

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

CLASS: B.ARCH
BRANCH: ARCHITECTURE

SEMESTER: III
SESSION: MO/2019

SUBJECT: AR201 CLIMATOLOGY

TIME: 2 HOURS

FULL MARKS: 25

INSTRUCTIONS:

1. The total marks of the questions are 25.
2. Candidates may attempt for all 25 marks.
3. Before attempting the question paper, be sure that you have got the correct question paper.
4. The missing data, if any, may be assumed suitably.

- Q1 (a) What are various factors which affect the global climate? [2]
Q1 (b) Explain the phenomenon of earth's thermal balance. [3]
- Q2 (a) At 25 degree centigrade the relative humidity of air is 60% and absolute humidity is 2 g/m³. What will be saturation point humidity for the air at the same temperature? [2]
Q2 (b) Compare indigenous shelters found in temperate zone and polar zone to illustrate their similarities and differences. [3]
- Q3 (a) Explain the heat gain and heat loss mechanism of human body. [2]
Q3 (b) How can a designer use bioclimatic chart to design a built environment for city in hot and humid climate? [3]
- Q4 (a) What is difference between Effective temperature and Corrected Effective temperature? [2]
Q4 (b) In the psychometric chart below the effective temperature is shown, find out the effective temperature at a dry bulb temperature of 45 * C with absolute humidity of 19 g/kg and relative humidity of 80% respectively. Also suggest which of the condition will be cooler among the first situation of 50°C dry bulb temperature and 20% relative humidity, and second situation of 35 *C dry bulb temperature and 100% relative humidity. [3]

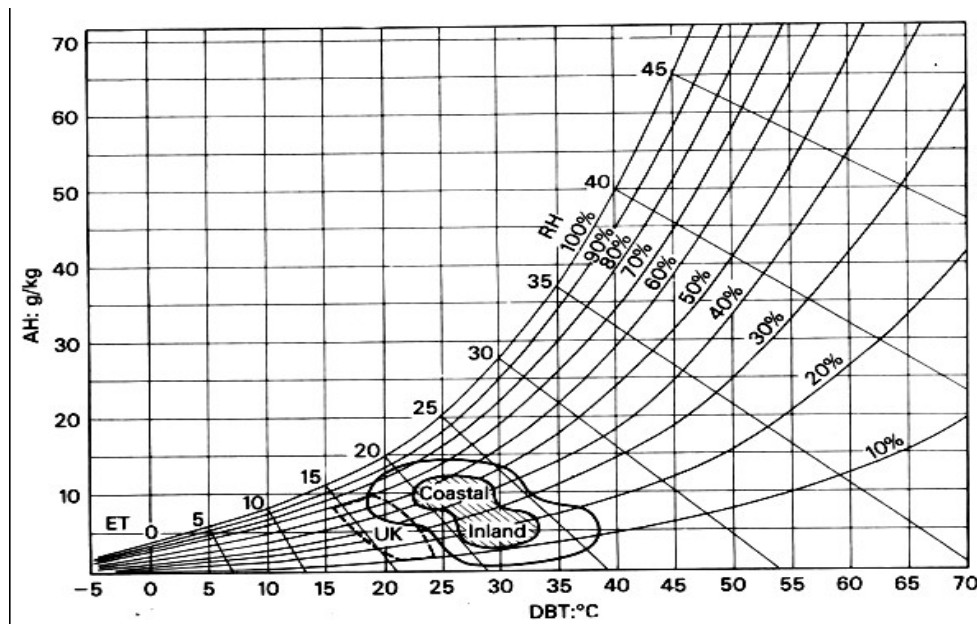


Figure for Question 4 (b).

- Q5 (a) Describe the role of solar altitude angle and solar azimuth angle in determining the Sunpath. [2]
Q5 (b) A brick having mass of 5 kg and thickness of 210 cm is having a K value of 28 W/m deg C and specific heat of 18 J/kg deg C. What will be the value of thermal capacity, resistivity and Conductance of the brick, assuming a unit temperature difference between its sides? [3]