Name: **Enrolment No:**	UPES

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, December 2018

Program: MBA (Power Management) **Semester – III**
Subject (Course): Energy Conservation and Audit **Max. Marks : 100**
Course Code : PIPM 8004 **Duration : 3 Hrs**
No. of page/s: 2

Section – A (2 marks * 10 = 20 Marks)

S. No.		Marks	CO
	Fill in the blanks with the most suitable word/figure. Correct filling of each blank will fetch 2 marks.		
1.	National Mission for Enhanced Energy Efficiency consist of four initiatives to enhance energy efficiency in energy intensive industries and those initiatives are _____ , _____ , _____ , and _____ .	**8**	**CO1**
2.	Energy _____ and Energy _____ corresponds to the reduction in energy consumption through behavioral and technological changes respectively.	**4**	**CO1**
3.	As per Energy Conservation Act 2001, the following are considered as designated consumers: _____ , _____ , _____ , and _____ .	**8**	**CO1**

Section – B (5 marks * 4 = 20 Marks)

Answer all questions in this section:

4.	Briefly explain the following:		
a)	Energy Conservation Building Codes	**5**	**CO1**
b)	Energy Audit	**5**	**CO1**
c)	Climate Change	**5**	**CO1**
d)	Green Building	**5**	**CO1**

Section – C (10 marks * 3 = 30 Marks)

Answer all questions in this section:

5.	Discuss the functions of BEE.	**10**	**CO2, CO3, CO4**
6.	Citing one example for each, explain the difference between Supply Side Management and Demand Side Management.	**10**	**CO2, CO3**
7.	One unit of electricity saved at consumer end is equivalent to more than three units of electricity contributed to the nation. Justify using appropriate values.	**10**	**CO2, CO3**
Section – D (30 marks * 1 = 30 Marks) **Answer any one question from this section:**			
8.	Objectives of National Mission for Enhanced Energy Efficiency are aligned with the Global Climate Negotiations. Justify with relevant facts and figures.	**30**	**CO2, CO3, CO4**
9.	Consider a 50 hp motor that is driving a centrifugal pump at full speed continuously throughout a year. The price of electricity is Rs 5.00/kWh. Since this particular pump accommodates a varying load, the pump does not need to be run at full speed throughout the year and therefore, a variable frequency drive can be employed to reduce the pump motor speed. The pump load schedule is: 20% of the time at 50% full speed; 50% of the time at 80% full speed; and 30% of the time at 100% full speed. Estimate annual savings (in %) with implementation of a variable frequency drive. Hint: 1 hp = 0.746 kW ; $(P_2/P_1) = (N_2/N_1)^3$	**30**	**CO1, CO2, CO3, CO4**

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Section – A (2 marks * 10 = 20 Marks)

S. No.		Marks	CO
	Fill in the blanks with the most suitable word/figure. Correct filling of each blank will fetch 2 marks.		
1.	National Mission for Enhanced Energy Efficiency consist of four initiatives to enhance energy efficiency in energy intensive industries and those initiatives are _____ , _____ , _____ , and _____ .	**8**	**CO1**
2.	Energy _____ and Energy _____ corresponds to the reduction in energy consumption through behavioral and technological changes respectively.	**4**	**CO1**
3.	As per Energy Conservation Act 2001, the following are considered as designated consumers: _____ , _____ , _____ , and _____ .	**8**	**CO1**

Section – B (5 marks * 4 = 20 Marks)

Answer all questions in this section:

4.	Briefly explain the following:		
a)	Energy Intensive Industries	**5**	**CO1**
b)	Energy Audit	**5**	**CO1**
c)	Demand Side Management	**5**	**CO1**
d)	Supply Side Management	**5**	**CO1**

Section – C (10 marks * 3 = 30 Marks)

Answer all questions in this section:

5.	Discuss the functions of BEE.	**10**	**CO2, CO3, CO4**
6.	Considering time and cost overruns in power projects, energy conservation seems to be an attractive option for addressing demand-supply deficit. Justify.	**10**	**CO2, CO3**
7.	One unit of electricity saved at consumer end is equivalent to more than three units of electricity contributed to the nation. Justify using appropriate values.	**10**	**CO2, CO3**
Section – D (30 marks * 1 = 30 Marks) **Answer any one question from this section:**			
8.	Discuss India's National Action Plan on Climate Change and its impact on energy sector.	**30**	**CO2, CO3, CO4**
9.	Consider a 50 hp motor that is driving a centrifugal pump at full speed continuously throughout a year. The price of electricity is Rs 5.00/kWh. Since this particular pump accommodates a varying load, the pump does not need to be run at full speed throughout the year and therefore, a variable frequency drive can be employed to reduce the pump motor speed. The pump load schedule is: 20% of the time at 50% full speed; 50% of the time at 80% full speed; and 30% of the time at 100% full speed. Estimate annual savings (in %) with implementation of a variable frequency drive. Hint: 1 hp = 0.746 kW ; $(P_2/P_1) = (N_2/N_1)^3$	**30**	**CO1, CO2, CO3, CO4**