UPES
End Semester Examination, December 2024

Course: Energy Sector Infrastructure and Functioning   **Semester: I**
Program: BBA OG   **Time : 03 hrs.**
Course Code: OGET1001   **Max. Marks: 100**

Instructions: Write precise and brief answers

SECTION A
10Qx2M=20Marks

S. No.		Marks	CO
Q 1	*Choose the correct option*		

1 (i)	Trade parity price consist of how much percentage of import parity price?
	  a) 80%
	  b) 75%
	  c) 70%
	  d) 85%
		2	CO4

1 (ii)	Under _____ pricing regime, prices in retail side are set by market forces of demand and supply.	2	CO3
1 (iii)	Till recently, petrol prices were completely under government control and regulation and companies were compelled to keep same prices under which pricing regime?	2	CO3

1 (iv)	_____ represents the price which oil companies would realize on export of petroleum products.
	  a) Trade parity price
	  b) Import parity price
	  c) Export parity price
		2	CO4

1 (v)	A dynamo or generator and a battery can deliver _____ form of energy.	2	CO4
1(vi)	Biomass, animate, solar, water and wind energy, as well as geothermal energy, are the examples of which type of energy?	2	CO3 and 4
1 (vii)	_____ is involved in all life cycles, and it is essential in agriculture as much as in all other productive activities.	2	CO3
1 (viii)	Energy = Power x Time. True or False	2	CO2
1 (ix)	Which form of energy is indicated by temperature	2	CO3
1 (x)	Lakes with storage dams, natural heads (waterfalls), weirs, and run-of-river systems, present _____ form of energy.	2	CO1

SECTION B
4Qx5M= 20 Marks

	Answer the following questions (approx. 50 words)		
2. (A)	Briefly explain the peak oil theory.	**5**	**CO3**
2 (B)	Briefly explain the energy policy of India.	**5**	**CO2 and 4**
2 (C)	Explain the carbon trading scheme.	**5**	**CO2**
2 (D)	Indicate true or false for the following as applicable. a) Solar energy can be tapped using PV cells only. b) New and renewable energy sources exclude nuclear energy. c) The radiation from the sun contains energy, and also the radiation from a light or a fire are the examples of potential energy. d) The equation for energy balance is "source + import = export + variation of stock + use". e) Nuclear energy is the example of traditional source of energy.	**5**	**CO2**
SECTION-C **3Qx10M=30 Marks**			
	Answer the following questions		
3.1	Identify the forms of energy and their conversion (divided in what a system is utilizing and generating) in the following systems: a) A petrol car b) Coal based power plant c) Working of ceiling fan d) Working of a dam e) Solar PV power plant	**10**	**CO2**
3.2	Write a note on HELP.	**10**	**CO4**
3.3	What are the future opportunities in energy retailing and how India can benefit from them?	**10**	**CO3**
SECTION-D **2Qx15M= 30 Marks**			
	Study the following case and answer the questions that follow:		
Q 4.1	A 120 W LED is used for 25 minutes. It consumes 180,000 J of energy. However, 25% of the energy is lost as heat, 10% is lost as thermal conduction, and an additional 15% is lost as electromagnetic radiation at frequencies outside the visible spectrum. **Calculate:** 1. The total amount of energy lost in all forms. 2. The total useful light energy produced by the LED. 3. The efficiency of the LED in converting electrical energy into visible light.	**15**	**CO1, 3 and 4**
Q 4.2-	A 75 W lightbulb is switched on for 15 minutes. During this time, it uses a total of 67,500 J of electrical energy. However, the bulb is only 50% efficient at converting electrical energy into visible light. Out of the remaining energy, 35% is lost as heat to the surroundings and 15% is lost through thermal conduction. **Calculate:**	**15**	**CO1, 3 and 4**

	1. The total useful light energy produced by the bulb. 2. The energy lost as heat and conduction. 3. The total energy efficiency of the bulb in converting electrical energy into light.		