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# P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

Seventh Semester, B.E. - Civil Engineering

Semester End Examination; Jan. / Feb. - 2021

**Basic Transportation Engineering**

Time: 3 hrs

Max. Marks: 100

*Note: Answer FIVE full questions, selecting ONE full question from each unit.*

## UNIT - I

- 1 a. Mention the different modes of transportation. Explain the various characteristics of road transport. 6
- b. What are the significant recommendations of Jayakar committee? How are they implemented? 6
- c. Explain the classification of roads as per Nagpur road plan. 8
- 2 a. Explain the scope of highway engineering. 6
- b. Compare the characteristics features of different modes of transportation. 6
- c. Explain the following, indicating the objectives of: 8
  - i) CRF
  - ii) CRR

## UNIT - II

- 3 a. Explain the functional and structural requirements of road pavements. 10
- b. Draw a sketch of flexible pavement cross-section and show the component parts. Enumerate the functions of each component of the pavement. 10
- 4 a. Compare the characteristic features of flexible and rigid pavements. 6
- b. List and explain the ideal requirements of highway alignment. 6
- c. Explain the factors governing the design control and criteria for geometric design of roads. 8

## UNIT - III

- 5 a. Define permanent way. Mention the requirements of an ideal permanent way. 6
- b. List and explain the different types of ballast used in railway track. 6
- c. Explain the types of joints adopted in railway track. 8
- 6 a. Mention the requirements of rails. 6
- b. Explain the following: 8
  - i) Sleeper density
  - ii) Concrete sleeper
- c. Mention the functions of sleepers. 6

**UNIT - IV**

- 7 a. Explain the factors that influence the site selection for an airport. 10
- b. Define the term harbor. Explain various classification of harbor. 10
- 8 a. Explain the following natural phenomenon affecting the design of harbors:
- i) Wave 10
- ii) Tide
- b. For an aircraft requiring the basic runway length of 1500 m, determine the actual runway length, if the airport is to be located at an elevation of 900 m, where the reference temperature is 20°C and the airport is to be constructed in a profile permitting 0.2% effective gradient. 10

**UNIT - V**

- 9 a. Explain the different data collection techniques employed in ITS. 10
- b. Write short notes on promotion of non-motorized transport. 10
- 10 a. Define ITS. Explain its application in transportation engineering. 10
- b. Explain promotion and integration of public transportation. 10

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