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Total Number of Pages : 02 **B.Tech.**
PECI5304

6th Semester Back Examination 2017-18
TRANSPORTATION ENGINEERING - II
BRANCH : CIVIL
Time : 3 Hours
Max Marks : 70
Q.CODE : C572

Answer Question No.1 which is compulsory and any five from the rest.
The figures in the right hand margin indicate marks.
Answer all parts of a question at a place.

Q1 **Answer the following questions :** **(2 x 10)**

a) What is grade compensation? What is the standard value of compensation for curvature for MG?
b) What is bulking of rail? What are the causes of bulking of rail?
c) Differentiate between end bound sleeper and centre bound sleeper with figure.
d) What are the function of check rail and wing rail?
e) Differentiate between cant deficiency and cant excess.
f) Calculate the weight of rail required for a locomotive of axle load of 24 tones.
g) What is the necessity of rail joint?
h) Define Wind Rose diagram?
i) Define Calm period.
j) How the airports are classified by ICAO.

Q2 **a)** Define permanent way, what are the requirements of an ideal permanent way. **(5)**

b) What are the different types of sleeper, briefly explain the advantages and disadvantages of pre-stressed concrete sleeper. **(5)**

Q3 **a)** A 4-8-2 locomotive is required to haul a train at a speed of 90 kmph. The train is made to run on a straight level track with an axle load of driving wheels of the engine is 22 tonne each. **(5)**
   i. Calculate the maximum permissible load that can be pulled by the engine
   ii. What should be the reduction in speed, if the train has to ascend a slope of 1 in 140 with a 3º curve?

b) Compare between flat footed and bull headed rails. **(5)**

Q4 **a)** Find out the length of the transition curve for a B.G. curve track having 4° curvature and a cant of 13 cm. the maximum permissible speed on a curve is 96 kmph. Also calculate the shift of the curve. **(5)**

b) On a B.G. 4° curve, the equilibrium cant is provided for a speed of 85 kmph. **(5)**
   i. Calculate the value of Equilibrium Cant.
   ii. Calculate the value of Theoretical Cant.
   iii. Calculate the maximum Permissible Speed

Q5 **a)** Calculate the elements of 1 in 12 turnout on a straight BG track, when it is given, angle of switch is1° 8’15”. **(5)**

b) What are the requirements and characteristics of a good crossing? **(5)**

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Q6 **a)** The length of the runway for landing and take-off under standard conditions is 2700 m and 2400m respectively. The airport is to be provided at elevation of 450 m above the mean sea level. The airport reference temperature is 34°C. if the runway is to be constructed with an effective gradient of 0.4 %, determine the corrected runway length to be provided as per ICAO and FAA. **(5)**

b) What are the imaginary surfaces? Explain briefly their significance. **(5)**

Q7 **a)** What are the objects of signaling? Explain the working principle of semaphore signal. **(5)**

b) What are the different types of airport marking? Explain any one. **(5)**

Q8 **Write short notes on :** **(2.5 x 4)**

a) Negative superelevation
b) Zoning laws
c) Exit Taxiway
d) Spikes