ANNA UNIVERSITY - 2007

B.E/B.TECH DEGREE EXAMINATION

TRANSPORTATION ENGINEERING-II

(CIVIL ENGINEERING)

TIME-3HOUR
MARK-100

ANSWER ALL THE QUESTIONS

PART A — (10 ´ 2 = 20 MARKS)

1. State the role of railways in economic development of the nation.

2. What are the components of permanent way?

3. What do you understand by creep in rails? State any two of its impact.

4. What do you mean by Track-circuiting?

5. List the different types of airport parking systems.

6. Write different systems of aircraft parking adjacent to terminal building.

7. State any two factors which necessitate the navigational aids in water transport.

8. Compare the warehouse and transit sheds in terms of their purpose and location.

9. What is meant by BOT concept?

10. How net present value (NPV) is defined?

PART B — (5 ´ 16 = 80 MARKS)

11. (a) Define the two measures of benefit cost ratio and evaluate the Benefit Cost Ratio criteria.

(b) The cash flow stream of a project is given below.

Calculate the internal rate of return.

12. (a) (i) Describe in detail the different types of surveys to be carried out in case of new railway project.

(ii) What are the factors on which the speed of the trains on curves depend? Write the formulae that are generally employed in Indian Railways to find the speed of trains on broad gauge, metre gauge and narrow gauge.

(OR)

(b) Explain the following of any four, with sketches if necessary.
(i) Gradient
(ii) Super elevation
(iii) Widening of gauges in curves
(iv) Grade compensation
(v) Transition curves
(vi) Coning of wheels

13. (a) Draw a neat diagram of a simple right-hand turn out and show its various components. Explain the working principles of the turnout.

(OR)

(b) Define interlocking and explain the principles if interlocking. Describe the various mechanical devices used for interlocking.

14. (a) (i) Describe the factors that influence the selection of site of an airport.

(ii) What are the functions of ICAO and its structure?

(OR)

(b) Following are the average wind data for an airport site, for the wind intensity is above 6Kmph. Draw a wind rose diagram and determine the best orientation of runway. Determine the percentage of time in a year during which the runway can be used for flights.

Wind Direction % time Wind Direction % time Wind Direction % time Wind Direction % time
N 6.6 E 1.8 S 7.7 W 3.9
NNE 10.3 ESE 0.9 SSW 14.3 WNW 0.5
NE 8.1 SE 0.4 SW 10.6 NW 0.3
ENE 3.1 SSE 4.1 WSW 5.7 NNW 4.2

15. (a) (i) What are the requirements of good ports? Briefly describe the classification and the components of harbours.

(ii) Describe the following:

1. Mooring and Mooring accessories
2. Navigational aids

(OR)

(b) Explain with neat sketches, the functions and working principles of the following.

(i) Jetties
(ii) Landing stages
(iii) Spring fenders
(iv) Dolphins.