

Name:	
Enrolment No:	

**UNIVERSITY OF PETROLEUM AND ENERGY STUDIES**  
**Online End Semester Examination, Jan 2021**

<b>Progra</b>	: <b>M.Tech. – ES &amp; REE</b>	<b>Semester</b>	: <b>I</b>
<b>Course</b>	: <b>Energy Management System</b>	<b>Time</b>	: <b>03 hrs</b>
<b>Course Code</b>	: <b>EPEC 7022</b>	<b>Max. Marks</b>	: <b>100</b>
<b>Nos. of page(s)</b>	: <b>2</b>		

**SECTION A**

S. No.		Marks	CO
Q 1	Name the five states in India, where coal production is concentrated.	5	CO1
Q 2	Name five energy intensive industries having annual energy consumption of 30,000 metric tonne of oil equivalent and above, notified as designated consumers under the EC Act 2001.	5	CO4
Q 3	List any five national missions under NAPCC.	5	CO4
Q 4	List down five schemes of BEE under the Energy Conservation Act – 2001.	5	CO4
Q 5	What are the key greenhouse gases driving global warming?	5	CO1
Q 6	List down the essential elements of monitoring and targeting System.	5	CO2

**SECTION B**

Q 1	List objective and main features of Electricity Act, 2003.	10	CO4
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Q 2	The average monthly electricity consumption in an Aluminium producing unit is 12.35 lac kWh. The other energy sources used in the manufacturing process are Furnace oil (GCV-9660 kcal/Ltr) and HSD (GCV-9410 kcal/Ltr). If the annual fuel oil consumption is 5760 kL of Furnace oil (sp. gr. 0.92) and 720 kL of HSD (sp. gr. 0.88), determine if the unit qualifies as a Designated Consumer under the EC Act?	10	CO1
Q 3	A plant is using 6 tons/day of coal to generate steam. The calorific value of coal is 3300 kcal/kg. The cost of coal is Rs. 4200 / ton. The plant substitutes coal with agro-residue, as boiler fuel, which has a caloric value of 3100 kcal/kg and costs Rs. 1800/ton. Calculate the annual cost saving at 300 days of operation, assuming boiler efficiency remains same at 72 % for coal and agro residue as fuel.	10	CO3
Q 4	Explain how does Energy conservation measures categorize based on energy audit and analyses of the plant. Also, tabulate project priority guidelines technical feasibility, economical feasibility and risk wise.	10	CO2
Q 5	A manufacturing industry plans to improve its energy performance under PAT through implementation of an energy conservation scheme. After implementation, calculate the Plant Energy Performance (PEP) with 2015-16 as the reference year. What is your inference? Given that: The current year (2016-17 ) Annual Production – 28,750 T , Current year (2016-17 ) Annual Energy Consumption– 23,834 MWh, Reference year (2015-16 ) production - 34,000 T, Reference year (2015-16 ) Energy consumption - 27,200 MWh.	10	CO3
<b>Section C</b>			
Q 1	<p>a) Explain in detail benefits of implementing ISO 50001 in organization.</p> <p>b) Draw PDCA cycle and explain its approach to Energy Management System.</p> <p style="text-align: center;"><b>OR</b></p> <p>a) With the help of block diagram illustrate relationship between Energy Management System and Energy Performance as ISO 50001 standard requires continual improvement of EnMS as well as energy performance to achieve intended outcomes.</p> <p>b) Explain in brief Energy policy and give a model Energy policy.</p>	20	CO5