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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	=	1.150W/mdeg C
50mm	Cavity	R _c	=	0.076m ² deg C/W
100mm	Dense concert block	K	=	1.440W/m deg C
25mm	Wood wool slab	K	=	0.093 W/m deg C
12mm	plastering	K	=	0.461 W/m deg C
1/f _i = 0.123 m ² deg C/W				
surface resistance		1/f _o	=	0.176m ² deg C/W
		1/f _i	=	0.123m ² 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)

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