Ref: EX / CON / PE/ H / T/ 423B

B.E Construction Engineering Fourth Year Second Semester Examination 2024

Alternative Material and Sustainable Construction.(HONS)

Time : Three hours **(50 Marks for each Part)** **Full Marks : 100**

Use separate answer script for each Part

PART I (50 Marls)

Answer any two questions.

Q-1(a) Explain the advantages of using Jute Geo-textile in road subgrade improvement. (7) CO4

(b) Explain the arrangements of placing geo-textile layers below the base of a shallow foundation for improvement of bearing capacity of soil. (8) CO3

© Explain the reasons of increase in allowable bearing capacity of soil with jute geo-textile. (10) CO3

Q-2(a) Discuss the need of climate resilient road in India . Discuss the significance of cold mix asphalt in climate resilient road construction. (8+8) CO3

(b) Discuss the principles to manufacture less pollutant clay bricks in West Bengal. (9) CO3

Q-3 (a) Why use of lime mortar in repair of old masonry structure is considered as environmental friendly . Which type of lime is used in repair in damp and moist condition and why? (7+6) CO4

(b) Explain the significance of construction and demolition waste with reference to city environmental management. What are the possible steps to reduce the CDW pollution. (6+6) CO4

[Turn over

Ref. No. : Ex/CON/PE/H/T/423B/2024

B.E. CONSTRUCTION ENGINEERING FOURTH YEAR SECOND SEMESTER – 2024

SUBJECT: ALTERNTIVE MATERIALS AND SUSTAINABLE CONSTRUCTION (HONS.)

Time : Three hours **(50 Marks for each Part)** **Full Marks : 100**

Use separate answer script for each Part

PART II (50 Marls)

Instructions:
1. Answer **ALL** questions
2. Illustrate your answers with neat sketches wherever necessary.
3. Figures to the right indicate full marks.
4. Assume suitable data if necessary.
5. Preferably, write the answers in sequential order

Q1.Define sustainability in the context of Engineering and Construction. Discuss the key principles that underpin sustainable development **OR** explain the concept of Life Cycle Analysis (LCA). How is LCA applied in assessing the environmental impacts of construction materials and method? **(CO1)** (10)

Q2. Evaluate the importance of repair and rehabilitation in extending the life cycle of construction projects and enhancing sustainability **OR** what are the key considerations for sustainable repair and rehabilitation of concrete structures? **(CO3)** (10)

Q3. Enumerate the concept of Zero-Energy Buildings **OR** enumerate the concept of Green Buildings. **(CO1)** (10)

Q4. Explain the key requirements of the Energy Conservation Building Code (ECBC) and its role in promoting energy efficiency in buildings **OR** what is the Overall Thermal Transfer Value (OTTV), and how is it used to assess the energy performance of buildings? **(CO4)** (10)

Q5. Discuss the advantages and disadvantages of using recycled materials in road construction **OR** Identify and explain alternative materials that can be used in road construction to enhance sustainability.**(CO2)** (10)