22302

12425

3 Hours / 70 Marks Seat No. | | | | | | | | |

Instructions : (1) All Questions are *compulsory.*

(2) Illustrate your answers with neat sketches wherever necessary.

(3) Figures to the right indicate full marks.

(4) Assume suitable data, if necessary.

(5) Use of Non-programmable Electronic Pocket Calculator is permissible.

Marks

1. Attempt any FIVE of the following : **10**

(a) State any four modes of transportation.

(b) State any four factors controlling road alignment.

(c) State importance of roads in India.

(d) Define :

(i) PCU

(ii) Traffic Density

(e) State various types of traffic control devices.

(f) List various types of curves provided on Hill Roads.

(g) Write any two necessities of providing drainage.

2. Attempt any THREE of the following : **12**

(a) Define Camber and Super-elevation. State IRC values of camber and super-elevation for National Highway.

(b) Define Gradient and state any four types of gradient.

(c) State the necessity of providing extra widening on horizontal curve.

(d) State and explain functions of pavement components.

3. Attempt any THREE of the following : **12**

(a) State the objectives of providing :

(i) Prime coat

(ii) Tack coat

(b) Draw neat sketch of penetrometer used in bitumen testing.

(c) Describe in brief purpose of conducting Traffic Volume Study.

(d) Explain the functions of components of Hill roads.

4. Attempt any THREE of the following : **12**

(a) Explain the precaution that can be taken to avoid possibility of landslides in hilly region.

(b) Draw a typical cross-section of Hill Road and label all component parts.

(c) State the functions of surface drainage and sub-surface drainage.

(d) Justify the remedial measures for the following defects in earthen road :

(i) Formation of dust during dry weather.

(ii) Growth of vegetations inside drains and their silting up.

(e) Justify the causes of common type of distress occurring in bitumen road.

5. Attempt any TWO of the following : **12**

(a) Draw the neat labelled and dimensional sketch of cross-section of National Highway in embankment.

(b) Calculate the stopping sight distance for a car moving with design speed 90 kmph. Assume total reaction time as 2.5 seconds. Take coefficient of friction = 0.7 and brake efficiency = 50%.

(c) Explain stepwise the alternate bay method of construction of concrete road with neat sketch.

6. Attempt any TWO of the following : **12**

(a) Explain stepwise construction procedure for water bound macadam road with neat sketch showing various components.

(b) Enlist different types of traffic islands and explain any one in brief with neat sketch.

(c) Draw the following road signs :

(i) Stop

(ii) Narrow bridge

(iii) Compulsory turn left

(iv) One way

(v) Speed limit

(vi) Width limit – 2m
