	1	MW
Project Life	20	years
PLF	60	%
Auxiliary Consumption	10	%
Plant Cost (without subsidy)	572.66	Rs. In Lakh/MW
Capital Cost	422.66	Rs. In Lakh/MW
Depreciation for first 12 years	5.83	%
Depreciation from 13th year onwards	2.51	%
Debt	295.862	Rs. In Lakh
Equity	126.798	Rs. In Lakh
Interest on Loan	13	%
Fuel		
Fuel Requirement	1.25	kg/kWh
Feedstock Price	3000	Rs/MT
Fuel Cost Escalation	3%	
O&M		
O&M Cost	42.29	lakhs/MW
O&M Cost Escalation	5.72	%
Maintenance Spares	15	% of yearly O&M cost

Applicable Tariff for FY 2013-2014 for Biomass Power Projects

States	Applicable Tariff
Andhra Pradesh	Rs. 5.55
Haryana	Rs. 6.05
Maharashtra	Rs. 6.15
Punjab	Rs. 6.24
Rajasthan	Rs. 5.52
Tamilnadu	Rs. 5.49
Uttar Pradesh	Rs. 5.61
Others	Rs. 5.80

Assumptions:

1. Tariff Rs. 6.5
2. Fuel cost four months equivalent of annual generation.
3. Operating and Maintenance expenses One month equivalent of O &M expenses
4. Receivables two month equivalent of annual charge.

You are required to calculate the following:

	a. Annual Net Generation b. Working Capital c. Fixed and Variable expenses d. Share of tariff components e. Also compare the calculated tariff with applicable tariff in the state of your choice and give your opinion about tariff fixation of biomass based power projects.		

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	Section A (attempt all)		**CO1**
1.	Explain Renewable Energy Systems MNRE has listed?	**[2]**	
2.	What are the different Costs Approaches for energy pricing .	**[2]**	
3.	Explain the following concepts: (2.5 Marks each) e) Seaboard Formula f) Levellized Tariff g) Load Factor h) Single Part Rate Design	**[10]**	
4.	State whether the following statements are True or False with reasons. **(4 Marks)** 1. Marginal cost is out of pocket cost. 2. Commodity charge in electricity tariff is apportioned on the basis of some measurement of use of capacity.	**[4]**	
5.	Postage Stamp Principle as element of rate design	**[2]**	
	SECTION B (Answer Any Four questions)	**CO3, CO5**	
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5.	Share your understanding on Building Block of Petrol (Gasoline) Price in India .	**[5]**	
	SECTION C (Answer Any Two Questions)	**CO1 to CO4**	
7.	Calculate Cost of power generation from the source of your choice. By using the concept of Cost Sheet with the help hypothetical examples.	**[15]**	
8.	The following cost data pertaining to the year 2016-17 are collected from the books of ABC Power Co. Ltd. Prepare the cost sheet showing the cost of generation of power per unit of Kwh.	**[15]**	

Total Units generated	1,50,000 Kwh
Operating labour	Rs. 16,500

		<table><tr><td>Repairs and Maintenance</td><td>Rs. 21,000</td></tr><tr><td>Lubricants and supplies</td><td>Rs. 10,500</td></tr><tr><td>Plant Supervision</td><td>Rs. 5,250</td></tr><tr><td>Administrative Overheads</td><td>Rs. 9,000</td></tr><tr><td>Capital cost</td><td>Rs. 1,50,000</td></tr></table> Coal consumed per Kwh for the year 1.5 lbs and cost of coal delivered to the power stations is Rs. 330.60 per metric tonne. Depreciation rate chargeable is 4% per annum and interest on capital is to be taken at 1% higher than the Reserve Bank rate of 6% per annum.		
9.	Discuss the following tools of trade of energy pricing: 1. Load Curve 2. Diversity Factor 3. Non Coincident Peak Deamand 4. Duration Curve 5. LOLP	**[15]**	
10.	What is petrol price mechanism in India? Discuss in detail along with tax structure and rates.	**[15]**	
	Section D (Answer all the questions)		
2.	A. Write your understanding on the basis of 'Note on Behavioral Pricing' of Harvard Business Review. Discuss the usefulness of behavioral pricing perspective in energy pricing. B. Discuss the California Electricity Crisis and lessons for the future.	**[30]**	**CO2-CO5**