Ex/CON/PC/B/T/314/2024

BACHELOR OF CONSTRUCTION ENGINEERING EXAMINATION, 2024

(3rd Year, 1st Semester)

TRANSPORTATION ENGINEERING

Time : Three hours Full Marks : 100

Answer any five questions .

Assume relevant data if required. 'A' is the last digit of your semester examination roll number

Q-1. Determine permissible speed , superelevation and the length for a 3 degree curve on Kolkata- Chennai route with a maximum sanctioned speed of 10 A kmph The equilibrium speed may be considered as 8A kmph and the booked speed of goods train as 5A kmph. (20)

Q-2. (a) Discuss function of a railway track. (5)

(b) If traffic density on a section is 20 GMT then estimate the service life of 52kg (90 UTS) and 60kg (90 UTS) rail. (5)

© If sleeper density in the route as proposed in Q-1 is M+7 then estimate the sleeper needed per kilometer of the railway track. (5)

(d) write notes on significance of ballast. (5)

Q-3 (a) A falling gradient of 1 : 20 meets a rising gradient of 1:40 in a MDR with a design speed of 80 kmph . Determine the length of the valley curve which should provide safe driving at night . (10)

(b) Explain the significance grade compensation. (5)

© Draw a neat sketch of a road section showing geometric details which passes through the top of an embankment. (5)

Q-4 (a) Why shoulder is required ? (5)

(b) How the camber can be provided on road ? (5)

© Illustrate utility of kerb in urban road (5)

(d) Explain significance of AADT . (5)

Q-5 (a) what is the significance of median strip on road. (5)

(b) Determine the radius of a curve for a national highway for which no super elevation is required. (5)

© Define time mean speed and Space mean speed . Which of these speed is related to accident analysis on road . (5)

(d) Explain the reasons of traffic congestion on road. (5)

Q-6 . (a) Calculate the maximum permissible speed on a horizontal curve of radius 125 m of a highway designed for a speed of 65 kmph to carry mixed traffic. (5)

(b) A two lane national highway with a design speed of 100 kmph in a plain terrain meets a curve with a radius of 355 m . Calculate the length of the transition curve and extra widening required. (15)