

**METE-201**

**M.E./M.Tech., II Semester**

Examination, November 2019

**Design and Construction of Rigid Pavement**

Time : Three Hours

Maximum Marks : 70

- Note :
- i) Attempt any five questions.
  - ii) All questions carry equal marks.
  - iii) Solve all parts of any question in continuous at the same place.

1. Answer any one question:
  - a) What are the different types of stresses associated in the rigid pavement in detail? Briefly explain the critical locations of stresses in the rigid pavement with a neat sketch. 14
  - b) Explain the philosophy of radius of relative stiffness with neat sketch. Briefly list out various parameters to be considered for the design of rigid pavement. Estimate the radius of relative stiffness if the thickness of the pavement is 625 mm and thickness of slab is 320 mm. The elastic modulus of cement concrete is 30,000 MPa and Poisson's ratio of concrete is 0.15 and modulus of subgrade reaction is 45 MPa/m and effective modulus of subgrade reaction is 285 MPa/m. 14
2. Answer any one question:
  - a) Classify various types of joints. Draw neat sketches of various types of joints indicating all necessary details of joints as per IRC codes. 14
  - b) Briefly explain the concept of load transfer efficiency and connection efficiency of joints in rigid pavement with neat sketches. 14

3. Answer any one question:
  - a) Differentiate the fundamental philosophy of conventional rigid pavement and continuous reinforced concrete pavements with neat sketches. Explain the advantages of continuous reinforced concrete pavements. 14
  - b) Explain design procedure of continuous reinforced concrete pavements as per IRC code with neat sketches. 14
4. Answer any one question:
  - a) Explain various strengthening and performance evaluation practices being adopted for rigid pavement. 14
  - b) Elaborate the concept of thin white topping type of overlay in rigid pavements. Explain the significance of separation layer between Dry lean concrete layer and PQC layer in performance of rigid pavement. 14
5. Answer any one question:
  - a) Explain the construction practice of dry lean concrete layer and PQC layer. 14
  - b) Classify various types of cement concrete mixes. Explain detailed procedure of design of pavement quality concrete mix based on compressive strength and flexural strength. http://www.rgpvonline.com 14
6. Answer all questions:
  - a) Explain the significance of differential temperature in the design and performance of the rigid pavement with neat sketches. 7
  - b) Explain the fundamental concept of liquid foundation for the design of rigid pavement. 7
7. Answer all questions:
  - a) Classify various types of rigid pavements with neat sketches. 7
  - b) Enlist various factors governing the design of rigid pavement. Explain the role of joints in durability and serviceability of rigid pavement. 7

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