

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VI (NEW) EXAMINATION – WINTER 2018

Subject Code:2160603

Date:27/11/2018

Subject Name:Railway, Bridge & Tunnel Engineering

Time: 02:30 PM TO 05:00 PM

Total Marks: 70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1**
- | | | |
|-----|---|-----------|
| (a) | Enlist the different gauges used in India. | 03 |
| (b) | Write short note on Mono rails. | 04 |
| (c) | What are the functions of rails? Explain the various types of rails in use. | 07 |

- Q.2**
- | | | |
|-----|---|-----------|
| (a) | Define the following: | 03 |
| | i) Ruling gradient ii) Pusher gradient iii) Momentum gradient | |
| (b) | Discuss factors affecting site selection of bridge. | 04 |
| (c) | Explain 'negative super elevation'. State the circumstances under which it is provided. | 07 |

OR

- | | | |
|-----|---|-----------|
| (c) | 5° curve diverges from a main curve of 4° 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 cant deficiency as 7.5 cm. | 07 |
|-----|---|-----------|

- Q.3**
- | | | |
|-----|--|-----------|
| (a) | Explain resistance due to friction that locomotive in motion has to overcome. | 03 |
| (b) | Explain Track Drainage. | 04 |
| (c) | Draw the neat sketch of simple left hand turnout and show its various component parts. Explain the working principle of the turnout. | 07 |

OR

- Q.3**
- | | | |
|-----|--|-----------|
| (a) | Give the purpose of railway station. | 03 |
| (b) | Explain causes of rail accidents and their remedial measures in brief. | 04 |
| (c) | What are the facility requirements of railway station? | 07 |

- Q.4**
- | | | |
|-----|---|-----------|
| (a) | Write types and function of bearing. | 03 |
| (b) | Discuss stages involved in bridge investigation. | 04 |
| (c) | What is 'economic span' of a bridge? Derive the expression for economic span of bridge. | 07 |

OR

- Q.4**
- | | | |
|-----|---|-----------|
| (a) | Give classification of bridge based on super structure. | 03 |
| (b) | Explain various defects in bridge. | 04 |
| (c) | Write Short note on "maintenance of bridges". | 07 |

- Q.5**
- | | | |
|-----|---|-----------|
| (a) | Define the terms: | 03 |
| | i) Water way ii) Afflux iii) Free board | |
| (b) | Discuss the drainage system in tunnel construction. | 04 |
| (c) | Discuss any one method of tunneling in hard rock. | 07 |

OR

- Q.5**
- | | | |
|-----|--|-----------|
| (a) | Write a short note on Scour depth. | 03 |
| (b) | Write safety precautions in tunnel construction. | 04 |
| (c) | Explain various methods of tunnel ventilation. | 07 |
