

**BACHELOR OF ARCHITECTURE EXAM 2018**  
Second Year First Semester  
**CLIMATE AND ARCHITECTURE**

Full Marks : 100

Time : 3 hours

Answer for 100 marks. Question No 1 is compulsory. Question No.1(i) – 1(xx) carry 1mark each.

1. i) ECBC stands for
  - a) Electrical conduit in Building Construction
  - b) Energy Conservation Building Code
  - c) Electrical Credit in Building Code
  - d) Energy Credit in Building Construction
  
- ii) Tropical climates are those where the annual mean temperature is
  - a) Equal to 20° C
  - b) > 20° C
  - c) < 20° C
  - d) None of the above
  
- iii) ITCZ stands for
  - a) Intra Tropical Convergence Zone
  - b) Inter Tropical Convergence Zone
  - c) International Tropical Convergent Zone
  - d) Inter Tropical Convergent Zone
  
- iv) Wind speed is measured by
  - a) Barometer
  - b) Hygrometer
  - c) Thermometer
  - d) Anemometer
  
- v) Ozone -hole in the atmosphere is largely caused by the presence of
  - a) Oxygen
  - b) Hydrogen
  - c) Chloro- floro carbon
  - d) Radio active waste

- vi) LEED is internationally accepted rating system for
  - a) Green buildings
  - b) Fire resistant buildings
  - c) Intelligent buildings
  - d) Tall buildings
  
- vii) Heating, cooling and ventilation in passive system designs are dependent on
  - a) differences in standards of active energy systems and amount of sunlight.
  - b) quality of insulation and quantity of glazing.
  - c) mechanical ventilation and the floor height of the building.
  - d) daylight factor and energy from mechanical systems.
  
- viii) GRIHA is a rating for Green Buildings given by
  - a) The Energy Research Institute
  - b) Development Alternatives
  - c) Bureau of Energy Efficiency
  - d) Ministry of Power
  
- ix) The parameter that does NOT appear in a Psychometric Chart is
  - a) Wind speed
  - b) Wet bulb temperature
  - c) Dry bulb temperature
  - d) Relative humidity
  
- x) Stack effect is
  - a) the process of supplying fresh air by electro-mechanical means both vertically and horizontally.
  - b) the tendency of hot air in a shaft to rise and create a draft of cool air intake.
  - c) the air-supply to a motor-driven louvered opening in basement.
  - d) the circulation of fresh air through windows from the plenum level.
  
- xi) A major hole in the Ozone layer has been identified above the
  - a) Amazon Forest
  - b) Arctic Region
  - c) Savannah Grasslands
  - d) Sahara Desert
  
- xii) E.I.A. stands for
  - a) East India Association
  - b) Environmental Impact Audit
  - c) Environment Impact in Asia

- d) Environmental Impact Assessment
- xiii) Which of the following generates heat island?  
a) Urban areas  
b) Wetlands  
c) Coastal areas  
d) Forest areas
- xiv) 'U-value' refers to  
a) Utility function for convective heat transfer  
b) Thermal transmittance of building components  
c) Energy transfer between thermal bridges  
d) Measure for area related heating and cooling loads
- xv) The difference between Wet Bulb Temperature and Dry Bulb Temperature is called  
a) Dry bulb depression  
b) Variable depression  
c) Wet bulb depression  
d) Atmospheric depression
- xvi) Star Rating of an Air Conditioner is determined by its  
a) Power Consumption  
b) Energy Efficiency Ratio  
c) Cooling Capacity  
d) Power of Compressor
- xvii) Identify which is NOT a green building rating system  
a) LEED  
b) CASBEE  
c) ENERGY BUILD  
d) BREEAM
- xviii) The ratio between *illumination at a working point indoor to total light available simultaneously outdoor* is known as  
a) Daylight Factor  
b) Sky Component  
c) Internally Reflected Component  
d) Externally Reflected Component
- xix) Walls with high thermal inertia are suitable in which type of climate ?  
a) Hot-dry  
b) warm -humid  
c) Temperate

d) cold

xx) The value of solar constant is

- a) 1390 W/m<sup>2</sup>
- b) 1395 W/m<sup>2</sup>
- c) 1365 W/m<sup>2</sup>
- d) 1367 W/m<sup>2</sup>

2. Name the climatic zones prevailing in India. Mention a city which falls under each category of above zones. 5+5
3. State the characteristics of any one of the following zones:
  - a. Composite 10
  - b. Temperate 10
4. How does the thermal balance of human body is maintained? 10
5. What are the meteorological elements which influence the climate of a particular region? 10
6. Discuss the following:
  - a. Sol-air temperature
  - b. Solar gain factor 10
7. Discuss the heat exchange process between a building & the outdoor environment. 10
8. What do you understand by Evaporative cooling and Mechanical cooling? 10
9. Define the following:
  - a. Solar altitude angle
  - b. Solar azimuth angle 10
10. What is the purpose of using a shading device in a building? Give examples with the help of sketches 10
11. Discuss with the help of sketches how the indoor air flow pattern can be guided by openings ? 10
12. Discuss with the help of plans and sketches the shelter types found in the following zone:
  - a. Hot- dry climatic zone
  - b. Cold climatic zone 10+10