

PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
M.Tech. Summer 2017 - 18 Examination

Semester: 2
Subject Code: 03211152
Subject Name: Pavement Design & Evaluation

Date: 21/05/2018
Time: 2.00 pm to 4:30 pm
Total Marks: 60

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

- Q.1** A) What is the role of soil subgrade? Enlist the tests used for evaluation of soil subgrade. **(05)**
 B) Enlist the general causes of pavement failures. **(05)**
 C) Give the classification of Maintenance works. **(05)**

- Q.2** Answer the following questions. (Attempt any three) (Each five mark) **(15)**

- A) What is ESWL? Explain its concept.
- B) Explain CBR test.
- C) What do you understand by frost action? Explain.
- D) Explain Group Index method for Flexible Pavement design.

- Q.3** A) What assumptions are made in the Burmister's Layered System Method? **(07)**
 B) Calculate the equivalent C-value of a three-layered pavement section having individual C-values as given below:

Materials	Thickness, cm	C-value
Bituminous concrete	10	60
Cement treated base	20	225
Gravel sub-base	10	15

(08)**OR**

- B) Calculate 10 years Equivalent wheel load and Traffic Index values using the following data:

Number of Axles	2	3	4	5
AADT (Both directions)	3500	344	295	80
EWL constant	330	1070	2460	4620

(08)

Assume: 50% increase in traffic in 10 years.

- Q.4** A) Compute the equivalent radius of resisting section of 20 cm slab, given that the radius of contact area wheel load is 15 cm. **(07)**

OR

- A) Compute the radius of relative stiffness of 15 cm thick cement concrete slab from the following data:

Modulus of elasticity of cement concrete = 210000 kg/cm² **(07)**

Poisson's ratio of concrete = 0.13

Modulus of subgrade reaction, K = (i) 3.0 kg/cm³ (ii) 7.5 kg/cm³

- B) Explain warping stresses in rigid pavements. **(08)**