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Total Number of Pages : 02

B.Tech
PCI6J001

6th Semester Regular / Back Examination 2018-19
ADVANCED TRANSPORTATION ENGINEERING
BRANCH : CIVIL
Time : 3 Hours
Max Marks : 100
Q.CODE : F605

Answer Question No.1 (Part-1) which is compulsory, any eight from Part-II and any two from Part-III.

The figures in the right hand margin indicate marks.

Part-I

- Q1** **Only Short Answer Type Questions (Answer All-10)** **(2 x 10)**
- a) What are the types of gauge of railway track used in India and what are the corresponding gauge widths?
 - b) What is composite sleeper index? How do you calculate C.S.I.?
 - c) What are the key constructions you would like to suggest during construction of track in case of valley alignment and cross country alignment?
 - d) Determine the equilibrium cant on a 2 degree curve on a broad gauge, if the weighted average of speeds is 58.125 km.p.h.
 - e) Write the uses of curves that provided during construction of railway track.
 - f) State the importance(s) of Facing points of Turnouts and Trailing points of Turnouts.
 - g) What is/are the use(s) of wind rose diagram?
 - h) What are the parts of network which is used for controlling the air traffic?
 - i) Classify harbour depending upon its utility.
 - j) What is Caisson? Write the types of Caisson.

Part- II

- Q2** **Only Focused-Short Answer Type Questions- (Answer Any Eight out of Twelve)** **(6 x 8)**
- a) Why is it desirable to maintain uniformity of gauges for railway track in any country? Mention the factors those govern the choice of different gauges.
 - b) Explain the necessity of sleepers in railway track. What are the desirable qualities or requirements of good sleepers?
 - c) State the observations those help you to notice the occurrence of creep in railway track. Explain the causes the creep by percussion theory and drag theory.
 - d) What are the key points need to be considered when the project report for a railway project is prepared by an engineer?
 - e) How do you define the Super-elevation? What are the objects of providing super-elevation on curves of a railway track?
 - f) Calculate the cant deficiency and permissible speed for a 4° curve on a B.G. track.
 - g) Sketch "left hand turn out" and name each components of it.
 - h) Explain the role of topography, wind and economic consideration in selecting the site for airport.
 - i) A taxiway is to be designed for operating Boeing 707-320 which has the following characteristics: Wheel base =17.70m, Tread of main loading gear = 6.62m, Turning speed = 40 kmph, coefficient of friction between tire and pavement surface = 0.13. Determine the tuning radius of the taxiway.
 - j) What are the facilities provided in airport building?
 - k) What are the factors to be studied and scrutinized in harbour planning?
 - l) Differentiate between sliding caisson and ship caisson.

Part-III

Only Long Answer Type Questions (Answer Any Two out of Four)

- Q3** Draw a neat sketch of typical cross section of a Permanent way and name the different parts. Discuss in brief the basic functions of various components of this permanent way. **(16)**
- Q4** Determine the length of transition curve and draw the offsets at every 20 m. Given that the design speed of the train on curve is 105 km.p.h. on a B.G. track. **(16)**
- Q5** Discuss briefly the various components considered in geometric design of runway as recommended by ICAO. **(16)**
- Q6** Discuss the requirements of the harbours, classified depending upon the utility. **(16)**