



Time Allotted : 3 Hours

Full Marks :70

The Figures in the margin indicate full marks.

Candidate are required to give their answers in their own words as far as practicable

Group-A (Very Short Answer Type Question)

1. Answer any ten of the following :

[1 x 10 = 10]

- (i) The road traffic consists of how many types of traffic?
- (ii) The road foundation for modern highway construction, was developed by which of the following scientists?
 - a) Telford
 - b) Macadam
 - c) Tresguet
 - d) Both Telford and Macadam
- (iii) The improper alignment of road will not result in _____
 - a) Increase in construction cost
 - b) Increase in maintenance cost
 - c) Increase of population
 - d) Increase in accidents
- (iv) Which is the first stage in traffic engineering studies?
- (v) The PCU (passenger car unit) value for a car on an urban road is
(A) 0.75 (B) 0.25 (C) 1.0 (D) 1.5
- (vi) At what rate is the temperature applied during the softening point test?
- (vii) On a single lane road with two-way traffic the minimum stopping sight distance is equal to
(A) stopping distance
(B) two times the stopping distance
(C) half the stopping distance
(D) three times the stopping distance
- (viii) Which of the following is not a parameter of traffic stream?
 - a) Speed
 - b) PCU
 - c) Density of traffic
 - d) Flow of traffic
- (ix) After the abrasion test, the sample is passed through which sieve?
- (x) The current highway development works in India are undertaken by?
 - a) NHDP
 - b) CPWD
 - c) PWD
 - d) NHAI
- (xi) Obligatory points through which the alignment should not pass are _____
 - a) Religious structure and costly structures
 - b) Intermediate towns
 - c) Important cities
 - d) Important places of worship
- (xii) Minimum value of super elevation at any curve in a road is
(A) Zero
(B) 0.5%
(C) Equal to camber
(D) 7 %

Group-B (Short Answer Type Question)

Answer any three of the following

[5 x 3 = 15]

2. What are obligatory points in highway alignment?
3. Briefly explain PIEV theory
4. What are the recommendations of Nagpur Road Conference?
5. What are the Factors controlling the Highway alignment?
6. Explain briefly the various stages of work in a new Highway Project.

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Group-C (Long Answer Type Question)

Answer any three of the following

[15 x 3 = 45]

7. (a) The spacing between the contraction joints of a CC pavement is 4.2 m. Find the tensile stress developed in the pavement due to contraction if the coefficient of friction between bottom of the pavement & supporting layer is 1.2 & unit weight of concrete is 2400 kg/m^3
(b) What do you mean by frictional stress?
(c) What is radius of relative stiffness?
8. (a) A vertical summit curve is to be designed when two grades, $+1/50$ and $-1/80$ meet on a highway. The stopping sight distance and overtaking sight distance required are 180m and 640m respectively. But due to site conditions the length of vertical curve has to be restricted to a maximum value of 500m if possible.
Calculate the length of summit curve needed to fulfill the requirements of
(i) Stopping sight distance, and
(ii) Overtaking sight distance or at least intermediate sight distance and discuss the results.
(b) Discuss the types of summit curves
9. (a) Explain maximum & minimum superelevation.
(b) Design speed of a road is 65 kmph. The friction coefficient is 0.36 & reaction time is 2.5 sec. Calculate a) Head light sight distance & Intermediate sight distance
10. (a) Write short notes on design speed & stopping sight distance
(b) Find the SSD on a highway at a descending gradient 2.5% for a design speed of 75 kmph. Assume other suitable data as per IRC guidelines.
11. (a) What is Passenger Car Unit (PCU)? Write down the factors affecting PCU values
(b) Discuss different types of traffic signs

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