17418

21314

3 Hours / 100 Marks Seat No. | | | | | | | | |

Instructions – (1) All Questions are *Compulsory*.

(2) Answer each next main Question on a new page.

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

(4) Figures to the right indicate full marks.

(5) Assume suitable data, if necessary.

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

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

Marks

1. a) Attempt any <u>SIX</u> of the following: **12**

i) State the role of transportation in the development of nation.

ii) State the importance of cross drainage works for railways.

iii) State the factors governing rail alignment.

iv) State the types of guages in railways.

v) State the factors affecting the choice of transport.

vi) Define super elevation.

Marks

vii) Define Negative Cant.

viii) Define Abutment and Wing walls.

b) **Attempt any <u>TWO</u> of the following:** **8**

i) Define Tunnel ventilation and state its objectives.

ii) Define Fore - poling method of tunnel in soft rock.

iii) State the necessity of maintenance of Bridge.

2. Attempt any <u>FOUR</u> of the following: **16**

a) What is tilting of rails? Explain with a neat sketch.

b) Explain factors governing the rail alignment.

c) State the types of culvert and draw a neat sketch of any one culvert.

d) Define tunnel lining and state its objectives.

e) Explain suspension bridges with a neat sketch.

f) State the factors affecting the alignment of tunnel.

3. Attempt any <u>TWO</u> of the following: **16**

a) Define coning of wheels. Explain with a neat sketch the behaviour of coned wheel on curved path.

b) Draw and explain diamond crossing? State its components.

c) Draw cross section of a broad guage double line railway track and name it's components.

Marks

4. Attempt any <u>TWO</u> of the following: **16**

a) Draw a neat sketch of a bridge and show and label all the component parts. Classify the bridges according to alignment and positions of HFL.

b) Define:

i) Afflux

ii) Effective span

iii) Economic span

iv) Certain wall

v) Clear span

vi) Free board

vii) Water way

viii) Scour depth

c) Describe heading and bench method of tunneling in hard rock with neat sketch.

5. Attempt any <u>TWO</u> of the following: **16**

a) Classify tunnels according to:

i) Traffic

ii) Conveyance

iii) Type of material

iv) Position of alignment.

b) State the different methods of tunneling in soft rock and explain any one method with a neat sketch.

Marks

c) Draw sketches of the following types of bearing and explain the conditions where each is used.

i) Fixed plate bearing

ii) Slide plate bearing

iii) Rocker bearing

iv) Roller bearing

6. Attempt any <u>FOUR</u> of the following: **16**

a) State the requirements of an ideal sleeper.

b) State the functions of Rails.

c) What do you mean by a causeway? State types of causeways.

d) What are the precautions to be taken while construction of tunnels?

e) State any four purposes of providing shafts in tunnel.

f) State purpose of temporary bridges. What are types of temporary bridges?