BRIDGE ENGINEERING (3-0-0)

Module I

Introduction, historical review, engineering and aesthetic requirements in bridge design. Introduction to bridge codes. Economic evaluation of a bridge project. Site investigation and planning. Bridge hydrology, economic span, Scour - factors affecting the scour and evaluation of scour .

Module II

Standards for loadings for bridge design. IRC loadings, Bridge foundations - open, pile, well and caisson. Piers, abutments and approach structures; Superstructure - right, skew and curved slabs. Girder bridges - types, load distribution, Orthotropic plate analysis of bridge decks, solution of typical problems using Courbon's method of analysis

Module III

Introduction to long span bridges - cantilever, arch, cable stayed and suspension bridges. Methods of construction of R.C Bridges, Prestressed concrete bridges and steel bridges Fabrication, Lounching & creation. construction joints (use of relevant codes of practice are permitted in the examination).

Reference Books:

1. Bridge Engineering – Victor Jognson, TMH Publication
2. Principles and practice of Bridge engineering by S.P Bindra, Dhanapat rai publ
3.V. K. Raina, *Concrete Bridges Practice – Analysis, Design and Economics*, Shroff Pub, New Delhi 2nd Ed. 2005.
4. Design of Concrete Bridges, Vazirani, Ratwani and Aswani, Khanna Pub. 2nd Ed.
5. B. M. Das, *Principles of Foundation Engineering,* Thomson, Indian Edition, 2003.

Reference Codes:

1. IRC codes for Road bridges- IRS Sec –I , II, III
2. IRS Codes of Practice for Railway bridges.