

## Scheme –I

### Sample Question Paper

**Program Name** : Civil Engineering Program Group  
**Program Code** : CE/CR/CS  
**Semester** : Fourth  
**Course Title** : Railway and Bridge Engineering  
**Max. Marks** : 70

**22403**

**Time: 3 Hours**

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#### 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) Preferably, write the answers in sequential order.

#### **Q.1 Attempt any FIVE of the following.**

**10 Marks**

- a. List the modes of transportation systems.
- b. Define rail gauge.
- c. Define (i) ruling gradient (ii) pusher gradient.
- d. Name the types of station yard.
- e. List the types of culvert.
- f. List out the components of left hand turnout.
- g. State the necessity of tunnel construction.

#### **Q.2 Attempt any THREE of the following.**

**12 Marks**

- a. Describe the causes and effects of creep of rail.
- b. Explain the functions of rail fixtures and fastenings.
- c. Classify the bridge based on:  
(i) its purpose (ii) material used for its construction.
- d. Discuss the factors affecting while selection of rail gauge.

#### **Q.3) Attempt any THREE of the following.**

**12 Marks**

- a. Explain the functions of bridge bearings.
- b. Discuss the preventive measures to avoid creep of rail.
- c. Draw a labeled sketch of L-section of bridge showing its components.
- d. Describe the factors affecting the site selection of a bridge construction.

#### **Q.4) Attempt any THREE of the following.**

**12 Marks**

- a. State any four advantages and disadvantages of pre-stressed bridge.
- b. Explain the necessity for pre and post monsoon inspection of bridge.
- c. Explain with sketch the needle-beam method of tunnel excavation in soft rock.

- d. Explain the following types of foundations for R.C.C. bridges
  - (i) Land foundation
  - (ii) Under water foundation
- e. Describe high level and low level causeways.

**Q.5) Attempt any TWO of the following.**

**12 Marks**

- a. Explain the necessity of negative cant with sketch.
- b. Describe with neat sketch (i) diamond crossing (ii) cross over
- c. Explain the daily and periodic maintenance of rail track.

**Q.6) Attempt any TWO of the following.**

**12 Marks**

- a. Describe the necessity of tunnel lining. Also state its types.
- b. Explain with sketch the full-face heading method of tunneling in hard rock.
- c. Explain the tunnel ventilation using mechanical method.

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## Scheme –I

### Sample Test Paper - I

**Program Name** : Civil Engineering Program Group  
**Program Code** : CE/CR/CS  
**Semester** : Fourth  
**Course Title** : Railway and Bridge Engineering  
**Max. Marks** : 20

**22403**

**Time: 1 Hour**

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**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. Preferably, write the answers in sequential order

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**Q.1 Attempt any FOUR of the following.**

**(08 Marks)**

- a) State the necessity of ballast provision in railways.
- b) Give the causes of creep of rail.
- c) Define cant deficiency.
- d) State the necessity of rail joints.
- e) Define scour depth and Highest Flood Level in case of bridge.
- f) State the situations where approaches in embankment are required to be provided.

**Q.2 Attempt any THREE of the following.**

**(12 Marks)**

- a) Summarize the requirements of a good railway sleeper.
  - b) Explain the tilting of rails in terms of its advantages.
  - c) Explain the requirements of a railway station.
  - d) Explain the tools required for track maintenance.
  - e) Explain the components parts of a bridge with sketch.
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**Scheme –I**

**Sample Test Paper - II**

**Program Name** : Civil Engineering Program Group  
**Program Code** : CE/CR/CS  
**Semester** : Fourth  
**Course Title** : Railway and Bridge Engineering  
**Max. Marks** : 20

**22403**

**Time: 1 Hour**

**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. Preferably, write the answers in sequential order

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**Q.1 Attempt any FOUR of the following.**

**(08 Marks)**

- a) List the types of piers.
- b) Define afflux and scour depth.
- c) Give the necessity of construction of temporary bridges.
- d) State any two advantages of pre-stressed bridge.
- e) Define the terms (i) Mucking (ii) Hauling
- f) Name the disruptive type of explosives used in tunnel excavation.

**Q.2 Attempt any THREE of the following.**

**(12 Marks)**

- a) Draw a labeled sketch of L-section of bridge.
- b) Enumerate the steps involved in construction of a bridge.
- c) Explain the daily maintenance of bridge.
- d) Explain the method of transferring the alignment inside the tunnel with sketch.
- e) Describe the heading and bench method of tunneling in hard rock.

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