Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

VII SEMESTER B.TECH (CIVIL) END SEMESTER EXAMINATIONS

December

SUBJECT: PROGRAMME ELECTIVE IV- Bridge Engineering [CIE 4019]

Date of Exam: Time of Exam: Max. Marks: **50**

Instructions to Candidates:

- Answer ALL the questions & missing data may be suitably assumed

1A.	List out the preliminary data to be collected for selecting type of bridge superstructure.	**(04)**
1B.	Explain the factors to be considered in selecting a bridge site.	**(06)**
2A.	Determine Linear Water way to handle the discharge for a Bridge Site is spread by 615 sq km. Velocity of the flow is 1.45 m/s Average Particle size of the bed material is 0.4mm. Bridge has 4 spans of 25m each. Determine the afflux and maximum scour depth.	**(06)**
2B	What are flood marks. How can flood marks be used to calculate Design Discharge? Describe Area velocity method.	**(04)**
3A.	Explain the condition when maximum moment under wheel load occurs in a one way slab bridge	**(05)**
3B.	An interior panel of bridge is deck 2.5m x 4m. Determine the Live load moment due to Class A wheel load and class B wheel load placed centrally	**(05)**
4A.	Distinguish between slab bridges and tee beam slab bridges	**(03)**
4B.	A box culvert is to be designed across a road with carriage way width of 7.5m. the invert level is 105.50m while the road formation level is 110.00m. Assume wearing coat of 100mm. SBC of soil is 100 kN/m^2, unit weight is 16.5 kN/m^2, Angle of internal friction is 30°. Internal dimensions of box culvert is 2.5mx2.5m. determine the forces acting on box culvert, assuming thickness of box culvert to be 300mm.	**(07)**
5A.	Why is deep foundation preferred for bridge structures. Explain of suitability of end bearing piles and friction piles for bridge foundations	**(05)**
5B.	Explain the functions of roller and rocker type bearings.	**(05)**