EVENING

2 3 MAR 2021

*Please check that this question paper contains__09__ questions and _ 02____ printed pages within first ten minutes.*

[Total No. of Questions: 09] [Total No. of Pages: 2]

Uni. Roll No. .....

Program: B.Tech. (Batch 2018 onward)
Semester: 4th
Name of Subject: Transportation Engineering
Subject Code: PCCE-108
Paper ID: 16179

**Time Allowed: 03 Hours** **Max. Marks: 60**

**NOTE:**

1) Parts A and B are compulsory.
2) Part-C has Two Questions Q8 and Q9. Both are compulsory, but with internal choice.
3) Any missing data may be assumed appropriately.
4) Scientific calculator is allowed.

**Part – A** **[Marks: 02 each]**

**Q1.**

a) Define Loading and Construction gauge?

b) Explain IFR and VFR in context of aircraft operations.

c) Discuss the role of ICAO in brief.

d) Classify rural roads as per Nagpur Road Plan. Also, mention the target road density decided to be achieved at the end of plan.

e) Discuss the need of providing tilted rails.

f) Why do we provide expansion and contraction joints in rigid pavements?

**Part – B** **[Marks: 04 each]**

**Q2.** Discuss the purpose of providing Exit taxiways. Also, explain the factors which affect the location of exit taxiway.

**Q3.** Differentiate between the construction techniques of Roman roads and Macadam Roads?

**Q4.** Define Gauge? Mention gauges used in India. Why uniform gauge is preferred to be provided across the country?

**Q5.** Discuss the factors which are considered in the selection of elevated or underground construction.



P.T.O.

**Q6.** Explain the stepwise procedure of Wind Rose analysis using Type-II diagram.

**Q7.** Determine the minimum depth of ballast under wooden sleepers having cross-section dimensions 25 x 13 cm and sleeper density M+7 for a BG track.

**Part – C** **[Marks: 12 each]**

**Q8.** (a) List the goals and policies contained in Lucknow road plan.

(b) The area of Karnataka is 1,92,000 sq. km. The number of towns and villages as per 1981 census is 210 and 32,000 respectively. Calculate the length of various categories of roads as per Lucknow road plan.

OR

Explain the stepwise procedure for construction of Water Bound Macadam and Wet Mix Macadam courses separately.

**Q9.** Explain the theories related to the Creep in a railway track. How do you identify creep in the field? Describe various measures adopted to reduce creep.

OR

(a) Define following terms in context of runway orientation:

(i) Wind coverage (ii) Calm period (iii) Cross wind

(b) The runway length required for landing at sea level in standard atmospheric conditions is 3200 m. Runway length required for take-off at sea level in standard atmospheric conditions is 2600 m. The airport site has an elevation of 220 m. Airport reference temperature is 23 °C. If the effective runway gradient is 0.5 percent, determine the runway length to be provided.

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