R-14

Code: 4G689

IV B.Tech. II Semester Advanced Supplementary Examinations August 2021
Pre Stressed Concrete
(Civil Engineering)

Max. Marks: 70   Time: 3 Hours
Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)
****

UNIT–I

1. a) Explain about pretensioning system and post tensioning system with neat sketches.
    b) List the advantages and limitations of prestressed concrete.

OR

2. a) Recognize the need for high strength steel and high strength concrete and its characteristics
    b) List different system of prestressing and describe them

UNIT–II

3. What are the types of losses in Pre-stressed concrete? What is the loss of stress due to creep of concrete?

OR

4. A prestressed concrete beam of rectangular section 180mm wide and 400mm deep is prestressed by 7 wires of 5mm diameter, provided at an eccentricity of 55mm.The initial stress in the wires is 1000 N/mm2 .Find the loss of stress in steel due to creep of concrete. Take $E_s = 2 \times 10^5$ N/mm2, $E_c = 3 \times 10^5$ N/mm2,   =1.50.

UNIT–III

5. A Rectangular concrete beam 150mm×300mm deep spanning over a span of 8.0 m, is pressed by straight cable carrying an effective prestressing force of 300 KN located at an eccentricity of 45 mm. The beam supports a live load of 2 KN/m. compute the extreme stresses at mid span of the beam.

OR

6. A prestressed concrete beam of section 120 mm wide by 300 mm deep is used over an effective span of 6 m to support a uniformly distributed load of 4 kN/m, which includes the self-weight of the beam. The beam is prestressed by a parabolic cable carrying a force of 180 kN and located at an eccentricity of 50 mm. compute the extreme stress at central span sections and end section.

UNIT–IV

7. A Prestressed concrete beam of rectangular cross section 400mm x 800mmdeep is Prestressed by 2 post tension cables area 500mm^2 each initially. Stressed to 1500N/mm^2. The span of the beam is 8 m. if fck =30 N/mm^2.Estimate the shear resistance of support section. Use IS 1343 code.

OR

8. Explain the design procedure of rectangular section according to IS code

UNIT–V

9. Explain analysis of end blocks by Guyon's method

OR

10. The end block of a post tensioned beam is 90mm wide and 180mm deep. A prestressing wire, 8 mm in diameter, stressed to 1400 N/mm2 has to beanchored against the end block at the centre. The anchorage plate is 50mm x50mm. The wire bears on the plate through a female cone of 20mm diameter. Given the permissible stress in concrete at transfer, fci as 20 N/mm^2 and the permissible shear in steel as 94.5 N/mm2, determine the thickness of the anchorage plate.

***

IV B.Tech. II Semester Advanced Supplementary Examinations August 2021
Advanced Transportation Engineering
(Civil Engineering)

Max. Marks: 70　　　　　　　　　　　　　　　　　　　　　　Time: 3 Hours
Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)
****

			Marks	CO	Blooms Level
		UNIT–I			
1.	a)	Draw neat labeled cross section of a single line and double line broad gauge track in embankment on straight path.	7M	CO1	L4
	b)	What are Sleepers? What are the advantages and disadvantages of Concrete sleepers?	7M	CO2	L1
		OR			
2.	a)	Calculate the super elevation, maximum permissible speed and transition length for a 4 degree curve on a high speed BG section with a maximum allowable speed of 100 kmph. Assume the equilibrium speed to be 70 kmph and the booked speed of the goods train to be 45 kmph.	7M	CO2	L3
	b)	Discuss about various gradients in Railway Track.	7M	CO1	L2
		UNIT–II			
3.	a)	Differentiate with a neat sketch of Diamond and Scissors crossing.	7M	CO3	L2
	b)	With the help of diagram explain the needle beam method tunneling	7M	CO3	L4
		OR			
4.	a)	What is interlocking? Explain various functions of interlocking.	7M	CO4	L1
	b)	Explain the method of transfer of centre line into tunnel and providing grade	7M	CO4	L2
		UNIT–III			
5.	a)	Explain the various Surveys to be conducted and the data to be collected for Airport site selection	7M	CO1	L2
	b)	What is a Wind rose diagram? What are its types? Explain any one.	7M	CO1	L1
		OR			
6.	a)	Write in detail about various airport markings with neat sketches.	5M	CO5	L1
	b)	The length of runway at sea level, standard atmospheric conditions and zero gradient is 1500 m. The airport site has an elevation of 900 m, and the reference temperature as 20° C. If the proposed runway grading permits an effective gradient of 0.20 percent, determine the actual runway length required at the site.	9M	CO5	L3
		UNIT–IV			
7.	a)	What is a "Harbour"? What are the types of harbours available? Explain with the help of neat sketches.	7M	CO4	L1
	b)	Explain different types of breakwater structures with suitable sketches.	7M	CO3	L1
		OR			
8.	a)	Define floating dry docks and explain the different types of floating docks.	7M	CO5	L1
	b)	What are the different methods of mound construction? With the help of neat sketch explain any one method.	7M	CO5	L1
		UNIT–V			
9.		What is dredging? List the modern types of mechanical dredges and also with the help of neat sketch explain about the hydraulic Dredger)	14M	CO2	L1
		OR			
10.	a)	Explain how do you disposal the dredged material.	4M	CO1	L1
	b)	Differentiate between Bucket Ladder dredger and Grab dredger	10M	CO2	L5

**********END*********