

Roll No.....

Total No. of Printed Pages: 1

Total No. of Questions: [09]

B. Tech (Civil Engg.) (Semester – 7th)
TRANSPORTATION ENGINEERING-II
Subject Code: BCIES1-721
Paper ID: 19110735

Time: 03 Hours

Maximum Marks: 60

Instruction for candidates:

1. Section A is compulsory. It consists of 10 parts of two marks each.
2. Section B consist of 5 questions of 5 marks each. The student has to attempt any 4 questions out of it.
3. Section C consist of 3 questions of 10 marks each. The student has to attempt any 2 questions.

Section – A

(2 marks each)

Q1. Attempt the following:

- a Enumerate the different rail gauges used on Indian railway tracks.
- b How much should be the minimum depth of ballast cushion on a BG railway track.
- c What are the operational aspects of a Semaphore signal?
- d Differentiate between SWR and LWR.
- e What is the use of a Triangle and a Turn Table in the station yards?
- f Differentiate between Turning radius and Circling radius for planning an airport.
- g List the Land-side and Air-side components of the Airport.
- h How the head-wind assists in aircraft landing and take-off.
- i Which is largest passenger airliner currently in operation in the world.
- j Give full names of any two international airports of India.

Section – B

(5 marks each)

- Q2. What functions do the sleepers perform in a railway track. What are the factors affecting the sleeper density. Find out the number of rail lengths and number of sleepers required for constructing a BG track of 100 km length, using a sleeper density of $n+6$.
- Q3. Draw a neat sketch and describe the necessity of the following:
(i) Tilting of rails (ii) Adzing of sleepers (iii) Coning of wheels.
- Q4. What are different types of gradients used on Indian Railways. When there is the necessity of compensating the gradients. What would be the steepest gradient permitted on a 2° curve on a BG track with ruling gradient of 5%.
- Q5. Draw and explain typical Airport layouts for (a) Single Runway, (b) Two Parallel Runways, and (c) Three non-intersecting Runways.
- Q6. What are the purposes of installing visual aids on the Airports. Explain the markings and lighting arrangement made on the runway.

Section – C

(10 marks each)

- Q7. (a) Explain briefly the different types of Station Yards. Explain the working of a Marshalling Yard with the help of a neat sketch.
(b) What is meant by a Level Crossing. How the Level Crossings are classified in India. Explain with sketch a right angled 'A' type Level Crossing.
- Q8. Write short notes on the following:
 - (i) Equivalent Turnout
 - (ii) Diamond Crossing
 - (iii) Cross Wind Component
 - (iv) Wind Rose Diagram
 - (v) Black Box
- Q9. What is basic runway length. What corrections need to be applied to calculate the actual length. Determine the actual length for the runway of basic length 1200 m, situated at an altitude of 600 m, and having the airport reference temperature as 27°C. Given the difference in elevation between the highest and lowest point on the runway is 2.0 m.