Bihar Engineering University, Patna End Semester Examination - 2022

Course: B.Tech. Code: 101703

Semester: VII Subject: PAVEMENT DESIGN

Time: 03 Hours Full Marks: 70

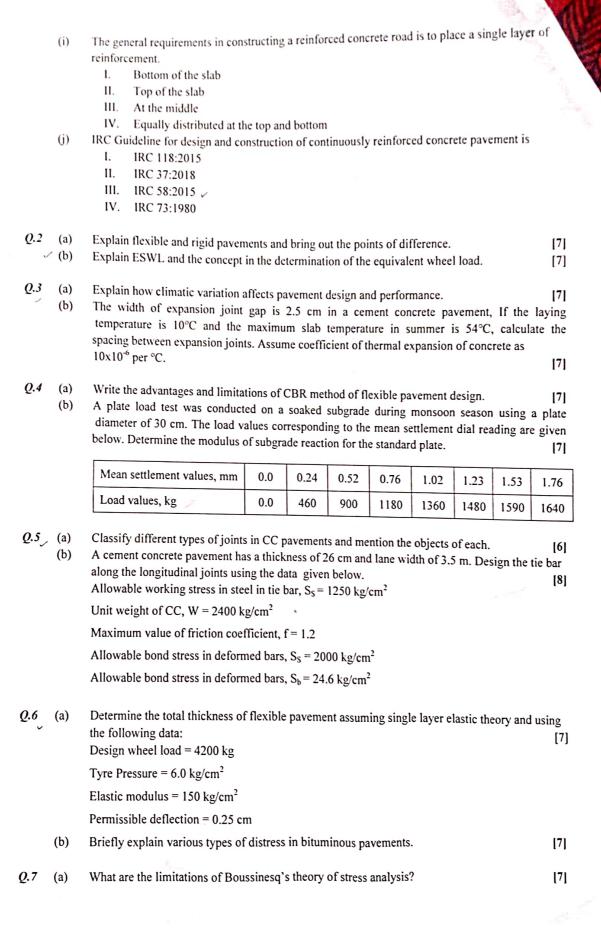
Instructions:-

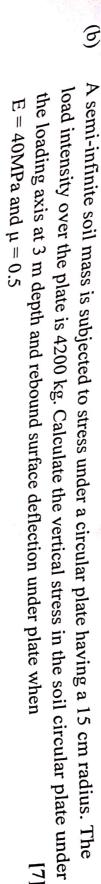
- (i) The marks are indicated in the right-hand margin.
- (ii) There are NINE questions in this paper.
- (iii) Attempt FIVE questions in all.
- (iv) Question No. 1 is compulsory

Q.1 Choose the correct answer of the following: (Answer any seven)

 $[2 \times 7 = 14]$

- (a) Flexible pavements derive stability primarily from
 - I. The aggregate interlock, particle friction and cohesion \checkmark
 - II. The cohesion alone
 - III. The binding power of bituminous material
 - IV. The flexural strength of the surface course
- (b) ESAL stands for
 - I. Equivalent Single Axle load >
 - II. Equivalent Standard Axle load
 - III. Enhanced Single Axle load
 - IV. Enhanced Standard Axle load
- (c) In a cement concrete pavement, dowel bars are used in
 - I. Longitudinal joints
 - II. Construction joints
 - III. Dummy joints
 - IV. Expansion joints
- (d) Which of the below is not a critical load position in Rigid Pavement.
 - I. interior
 - II. corner
 - III. edge
 - IV. center
- (e) Which of the below is a type of empirical methods used for the design of flexible pavements
 - I. Group index method.
 - II. Burmister's method
 - III. Triaxial test
 - IV. IRC method
- (f) The load transfer to lower layers in flexible pavements is by
 - I. Bending action of layers
 - II. Shear deformation
 - III. Grain-to-grain contact >
 - IV. Consolidation of subgrade
- (g) According to Boussinesq's theory, the soil mass is not considered to be
 - I. Elastic
 - II. Infinite 🗸
 - III. Homogeneous
 - IV. Isotropic
- (h) In cement concrete pavement, tie bars are installed in
 - I. Expansion joint
 - II. Contraction joint
 - III. Warping joint
 - IV. Longitudinal joint





Q.8 Differentiate following:

Flexible pavement and Rigid Pavement

Empirical Method and Mechanistic Empirical Method of Pavement design

(iii) Dowel bars and Tie bars

Z Jointed Plain concrete Pavement and continuously reinforced concrete pavement.

0.9 (a) G Write in brief about various types of joints in rigid pavement. Find the Vehicle damage factor using the following axle load survey data.

[7]

No. of total axles = 1100

Commercial vehicle sampled = 550

Frec	Load
Frequency	Load group (kN)
100	0-40
250	40-80
400	80-120
250	120-160
80	160-200
20	200-240