

# C.U.SHAH UNIVERSITY

## Summer Examination-2019

**Subject Name: Railway, Bridge and Tunnel Engineering**

**Subject Code: 4TE06RBT1**

**Branch: B.Tech (Civil)**

**Semester : 6**

**Date : 02/05/2019**

**Time : 10:30 To 01:30**

**Marks: 70**

Instructions:

- (1) Use of Programmable calculator & any other electronic instrument is prohibited.
- (2) Instructions written on main answer book are strictly to be obeyed.
- (3) Draw neat diagrams and figures (if necessary) at right places.
- (4) Assume suitable data if needed.

<b>Q-1</b>	<b>Attempt the following questions:</b>	<b>(14)</b>
	a) Why are water columns necessary?	1
	b) Define afflux.	1
	c) What is mean by coning of wheels?	1
	d) Define economic span of bridge.	1
	e) What do you understand by the word 45 kg rail?	1
	f) Define bridge.	1
	g) Define gauge of a railway track.	1
	h) Draw a sketch of the inclined base-plate.	1
	i) What are the two types of drill-bits?	1
	j) A M.G. track is laid with rails of length 13 m. Find out the number of sleepers under one rail length with sleeper density as $n + 5$ .	1
	k) What is a tunnel?	1
	l) A rising grade of 1 in 100 meets a rising grade of 1 in 200. Will it be necessary to provide the vertical curve?	1
	m) Why is lining necessary in tunnel?	1
	n) Define railway station.	1

**Attempt any four questions from Q-2 to Q-8**

<b>Q-2</b>	<b>Attempt all questions</b>	<b>(14)</b>
	a) What are the safety measures to be usually observed in rock tunneling?	3
	b) Describe the ways of providing effective drainage during and after the construction of tunnel.	4
	c) Describe the different types and shapes of switches.	7

<b>Q-3</b>	<b>Attempt all questions</b>	<b>(14)</b>
	a) What preliminary data should be collected and analyzed by engineer-in-charge of the investigation of a bridge site?	7
	b) Describe in detail the various surveys, which are conducted before laying	7



	a new railway track.	
<b>Q-4</b>	<b>Attempt all questions</b>	<b>(14)</b>
<b>a</b>	Define super-elevation and show how it is worked out. Also, discuss the factors affecting super-elevation.	7
<b>b</b>	Discuss the erection of steel girders.	7
<b>Q-5</b>	<b>Attempt all questions</b>	<b>(14)</b>
<b>a</b>	Discuss the important general features of concrete sleeper.	7
<b>b</b>	Write a short note on maintenance of bridge.	7
<b>Q-6</b>	<b>Attempt all questions</b>	<b>(14)</b>
<b>a</b>	Discuss – Wayside stations, Junction station and Terminals	3
<b>b</b>	Write a short note on Bridge bearing.	7
<b>c</b>	Draw a neat sketch of a semaphore type signal and show its various parts. Explain its working.	4
<b>Q-7</b>	<b>Attempt all questions</b>	<b>(14)</b>
<b>a</b>	Explain the different types of rail with neat sketch.	7
<b>b</b>	Write the classification of tunnels depending upon alignment, purpose and materials.	3
<b>c</b>	Briefly describe how you would transfer the centerline and grade of a proposed tunnel from the ground surface to the tunnel interior. Give neat sketches in support of the answer.	4
<b>Q-8</b>	<b>Attempt all questions</b>	<b>(14)</b>
<b>a</b>	What are the characteristics of a good ideal rail joint?	3
<b>b</b>	Describe briefly the process of screening of ballast.	4
<b>c</b>	Explain with sketches the following methods of tunneling in rock and discuss their relative merits and demerits:	7
	1) Drift method	
	2) Full face method	

