

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATIONS- 2026

M.Tech-II Semester (CE-Structural Engineering)

COURSE CODE (CREDITS): 25M1WCE232 (3)

MAX MARKS: 25

COURSE NAME: BRIDGE ENGINEERING

COURSE INSTRUCTOR: Dr. KAUSHAL KUMAR

MAX. TIME: 1 Hour 30 Min

Note: (a) All questions are compulsory.

(b) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

(c) Use of **calculator** along with **IRC 6 Code** is allowed.

Q.No	Question	Marks
Q1	(a). What are the different types of loads acting on culverts? Which is most critical? (b). Write short notes on impact factor in bridge design as per IRC. (c). Why are slab culverts considered economical for small spans? Mention critical loading conditions.	2*3 = 6
Q2	A bridge needs to be constructed across an alluvial stream having a discharge of 500 cumecs. Calculate the depth of maximum scour when the bridge consists of: (i) three spans of 15 m each (iii) four spans of 30 m each Take $f = 1.1$	4
Q3	Define End Connectors in a bridge and its functions. With the help of neat sketches, discuss different types of wing walls used as end connectors.	5
Q4	Design a deck slab for the following particulars: Clear span: 6.0 m Width of the carriageway: 7.5 m Width of the footpath: 1 m on either side Wearing coat: 100 mm Loading: IRC Class AA (Tracked) Support: Simply Supported on both ends. Materials: M35 concrete and Fe 415 steel. <i>Ignore checking for shear stresses.</i>	10