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BTECH
(SEM IV) THEORY EXAMINATION 2024-25
MATERIALS, TESTING & CONSTRUCTION PRACTICES

TIME: 3 HRS

M.MARKS: 70

Note: Attempt all Sections. In case of any missing data, choose suitably.

SECTION A

1. Attempt *all* questions in brief.

02 x 7 = 14

		CO	Level
a.	What are the properties of good building stones?	1	K2
b.	List the desirable properties of thermal insulating materials.	1	K1
c.	What are the essential components of a foundation?	2	K3
d.	Define lintel and its role in construction.	2	K2
e.	State the different types of ventilation systems.	3	K4
f.	Explain the role of hydration in the setting of cement.	3	K2
g.	What is the importance of building planning principles?	4	K1

SECTION B

2. Attempt any *three* of the following:

07 x 3 = 21

		CO	Level
a.	What are the essential constituents of good brick earth? Describe the various methods used for the manufacturing of bricks. Also, explain the different tests conducted to assess the quality of bricks.	1	K2
b.	Explain the use and advantages of fly ash and GGBS in construction.	2	K3
c.	Define masonry and explain the common terms used in masonry construction. Differentiate between brick masonry and stone masonry. Also, describe the various types of bonds used in brick and stone masonry work with suitable sketches.	3	K1
d.	Define shoring and underpinning in the context of building construction. Explain the situation where each is required. Describe the different types of shoring and underpinning techniques commonly used, along with their purposes and key considerations during implementation.	4	K4
e.	Explain methods of damp proofing and their significance.	5	K3

SECTION C

3. Attempt any *one* part of the following:

07 x 1 = 07

		CO	Level
a.	Explain the purpose and procedure of the following laboratory tests conducted on cement: Fineness Test, Standard Consistency Test, Initial Setting Time Test, Final Setting Time Test, Soundness Test.	1	K1
b.	Explain the following tests conducted on coarse aggregates, highlighting their purpose, procedure, and significance in construction quality control: Aggregate Crushing Value (ACV) Test, Aggregate Impact Value (AIV) Test, Los Angeles Abrasion Test, Flakiness Index Test.	1	K2



Paper id: 252560

Printed Page: 2 of 2
Subject Code: BCE401

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4. Attempt any *one* part of the following: 07 x 1 = 07

		CO	Level
a.	Explain the various types of paints used in construction. Discuss their composition, preparation, and application on different surfaces.	2	K3
b.	What are insulating materials? Explain the desirable properties of good insulating materials. Discuss the different types of thermal and sound insulating materials used in building construction, along with their applications.	2	K2

5. Attempt any *one* part of the following: 07 x 1 = 07

		CO	Level
a.	Define and differentiate between load-bearing walls, partition walls, and cavity walls. Explain the functions, construction methods, and typical applications of each type in building construction.	3	K1
b.	What are the essential requirements of a good floor in building construction? Describe the components of a ground floor and the factors influencing the selection of flooring materials. Explain the procedure for laying of the following types of flooring: Mosaic flooring and Granite flooring.	3	K4

6. Attempt any *one* part of the following: 07 x 1 = 07

		CO	Level
a.	Discuss the various types of roofing systems used in building construction with reference to: (a) Trussed roofs and (b) R.C.C. roofs. Highlight the features, construction methods, and suitability of each type.	4	K1
b.	What is formwork in building construction? Explain its purpose and importance. Discuss the various types of formworks commonly used in construction projects. Also, elaborate on the precautions and preventive measures that should be taken while providing formwork on site.	4	K3

7. Attempt any *one* part of the following: 07 x 1 = 07

		CO	Level
a.	Discuss the principles of fire protection in buildings. Explain fire hazards, classification of fire-resistant materials, and fire-resistant construction techniques.	5	K2
b.	Explain the different methods and materials used in plastering and pointing. Discuss the common defects in plastering and the role of waterproofing in enhancing durability.	5	K3