

Third Semester B.Arch. Degree Examination, June/July 2025

Climatology

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. What is psychometric chart? Explain its components with the help of sketches. (08 Marks)
- b. Discuss the roles and responsibilities of an architect in mitigating climate change through their design practices. (12 Marks)

OR

- 2 a. What is site climate? Explain the factors governing the site climate. (10 Marks)
- b. What is thermal comfort indices. Explain the usage of bioclimatic chart in climatic analysis. (10 Marks)

Module-2

- 3 a. Explain solar altitude and solar azimuth angle with the help of sketches. (10 Marks)
- b. Explain the process of thermo regulatory mechanism of human body. (10 Marks)

OR

- 4 Describe the heat exchange process of building with respect to outdoor environment. (20 Marks)

Module-3

- 5 a. Define U-value (thermal transmittance). How U, K-value (thermal conductivity) and R-value (thermal Resistance) are related to each other. (10 Marks)
- b. Calculate U-value of a 20 cm thick concrete block wall with 1.20 cm thick cement plaster on both the sides. (10 Marks)

Given- $K \text{ (Concrete - block)} = 1.396 \text{ W/mk}$

$K \text{ (Cement plaster)} = 0.721 \text{ W/mk}$

OR

- 6 Write short notes on:
 - a) Periodic heat flow (05 Marks)
 - b) Time lag and decrement factor (10 Marks)
 - c) Thermal insulation (05 Marks)

Module-4

- 7 Explain with sketches various types of air flow movement around building and how it affect ventilation. (20 Marks)

OR

- 8 Explain with sketches:
 - a) Stock effect
 - b) Wind scoop
 - c) Types of shading device
 - d) Functions of ventilation. (20 Marks)

Module-5

- 9 a. Explain day light factors and its components. (08 Marks)
- b. Explain the different challenges in providing adequate day lighting in hot and dry climate and way of overcoming them. (12 Marks)

OR

- 10 Explain design consideration for warm and humid climate using a case study as an example. Draw relevant sketches. (20 Marks)

* * * * *