

*Note: All questions are compulsory. Marks are indicated against each question in square brackets. (ii) IRC-6 is allowed also 1 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 m<sup>3</sup>/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: 1 m wide on either side
- Loading: IRC Class A
- Materials: M40 concrete Fe415 steel
- No. of longitudinal girders: 3

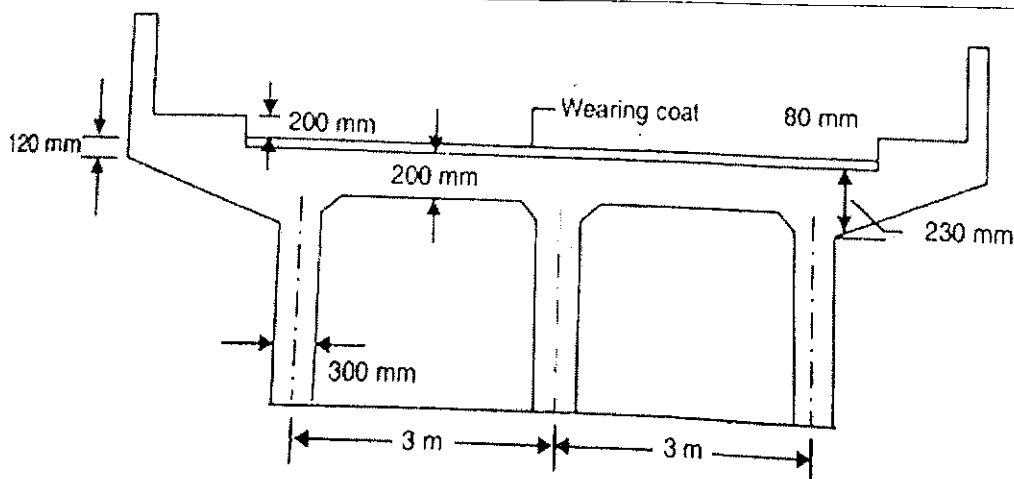


Figure-1

