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Gandhi Institute of Engineering and Technology University, Odisha, Gunupur
(GIET UNIVERSITY)



Ph.D. (Second Semester-Summer) Examinations, April – 2026
23PPECV2011 – Recent Advances in Construction Materials
 (Civil Engineering)

Time: 3 hrs

Maximum: 70 Marks

The figures in the right hand margin indicate marks.

Answer ANY FIVE Questions.**(14 x 5 = 70 Marks) Marks**

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| 1.a. | Analyze the influence of various factors on the properties of fibre reinforced concrete with reference to mix design and field performance. | 7 |
| b. | Select appropriate types of fibre reinforced concrete for different engineering applications and justify your choices based on their characteristics. | 7 |
| 2.a. | Demonstrate how the workability of fibre reinforced concrete can be evaluated and improved in practical situations. | 7 |
| b. | Assess the mechanical and physical properties of fibre reinforced concrete and their implications in structural applications. | 7 |
| 3.a. | Apply your understanding to discuss the utilization of industrial waste materials in concrete with suitable examples. | 7 |
| b. | Analyze the influence of industrial waste materials on the physical, mechanical, and durability properties of concrete in practical applications. | 7 |
| 4.a. | Discuss the mechanisms of corrosion of reinforced steel in concrete and propose suitable control measures for its prevention. | 7 |
| b. | Explain the techniques and materials used to produce corrosion-resistant concrete, illustrating your answer with appropriate examples. | 7 |
| 5.a. | Using appropriate engineering principles, discuss the application of polymers in concrete and evaluate their impact on performance. | 7 |
| b. | Examine the properties, advantages, limitations, and practical uses of polymer concrete in construction. | 7 |
| 6.a. | Using appropriate engineering concepts, distinguish between sealants and adhesives, and describe their different types with suitable illustrations. | 7 |
| b. | Explain the functional significance of structural elastomeric bearings and resilient seating, emphasizing their applications in construction. | 7 |
| 7.a. | Discuss the application and effectiveness of moisture barriers in preventing dampness in structures. | 7 |
| b. | Examine the properties and practical uses of polymer foams in building construction. | 7 |
| 8.a. | Explain the utilization of industrial waste materials in the construction industry, outlining their benefits and limitations. | 7 |
| b. | Explain the different methods used to protect concrete structures against corrosion, along with their practical applications. | 7 |

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