

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

CLASS: B.ARCH
BRANCH: ARCHITECTURE

SEMESTER : III/ADD
SESSION : MO/18

SUBJECT: AR3301 BUILDING SCIENCE-I CLIMATOLOGY

TIME: 3.00 HOURS

FULL MARKS: 60

INSTRUCTIONS:

1. The question paper contains 7 questions each of 12 marks and total 84 marks.
 2. Candidates may attempt any 5 questions maximum of 60 marks.
 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.
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- Q.1(a) What effects microclimate of a place? [4]
Q.1(b) Classify and describe each of the main types of tropical climates. Describe the climatic conditions of each of them. [8]
- Q.2(a) On what main factors does human thermal-comfort depend? [2]
Q.2(b) What is meant by Bio-Climatic chart? Explain. [4]
Q.2(c) How is human thermal comfort inside a building plotted on a psychrometric-chart. Explain with the help of a detailed diagram. [6]
- Q.3 State how do a) Plan Form, b) Elevation Elements, c) Building Orientation and d) Surface area to volume ratio affect the climate-responsiveness of a building. [12]
- Q.4(a) Define macro and micro climate. State the factors which affect local site-climate. [5]
Q.4(b) How is appropriate site-selection an important aspect in cold mountainous regions of Ladakh. Explain with appropriate sketches. [7]
- Q.5(a) Describe the three basic categories of shading devices. [2]
Q.5(b) List the typical types of exterior shading devices. Draw sketches. [4]
Q.5(c) State how does Fenestration pattern and configuration, Fenestration orientation and Fenestration controls affect the climate-responsiveness of a building. [6]
- Q.6(a) Give an example of venture effect manifested in a group housing with appropriate sketches. [5]
Q.6(b) How do wing-walls, Screen porches and verandahs help in thermal-comfort in warm-humid areas? Explain with appropriate sketches. [7]
- Q.7(a) State how the 'Roof-form' of the dwelling affects the climate-responsiveness of a building in a hot-dry climate. [6]
Q.7(b) How to keep heat in and the cold temperatures out during the winter in very cold areas. [6]

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