PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
B.Tech. Summer 2021 - 22 Examination

Semester: 8   Date: 01/04/2022
Subject Code: 03104481   Time: 10:30am to 1:00pm
Subject Name: Pavement Design and Evaluation   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 Objective Type Questions - (Each of one mark)   **(15)**

1. Full form of EWLF?

2. What is EWSL?

3. Write down definition of rigid pavement?

4. What is pavement design

5. Percentage of vehicle arrivals with less than a fixed time deviation from schedule is referred as____

6. Which of the below is a type of empirical methods used for the design of flexible pavements?

(a) Group index method   (b) Burmister method   (c) Triaxial test   (d) IRC method

7. Which of the below is not an input for the design of flexible pavement using the mechanistic-empirical method?

(a) Pavement layers thickness (b) Total wheel load   (c) Poisson's ratio   (d) Deflection

8. What test can be carried out to obtain the group index?

(a) Specific gravity   (b) Density   (c) Sieve analysis   (d) Particle index

9. The triaxial compression test is used to determine the _____ of various materials.

(a) Shear strength   (b) Modulus of elasticity (c) Moisture content (d) Compressive stress

10. Which of the below is not a classification of traffic condition that is used in the CBR design chart?

(a) Normal traffic 2500 kg (b) Light traffic 3175 kg   (c) Medium traffic 4082 kg (d) Heavy traffic 5433kg

11. What is formula for uniform growth factor method?

12. What is CBR?

13. Full name of IRC is _____.

14. Full name of CVPD is _____.

15. The design period of cement roads is usually taken as _____but they can even last longer if properly maintained and designed.

Q.2 Answer the following questions. (Attempt any three) **(15)**

A) Define liquid limit and plasticity Index.

B) Differentiate between rigid pavement and flexible pavement.

C) Write down necessity of highway maintenance.

D) Explain factors affecting pavement design.

Q.3 (A) Design a new flexible pavement for a two lane undivided carriageway using the following data **(07)** CBR is 5%, Initial traffic on completion of construction is 500 cvpd, growth Rate is 6%/year, Design life is 10 Years, and VDF is 2.5

B) Describe various types of damages and deterioration of road during rainy season. **(08)**

OR

B) Calculate the stresses at interior, edge and corner region of cement concrete pavement using **(08)** Westergaard's stress equations. Take wheel load = 5100 kg, Ec = 3 x 105 kg/cm2 , Pavement thickness = 15 cm, μ = 0.15, Modulus of sub grade reaction K = 5 kg/cm3, Radius of contact area = 15 cm.

Q.4 A) Short note on shear failure and its remedial measures. (07)

OR

A) Write down step by step procedure of CBR method of pavement design. **(07)**

B) Write down types of distresses in bitumen payment and maintenance methods. **(08)**