

Bachelor Of Architecture Examination,2024

2<sup>nd</sup> Year,1st Semester

CLIMATE & ARCHITECTURE

Total marks:100

*Question no 1 is compulsory.*

*Part answering is allowed excepting Question no 1*

1.

30 x1

- i) When does the distance between the sun and the earth become longest?
  - a) September 22
  - b) January 3
  - c) June 21
  - d) December 22
- ii) GRIHA is a green building rating given by
  - a) The Energy Research Institute
  - b) Ministry of New and Renewable Energy
  - c) Bureau of Energy Efficiency
  - d) Ministry of Power
- 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) 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.
- v) .....is a programme run by UN related to sustainable development.
  - a) GHG Indicator
  - b) Agenda 21
  - c) IPCC
  - d) UNEP
- vi) A phenomenon where the temperature in urban areas is hotter than rural areas?

- a) Albedo effect
  - b) urban heat island
  - c) wind shadow
  - d) azimuth
- vii) Among the following gases which is/are responsible for climate change ?
- a) Oxygen,
  - b) Carbon di oxide
  - c) Nitrogen
  - d) Helium
- viii) 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
- ix) The atmosphere is mainly heated by
- a) Long wave terrestrial radiation
  - b) Short wave solar radiation
  - c) Reflected solar radiation
  - d) None of the above
- x) The atmosphere of the Earth is surrounded by .....
- a) gases
  - b) water
  - c) dust
  - d) plants
- xi) The major components of air are nitrogen and .....
- a) Oxygen
  - b) Hydrogen
  - c) Helium
  - d) neon
- xii) Carbon footprint can be measured by
- a) Carbon dating
  - b) Instruments
  - c) Carbon accounting
  - d) Formula
- xiii) .....is not considered as non-conventional energy source.

- a) Coal
  - b) solar
  - c) wind
  - d) tidal
- xiv) Carbon can be stored in organic matter in the form of :
- a) Biomass
  - b) Biofuel
  - c) Bio energy
  - d) Bio carbon
- xv) The main source of nitrogen deposition is
- a) Deforestation
  - b) Fertilisers
  - c) Factories
  - d) Household waste
- xvi) Atmospheric pressure generated on the earth's surface is due to :
- a) Earth's rotation
  - b) Earth's revolution
  - c) Gravitational force of the Earth
  - d) None of these
- xvii) Increased Carbon-di-oxide in atmosphere results in :
- a) uniform Earth temperature
  - b) increased volume of sea water
  - c) fall in Earth temperature
  - d) rise in Earth temperature
- xviii) What causes smog ?
- a) water pollution
  - b) Earth's heat
  - c) air pollution
  - d) none of these
- xix) Trade winds are due to :
- a) Conduction
  - b) Convection
  - c) Radiation
  - d) Scattering
- xx) CNG stands for

- a) Consumer Natural Gas
  - b) Compressed Natural Gas
  - c) Compressed Neutral Gas
  - d) Clean Natural Gas
- xxi) The main cause of global climatic change is :
- a) increase in the content of carbon dioxide in the atmosphere
  - b) emissions of industrial gases
  - c) adding of dust
  - d) change in plant cover
- xxii) In which region does rainfall occur throughout the year ?
- a) Mediterranean
  - b) Tropical
  - c) Equatorial
  - d) Temperate
- xxiii) Star Rating of an Air Conditioner is determined by its
- a) Power Consumption
  - b) Energy Efficiency Ratio
  - c) Cooling Capacity
  - d) Power of Compressor
- xxiv) 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
- xxv) The value of solar constant may vary due to variations in the output of the sun itself
- a)  $\pm 1\%$
  - b)  $\pm 2\%$
  - c)  $\pm 2.5\%$
  - d)  $\pm 3.5\%$
- xxvi) LEED is internationally accepted rating system for
- a) Green buildings
  - b) Fire resistant buildings
  - c) Intelligent buildings
  - d) Tall buildings

xxvii) Albedo is

- 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

xxviii) Walls with high thermal inertia are suitable in which type of climate?

- a) Hot-dry
- b) Hot-humid
- c) Temperate
- d) Cold

xxix) The parameter that does not appear in a psychometric chart is

- a) Wind speed
- b) Dry bulb temperature
- c) Wet bulb temperature
- d) Humidity

2. Match the following:

5+5=10

i)

A.	Thermometer	for measuring humidity
B.	Barometer	for measuring air and sea surface temperature
C.	Hygrometer	for measuring atmospheric pressure
D.	Pyranometer	for measuring cloud ceiling
E.	Ceilometer	for measuring solar radiation

ii)

A.	Doldrums	process of change by which a species becomes better suited to its environment.
B.	Coriolis force	The zone which experience completely calm conditions
C.	Acclimatisation	A 'slippage' at the boundary layer between the earth and its atmosphere caused
D.	Adaptation	Temperature differences between day and night
E.	Diurnal range	the process or result of becoming <u>accustomed</u> to a new climate or to new conditions.

3. What are the meteorological elements which influence the climate of a particular region? 5

4. Discuss with the help of diagrams the characteristics of the building designs in following climatic zones: 5x5

- i) Hot-dry
- ii) Hot-humid
- iii) Composite
- iv) Temperate
- v) Cold

5. Write short notes on : 5X2

- i) Solar constant
- ii) Solar azimuth angle
- iii) Coriolis force.
- iv) Solar gain factor
- v) U-Value

6. How climate influences our daily lives ? What is the impact of globalization and consumerism on our lifestyle leading to complete departure from climatic influences? How is it influencing Architecture ? 6+6+8

7. Define 'climate' and 'weather' ? What are the factors which influence the climate of a zone? 5+5

8. Discuss the earth-sun relationship and earth's thermal balance with the help sketches. 5+5

9. What is a shading device in a building? As per NBC, what is the maximum projection which can be termed as "*chajja*" ? Discuss the various types to internal shading devices with the help of sketches. 4+1+15

10. What is adaptation ? How many types of adaptation are there ? Discuss two animal/insect/bird habitat with the help of sketches. 1+4+5+5