Name: Enrolment No:	

UPES

End Semester Examination, December 2023

Course: Material Testing and Evaluation — **Semester: III**

Program: B.Tech in Civil Engineering — **Time : 03 hrs**

Course Code: CIVL 2019 — **Max. Marks: 100**

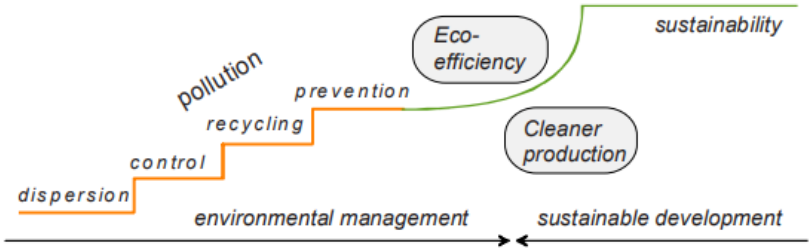
Instructions: 1. Draw neat sketches wherever required.
2. Do step-by-step calculations while solving the numerical.

SECTION A

(5Qx4M=20Marks)

S. No.		Marks	CO
Q 1	**Very short answer type questions**		
a)	What is the purpose of dressing stones?	**1**	**CO 1**
b)	Justify the use of stone as a building material?	**1**	**CO 1**
c)	Write the applications of light weight concrete?	**1**	**CO 1**
d)	What are the uses of stone?	**1**	**CO 1**
Q 2	**Enumerate the differences between the following:**		
a)	Stone and brick	**2**	**CO 2**
b)	Timber and glass	**2**	**CO 2**

Q 3	**What do you understand by the following terms?**		
a)	Thawing test	**2**	**CO 2**
b)	Water absorption test	**2**	**CO 2**
Q 4	Classify the construction material based on the use for construction of building types.	**4**	**CO 2**
Q 5	What are the various tests for stones? Briefly explain any one test.	**2+2**	**CO 2**
	SECTION B **(4Qx10M= 40 Marks)**		
Q 6	i. Why the compressive strength of bricks is necessary to determine before use? ii. Explain the step-by-step procedure to find out the compressive strength of bricks. iii. Draw a diagram for compressive stress-strain test.	**3+5+2**	**CO 3**
Q 7	Classify physical, mechanical, and chemical properties of building material. Briefly explain three properties from each category.	**4+6**	**CO 2**
Q 8	A concrete block measuring 0.5 m × 1.0 m × 2.0 m (H x W x L) has a mass of 2600 kg. What is the maximum pressure it can exert on the ground under following situations: i. 0.5 m × 1.0 m × 2.0 m ii. 1.0 m × 0.5 m × 2.0 m iii. 2.0 m × 1.0 m × 0.5 m iv. What is the greatest possible pressure the block will exert on the ground. Also show it diagrammatically. v. What is the minimum possible pressure the block will exert on the ground. Also show it diagrammatically.	**10**	**CO 2**
Q 9	Why all the structural components of a building should be constructed in such a way and of such materials that they withstand fire? Explain in detail.	**10**	**CO 3**
	SECTION-C **(2Qx20M=40 Marks)**		
Q 10	A bungalow with an open verandah and flat roof is to be constructed in Dehradun. Write briefly about the sustainable construction materials you specify for the following parts of the building giving reasons for your choice: i. Foundation ii. Brick masonry iii. Beams and columns iv. Roof v. Floor	**20** (4 marks each)	**CO3**

Q 11	a) Write short notes on: i. Use of Plastics in civil engineering. ii. Advantage of hollow blocks. b) What do you understand by the concept of Eco-Efficiency in sustainable construction? Explain with the help of following figure.  	**5+5** **10**	**CO2** **CO3**