

**BACHELOR OF ARCHITECTURE (B.Arch.)**

**Term-End Examination**

**June, 2017**

00188

**BAR-029 : ARCHITECTURAL SCIENCES AND  
SERVICES – I (CLIMATOLOGY)**

*Time : 3 hours.*

*Maximum Marks : 70*

**Note :** *Section A is compulsory. Attempt any five questions from section B.*

**SECTION A**

1. Select the right option :

$$8 \times \frac{1}{2} = 4$$

- (a) Wind rose is a/an
- (i) graphical method to measure colour intensity
  - (ii) instrument to measure wind velocity
  - (iii) graphical method to represent wind
- (b) Trombe wall is a wall placed
- (i) inside the building envelope
  - (ii) outside the building envelope
  - (iii) on the roof top
- (c) Insulating materials have
- (i) high k-value
  - (ii) low k-value
  - (iii) 12 mm thickness

- (d) Which is a better insulating glass ?
- (i) Two panes of glass glued together
  - (ii) Reinforced glass pane
  - (iii) Two glass panes separated by a layer of gas
- (e) Brise-Soleil is a
- (i) permanent fixed/movable shading device
  - (ii) temporary fixed/movable shading device
  - (iii) solar radiation measuring instrument
- (f) Visual Light Transmission (VLT) depends on
- (i) glazing quality
  - (ii) orientation of the building
  - (iii) shading device
- (g) Discomfort glare occurs due to
- (i) low average illumination level
  - (ii) high overall illumination level
  - (iii) high contrast in illumination level
- (h) Stack effect increases with increase in
- (i) stack cross-sectional area
  - (ii) height of the stack
  - (iii) Both (i) and (ii)

2. Write short notes on the following :

2×3=6

- (a) Site Analysis with respect to Climate Conscious Design
- (b) Exhaust Ventilation Systems

## SECTION B

3. Explain the concept of 'Sol-Air Temperature' and 'Periodic Heat Flow'. 12
  4. Discuss the traditional building typologies in hot and humid climates with neat sketches. Explain the passive techniques used in these buildings. 12
  5. Explain the process of designing shading devices for openings in different orientations. 12
  6. What do you understand by the term 'Climatically Responsive Building' ? Discuss the design procedure for the same. 12
  7. What is meant by natural ventilation ? How can a designer ensure natural ventilation and air movement inside a building ? 12
  8. Write short notes on the following :  $4 \times 3 = 12$ 
    - (a) Daylight Factor
    - (b) Cross Ventilation
    - (c) Insolation
    - (d) Psychrometric Chart
  9. What is Comfort Index ? Discuss any two comfort indices. 12
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