JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT TEST -2 EXAMINATIONS-2022

M.Tech - II Semester (Civil-SE)

COURSE CODE (CREDITS): 11M1WCE133 (3)

MAX. MARKS: 25

COURSE NAME: BRIDGE ENGINEERING

COURSE INSTRUCTORS: Mr. KAUSHAL KUMAR

MAX. TIME: 1 Hour 30 Min

Note: All questions are compulsory. Marks are indicated against each question in square brackets. (ii) IRC-6 is allowed also I page one sided hand written note is allowed.

Q1. (a). Explain Pigeaud's theory for the design and analysis of T-Bridges.

[2 Marks]

(b). Write short notes on "IRC class A-A loading (wheeled)".

[2 Marks]

- (c). Why Box culvert bridges are economical? What are different conditions of loading in box culvert, which are treated critical? [2 Marks]
- Q2. Design a Slab Culvert over an effective span of 7.0 m for the following data:

Clear carriage way width - 7.0 m;

Width of kerb -650 mm on either side;

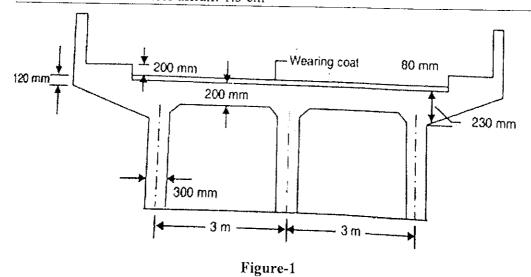
Load - IRC class AA (Tracked);

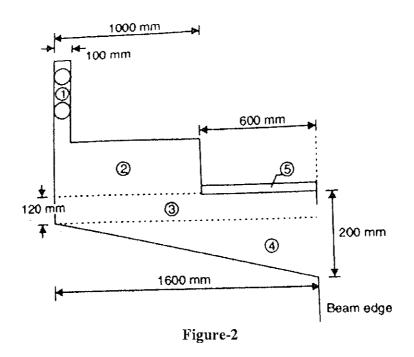
Thickness of wearing coat - 80 mm;

Use M25 and Fe-415 grades.

[7 Marks]

- Q3. A T-beam bridge (section given in Figure-1) has to be provided across a channel with the following data.
 - Flood discharge: 30 m3/s
 - Bed width: 12 m
 - Side slope: 1:1
 - Bed level: 50 m
 - HFL: 51.25 m
 - Maximum allowable afflux: 1.5 cm
- Road: National highway (2-lane)
- Footpath: I m wide on either side
- Loading: IRC Class A
- Materials: M40 concrete Fe415 steel
- No. of longitudinal girders: 3





(a) Design the linear waterway.

[5 Marks]

(b) For the cantilever slab portion of the bridge given in Figure-2, calculate the design moment and design shear only. [7 Marks]

-----The End-----