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BTECH
(SEM VII) THEORY EXAMINATION 2024-25
RAILWAY, WATERWAY AND AIRWAY ENGINEERING

TIME: 3 HRS**M.MARKS: 100**

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

SECTION A**1. Attempt all questions in brief.****2 x 10 = 20**

| Q no. | Question | CO | Level |
|-------|---|-----|-------|
| a. | What is the function of ballast in railway tracks? | CO1 | K2 |
| b. | What is sleeper density? | CO1 | K2 |
| c. | Define a marshalling yard. | CO2 | K2 |
| d. | What is cant excess? | CO2 | K2 |
| e. | What is a railway signal? | CO3 | K3 |
| f. | Define ballastless track. | CO3 | K2 |
| g. | What is the purpose of an airport hangar? | CO4 | K2 |
| h. | Discuss different types of runway lighting systems. | CO4 | K3 |
| i. | Define littoral drift. | CO5 | K2 |
| j. | What is sounding in water transport? | CO5 | K3 |

SECTION B**2. Attempt any three of the following:****10 x 3 = 20**

| Q no. | Question | CO | Level |
|-------|--|-----|-------|
| a. | Explain the concept of coning of wheels and its significance in railway operations. | CO1 | K3 |
| b. | What are the different types of railway stations, and how are they classified based on their functions? | CO2 | K3 |
| c. | What are the key design considerations for high-speed rail tracks to ensure safety and stability at higher speeds? | CO3 | K3 |
| d. | Why is drainage management critical in airport design and operation? | CO4 | K4 |
| e. | What is a port? Discuss the requirements of a good port. | CO5 | K3 |

SECTION C**3. Attempt any one part of the following:****10 x 1 = 10**

| Q no. | Question | CO | Level |
|-------|---|-----|-------|
| a. | Define a permanent way and explain its importance in railway infrastructure. | CO1 | K3 |
| b. | Explain the types of locomotives used in Indian Railways and their respective advantages. | CO1 | K3 |

4. Attempt any one part of the following:**10 x 1 = 10**

| Q no. | Question | CO | Level |
|-------|--|-----|-------|
| a. | A broad-gauge railway track has a curve with a radius of 1500 meters. The maximum sanctioned speed is 120 km/h, and the equilibrium speed is 90 km/h. Calculate the following: <ul style="list-style-type: none"> The required super-elevation. The maximum permissible speed. | CO2 | K4 |



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Printed Page: 2 of 2

Subject Code: KCE070

Roll No:

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| | | | |
|----|--|-----|----|
| b. | Describe the types of crossings used in railway tracks and their applications. | CO2 | K3 |
|----|--|-----|----|

5. Attempt any one part of the following:**10 x 1 = 10**

| Q no. | Question | CO | Level |
|-------|---|-----|-------|
| a. | What is track interlocking? Discuss the different types of interlocking systems used in railway operations. | CO3 | K3 |
| b. | What is the Centralized Train Control (CTC) system, and how does it improve train operations and safety | CO3 | K4 |

6. Attempt any one part of the following:**10 x 1 = 10**

| Q no. | Question | CO | Level |
|-------|---|-----|-------|
| a. | Explain the role of zoning laws in ensuring the safety of airport operations. | CO4 | K3 |
| b. | What are the major components of an airport, and how do they function together? | CO4 | K3 |

7. Attempt any one part of the following:**10 x 1 = 10**

| Q no. | Question | CO | Level |
|-------|--|-----|-------|
| a. | Why is tidal analysis crucial for port and harbor operations? | CO5 | K3 |
| b. | Discuss the factors to be considered when selecting a location for a harbor. | CO5 | K4 |