

Enrollment No: _____

Exam Seat No: _____

C.U. SHAH UNIVERSITY

Summer Examination-2017

Subject Name: Railway, Bridge and Tunnel Engineering

Subject Code: 4TE06RBT1

Branch: B.Tech (Civil)

Semester: 6

Date: 25/04/2017

Time: 02:30 To 05:30

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.
-

- Q-1 Attempt the following questions: (14)**
- a) Define nipper cars. (1)
 - b) What are the various components of permanent way (or track)? (1)
 - c) Define free bearing? (1)
 - d) What are fish plates? (1)
 - e) Define bridge components. (1)
 - f) Draw horse shoe shape tunnel. (1)
 - g) Draw bridge figure with all components. (1)
 - h) What are points and crossing? (1)
 - i) Define track capacity. (1)
 - j) Define scour depth. (1)
 - k) What is the throw of switch? (1)
 - l) Define pilot tunnel. (1)
 - m) What is the sleeper density on the board gauge track? (1)
 - n) What is mucking? (1)

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

- Q-2 Attempt all questions (14)**
- A** What is creep? What are the effects of creep of rails? (7)
- B** What is meaning of “Economic span” for a bridge and state how it is determined? (7)

- Q-3 Attempt all questions (14)**
- A** Write a short note on Heading and bench method of tunnelling in rock. (7)
- B** A switch has the following dimensions (7)
- Heel divergence = 136.50mm
- Thickness at toe of tongue rail = 6.50mm



Actual length of tongue rail = 4.75 m
Find out the angle of switches and theoretical length of switch

- Q-4** **Attempt all questions** (14)
- A** State the classification of bridges based on different factors. (7)
- B** Compare the characteristics of wooden sleepers and reinforced concrete sleepers used on Indian Railways. (4)
- C** Using a sleeper density of $M + 5$, find out the number of sleeper required for constructing a railway track 640 meters long. (B.G Track) (3)
- Q-5** **Attempt all questions** (14)
- A** Enlist various methods of tunnelling in hard rock. Explain any two of them with sketches. (7)
- B** Write short note on uniformity of gauge and coning of wheels. (7)
- Q-6** **Attempt all questions** (14)
- A** What material as ballast you would suggest for high speed track and why? (7)
- B** Draw a neat sketch of a semaphore type signal and shows its various parts. Explain its working. (7)
- Q-7** **Attempt all questions** (14)
- A** Explain bridge bearings. (7)
- B** Explain the type of rail section. (7)
- Q-8** **Attempt all questions** (14)
- A** Discuss with sketches ventilation, drainage and safety measures in tunnel construction. (7)
- B** Explain in brief: 1) Marshalling yards 2) water column (7)

