Registration No. :

Total number of printed pages – 2

Sixth Semester (Special/Back) Examination – 2013

TRANSPORTATION ENGINEERING - II

BRANCH : CIVIL

QUESTION CODE : E 389

Full Marks – 70

Time : 3 Hours

Answer Question No. 1 which is compulsory and any five from the rest.

The figures in the right-hand margin indicate marks.

1. Answer the following questions :   2 ×10

    (a) Draw a typical cross-section of a permanent way on embankment showing various components.

    (b) What is creep ? List out the theories to explain its probable causes.

    (c) What do you mean by corrugated or roaring rails ?

    (d) Explain obtuse angle crossing by means of a neat sketch.

    (e) What are the functions of ballast in a railway track ?

    (f) Discuss the necessity and effects of coning of wheels.

    (g) Enumerate various factors which affect the locations of exit taxiway ?

    (h) Explain the necessity of airport lighting.

    (i) Draw a neat sketch of various markings on runways.

    (j) Name the different characteristics of aircrafts.

2. (a) Discuss the factors on which sleeper density depends. How is the sleeper density expressed ? Using a sleeper density M+5, find out the number of sleepers required for constructing a B.G. railway track 640 meters long.   5

    (b) What do you understand by a railway track or a permanent way ? Mention the requirements of an ideal permanent way.   5

3. (a) What is meant by wear of rails ? Discuss the various suitable measures to reduce the effect of wear on rails.   5

(b) A BG locomotive has three pairs of driving wheels with an axle load of 20 tonnes. If this locomotive runs at a speed of 120kmph, what is the train weight in tonnes that the locomotive can pull on a straight level track ? What is the train weight the same locomotive will be able to haul on a 2° curve and a 1 in 100 gradient ? (Assume suitable data, if necessary) 5

4. Define the terms equilibrium cant and cant deficiency on a railway track. Calculate cant deficiency for a 4° curve on a BG track.

For a main line and a branch line on 5° curves, calculate the super elevation and the speed on the branch line, if the maximum speed permitted on the main line is 48 kmph. 10

5. (a) Explain the working principle of a left hand turnout with a neat diagram. 5

(b) Give the classification of signals according to their location in station yards along with suitable sketches. 5

6. (a) Why is it necessary to plan airports on regional basis ? What information is obtained from the regional plans ? What data are to be collected for such planning ? 5

(b) The length of a runway at sea level, standard atmospheric conditions and zero gradient is 1500 m. The airport site has an elevation of 900m. Its reference temperature is 20°C. If the runway is to be constructed with an effective gradient of 0.20 percent, determine the actual runway length required at the site. 5

7. (a) What is Wind Rose Diagram ? What is its utility ? What are its types ? Explain each type. 5

(b) What are imaginary surfaces and their significance ? Explain with the help neat sketches the various types of imaginary surfaces of an air-port. 5

8. Write short notes on any **two** the following : 5 × 2

(a) Zoning laws

(b) Component parts of an aero plane

(c) Layout of taxiway

(d) Minimum turning radius

(e) Holding aprons.