



REGISTRATION NUMBER

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## SRINIX COLLEGE OF ENGINEERING

2<sup>ND</sup> INTERNAL EXAMINATION-2017-18

Subject-**HTE**

Semester-**4<sup>TH</sup>**

Branch-**CIVIL**

Full Mark-**50**

Time-**1.30Hrs**

**ANSWER ALL QUESTIONS (PART-A)**

**[2X7=14]**

1. Total reaction time of a driver does not depend upon

- (a) Perception time (b) brake reaction time  
(c) Condition of mind of the driver (d) speed of vehicle

2. Which of the following are the accepted criteria for design of Valley curve for highways?

- (i) Headlight sight distance (ii) Passing and non passing sight distance  
(iii) Aesthetic consideration (iv) Motorist comfort (v) Drainage control

Select the correct answer using the codes given below

- (a) 1, 2, 3 and 4 (b) 1, 3, 4 and 5 (c) 2,3,4 and 5 (d) 1 and 5

3. As per latest IRC guidelines for designing flexible pavement of CBS method, the load parameter required is

- (a) Number of commercial vehicles per day (b) cumulative standard axles in msa  
(c) Equivalent single axle load (d) number of vehicles (all types) during design life

4. Which one of the following methods is used in the design of rigid pavements?

- (a) CBR method (b) Group index method  
(c) Westergaard's method (d) McLeod's method

5. What are the maximum value of CBR and minimum value of GI of any material respectively?

- (a) 100, 0 (b) 100, 20 (c) 50, 5 (d) 10, 0

6. Radius of relative stiffness of cement concrete pavement does not depend upon which one of the following?

- (a) Modulus of sub grade reaction (b) Wheel load  
(c) Modulus of elasticity of cement concrete (d) Poisson's ratio of concrete

7. Which one of the following criteria is used for obtaining the value of modulus of subgrade reaction from the plate bearing test data?

- (a) Slope of pressure settlement graph
- (b) Pressure corresponding to the settlement of 1.25mm
- (c) pressure corresponding to a pressure of 1.25kg/cm<sup>2</sup>
- (d) pressure corresponding to the settlement of 1.50mm.

**ANSWER ALL QUESTIONS (PART-B)**

**[2X8=16]**

1. If the modulus of subgrade reaction of a soil is 10kg/cm<sup>3</sup> when tested with 30cm diameter plate, the corrected modulus of subgrade reaction for the standard diameter plate will be?

2. In 500gm sample of coarse aggregate, there are 100gm flaky particles and 80gm elongated particles. What are the flakiness and elongation indices (total) as per IS?

3. What are the standards for testing of road macadam in Aggregate Impact Test?

4. The weight of aggregate having specific gravity 2.65, completely filled into a cylinder of volume 0.003 m<sup>3</sup> is 5.2 kg. What is the value of the angularity index of aggregate (approximately) as given by Murdock?

5. The amount of mechanical energy imposed on the aggregate during the aggregate impact test is of the order of?

6. The design speed of a traffic lane is 70kmph, What is the theoretical capacity per hour taking the total reaction time to be 2 seconds and average length of vehicles as 8m?

7. What will be the initial traffic after construction, in the commercial vehicles per day (CVD) for the following data?

Annual average daily traffic at last count=400CVD, Rate of traffic growth per annum=7%

The road is proposed to be completed in 3 years.

8. On a road the free speed was 65kmph and the space headway at jam density was 6.25m. What is the maximum flow which could be expected on this road?

**ANSWER ANY TWO QUESTIONS (PART-C)**

**(10X2=20)**

- 1. (a) Explain different tests on bitumen?
- 2. Soil subgrade sample collected from the site was analyzed and the results obtained are as given below:

Soil portion passing 0.75 mm sieve, percent =50, Liquid Limit, percent =40, Plastic Limit, percent =20, Design the pavement thickness by group index method?

3. (a) The plate bearing tests were conducted with 30 cm plate diameter on soil subgrade and over 15 cm base course. The pressure yielded at 5 cm deflection are 1.25kg/cm<sup>2</sup> and 4kg/cm<sup>2</sup> respectively. Design the pavement section for 4100kg wheel load with Tyre pressure of 5kg/cm<sup>2</sup> for an allowable deflection of 5cm using Burmister's approach?

(b) Soil subgrade sample collected from the site was analyzed and the results obtained are as given below: Soil portion passing 0.75 mm sieve, percent =50, Liquid Limit, percent =40, Plastic Limit, percent =20, Design the pavement thickness by group index method?

