

ADVANCED REINFORCED CONCRETE STRUCTURES

FINAL EXAM

ATTEMPT ALL THE QUESTIONS

TIME: 3 Hours

QUESTION ONE: [10 Marks]

Explain the term drop and capital in flat slab and state the advantages and disadvantages of flat slab mentioning some of the components of flat slab.

QUESTION TWO: [10 Marks]

Write the different types of flat slabs and mention the different methods of analysis of flat slab?

QUESTION THREE: [25 Marks]

Design and detail longitudinal and cross girder of reinforced concrete T MPa, Permissible shear stress = 100 MPa. -Beam girder bridge without footpath for the following data.
Clear width of road way = 7.5 m
Span of bridge = 20 m (c/c between bearings)
Average thickness of wearing coat = 80 mm
Use M-20 grade concrete & Fe-415 grade steel
Assume other relevant data if necessary.

QUESTION FOUR: [10 Marks]

Explain uses of Pigaud's curves in detail.

QUESTION FIVE: [10 Marks]

Explain types of superstructure and substructure for bridges in detail.

QUESTION SIX: [25 Marks]

Design and detail longitudinal and cross girder of reinforced concrete T-Beam girder bridge without footpath for following data.
Clear width of road way = 7.5 m
Span of bridge = 16 m (c/c between bearings)
Average thickness of wearing coat = 75 mm
Use M-25 grade concrete & Fe-415 grade steel
Assume other relevant data if necessary.

QUESTION SEVEN: [10 Marks]

A cylindrical silo has an internal diameter of 8.0 m and depth of 30 m. Material to be stored

is coal. Design and detail the silo for following data.

Density of coal = 9kN/m^3 , Angle of repose = 30° , Co-efficient of friction = 0.33,

Ratio of horizontal to vertical pressure intensity = 0.3.