

# 17602

**15162**

**3 Hours / 100 Marks**

Seat No.

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

**Marks**

1. a) Attempt any THREE of the following: 12
- (i) State any four characteristics of Road transport.
- (ii) Classify the roads as per Nagpur Road Plan.
- (iii) Define ‘Road alignment’? State factors affecting road alignment.
- (iv) Enlist the various drawings and plans prepared for road project.
- (v) State any four objects of providing superelevation to road pavement.

P.T.O.

**b) Attempt any ONE of the following:****6**

- (i) Calculate the stopping sight distance for two way traffic in a single lane road. The design speed is 68 kmph. Assume reaction time of driver as 2.5 second. Coefficient of friction 0.6. Brake efficiency is 50%.
- (ii) Calculate the super elevation required for a road of 7.0 m wide on curve of 260 m radius for a permissible speed of 80 kmph. The coefficient of friction is 0.15.

**2. Attempt any FOUR of the following:****16**

- a) State different survey operation to be carried out during fixing alignment of road.
- b) What is the importance of following drawing in road project
  - (i) Index map
  - (ii) Key map
- c) Define 'Gradient'? Explain types of gradient with IRC recommendation.
- d) Define 'Camber'? State the purposes of camber.
- e) Write difference between flexible and rigid pavement.
- f) Explain construction procedure of bituminous road.

**3. Attempt any FOUR of the following:****16**

- a) Draw a cross section of National Highway in hilly area.
- b) What are the factors on which design speed depends.
- c) State and explain factors controlling alignment of hill road.
- d) What is soil stabilised road. State the necessity of soil stabilization.
- e) Explain with neat sketch the various types of longitudinal joints in pavement.

- 4. a) Attempt any THREE of the following:** **12**
- (i) What is prime coat? What purposes does it serve.
  - (ii) Define 'Traffic density' and Traffic capacity.
  - (iii) Explain the methods of Traffic volume study.
  - (iv) Draw a neat sketch of catch water drain.
- b) Attempt any ONE of the following:** **6**
- (i) State the methods of construction of cement concrete road. Explain any one.
  - (ii) Define the terms : Borrow pit, Spoil banks, Lead.
- 5. Attempt any FOUR of the following:** **16**
- a) What is Traffic rotary? Explain with neat sketch.
  - b) State the various causes of Land Slide.
  - c) Define Kerb, Right of way.
  - d) Draw the neat sketch (plan and section) of longitudinal drains and cross drain.
  - e) Draw a neat sketch of Dragline.
  - f) Draw a neat line sketch of JCB and show components.
- 6. Attempt any FOUR of the following:** **16**
- a) State the component parts of hot mix plant.
  - b) State the uses of compacting equipment.
  - c) What are the various types of curves provided in hill road. Draw neat sketch of any one type.
  - d) Explain surface drainage system in urban roads.
  - e) Enlist eight types of equipments used for excavation work.
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