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Q :) Which of the following is the chronological sequence in regard to road construction/design development?

A: Telford, Tresaguet, C.B.R. , Macadam

B: Tresaguet, Telford, Macadam, C.B.R.

C: Macadam, C.B.R. , Tresaguet, Telford

D: Tresaguet, Macadam, Telford, C.B.R.

Q :) Which of the criteria below are used for the design of valley vertical curves on roads?

- 1. Rider comfort**
- 2. Headlight sight distance**
- 3. Drainage**
- 4. Select the correct answer using the codes given below:**

A: 1, 2 and 3

B: 1 and 3

C: 2 and 3

D: 1 and 2

Q :) Which one of the following expressions gives intermediate sight distance as per I.R.C. standards? (SSD: Stopping sight distance ; OSD : overtaking sight distance)

A: 2 SSD

B: $\frac{(SSD + OSD)}{2}$

C: $\frac{(OSD - SSD)}{2}$

D: 2 OSD

Q :) Total reaction time of a driver does not depend upon

A: Perception time

B: Break reaction time

C: Condition of mind of the driver

D: Speed of vehicle

Q :) Consider the following factors:

- 1. Reaction time**
- 2. Speed**
- 3. Coefficient of longitudinal friction**
- 4. Gradient**

Which of these factors are taken into account for computing braking distance?

A: 1 and 3

B: 1, 2 and 4

C: 2, 3 and 4

D: 2 and 3

Q :) For a given road, safe stopping sight distance is 80 m and passing sight distance is 300 m. What is the intermediate sight distance?

A: 220 m

B: 190 m

C: 160 m

D: 150 m

Q :) What is the minimum width of roadway for a six-lane high –level bridge constructed for the use of road traffic only?

A: 21.5 m

B: 22.5 m

C: 24.0 m

D: 25.5 m

Q :) If a road surface is adequately super-elevated on horizontal curve, which one of the following is the proper distribution of pressure on the vehicle wheels?

A: Pressure on both outer and inner wheels is equal

B: Pressure on inner wheels is more than the outer wheels

C: Pressure on inner wheels is less than the outer wheels

D: Pressure on front wheels is thrice the pressure on rear wheels

Q :) Light reflection devices used to guide the driver along the proper alignment are called

A: Rumble strips

B: Delineators

C: Attenuators

D: Litter bin

Q :) If superelevation is not provided on a horizontal curve of a highway, then on which portion of the road, are pot holes likely to develop?

A: Outer edge of road

B: Inner edge of road

C: Centre of road

D: Shoulder of road

Q :) Full amount of superelevation on a horizontal curve is provided at the

A: Beginning of the transition curve

B: Centre of the circular curve

C: End of the transition curve

D: Centre of the transition curve

Q :) A 3% downgrade curve is followed by a 1% upgrade curve and rate of change of grade adopted is 0.1% per 20 m length. The length of the respective vertical curve is:

A: 800 m

B: 200 m

C: 100 m

D: 400 m

Q :) An ideal horizontal transition curve is a

A: Parabola

B: Circle

C: Clothoid spiral

D: Hyperbola

Q :) If R is the radius of the curve and L is the length of the long chord, the shift of the curve is (all in metre units)

1. $\frac{L^2}{R}$

2. $\frac{L^2}{2R}$

3. $\frac{L^2}{24R}$

4. $\frac{L^2}{6R}$

The ratio between the adopted centrifugal ratios for roads and railways is

A: 3 : 1

B: 4 : 1

C: 2 : 1

D: 5 : 1

Q :) While aligning a hill road with a ruling gradient of 6% a horizontal curve of 75 m radius is encountered. The compensated gradient at the curve will be

A: 1%

B: 2%

C: 3%

D: 5%

Q :) The rate of equilibrium superelevation on a road is

- 1. Directly proportional to the square of vehicle velocity**
- 2. Inversely proportional to the radius of the horizontal curve**
- 3. Directly proportional to the square of the radius of the horizontal curve**

Which of the above statements are correct?

A: 1 and 2 only

B: 1 and 3 only

C: 2 and 3 only

D: 1, 2 and 3

Q :) The type of transition curve that is generally provided on hill road is

A: Circular

B: Cubic parabola

C: Lemniscate

D: Spiral

Q :) The type of the camber which is best suited for cement concrete pavement is

A: Straight line

B: Parabolic

C: Elliptical

D: Composite

Q :) Which one is not a road pattern?

A: Block pattern

B: Star and block pattern

C: Hexagonal pattern

D: Diamond pattern

Q :) The govt, of India, appointed the national transport policy committee in the year

A: 1978

B: 1873

C: 1956

D: 1943

Q :) The perpendicular offset from a tangent to the junction of transition curve and circular curve is equal to

(Where L = length of transition curve

R = Radius of the circular curve)

A: $\frac{L}{6R}$

B: $\frac{L}{24R}$

C: $\frac{L^2}{6R}$

D: $\frac{L^2}{24R}$



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Q :) The liquid limit and plastic limit of a soil are 50% and 25% respectively. When the soil was dried from its state at liquid limits, the decrease in volume was 40 per cent of the volume at liquid limit. When it was dried from its state at plastic limit, the volume decrease was 20 per cent of the volume at plastic limit. Determine the shrinkage limit and shrinkage ratio.

Q :) A sample of saturated soil has a water content of 25 percent and a bulk unit weight of 20 kN/m³. Determine dry density, void ratio and specific gravity of solid particles, What would be the bulk unit weight of the same soil at the same void ratio but at a degree of saturated of 80%? Take $\gamma_w = 10$ kN/m³