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**B.E./B.Tech (Full Time) DEGREE END SEMESTER EXAMINATION, April/May 2014**  
**CIVIL ENGINEERING BRANCH**  
**ARREAR EXAM**  
**FIFTH SEMESTER (REGULATIONS 2008)**  
**CE 9305 – HIGHWAY ENGINEERING**

**Time : 3 Hours**

**Max Marks : 100**

**PART –A**

**(10 x 2 = 20 Marks)**

- 1) What are the recommendations of the CRR1.
- 2) Draw the cross section of a sub-arterial.
- 3) Discuss the concept of ESWL
- 4) Define PIEV theory.
- 5) State the difference between coarse and fine aggregates.
- 6) Define Vehicle Damage Factor?
- 7) What is a Transition Curve?
- 8) State any two differences between Flexible and Rigid Pavement.
- 9) What is Cul de sac.
- 10) List the different types of bituminous material used in road constructions.

**PART – B**

**( 5 x 16 = 80 Marks)**

- 11 a. Discuss the Classification of Urban Roads with a neat diagram. **(16 marks)**
- 12 a. Discuss the concept of Overtaking Sight Distance with a neat sketch **(16 marks)**
- (OR)**
- 12 b. Design the Flexible Pavement for the construction of new highway with the following data:  
No of commercial vehicles as per last count = 3200 CV; Period of construction = 4 years;  
Design CBR of Subgrade soil = 10%; Category of road = NH, 4 lane single carriageway;  
Design life 15 years. Assume suitable data **(16 marks)**
- 13.a Derive an equation for calculating superelevation in highways. **(16 marks)**
- (OR)**
- 13 b. Discuss Off Tracking, Gradients in Roadway, and Widening of Pavements. **(16 marks)**
- 14 a. Discuss any two test procedures of for bitumen and Aggregates. **(16 marks)**
- (OR)**
- 14 b. Discuss the materials used for sub grade, subbase and wearing course. **(16 marks)**
- 15 a. Discuss the structure of Flexible Pavements and their Failure, Repairs and Maintenance. **(16 marks)**
- (OR)**
- 15 b. Discuss the working principle of Benkleman Beam deflection. **(16 marks)**