C.U. SHAH UNIVERSITY Winter Examination-2019

Subject Name: Railway, Bridge and Tunnel Engineering

| Subject Code: 4TE06RBT1 | | Branch: B.Tech (Civil) | |
|-------------------------|-----------------|------------------------|-----------|
| Semester: 6 | Date:23/09/2019 | 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.

| Q-1 | | Attempt the following questions | (14) |
|------------|------------|---|------|
| - | a) | What is meant by wear of rails? | (1) |
| | b) | What are the two types of bridge floors? | (1) |
| | c) | A rising grade of 1 in 100 meets a rising grade of 1 in 200. Will it be necessary to | (1) |
| | , | provide the vertical curve? | ~ / |
| | d) | What is primary lining? | (1) |
| | e) | Draw a sketch of dog – spike. | (1) |
| | f) | What is twin tunnel? | (1) |
| | g) | Write down the forces acting on an abutment. | (1) |
| | h) | Define permanent way. | (1) |
| | i) | Where are the circular section and horse – shoe form of a tunnel the most suitable? | (1) |
| | j) | What are the free and fixed bearing? | (1) |
| | k) | Find out the number of sleepers for rails of 12.80 m length with sleeper density as | (1) |
| | | (n + 3). | |
| | 1) | Define creep. | (1) |
| | m) | Enlist the two types of bridge joints. | (1) |
| | n) | What is level crossing? | (1) |
| Atten | npt any f | our questions from Q-2 to Q-8 | |
| O-2 | | Attempt all questions | (14) |
| Ľ | A) | Why is lighting necessary tunnel? Describe various types of tunnel lights. | (7) |
| | B) | A five-degree curve diverges from a main curve of 4 degree in an opposite direction in the layout of a broad gauge yard. If the speed on the main curve is restricted to 54.33 kmph, determine the speed restriction on the branch line. Assume permissible | (7) |
| 0.2 | | | (14) |
| Q-3 | A) | Attempt all questions | (14) |
| | A) D) | Draw a near sketch of a diamond crossing in ranways and list its important reatures. | (7) |
| | В) | write a short note on Heading and bench method of tunneling in rock. | () |
| Q-4 | | Attempt all questions | (14) |
| | A) | Explain the methods of strengthening a bridge superstructure | (7) |
| | B) | Explain resistance due to friction and due to wave action that a locomotive in motion Page 1 of 2 | (7) |



| | | has to overcome. | |
|-----|------------|--|------|
| Q-5 | | Attempt all questions | (14) |
| | A) | What are the requirements of a ventilating system? Explain briefly various methods for dust suppression during tunneling. | (7) |
| | B) | What are the basic functions of marshalling yard and state the points which should be kept in mind when designing a marshalling yard. | (7) |
| Q-6 | | Attempt all questions | (14) |
| | A) | Compare the characteristics of wooden sleepers and reinforced concrete sleepers used on Indian Railways. | (7) |
| | B) | State the classification of bridges based on different factors. | (7) |
| Q-7 | | Attempt all questions | (14) |
| | A) | Define economic span, linear waterway and afflux. Also state the guiding principle which must be kept in mind to ensure the safety of the structure while fixing the waterway of bridge. | (7) |
| | B) | What are the functions of rails? Explain the various types of rails in use. | (7) |
| Q-8 | , | Attempt all questions | (14) |
| - | A) | State the functions of bearings and also explain rocker and roller bearings. | (7) |
| | B) | Describe in brief the basic requirements of a good alignment. | (7) |

