10CV763

Seventh Semester B.E. Degree Examination, Dec.2016/Jan.2017 **Pavement Materials and Construction**

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, selecting atleast TWO questions from each part.

PART - A

a. Give a brief write up on importance of derivable properties of road aggregates. Describe the laboratory procedure for determination of toughness property of road aggregates. (10 Marks)

b. Explain the Rothfusch method of desired gradation.

Bring out the major differences between bitumen and Tar. Describe the laboratory procedure for determination of hardness property of bitumen.

b. Describe the chemical constitution of bitumen and list the desirable requirements of bitumen.

(10 Marks)

- a. Compare the salient characteristics of cutback and emulsions and describe under what circumstance each one is used.
 - b. What is stripping of bitumen? What are its adverse effects? How is the extent of bitumen stripping estimated in the lab? (10 Marks)

a. Explain the steps in bituminous mix design.

(10 Marks)

b. A BC mix is prepared with aggregates A, B and C in the proportion A:B:C=40:50:10. The respective specific gravity of A, B and C and bitumen are 2.7, 2.8, 3.0 and 1.02. The bitumen content by weight of aggregate is 5%. Determine the maximum theoretical density, percentage air voids, voids in mineral aggregates, voids filled with bitumen given that the specimen weighs 1251.5 g in air and 720.6 g in water. (10 Marks)

PART - B

What is a clamshell? With a neat sketch explain its operation and applications. (10 Marks)

Write an explanatory note on Rollers in road construction.

(10 Marks)

Describe the construction method and quality control tests in subgrade. (10 Marks)

Explain the circumstances in which construction of embankment becomes necessary.

(10 Marks)

a. Describe the suitability of following in bituminous pavement construction:

i) Surface dressing

iii) Bituminous premixed carpet

ii) Penetration macadam

iv) Builtup spray grout (10 Marks)

b. Explain the material specification and construction steps in Built-up spray grout. (10 Marks)

a. Briefly describe the quality control tests used in construction of concrete pavements.

(10 Marks)

b. Write a note on various types of joints in concrete pavement indicating their purpose of providing. (10 Marks)

written eg, 42+8 = 50, will be treated as malpractice. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages equations Any revealing of identification, appeal to evaluator and /or Important Note: 1.