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B TECH
(SEM-VII) THEORY EXAMINATION 2020-21
RAILWAYS, AIRPORT & WATERWAYS

Time: 3 Hours

Total Marks: 70

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt all questions in brief.

2 x 7 = 14

a.	What are the various parts of a turnout?
b.	What do you understand by the term wet Dock?
c.	What type of site is suitable for locating an airport on a hilly area and why?
d.	What do you understand by Littoral Drift?
e.	List the components of an airport layout.
f.	What should be the actual ruling gradient, if the ruling gradient is 1 in 300 on a B.G. track and a curve of 2° is superimposed on it?
g.	Define a permanent way or a railway track in railways.

SECTION B

2. Attempt any three of the following:

7 x 3 = 21

a.	What are the functions of rail joints? Compare the various types of rail joints with neat and labelled sketches.
b.	If an 8° curve track diverges from a main curve of 5° in an opposite direction in the layout of a B.G. yard. Calculate the super-elevation and the speed on the branch line, if the max. Speed permitted on the main line is 40km/h.
c.	What do you understand by Interlocking? Explain various principles of interlocking.
d.	Explain with a neat sketch to show how 'marking' is done on a runway.
e.	Explain different types of harbors with neat sketch.

SECTION C

3. Attempt any one part of the following:

7 x 1 = 7

(a)	Explain the various rail defects or deformation with neat sketches.
(b)	Give the list of various types of track fittings and fastening. What are spikes? Write the requirement of dog spike.

4. Attempt any one part of the following:

7 x 1 = 7

(a)	Define the various types of stations used in India with neat and labelled diagram.
(b)	Determine the equilibrium cant on a 2° curve on a broad gauge, if 16 trains, 10 trains, 8 trains, 4 trains and 2 trains are running at a speed of 50Kmph, 60Kmph, 70Kmph, 80Kmph and 100Kmph respectively. Also, determine the deviation from maximum speed.

5. Attempt any one part of the following:

7 x 1 = 7

(a)	How are the signals classified? Explain the different types of signals used in station yards.
(b)	What are the various methods to control the movement of trains in India? Explain briefly.



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

(a)	Explain briefly the various factors considered in the selection of site for airport.
(b)	An airport is proposed at an elevation of 600 m above Mean Sea Level where the mean of maximum and mean of average daily temperatures of the hottest month are 45.6° C and 28.2°C respectively. The maximum elevation difference along the proposed profile of the runway is 6.3 m. If the basic length of the runway is 1550 m, determine the actual length of runway to be provided.

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

(a)	Briefly describe the different navigational aids in harbor engineering.
(b)	What is the role of the following processes in harbor layout and suggest remedies? (i) Storm Wind, (ii) High Tides