

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

CLASS: B. ARCH
BRANCH: ARCHITECTURE

SEMESTER : III
SESSION : MO/19

SUBJECT: AR201 CLIMATOLOGY

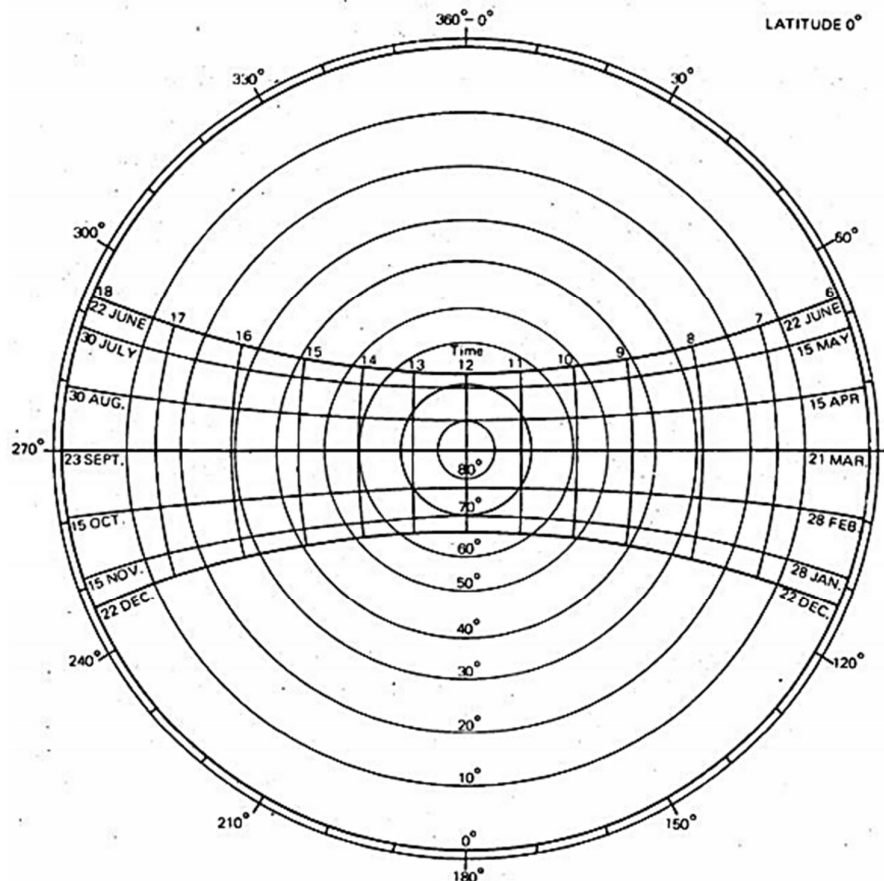
TIME: 3 HOURS

FULL MARKS: 50

INSTRUCTIONS:

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
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.

- Q.1(a) Define climate and list various elements of climate. If the relative humidity of the air is 80% and absolute humidity is 5 g/kg, then what amount of moisture could be further added into air? [3+2]
- Q.1(b) Discuss role of solar radiation at the surface of the earth and tilt of earth's axis in the maintenance of global climate. [5]
- Q.2(a) Explain the fact that an excess of moisture is generated in air conditioner during cooling? [4]
- Q.2(b) Write short note on : [6]
- i) psychometric chart
 - ii) Difference between effective and corrected effective temperature
 - iii) Bioclimatic Chart
- Q.3(a) Discuss the design of horizontal and vertical shading devices. [4]
- Q.3(b) For the given Solar Chart find out the following information for the dates of 22nd June and 15th October at 11:00 am. [6]
- i) Solar Altitude angle
 - ii) Solar Azimuth angle
 - iii) Angle of incidence (Assume the face of building is aligned in south-west direction)



- Q.4(a) Write Short note on any two of the following using neat illustrations. [4]
- i) Solar Chimney
 - ii) Stack effect
 - iii) Wind Tower
- Q.4(b) As a designer, discuss the utilization of various factors which affect the indoor air flow inside a building. [6]
- Q.5(a) List various site planning considerations for a building in hot and humid climate. [4]
- Q.5(b) Discuss the role of thermal mass of building material, nature of cut-outs and openings, layout of the buildings in minimizing diurnal temperature variation within a building in hot and dry climate. Reinforce your understanding with the help of an example. [6]

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