GANPAT UNIVERSITY

B.Tech. Semester VII (CIVIL), Regular Examination – November/December: 2011

C 703: Highway and Traffic Engineering

Max.Time: 3 Hours **Max. Marks: 70**

Exam. No. of the candidate: _____ Supervisor's dated initial: _____

Instructions: - (1) Answer to the two sections must be written in **separate** answer books.

(2) Figures to the **right** indicate **full** marks.

(3) Assume suitable data if required.

Section - I

Q.1 **(12)**

(A) Which is the better and more scientific road development in history? Describe the typical cross section and construction steps of it.

(B) Explain superelevation. Enumerate the steps for practical design of superelevation.

(C) Derive an expression for finding the overtaking and stopping sight distance at level and at grades.

OR

Q.1 (A) Discuss the classification of roads by Nagpur road plan and road pattern in detail?

(B) State the factors that govern the length of summit curve for SSD. How is it decided?

(C) Explain total reaction time of driver and the factors on which it depends.

Q.2 **(11)**

(A) Define embankment. Give the design element and construction of embankment.

(B) What are the various factors to be considered in pavement design? Discuss the significance of each.

OR

Q.2 (A) Write down the construction steps for WBM roads.

(B) Enumerate the various methods of flexible pavement design. Briefly indicate the basis of design in each case.

Q.3 **(12)**

(A) BSD (Bituminous surface dressing).

(B) Temperature stresses.

(C) Mud pumping.

Section - II

Q.4 (12)

(A) What is passenger car unit? Explain factors affecting PCU values.

(B) Explain water logged areas. Give treatment of roads in water logged areas in brief.

(C) Which are the various types of drawings required for a highway project?

OR

Q.4 (A) Explain road user characteristics which affect the traffic performance.

(B) Write main components of a bridge structure with a figure of typical bridge.

(C) Explain the principle and uses of Benkelman beam test.

Q.5 (11)

(A) What are the general causes of failures? Explain various types of failure in flexible pavement and their causes.

(B) Explain different grade separated intersection with neat sketch and their disadvantages.

OR

Q.5 (A) Write descriptive note on highway drainage.

(B) What are the various causes of road accidents? Explain with the help of neat sketch of condition and collision diagram.

Q.6 (12)

(A) Describe pavement unevenness with its index values.

(B) Describe Unified soil classification system.

(C) A radius of 350m has to be provided at a locality due to restriction in National Highway with design speed of 90kmph. Design superelevation Should there be restriction in speed?

END OF PAPER