BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: B. ARCH **SEMESTER : 3**
BRANCH: ARCHITECTURE **SESSION : MO/2025**

SUBJECT: AR201 CLIMATOLOGY

TIME: 3 Hours **FULL MARKS: 50**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
4. Before attempting the question paper, be sure that you have got the correct question paper.
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
6. Support your answers with clearly labelled sketches wherever appropriate.

			CO	**BL**
Q.1(a)	Define global climate, tropical climate, and site climate. Explain briefly how site-specific climatic factors guide the preliminary stages of architectural design.	[5]	CO1	I
Q.1(b)	Describe the elements of climate (temperature, humidity, wind, precipitation, solar radiation). Explain how any two of these elements affect human habitat and shelter design.	[5]	CO2	III
Q.2(a)	Explain the concept of thermal comfort and mention any two physical or physiological factors influencing it.	[5]	CO1	II
Q.2(b)	What is the purpose of the bio-climatic chart? Describe how architects use it to select appropriate climatic design strategies.	[5]	CO2	V
Q.3(a)	Describe the role of sun-path in architectural design. Explain how seasonal variations in the sun's position affect orientation and daylight planning.	[5]	CO3	IV
Q.3(b)	What do you understand by solar shading devices? Illustrate how shading helps in achieving visual comfort and reducing heat gain.	[5]	CO3	III
Q.4(a)	Explain how prevailing wind direction influences the placement and form of buildings. Describe why buildings are often oriented at an angle to the wind rather than directly facing it.	[5]	CO4	IV
Q.4(b)	Describe the basic airflow behaviour around buildings. Explain how building form, gaps, and surrounding structures modify wind speed and air movement on a site.	[5]	CO4	III
Q.5(a)	Explain how building orientation and massing help reduce heat gain and improve comfort in different climatic zones.	[5]	CO3	V
Q.5(b)	Compare the key architectural strategies used in warm-humid and hot-dry climates. Mention any two suitable design responses for each climate.	[5]	CO3	VI

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