

BACHELOR OF ARCHITECTURE EXAM 2019
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) ASHRAE is an society advancing human well-being through sustainable technology for the built environment.
 - a) Asian
 - b) Australian
 - c) American
 - d) None of the above

- ii) The sun is lowest in the sky in the northern hemisphere on the day of the
 - a) Vertical equinox
 - b) Summer solstice
 - c) Autumnal equinox
 - d) Winter solstice

- iii) CNG stands for
 - a) Consumer Natural Gas
 - b) Compressed Natural Gas
 - c) Compressed Neutral Gas
 - d) Clean Natural Gas

- iv) Which of the following may be a source of a building's heat loss ?
 - a) Air Infiltration
 - b) Occupants
 - c) Insolation
 - d) Electric Lighting

- v) The Ozone -hole is a phenomenon that has occurred in
 - a) Arctic region
 - b) Northern Temperate Region
 - c) Southern Temperate Region
 - d) Antarctic Region

- vi) LEED means

- a) Leadership in Ecological and Environmental Design
- b) Leadership in Energy and Environmental Design
- c) Leadership in Efficiency and Environmental Design
- d) Leadership in Efficiency and Ecological Design

vii) What is Albedo ?

- a) A reference to a type of formaldehyde in a building material.
- b) A measure of photosynthesis.
- c) The reflectivity of a material.
- d) The emissivity of a material.

viii) Consider the following statements about The Energy and Research Institute (TERI):

- 1| It is research institute head-quartered in Mumbai.
- 2| It works under the administrative control of the Ministry of Environment, Forest and Climate Change
- 3| GRIHA, the national rating system for green buildings, was conceived by TERI

Which of the above statement/s is/are correct ?

- a) 2 and 3 only
- b) 3 only
- c) 1 and 2 only
- d) 1,2 and 3

ix) Which of the following are units of illuminance

- a) Foot Candle
- b) Lumen
- c) Lux
- d) Candela

x) Location of air quality monitoring stations is decided by PCB

- a) True
- b) False

xi) Based on what the Kyoto Protocol set emission reduction targets for the group of greenhouse gases ?

- a) Hydrogen equivalents
- b) Carbon dioxide equivalents
- c) Oxygen equivalents
- d) Nitrogen equivalents

xii) When did the Kyoto Protocol entered into force ?

- a) 1997
- b) 2000
- c) 2005
- d) 2009

- xiii) Urban areas tend to be warmer than surrounding rural areas , what is this effect known as?
a) Urban boundary layer effect
b) Urban Heat Island Effect
c) Urban Canopy Layer Effect
d) The Venturi Effect
- xiv) Near to the ground surface, the natural features available in the site create vertical and horizontal changes in the characteristics of the prevailing climate, thus creating:
a) Macro climate
b) Local climate
c) Micro climate
d) None of the above
- xv) The difference between WBT and DBT is called
a) Dew point depression
b) Effective Temperature
c) Wet bulb depression
d) Adiabatic Saturation Temperature
- xvi) A device which is used to find relative humidity
a) Pyrometer
b) Anemometer
c) Hydrometer
d) Hygrometer
- xvii) Identify which is NOT a green building rating system
a) LEED
b) CASBEE
c) ENERGY BUILD
d) BREEAM
- xviii) Find the wrong statement : Specific heat of a material
a) constant for a material
b) heat capacity per unit mass
c) extrinsic property
d) has units as J/kg-K
- xix) Which of the following has the least value of conductivity ?
a) glass
b) water
c) rubber
d) air
- xx) When heat is transferred from one particle of hot body to another by

actual motion of the heated particles , it is referred to as heat transfer by

- a) conduction
- b) convection
- c) radiation
- d) Conduction and convection

2. Name the climatic zones prevailing in India as per ECBC. Mention At least two cities which falls under each category of above zones. 5+5
3. State the characteristics of any one of the following zones:
 - a. Hot and dry
 - b. Cold10
4. How does the thermal balance of human body is maintained? 10
5. Discuss the following:
 - a. Macro climate
 - b. Micro climate5+5
6. Discuss the heat exchange process between a building & the outdoor environment. 10
7. What do you understand by Evaporative cooling and Mechanical cooling? 10
8. Define the following:
 - a. Solar altitude angle
 - b. Solar azimuth angle10
9. What is the purpose of using shading device in a building? Give examples with the help of sketches 10
10. What is adaptation ? How many types of adaptation are there ? Discuss with some examples and sketches about how animals/plants adapt to their environment. 10
11. Discuss with the help of sketches how does an animal/insect protect themselves by constructing their its own habitat? 10
12. Discuss with the help of plans and sketches the shelter types found in the following zone:
 - a. Warm and Humid zone
 - b. Composite zone10+10