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## P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belgaum)

**Seventh Semester, B.E. - Civil Engineering**

**Semester End Examination; Dec. - 2015**

**Pavement Materials and Construction**

*Time: 3 hrs*

*Max. Marks: 100*

*Note: Answer any FIVE full questions, selecting at least TWO full questions from each part.*

### PART - A

- |    |    |  |    |
|----|----|--|----|
| 1. | a. | Briefly explain the classification of aggregates.  | 6  |
|    | b. | List and explain briefly any five desirable properties of road aggregates.                     | 6  |
|    | c. | List the various tests conducted on road aggregates and explain Aggregate impact test.         | 8  |
| 2. | a. | Explain in brief the manufacturing process of Bitumen.   | 6  |
|    | b. | List the various properties of Bitumen. Explain various requirements of Bitumen.               | 8  |
|    | c. | List the various tests conducted on Bitumen used in road works and explain any one.            | 6  |
| 3. | a. | Explain the mechanism of stripping of bituminous binder and the methods of improving adhesion. | 8  |
|    | b. | Explain Anionic, Cationic and Non - ionic emulsions.   | 6  |
|    | c. | What are Emulsion and cut back bitumen? Explain.   | 6  |
| 4. | a. | List and explain the desirable properties of bituminous mixes.                                 | 10 |
|    | b. | Explain proportioning of materials by Rothfuch's method with the help of a graph.              | 10 |

### PART - B

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|----|----|---|----|
| 5. | a. | List any four types of equipments used for;   | 10 |
|    |    | i) Grading                      ii) Compaction and explain any one equipment for each.  |    |
|    | b. | Explain the working principle of :  | 10 |
|    |    | i) Power shovel              ii) Drag line with neat sketch   |    |
| 6. | a. | Explain the various steps in the Formation of an embankment.  | 10 |
|    | b. | Explain the steps in the construction of subgrade. What are the quality control tests for checks at the lab and in the field? | 10 |
| 7. | a. | Discuss the materials required and the construction steps for the construction of bituminous concrete pavement.               | 10 |
|    | b. | Explain the material specification, construction method and quality control checks for wet mix macadam.                       | 10 |
| 8. | a. | Explain the various types of joints provided in cement concrete roads. Why are they provided?                                 | 10 |
|    | b. | Enumerate the various steps in the construction of cement concrete Pavements.   | 10 |