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B.TECH. (CIVIL) III SEMESTER

END TERM EXAMINATION **Nov/Dec-2022**

CE207: ENGINEERING ANALYSIS AND DESIGN

Duration: 3:00 Hr ***Max. Marks: 50***

Note: Attempt ANY FIVE questions.
Draw neat sketches wherever required.
All questions carry equal marks.
Assume suitable missing data, if any.

Q.1 Compare the concepts of design of following along with their typical sketches:
(a) Flexible pavement and rigid pavement [CO4:5]
(b) Under reinforced section and over reinforced section [CO4:5]

Q.2(a) Explain consistency limits of soil. [CO1:5]
(b) Calculate coefficient of permeability of a soil sample, 6 cm height and 40 cm^2 in cross sectional area, if a quantity of water equal to 400 ml passed down in 10 minutes, under a head of water of 50 cm. [CO3:5]

Q.3(a) What are the factors that control geometric design of highway? Discuss in brief. [CO2:5]
(b) On a highway free mean speed is observed as 100 km/h. Under fully jam condition the average spacing between vehicles is found as 6.8 m. Calculate maximum traffic flow. [CO3:5]

P.T.O.

Q.4(a) On a typical diagram show important components of a railway track. [CO2:5]

(b) Estimate the size of supply pipe with flow velocity 1.2 m/sec, to service reservoir, serving a town of 20,000 population with average water demand of 120 litres/capita/day. [CO3:5]

Q.5(a) Describe hydraulic depth and hydraulic radius. [CO1:5]

(b) Calculate both for a pipe of radius of 50 cm which is flowing half full under action of gravity. [CO4:5]

Q.6(a) Discuss applications of any two important equipment that are generally used in field surveying. [CO1:5]

(b) The length and bearing of a traverse PQRS are given below. [CO4:5]

Segment	Length	Bearing
PQ	40	80°
QR	50	10°
RS	30	210°

Compute length of line segment SP (round off to two places of decimal).