Enrolment No:	UPES UNIVERSITY WITH A PURPOSE

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

END SEMESTER EXAMINATION, DEC 2020

Course: Green Buildings. **Semester: III**

Program: M Tech ES and REE **Time 03 hrs.**

Course Code: EPEC-8009 **Max. Marks: 100**

SECTION A

1. Each Question will carry 5 Marks

2. Instruction: Write your answer in 5 lines maximum.

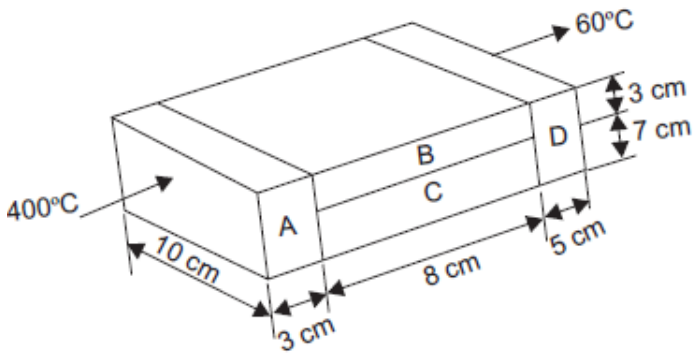
S. No.		CO
Q1	Highlight any five features of Green Buildings, which can result into the economic benefits of the society.	CO1
Q2	Write the name of any five nonmetallic minerals and their use in building sector.	CO2
Q3	List down the factors, which can affect the energy use of the buildings.	CO3
Q4	Name two methods to prove compliance of building performance with ECBC show the rating threshold.	CO4
Q5	Identify two main reasons for sick building syndrome and suggest any two remedial measures for reducing such effects on buildings.	CO1
Q6	Outline the advantages and disadvantages of Facultative Aerated Lagoon method of waste management?	CO3

SECTION B

1. Each question will carry 10 marks

2. Instruction: Write short / brief notes

Q7	Discuss in detail giving some examples about the environmental impact of Green Buildings.	CO1
Q8	According to WHO report, which chemical has been considered as most hazardous element for the building occupants? Describe the chemical properties of that element stating the ill impact on human health.	CO2
Q9	Find the heat flow rate through the composite wall as shown in Fig. 1. Assume one-dimensional flow. k_A = 150 W/m°C, k_B = 30 W/m°C, k_C = 65 W/m°C and k_D = 50 W/m°C.	CO3

		
Q10	Discuss the provisions given in various building rating systems practiced in India for renewable energy integration with their pros and cons.	**CO4**
Q11	In a commercial building after the energy audit of HVAC system the following observation is made, salt brine flow at the rate of 18 m^3/ hr is cooled down from 12°C to 7 °C using chilled water. The chiller unit compressor motor draws 31 kW power and total input power to the allied accessories is 16 kW. The operating efficiency of the motor is 90%. The salt brine density is 1.2 kg/litre and specific heat capacity is 0.97 kCal/kg °C. a) Calculate the refrigeration load (TR) imposed by the brine cooling? b) Calculate the COP of refrigeration compressor? c) Calculate the overall specific power consumption in kW/TR ?.	**CO3**
Section C 1. **Each Question carries 20 Marks.** 2. **Instruction: Write long answer.** 3. **Attempt any one question**		
Q12	(a) Draw a sketch of Green Building showing various measures which should be taken in order to get 5 star rating from LEED India rating system by justifying each criterion and impact on EPI of the Building. **OR** (b) Explain in detail how ECBC code is useful in reducing the energy intensity in building sector in India. Discuss the methodology of rating system given in ECBC Code.	**CO4** **CO4**