# MANIPAL ACADEMY OF HIGHER EDUCATION

## THIRD/FOURTH/FIFTH SEMESTER B. ARCH. DEGREE EXAMINATION – NOVEMBER 2018

### SUBJECT: ARC-14-211 : PRINCIPLES OF CLIMATIC DESIGN (2014 SCHEME)

Friday, November 02, 2018

Time: 10:00 – 13:00 Hrs.                                    Max. Marks: 50

- ✍ **Answer any FIVE FULL questions.**
- ✍ **Answer all parts of a question.**
- ✍ **Give sketches wherever necessary.**

1A. Differentiate the terms 'weather' and 'climate'.
1B. What is meant by atmospheric depletion?
1C. What is the basic cause for seasonal changes?
1D. Explain Equinox days and Solstice days.

(2½ marks × 4 = 10 marks)

2A. Explain body's heat exchange process with the environment.
2B. Apart from the main four climatic variables what are the other subjective variables that affect human thermal comfort. Explain.

(4+6 = 10 marks)

3. Determine the overall unit thermal resistance and transmittance value of a masonry wall of concrete blocks having 100mm thickness and R-Value 0.13 $m^2.^0C/W$ plastered on either side with cement mortar 13 mm thick and having R-Value 0.018 $m^2.^0C/W$. The masonry has an external brick facing of 100 mm thickness and R-Value 0.075 $m^2.^0C/W$. Outside surface resistance is 0.030 $m^2.^0C/W$ and internal surface resistance if 0.12 $m^2.^0C/W$.

(10 marks)

4A. Write on 'inverse square law' in illumination.
4B. What are the three facts by which visual efficiency can be measured?

(2½+7½ = 10 marks)

5. **Explain:**
5A. Stack effect
5B. Wind Tunnel
5C. Wind scoop
5D. Wind shadow

(2½ marks × 4 = 10 marks)

6. Differentiate between the characteristics of Warm-Humid climate and Hot-Dry Desert climate.

(10 marks)