

GUJARAT UNIVERSITY
B.E. Sem V (Civil) Examination
Rilway Bridges & Tunnels

Friday, 28th December, 2007]

[Time : 3 Hours
Max. Marks : 100

- Instructions :** (1) Attempt all questions from each section.
(2) Answer to the two sections must be written in **separate** answer books.
(3) Figures to the right indicate **full** marks.
(4) Assume suitable additional data if necessary.

SECTION I

- 1 (a) What are the sub-structures of a bridge? Mention the functions of each of them. 6
(b) What are the data required for bridge design. 6
(c) How will you calculate the economic span of a bridge? 4

OR

- 1 (a) Classify the bridges in different ways. 6
(b) What are the various stages of investigation for important bridges ? 6
(c) Define a bearing and mention the purpose of providing bearing in a bridge. 4

- 2 (a) A bridge has a linear water way of 200m, constructed across a stream whose natural linear water way is 250m. If the average flood discharge is 1500 m³/sec. and average flood depth is 5m. Calculate the afflux under the bridge. 8
(b) What are the requirements of an ideal bridge? Discuss them. 8

OR

- 2 (a) The approximate cost of one pier and one pier superstructure-span for a multiple span for various length of span are tabulated as follow. 8

Span (m)	Cost of the pier (Rs.)	Cost of super Structure (Rs.)
10	20000	8000
15	25000	16000
20	30000	35000
25	35000	40000
30	40000	45000

Determine the economic span of a bridge.

- (b) What is afflux ? Explain various methods at finding out the afflux 8

- 3 Attempt any **three** : 18

- (1) What are the advantage and disadvantages of tunnel?
(2) What is shaft? What are the factors that governs its Size?
(3) How the effective drainage is provided in the tunnel.
(4) How the centre line of a tunnel is transferred from ground surface to inside the tunnel.
(5) Write short note on suspension bridges.

P. T. O.

SECTION II

- 4 (a) State the requirements of a railway station. 6
(b) What are the resistances required to be overcome by a moving train? Explain them. 6
(c) Find out number of sleepers required for the construction of a Broad gauge track 800m long. 8

OR

- 4 (a) Why the fish plate and bearing plates are provided? Explain it. 6
(b) What is superelevation ? Explain factors affecting superelevation. 6
(c) How will you reduce wear of rails. 4

- 5 (a) What are the factors affecting choice of a gauge? 6
(b) What is coning of wheels? What are the advantages and disadvantage of it? 6
(c) Compare railway transportation with road transportation. 4

OR

- 5 (a) Draw a sketch illustrating various constituents of a turnout. 6
(b) Write short notes on cross over 6
(c) Explain method of interlocking. 4

- 6 Write short notes on (any three) : 18
(1) Write short note on cross- overs
(2) Centralized traffic control system
(3) Needle-beam method in tunnelling
(4) Dust control in tunnelling.

HowToExam.com