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)**