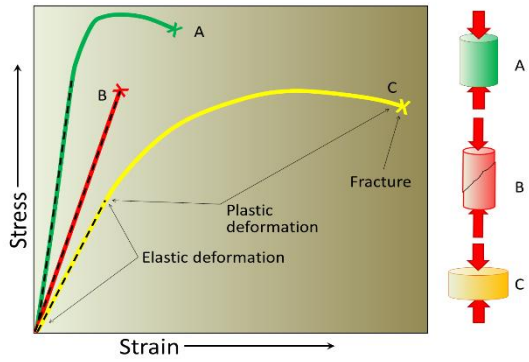
Name:

Enrolment No:

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, December 2022

Course: Material testing and evaluation **Semester: III**
Program: B Tech Civil Engineering **Time : 03 hrs.**
Course Code: CIVL 2019 **Max. Marks: 100**

Instructions:

SECTION A (5Qx4M=20Marks)			
S. No.		**Marks**	**CO**
Q 1	Differentiate between porosity and void ratio.	**4**	**CO1**
Q 2	Define flakiness index.	**4**	**CO2**
Q 3	Describe cup and cone failure.	**4**	**CO3**
Q 4	Differentiate between standard size and nominal size of brick.	**4**	**CO1**
Q 5	List three field tests of brick.	**4**	**CO2**
SECTION B (4Qx10M= 40 Marks)			
Q 6	Differentiate between physical and mechanical properties of materials used in building construction.	**10**	**CO1**
Q 7	Hardness of steel plays a role in manufacture of reinforced cement concrete – defend the statement with valid reasons	**10**	**CO2**
Q 8	 Explain the above diagram for three different types of metals.	**10**	**CO3**
Q 9	Draw a flow chart of dry process of manufacturing of cement.	**10**	**CO1**
SECTION-C (2Qx20M=40 Marks)			
Q 10	Define workability of concrete and explain any two methods of testing it in laboratory. mention the standard specifications for the same. (OR) a. Describe the use of Vicat's apparatus for finding the properties of cement	**20**	**CO2**

	b. Explain the procedure for knowing the presence of unburnt lime in cement.		
Q 11	Explain the following terms for a metal A) elastic deformation B) creep C) shear strength D) rigidity	**20**	**CO3**

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SECTION A (5Qx4M=20Marks)			
S. No.		**Marks**	**CO**
Q 1	Differentiate between unit weight and dry unit weight.	**4**	**CO1**
Q 2	Define elongation index.	**4**	**CO2**
Q 3	Concrete is superior in compression than tension – explain.	**4**	**CO3**
Q 4	Differentiate between poor grading and gap grading.	**4**	**CO1**
Q 5	List three field tests of cement.	**4**	**CO2**
SECTION B (4Qx10M= 40 Marks)			
Q 6	Describe the various steps involved in manufacturing of brick with neat diagrams	**10**	**CO1**
Q 7	Toughness of aggregate plays a major role in manufacture of concrete – defend the statement with valid reasons	**10**	**CO2**
Q 8	Explain the mechanical properties of mild steel	**10**	**CO3**
Q 9	Draw a flow chart of wet process of manufacturing of cement.	**10**	**CO1**
SECTION-C (2Qx20M=40 Marks)			
Q 10	Differentiate between destructive and non-destructive testing of concrete. Illustrate the mutual advantages and disadvantages of the same. (OR) Explain the properties of ferrous metals generally used in applications of building construction. Also explain the need of their alloys.	**20**	**CO2**
Q 11	Explain the following terms for a metal A) plastic deformation B) fatigue C) hardness D) flexibility	**20**	**CO3**