

CBCS SCHEME

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18ARC33

Third Semester B.Arch. Degree Examination, July/August 2021 Climatology

Time: 3 hrs.

Max. Marks:100

Note: 1. Answer any FIVE full questions.

2. Draw neat labeled sketches wherever necessary mandatorily.

- 1 a. List the major and subzones of tropical climate. (05 Marks)
b. Explain with sketches the various instruments and measuring units of different elements of climate. (15 Marks)
- 2 a. Explain Thermal comfort scale. (05 Marks)
b. Describe the following with relevant sketches
i) Kata thermometer ii) Bio climatic chart iii) Globe thermometer. (15 Marks)
- 3 a. Explain with sun path diagram, its components and methods of computing solar altitude and azimuth for given date and time. (10 Marks)
b. Explain the concept of Sol-Air temperature and solar gain factor. (10 Marks)
- 4 Explain the heat exchange processes of a building with the outside environment. (20 Marks)
- 5 Explain steady state, periodic heat flow, time lag and decrement factor. (20 Marks)
- 6 Calculate 'U' value of a given composite wall. Assume a wall of a westerly, normal exposure, consisting of the following :
114mm Engineering brickwork $K = 1.150\text{W/mdeg C}$
50mm Cavity $R_c = 0.076\text{m}^2\text{deg C/W}$
100mm Dense concert block $K = 1.440\text{W/m deg C}$
25mm Wood wool slab $K = 0.093\text{ W/m deg C}$
12mm plastering $K = 0.461\text{ W/m deg C}$
 $1/f_1 = 0.123\text{ m}^2\text{ deg C/W}$
surface resistance $1/f_0 = 0.176\text{m}^2\text{ deg C/W}$
 $1/f_1 = 0.123\text{m}^2\text{ deg C/W}$
(20 Marks)
- 7 a. What are the shading devices? Explain the different types of shading devices used in buildings. (10 Marks)
b. What are the functions of natural ventilation and air movement? (10 Marks)
- 8 a. What is stack effect? (10 Marks)
b. Discuss internal airflow pattern with respect to location of opening, external features and wind direction. (10 Marks)
- 9 a. What is "Day light Factor"? (05 Marks)
b. Describe how "Day light Factor" can be useful in functional architectural spaces. (15 Marks)
- 10 Illustrate with sketches 'design principle' for building in hot dry as compared with warm humid climate. (20 Marks)