

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -3 EXAMINATION- May-2018

B.Tech VI Semester

COURSE CODE: 10B11CE614

MAX. MARKS:35

COURSE NAME: Transportation Engineering

COURSE CREDITS: 04

MAX. TIME: Two Hours

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.

Q1. What do you mean by 'Harbour'? Explain its classification in detail. Also discuss the accessibility and size of harbours. (3)

Q2. The following is the wind data for 5 years. (7)
Determine the best runway orientation (Wind Rose-II) and calculate the total wind coverage.

Wind Direction	Duration of wind, in hrs		
	1.67-6.95 m/sec	6.95-11.12 m/sec	11.12-16.67 m/sec
N	3241.2	1182.6	87.6
NNE	2496.6	919.8	131.4
NE	1051.2	394.2	262.8
ENE	525.6	175.2	87.6
E	350.4	87.6	0
ESE	131.4	43.8	0
SE	1883.4	1226.4	0
SSE	2409	1401.6	0
S	4248.6	2014.8	0
SSW	2759.4	1401.6	219
SW	1576.8	788.4	131.4
WSW	438	219	43.8
W	175.2	43.8	0
WNW	87.6	43.8	0
NW	2321.4	832.2	0
NNW	1752	569.4	131.4

Q3. An airport is proposed at an elevation of 400 m above mean sea level where the mean of maximum and mean of average daily temperatures of the hottest month are 44.8°C and 26.2°C respectively. The maximum elevation difference along the proposed profile of runway is 6.3 m. If the basic runway length of runway is 1260 m, determine the actual length of runway to be provided. (3)

- Q4. (i) What are the objectives of Airport Surveys? Explain any six types of surveys in detail.(3)
(ii) What are the three components of Air Traffic Control Network? Explain each in detail.(3)

- Q5. (i) Determine the length of transition curve and determine the offsets at every 15m. Given that the design speed of the train on curve is 90 kmph on a B.G. track. (3)
(ii) A B.G. has a sleeper density of (M+6). If the track is laid with welded rails of 26 m length, find out the number of sleepers on rail length. (2)

- Q6. (i) Calculate the wheel load stresses at interior, edge and corner regions of a cement concrete pavement using Westergaard's stress equations for the data given- Wheel load=5100kg, Pavement thickness = 18 cm, Modulus of subgrade reaction = 6 kg/cm^3 , radius of contact area= 15 cm, Poisson's ratio= 0.15, $E = 3 \times 10^5 \text{ kg/cm}^2$. (3)
(ii) The spacing between the contraction joints of a CC pavement is 4.2 m. Determine the tensile stress developed in the CC pavement due to contraction if the coefficient of friction between the bottom of the pavement and the supporting layer is 1.1 and the unit weight of CC is 2400 kg/m^3 . (3)

- Q7. (i) What is meant by crossing? What are the essential requirements of a good crossing? Discuss various types of crossings in use on Indian Railways. (3)
(ii) Explain the term "Loops" and its types with the help of neat sketches. (2)