

Dr. Amrdeep

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -3 EXAMINATION- 2021

B.Tech – Vth Semester

COURSE CODE: 18B11CE511

MAX. MARKS: 35

COURSE NAME: Highway Engineering

COURSE CREDITS: 3

MAX. TIME: 2 Hours

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means. XXXXXXXXXXXXXXXXXXXXXXXX

1. Please answer the followings:
 - a) Discuss different types of stresses induced in a flexible pavement along with their net sketches. (3)
 - b) Explain different types of mixes for flexible pavement. (3)
2. What is the interface treatments using prime coat? Discuss its applications and different prime coat materials with their requirements. (5)
3. Explain different fundamental diagram of traffic flow. (3)
4. Answer the followings in tabular form only:
 - a) Width of carriageway for various classes of roads as per IRC (1)
 - b) Values of camber for various classes of roads surfaces as per IRC (1)
 - c) width of medians for various classes of roads as per IRC (1)
 - d) Explain Overtaking Sight Distance in detail (3)
5. Solve the following problem: (3)

Calculate the length of transition curve and the shift using the following data :

Design speed = 65 kmph

Radius of circular curve = 220 m

Allowable rate of introduction of superelevation (pavement rotated about the centre line)

= 1 in 150

Pavement width including extra widening = 7.5 m

6. Solve the following problem: (3)

Calculate the extra widening required for a pavement of width 7m on a horizontal curve of radius 250 m if the longest wheel base of vehicle expected on the road is 7.0 m. Design speed is 70 kmph. Compare the value obtained with IRC recommendations.

7. Solve all the parts of the following statement (3)

While aligning a highway in a built up area, it was necessary to provide a horizontal circular curve of radius 325 metre. Design the following geometric features .

- (i) Superelevation
- (ii) Extra widening of pavement
- (iii) Length of transition curve

Data available are

Design speed = 65 kmph, Length of wheel base of largest truck = 6 m, Pavement width = 10.5 m

8. A State Highway passing through a rolling terrain has a horizontal curve of radius equal to the ruling minimum radius. (3)

- (i) Design all geometric feature of this curve assuming standard data.

9. Discuss design of overlay by benkelman beam deflection method (IRC 81:1997) with its principal and application. (3)