

BACHELOR OF ARCHITECTURE EXAM 2025

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. Part answering is allowed.

1. i) Select the correct set of statements regarding the effects of climate change
 - a) Increased sea level; more intense cyclones; species migration
 - b) Decrease in global temperatures; increased sea ice; expansion of tropical forests
 - c) Decrease in ocean's acidity; reduced CO2 emission; increased glacier mass
 - d) Reduced agricultural productivity ;decrease in renewable energy sources ;increased polar bear population
- 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) On which of the following can you find BEE star rating label ? 1) Ceiling fans 2) Refrigerator 3) Electric geysers
 - a) 1 & 2 only
 - b) 3 only
 - c) 2 & 3 only
 - d) 1, 2 & 3 only
- 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

[Turn over

- vii) This is not one of the possible adverse effects of the phenomena of global warming
- a) extraordinary weather patterns
 - b) retreat of glaciers
 - c) an increase of UVB radiations
 - d) rise in the sea levels
- 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 plinth level.
- xi) Which of the statement given below about Bureau of Energy Efficiency is/are correct?
1. It gives financial assistance to institutions for promoting efficient use of energy.
 2. It is a statutory body under Energy Conservation Act, 2001.
 3. It works under Ministry of New and Renewable Energy.
- Select the correct answer using the code given below.
- a) 1 & 2 only
 - b) 2 & 3 only
 - c) 1 & 3 only
 - d) All the above
- 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/m²
 - b) 1395 W/m²
 - c) 1365 W/m²
 - d) 1367 W/m²

2. Writes short notes on : 5 x5
- a) Urban Heat Island Effect
 - b) Adaptation
 - c) GRIHA
 - d) Green house effect
 - e) ECBC
3. State the characteristics of any one of the following zones:
- a. Hot and dry
 - b. Warm and humid 10
4. How does the thermal balance of human body is maintained? 10
5. What are the elements of climate ? Mention the instruments for measuring each of them ? 10
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: 5x2=10
- a. Solar altitude angle
 - b. Solar azimuth angle
9. What is the purpose of using a shading device in a building? Give examples with the help of sketches 10
10. Discuss with the help of sketches the habitat techniques of any particular animal/avian species of your choice. 10