

PRN No.	
---------	--

PAPER CODE	V315-224C (ESE)
------------	-----------------

(AY: 2025-26) DECEMBER 2025 EXAM (ENDSEM)
TY (SEMESTER - I)

COURSE NAME:
Infrastructure
Engineering

Branch: Civil Engineering

COURSE CODE: CV31234C

(T.Y PATTERN 2023)

Time: [1 Hr 30 Min]

[Max. Marks: 40]

(* Instructions to candidates:

- 1) Figures to the right indicate full marks. Use of scientific calculator is allowed
- 2) Use suitable data wherever required
- 3) All questions are compulsory. Solve any two sub question each from Questions 1 and 2
- 4) Solve any one sub question (2 marks) from Questions 3 ,4 ,5 and 6 and sub question of 4 marks is compulsory from questions 3,4,5,and 6

Q. No.	Question Description	Max. Marks	CO mapped	BT Level
Q.1	a) Explain Infrastructure Engineering and state its importance in national and global development.	[4]	1	Understanding
	b) Explain the salient features of a Smart City as proposed under India's Smart City Mission.	[4]	1	Understanding
	c) Discuss how Public-Private Partnership (PPP) models are implemented in infrastructure projects in India. Give any two examples	[4]	1	Understanding
Q2	a) What is the function of sleepers and ballast in railway tracks?) State two types of modern sleepers used in railway tracks	[4]	2	Applying
	b) Explain coning of wheels in railway tracks and importance in detail with diagram	[4]	2	Applying
	c) Calculate the superelevation and maximum permissible speed for a 2 degree BG transitioned curve on a high-speed route with a maximum sanctioned speed of 100 kmph. The speed for calculating the equilibrium super-elevation is 80 kmph and the booked speed of goods train is 40 kmph.	[4]	2	Applying

Q3	a) What is the purpose of a tunnel portal? OR b) Explain different parameters for site selection for tunnel work c) Describe the different types of tunnels methods in soft strata and hard strata with sketches.	[2] [2] [4]	3 3 3	Remembering Remembering Understanding
Q4	a) What are the key requirements of a good harbour? OR b) What is the purpose of a Dry Dock and wet dock c) Describe the factors influencing the selection of a site for a harbor. Give examples of good site conditions.	[2] [2] [4]	4 4 4	Remembering Remembering Understanding
Q.5	a) What are hangers in an airport, and what are their function? OR b) Explain the Wind rose diagram? What are its types? c) The length of runway under standard conditions is 1730 m. The airport site has an elevation of 290 m. Its reference temperature is 31.60°C. If the runway is to be constructed with an effective gradient of 0.15 percent, determine the corrected runway length.	[2] [2] [4]	5 5 5	Remembering Remembering Understanding
Q.6	a) Explain the term 'clearance' in bridge design. OR b) Describe the two factors that influence the choice of bridge superstructure. c) Explain the preliminary data that need to be collected during the investigation of a site for bridge construction.	[2] [2] [4]	6 6 6	Remembering Remembering Understanding