22302

24225

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.

(6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

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

(a) State all the requirements of the ideal road alignment.

(b) Enlist the types of roads as per Lucknow plan.

(c) Write any one scope & one importance of roads in India.

(d) Define sub-surface drain.

(e) Enlist the types of drains (any four).

(f) Define land slide.

(g) Enlist the types of hill road curves.

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

(a) Define camber and state its IRC recommended values.

(b) State & explain types of Kerbs.

(c) State the factors affecting gradient. (any four)

(d) Suggest a suitable type of curve with figure, if a 1:15 falling gradient meets horizontal road.

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

(a) State the importance of conducting flash fire & point test on bitumen. State the recommended value of flash & fire point of bitumen.

(b) Compare flexible pavement & rigid pavement with any four points.

(c) Explain step-by-step procedure of construction of bituminous road.

(d) State merits (any 2) & demerits (any 2) of WBM road.

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

(a) Define traffic volume study & objectives of traffic volume study (any 2).

(b) State the different factors which affecting PCU.

(c) Define traffic island & state its types with necessary figures.

(d) Draw any four regulatory traffic signs.

(e) State the significance of penetration test and state the recommended values for bitumen.

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

(a) Define hill road & draw a cross-section of a hill road showing its components.

(b) State the causes of land slide & its preventive measures.

(c) Calculate the length of stopping sight distance for a two way traffic in a single lane road. The design speed is 80 kmph. Assume reaction time of driver is 2 sec & co-efficient of friction is 0.4 for sloping road with

(i) Ascending slope of 2.5%

(ii) Descending slope of 3.5%

Breaking efficiency is 50%

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

(a) State the need for highway maintenance & write the classification of maintenance.

(b) Explain the maintenance steps for,

(i) Patching pot holes

(ii) Surface treatment

(iii) Repairs of joints

(c) Define WBM road & draw a neat sketch of clover-leaf grade separated inter section.
