

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

MAKEUP EXAMINATION- 2016

M.Tech 4th Semester 2nd Year

COURSE CODE: 11M1WCE133

MAX. MARKS: 25

COURSE NAME: Bridge Engineering

COURSE CREDITS: 03

MAX. TIME: 1Hr 30 Min

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means. Suitably assume any missing data.

1. Discuss the classifications of bridges. Also elaborate on the preliminary data to be collected from site for design of bridge. **[5 Marks]**

2. A two-span plate girder bridge is to be provided across a river having the following data:

Flood Discharge	100 m ³ /sec
Bed Width	30 m
Side Slope	1:1
Bed Level	50.00 m
H.F.L.	52.50 m
Maximum allowable afflux	15 cm

Calculate the span of the bridge. **[5 Marks]**

3. Calculate Design Moments and Shear Forces for a deck slab with the following particulars:

a. Clear Span	5.5 m
b. Width of the footpath	1 m on either side
c. Wearing coat	100 mm
d. Loading	IRC Class AA (Tracked) and IRC Class A

[10 Marks]

4. The catchment area of a stream is of sandy soil with thick vegetation cover and the area of the catchment is 8,000 hectares. The length of the catchment is 20 km and the fall in level from the critical point to the bridge site is 160 m. Calculate the peak runoff for designing of the bridge if the severest storm as recorded yielded 16cm of rain in 4hrs.

Take $P = 0.1$, $f = 0.76$

[5 Marks]