

CLIMATE AND BUILT ENVIRONMENT

UNIT I – CLIMATE AND HUMAN COMFORT

1. Pick the components of climate from the below

- A) Atmosphere
- B) Car
- C) Box
- D) Home

2. Pick the non components of climate from the below

- A) Atmosphere
- B) Hydrosphere
- C) Lithosphere
- D) Home

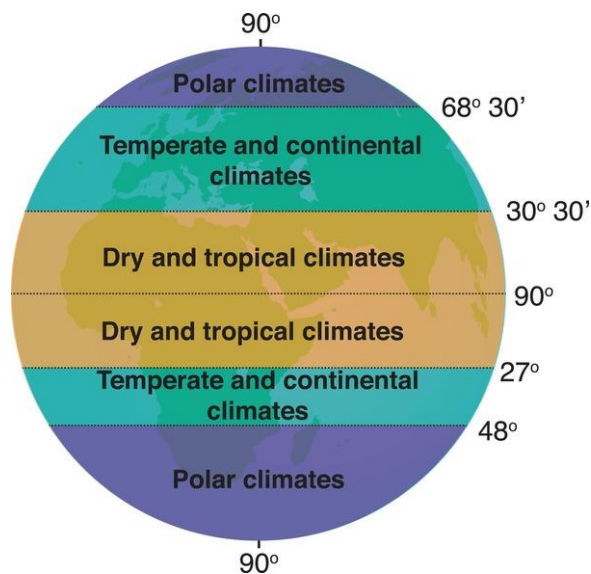
3. Identify the factors that determine climate of a place

- A) distance from the sea
- B) direction of prevailing winds
- C) distance from the equator
- D) all the above

4. Find the human thermal comfort value for air temperature

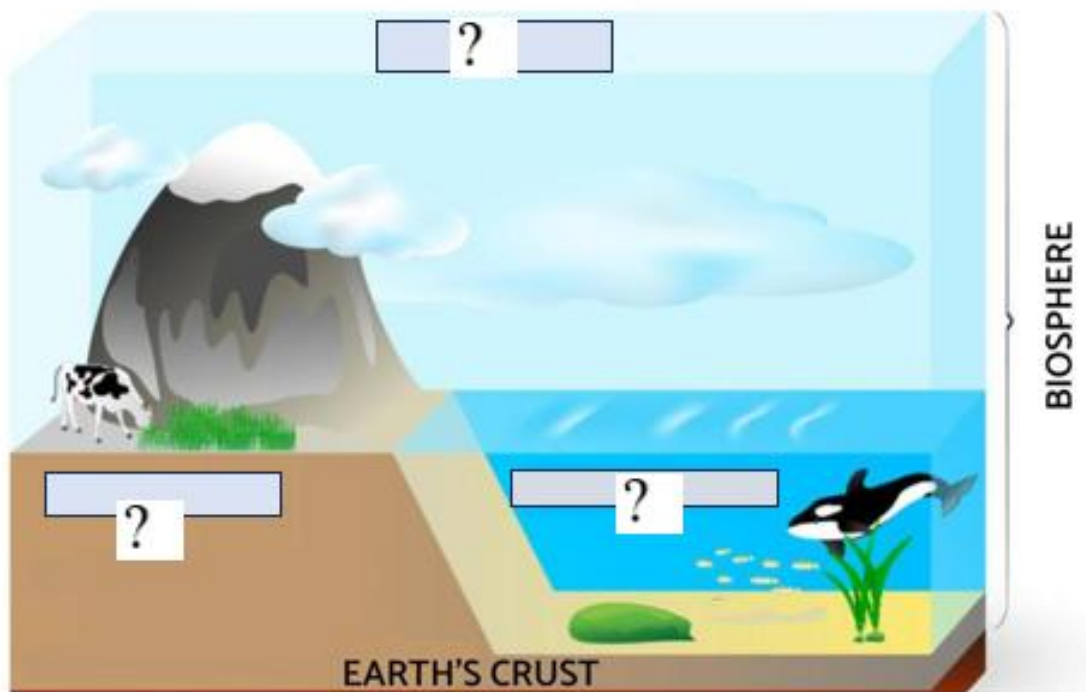
- A) between 22°C to 27°C
- B) between 18°C to 217°C
- C) between 16°C to 27°C
- D) none of the above

5. Pick the climates from North and South Poles ----- & -----



- A) Tropical climates
- B) Temperate climates
- C) Polar climates
- D) Monsoon climates

6. Identify the spheres or layers of the earth from the below

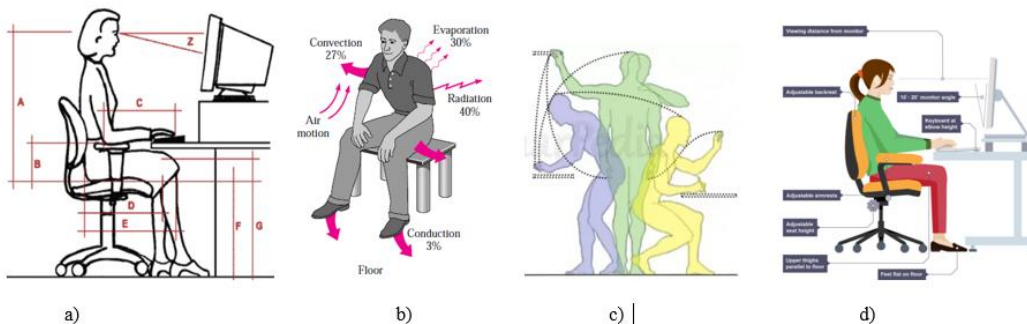


- A) Atmosphere, hydrosphere, and lithosphere
- B) Galaxy, milky wave, and ocean
- C) Sky, ozone and mountain
- D) Mountain, lake and land

7. Cryosphere means _____

- A) Water body
- B) Frozen water body
- C) River
- D) Lake

8. Identify the Human body heat balance figure from the below



- A) A
- B) B
- C) C
- D) D

9. Mahoney tables are a set of tools used in architectural design to create

- A) climate-responsive buildings
- B) glass house
- C) green house
- D) boat house

10. Mahoney tables include region-specific climate data like

- A) Temperature
- B) Humidity
- C) Rainfall
- D) All the above

11. Identify the data which include in the Mahoney tables

- A) Glass
- B) Humidity
- C) Sheet Glass
- D) Stained Glass

12. Identify the odd data which is not included in the Mahoney tables

- A) Temperature
- B) Humidity
- C) Rainfall
- D) Glass

13. Mahoney tables are a set of tools used in architectural design to create

- A) climate-irresponsive buildings
- B) climate non responsive buildings
- C) climate-responsive buildings
- D) climate-not responsive buildings

14. The part of Earth where water is in solid form, including all ice and snow is

- A) Atmosphere
- B) Hydrosphere
- C) Cryosphere
- D) None of the above

15. cryosphere comprise of

- A) Frozen water body
- B) A land form
- C) Pond
- D) Sky

16. Climate can be best described as:

- A) The atmospheric condition at one particular moment
- B) The long-term pattern of weather conditions of a place
- C) The temperature recorded during one day
- D) The rainfall during one storm

17. Which of the following is an important component of climate?

- A) Air temperature
- B) Building height
- C) Plot area
- D) Building materials

18. The position of a place north or south of the equator is called:

- A) Latitude
- B) Altitude
- C) Wind direction
- D) Vegetation

19. The distance of a place from the sea mainly affects its:

- A) Climatic character
- B) Building height
- C) Floor finish
- D) Structural system

20. Which of the following can influence the climate of a place?

- A) Latitude
- B) Altitude
- C) Distance from the sea
- D) All the above

21. Human body heat balance occurs when:

- A) Heat production is always greater than heat loss
- B) Heat loss is always greater than heat production
- C) Heat gain and heat loss are approximately balanced
- D) Body temperature continuously increases

22. Which of the following is a way by which the human body loses heat?

- A) Convection
- B) Conduction
- C) Radiation
- D) All the above

23. Heat transferred from the human body to surrounding surfaces without direct contact is mainly through:

- A) Radiation
- B) Conduction
- C) Evaporation
- D) Respiration

24. Heat transfer between the human body and moving air is mainly associated with:

- A) Radiation
- B) Convection
- C) Conduction
- D) Reflection

25. Evaporation helps the human body to:

- A) Increase body temperature
- B) Lose heat and cool the body
- C) Stop sweating
- D) Increase humidity

26. Which climatic factor affects evaporative cooling from the human body?

- A) Relative humidity
- B) Building height
- C) Floor area
- D) Wall thickness

27. When air movement around the human body increases, heat loss through convection generally:

- A) Decreases
- B) Increases
- C) Remains exactly the same
- D) Stops completely

28. Effective temperature is mainly used to assess:

- A) Structural stability
- B) Human thermal comfort
- C) Building cost
- D) Daylight factor

29. Human thermal comfort is influenced by:

- A) Air temperature
- B) Humidity
- C) Air movement
- D) All the above

30. The main purpose of using C. Mahony's tables in architectural design is to:

- A) Select structural reinforcement
- B) Develop climate-responsive design recommendations
- C) Calculate building construction cost
- D) Determine furniture dimensions

ANSWER KEY

1. A 2. D 3. D 4. A 5. C 6. A 7. B 8. B 9. A 10. D

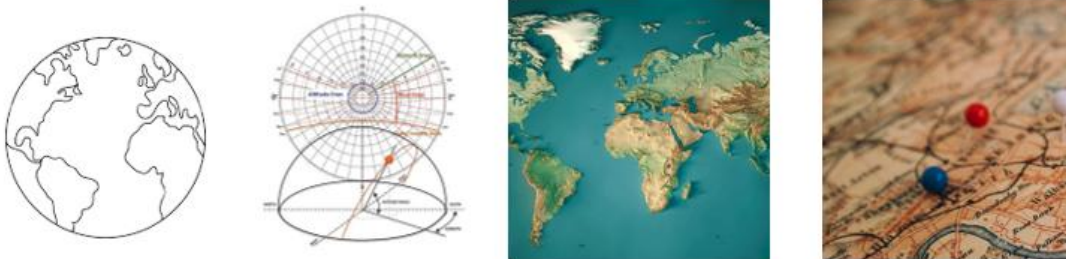
11. B 12. D 13. C 14. C 15. A 16. B 17. A 18. A 19. A 20. D

21. C 22. D 23. A 24. B 25. B 26. A 27. B 28. B 29. D 30. B

CLIMATE AND BUILT ENVIRONMENT

UNIT II – SOLAR SHADING DEVICES

1. Identify the sun diagram



- A) A
- B) B
- C) C
- D) D

2. A sun path diagram is a visual tool used to determine the ----- in the sky for a specific location throughout the year.

- A) moon's position
- B) star analysis
- C) wind direction
- D) sun's position

3. Sun path diagram helps to determine ----- the for a building to maximize passive solar heating or natural light.

- A) Plinth height
- B) Best orientation
- C) Staircase calculation
- D) Water tank design

4. Sun path diagram is used to design effective shading devices like -----

- A) Vertical fins
- B) Horizontal fins
- C) Eaves
- D) All the above

5. The sun's path diagram is used to calculate the -----during summer

- A) Overheating periods
- B) Climatic change
- C) Rainfall
- D) None of the above

6. Solar shading refers to architectural and landscaping elements used to

- A) Block direct sunlight, reduce solar heat gain, and control glare in buildings
- B) Allow direct sunlight, increase solar heat gain, and increase glare in buildings
- C) Plant trees, flowering plant, and non-flowering plants
- D) Maintain tree height, control flowering, and manage yield

7. Solar shading benefits include improving

- A) Thermal comfort for occupants
- B) Reducing the need for air conditioning to save energy
- C) Decreasing carbon footprints
- D) All the above

8. Identify the odd in the pictures



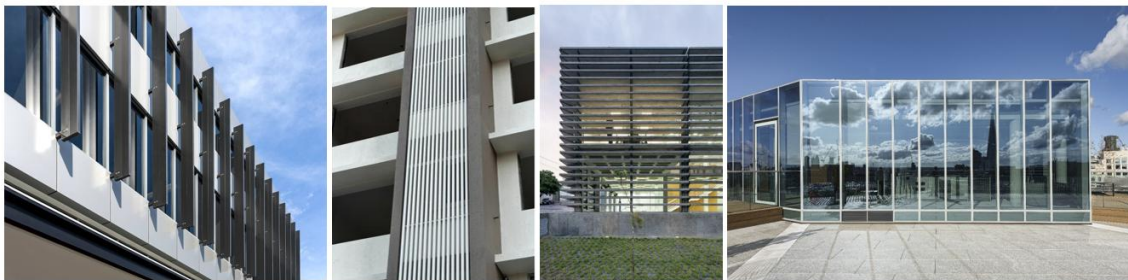
- A) A
- B) B
- C) C
- D) D

9. Identify the horizontal shading devices in the pictures



- A) A
- B) B
- C) C
- D) D

10. Identify the vertical shading devices in the pictures



- A) A & B
- B) A, B, & C
- C) A
- D) A, B, C, & D

11. The apparent movement of the sun across the sky is called:

- A) Solar radiation
- B) Sun's apparent movement
- C) Wind movement
- D) Cloud movement

12. The sun appears to rise approximately in the:

- A) North
- B) South
- C) East
- D) West

13. The sun appears to set approximately in the:

- A) North
- B) West
- C) East
- D) South

14. A sun path diagram mainly shows the movement of the sun for a particular:

- A) Building material
- B) Location
- C) Furniture type
- D) Structural system

15. Which instrument is commonly used to determine the direction of a building?

- A) Thermometer
- B) Barometer
- C) Compass
- D) Rain gauge

16. The position of the sun in the sky is described using:

- A) Solar angles
- B) Building angles
- C) Roof angles only
- D) Floor angles

17. The angle of the sun measured upward from the horizontal plane is called:

- A) Solar altitude angle
- B) Shadow angle
- C) Wall angle
- D) Roof angle

18. The angle that indicates the horizontal direction of the sun is called:

- A) Altitude angle
- B) Azimuth angle
- C) Shadow angle
- D) Roof angle

19. When the sun is directly overhead, its altitude angle is approximately:

- A) 0°
- B) 30°
- C) 60°
- D) 90°

20. The period during which the sun passes almost directly overhead is called:

- A) Winter period
- B) Overhead period
- C) Shading period
- D) Night period

21. The overhead period is particularly important in:

- A) Tropical regions
- B) Polar regions only
- C) Cold regions only
- D) Mountain regions only

22. Which of the following is an example of a horizontal shading device?

- A) Vertical fin
- B) Overhang
- C) Vertical screen
- D) Side fin

23. Which of the following is an example of a vertical shading device?

- A) Roof overhang
- B) Canopy
- C) Vertical fin
- D) Horizontal louver

24. The main purpose of an external shading device is to:

- A) Increase heat gain
- B) Prevent unwanted solar radiation from entering the building
- C) Increase indoor glare
- D) Increase indoor temperature

25. Which shading device is made of a series of horizontal blades?

- A) Vertical fins
- B) Horizontal louvers
- C) Vertical screen
- D) Solid wall

26. A shadow is produced when:

- A) Sunlight is blocked by an object
- B) There is no sunlight
- C) The sky becomes cloudy
- D) The temperature decreases

27. When the sun is low in the sky, the shadow of an object is generally:

- A) Very short
- B) Long
- C) Zero
- D) Circular

28. When the sun is high in the sky, the shadow of an object is generally:

- A) Short
- B) Very long
- C) Absent at all times
- D) Horizontal

29. Shadow angles are useful in designing:

- A) Solar shading devices
- B) Foundations
- C) Staircases
- D) Plumbing systems

30. Which of the following is a benefit of properly designed solar shading?

- A) Reduced unwanted solar heat gain
- B) Increased glare
- C) Increased cooling load
- D) Increased direct solar radiation

Correct answers

1. B 2. D 3. B 4. D 5. A 6. A 7. D 8. D 9. C 10. A 11. B 12. C 13. B 14. B 15. C

16. A 17. B 18. D 19. B 20. A 21. B 22. C 23. B 24. B 25. A 26. B 27. A 28. A 29. A 30. A

CLIMATE AND BUILT ENVIRONMENT

UNIT III – HEAT FLOW THROUGH BUILDING ENVELOPE CONCEPTS

1. Heat travels through solids primarily through _____, a process where vibrating particles transfer kinetic energy to their neighbours through direct contact.
 - a) Conduction
 - b) Convection
 - c) Radiation
 - d) Resistivity
2. The amount of heat energy required to raise the temperature of a unit mass of a substance by one degree Celsius (or Kelvin).
 - a) Convection
 - b) Radiation
 - c) Resistivity
 - d) Specific heat
3. A fundamental property of a material that measures how strongly it opposes the flow of electric current.
 - a) Convection
 - b) Radiation
 - c) Resistivity
 - d) Specific heat
4. The amount of heat energy required to raise the temperature of a body by one degree Celsius or Kelvin.
 - a) Radiation
 - b) Resistivity
 - c) Specific heat
 - d) Thermal capacity
5. _____ measures how well a building component, like a window, wall, or roof, conducts heat.
 - a) R value
 - b) C value
 - c) T Value
 - d) U Value
6. A higher U-value means there is _____.
 - a) More heat transfer
 - b) Cold transfer
 - c) Wind transfer
 - d) Rain transfer
7. A low U-value means there is _____.
 - a) Less heat transfer
 - b) Cold transfer
 - c) Wind transfer
 - d) Rain transfer

8. Building components such as windows, the lower the U-value means
- a) The lesser the energy efficiency
 - b) The lower the energy efficiency
 - c) The low the energy efficiency
 - d) The greater the energy efficiency
9. The delay between a climate-forcing event, like a rise in greenhouse gas emissions, and the full realization of its effects.
- a) Time lag
 - b) Time zone
 - c) Decrement value
 - d) Increment value
10. A measure of how effectively a material or building structure reduces the amplitude of cyclic temperature variations as they pass from the exterior to the interior is _____
- a) Decrement factor
 - b) Increment factor
 - c) Increment value
 - d) Time lag
11. The decrement factor (DF) =
- a) Indoor temperature amplitude / outdoor air
 - b) Indoor temperature amplitude / outdoor temperature amplitude
 - c) Indoor temperature amplitude / rain fall
 - d) Indoor temperature amplitude / wind direction
12. The physical barrier separating the interior of a building from the exterior environment, comprising all the components that enclose the space, such as the walls, roof, doors, windows, and foundation
- a) The building envelope
 - b) The Load bearing structure
 - c) Framed structure
 - d) Sunken slab

13. Identify the architecture term for the reference picture.



- a) Building
- b) Brick structure
- c) High rise building
- d) Envelope

14. Identify the glass envelope from the pictures.



- a) A
- b) B
- c) C
- d) D

15. Identify the membrane envelope from the pictures.



- a) A
- b) B

- c) C
- d) D

16. The ability of a material to conduct heat is called _____.

- a) Conductivity
- b) Resistivity
- c) Resistance
- d) Thermal capacity

17. Thermal resistance of a building material indicates its ability to _____ heat flow.

- a) Increase
- b) Oppose
- c) Generate
- d) Reflect

18. Thermal conductance is a measure of the _____ of heat through a material or component.

- a) Flow
- b) Colour
- c) Weight
- d) Density

19. Which property indicates the quantity of heat needed to raise the temperature of a material?

- a) Conductivity
- b) Thermal capacity
- c) U-value
- d) Surface resistance

20. An air cavity in a building envelope can help to _____ heat transfer.

- a) Increase
- b) Reduce
- c) Reverse
- d) Eliminate completely

21. Surface resistance occurs at the _____ between a building surface and the surrounding air.

- a) Foundation
- b) Interface
- c) Plinth
- d) Beam

22. The U-value is commonly expressed as the rate of heat transfer through a building component per unit _____.

- a) Area per temperature difference
- b) Length
- c) Weight
- d) Volume

23. A wall with a lower U-value generally provides _____ resistance to heat transfer.
- a) Lower
 - b) Greater
 - c) Zero
 - d) Variable only
24. Which building element is particularly important when considering heat transfer because of its relatively high thermal transmittance?
- a) Glass window
 - b) Solid earth
 - c) Foundation soil
 - d) Landscape plant
25. Time lag refers to the time difference between the occurrence of peak temperature at the _____ and at the inside surface.
- a) Exterior
 - b) Foundation
 - c) Basement
 - d) Floor
26. Decrement factor describes the reduction in the _____ of temperature variation as heat passes through an envelope.
- a) Amplitude
 - b) Colour
 - c) Area
 - d) Thickness only
27. Which of the following is a component of a building envelope?
- a) Wall
 - b) Roof
 - c) Window
 - d) All the above
28. Glass envelopes can contribute significantly to a building's _____ and solar heat gain.
- a) Daylighting
 - b) Foundation depth
 - c) Soil bearing capacity
 - d) Structural span only
29. A double-glazed window contains two panes of glass separated by an _____ space.
- a) Air
 - b) Concrete
 - c) Brick
 - d) Timber

30. A major purpose of improving the thermal performance of a building envelope is to reduce unwanted _____ transfer.

- a) Heat
- b) Water
- c) Sound only
- d) Structural load

ANSWER KEY

- 1. a) Conduction
- 2. d) Specific heat
- 3. c) Resistivity
- 4. d) Thermal capacity
- 5. d) U Value
- 6. a) More heat transfer
- 7. a) Less heat transfer
- 8. d) The greater the energy efficiency
- 9. a) Time lag
- 10. a) Decrement factor
- 11. b) Indoor temperature amplitude / outdoor temperature amplitude
- 12. a) The building envelope
- 13. d) Envelope
- 14. c) C
- 15. b) B
- 16. a) Conductivity
- 17. b) Oppose
- 18. a) Flow
- 19. b) Thermal capacity
- 20. b) Reduce
- 21. b) Interface
- 22. a) Area per temperature difference
- 23. b) Greater
- 24. a) Glass window
- 25. a) Exterior
- 26. a) Amplitude
- 27. d) All the above
- 28. a) Daylighting
- 29. a) Air
- 30. a) Heat

CLIMATE AND BUILT ENVIRONMENT

UNIT IV – AIR MOVEMENT DUE TO NATURAL AND BUILT FORMS

1. Identify the right wind pattern in building design.



A)



B)



C)



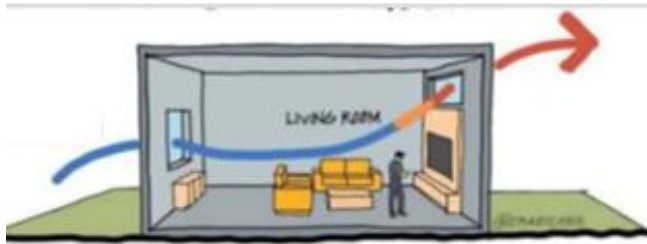
D)

- a) A
- b) B
- c) C
- d) D

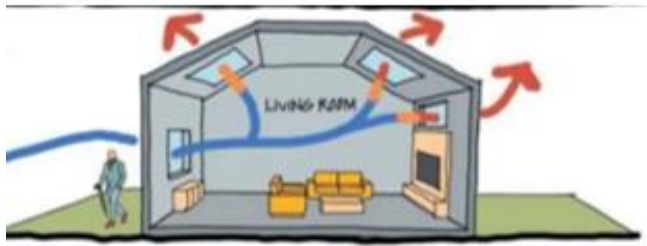
2. Identify the Stack Effect



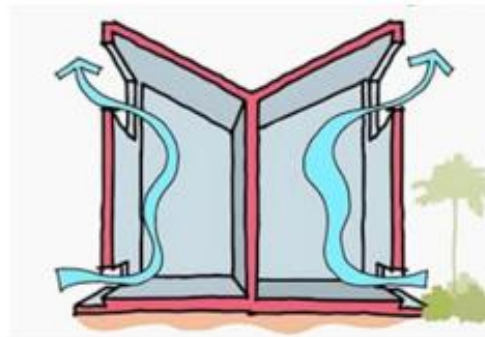
A)



B)



C)



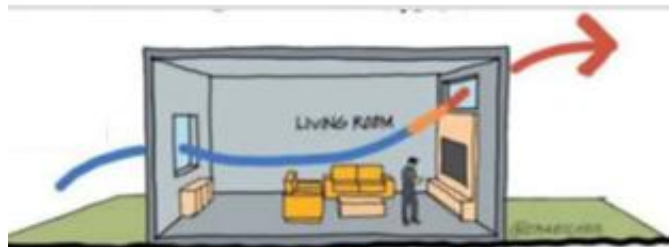
b)

- a) A
- b) B
- c) C
- d) D

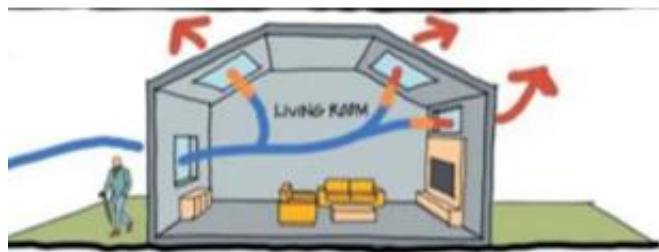
3. Identify the cross ventilation from the pictures



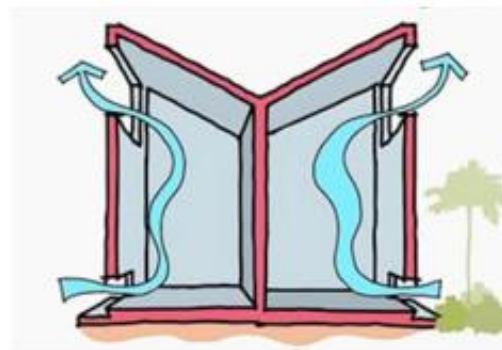
A)



B)



C)



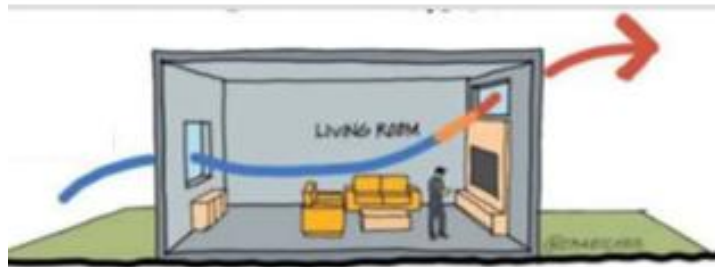
D)

- a) A
- b) B
- c) C
- d) D

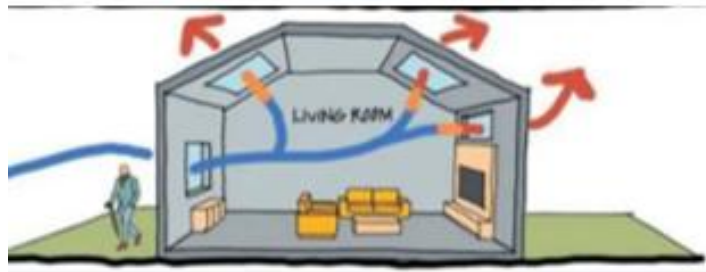
4. Identify the single side ventilation



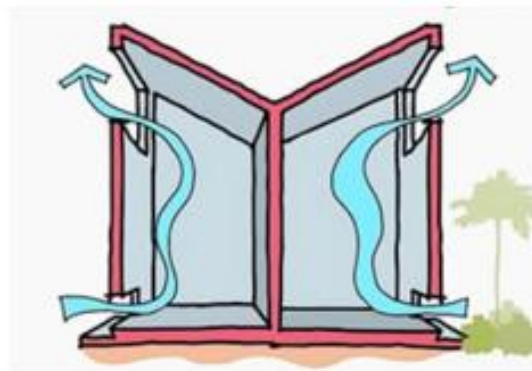
A)



B)



C)



b)

- i. A,D
- ii. A
- iii. B,C
- iv. D

5. ____ is the natural upward movement of air in a building or chimney caused by a difference in air density between the inside and outside.
- a) Stack effect
 - b) Wind pattern
 - c) Barrier
 - d) Fan
6. ____ increase in wind speed and decrease in pressure that occurs when air is forced through a narrow passage, such as between two tall buildings
- a) Venturi effect
 - b) Stack effect
 - c) Wind pressure
 - d) Rainfall
7. ____ are used for natural ventilation and cooling in buildings, reducing the need for air conditioning by channelling wind into indoor spaces
- a) Mechanical ventilation
 - b) Exhaust fan
 - c) Airconditioning
 - d) Wind catcher
8. ____ purpose is to provide natural light and ventilation, a private and tranquil outdoor living space, and a central hub for social activities
- a) Foyer area
 - b) Court yard
 - c) Storage area
 - d) Study room
9. A courtyard's purpose is to provide _____
- a) Natural light and ventilation
 - b) Mechanical means of ventilation
 - c) Meeting space for Public
 - d) Space for Cooking
10. _____ is the natural movement of air through a building by opening windows, doors, or other vents on opposite or adjacent sides
- a) Single side ventilation
 - b) Cross-ventilation
 - c) Multi side ventilation
 - d) Basement Air Movement
11. Wind is the horizontal movement of _____.
- a) Air
 - b) Water
 - c) Soil
 - d) Heat

12. The direction from which the prevailing wind comes is important for building _____.
a) Orientation
b) Foundation
c) Flooring
d) Furniture
13. Topography can change the speed and direction of _____.
a) Wind
b) Rainwater only
c) Sunlight only
d) Sound
14. Wind generally moves around a building because of differences in _____.
a) Pressure
b) Floor colour
c) Furniture
d) Ceiling height only
15. An opening through which outside air enters a building is called an _____ opening.
a) Inlet
b) Outlet
c) Drainage
d) Service
16. An opening through which indoor air leaves a building is called an _____ opening.
a) Outlet
b) Inlet
c) Foundation
d) Structural
17. Cross-ventilation is most effective when inlet and outlet openings are placed on _____ sides of a room.
a) Opposite or suitably adjacent
b) The same sealed wall
c) The floor only
d) The roof only
18. Fans are used to increase indoor _____ movement.
a) Air
b) Water
c) Soil
d) Solar radiation
19. A ceiling fan mainly improves comfort by increasing the movement of _____ around occupants.
a) Air
b) Rain
c) Soil
d) Building materials

20. Thermally induced air movement is caused by differences in air _____.
a) Temperature and density
b) Colour
c) Moisture only
d) Floor area
21. In the stack effect, warm air tends to _____.
a) Rise
b) Sink
c) Stop
d) Condense immediately
22. In the stack effect, cooler air tends to _____.
a) Move downward
b) Rise upward
c) Remain stationary
d) Become a fan
23. The Venturi effect occurs when air passes through a _____ passage.
a) Narrow
b) Closed
c) Underground
d) Sealed
24. The Venturi effect can result in an increase in wind speed and a decrease in _____.
a) Pressure
b) Temperature only
c) Humidity only
d) Building height
25. A courtyard can act as a source of natural light and _____.
a) Ventilation
b) Structural load
c) Foundation support
d) Waterproofing
26. Courtyards can create a more comfortable local _____ within a building complex.
a) Microclimate
b) Structure
c) Foundation
d) Furniture layout
27. Trees and landscape elements can influence the _____ pattern around buildings.
a) Wind
b) Structural
c) Plumbing
d) Electrical

28. A building placed directly across the prevailing wind may create areas of wind _____ and turbulence.
- a) Acceleration
 - b) Storage
 - c) Waterproofing
 - d) Insulation
29. Natural ventilation can reduce the dependence on _____ ventilation in suitable climates.
- a) Mechanical
 - b) Structural
 - c) Artificial lighting
 - d) Drainage
30. Proper air movement in a building contributes to better _____ comfort.
- a) Thermal
 - b) Structural
 - c) Visual only
 - d) Acoustic only

ANSWER KEY

- | | |
|--------------------------------------|---------------------|
| 1. b) B | 27. a) Wind |
| 2. d) D | 28. a) Acceleration |
| 3. b) B | 29. a) Mechanical |
| 4. ii. A | 30. a) Thermal |
| 5. a) Stack effect | |
| 6. a) Venturi effect | |
| 7. d) Wind catcher | |
| 8. b) Court yard | |
| 9. a) Natural light and ventilation | |
| 10. b) Cross-ventilation | |
| 11. a) Air | |
| 12. a) Orientation | |
| 13. a) Wind | |
| 14. a) Pressure | |
| 15. a) Inlet | |
| 16. a) Outlet | |
| 17. a) Opposite or suitably adjacent | |
| 18. a) Air | |
| 19. a) Air | |
| 20. a) Temperature and density | |
| 21. a) Rise | |
| 22. a) Move downward | |
| 23. a) Narrow | |
| 24. a) Pressure | |
| 25. a) Ventilation | |
| 26. a) Microclimate | |

CLIMATE AND BUILT ENVIRONMENT

UNIT V – CLIMATE AND DESIGN OF BUILDINGS

1. Expand LEED

- a) Leadership in Energy and Environmental Design
- b) Leadership in Environmental and Energy Design
- c) Leadership in Environment and Energy Design
- d) Leadership in Energy and Engineering Design

2. LEED different levels certifications are

- a) Certified, Silver, Gold, and Diamond
- b) Certified, Silver, and Gold
- c) Silver, Gold, Platinum, and Uranium
- d) Certified, Silver, Gold, and Platinum

3. In LEED version 2.2 for new construction and major renovations for commercial buildings there are _____ possible points and buildings can qualify for four levels of certification

- a) 69
- b) 70
- c) 65
- d) 61

4. LEED Certificate points for Silver rated building is

- a) 26 to 32 points
- b) 33 to 38 points
- c) 39 to 51 points
- d) 52 to 69 points

5. LEED Certificate points for Gold rated building is

- a) 26 to 32 points
- b) 33 to 38 points
- c) 39 to 51 points
- d) 52 to 69 points

6. LEED Certificate points for Platinum rated building is

- a) 26 to 32 points
- b) 33 to 38 points
- c) 39 to 51 points
- d) 52 to 69 points

7. LEED points for Certificate rated building is

- a) 26 to 32 points
- b) 33 to 38 points
- c) 39 to 51 points
- d) 52 to 69 points

8. Expand GRIHA

- a) Green Rating for Integrated Habitat Assessment
- b) Green Rating for Internal House Assessment
- c) Green Rating for Internal Housing Assessment
- d) Green Rating for Integrated Housing Assessment

9. _____ certification is a national rating system for green buildings in India, developed by the Energy and Resources Institute (TERI).

- a) BREEAM
- b) IGBC
- c) GRIHA
- d) LEED

10. The oldest green building rating system were Created in 1990

- a) BREEAM
- b) IGBC
- c) GRIHA
- d) LEED

11. LEED certification has ____ number of Levels for certification

- a) 5
- b) 6
- c) 7
- d) 4

12. Pick the LEED certified Gold rated green rated building in Chennai.

- a) Olympia Tech Park, Guindy, Chennai
- b) TIDEL Park, Taramani, Chennai
- c) ELCOT SEZ, Sholinganallur, Chennai
- d) The World Trade Center, Chennai

13. Pick the LEED certified Platinum rated green rated building in Chennai.

- a) Ramanujan IT Park, Taramani, Chennai
- b) ELCOT SEZ, Sholinganallur, Chennai
- c) The World Trade Center, Chennai
- d) All the above

14. Expand IGBC

- a) Indian Green Building Council
- b) Indian Green Building Committee
- c) Indian Green Building Construction
- d) Indian Green Building Company

15. IGBC different levels certifications are

- a) Certified, Silver, Gold, and Diamond Plus
- b) Certified, Silver, and Gold Plus
- c) Silver, Gold, Platinum, and Uranium Plus
- d) Certified, Silver, Gold, Platinum, and Platinum Plus

16. In a warm humid climate, buildings generally benefit from _____ ventilation.
- a) Natural cross
 - b) No
 - c) Underground
 - d) Sealed
17. A common design response in warm humid climates is to provide _____ shaded openings.
- a) Large
 - b) Sealed
 - c) Underground
 - d) No
18. In hot dry climates, thick walls can help reduce _____ transfer.
- a) Heat
 - b) Water
 - c) Sound only
 - d) Light
19. Courtyards are commonly used in hot dry climates to create a more _____ microclimate.
- a) Comfortable
 - b) Windless and sealed
 - c) Noisy
 - d) Wet
20. In cold climates, building design aims to reduce unwanted _____ loss.
- a) Heat
 - b) Light
 - c) Sound
 - d) Rain
21. Compact building forms are generally useful in cold climates because they reduce exposed _____ area.
- a) Surface
 - b) Floor
 - c) Furniture
 - d) Road
22. In hot humid climates, shading devices help reduce _____ heat gain.
- a) Solar
 - b) Structural
 - c) Acoustic
 - d) Ground
23. Climate-responsive design means adapting a building to its _____ conditions.
- a) Climatic
 - b) Furniture
 - c) Decorative
 - d) Structural only

24. Green building design aims to reduce environmental impact and improve _____ performance.
- a) Resource
 - b) Decorative
 - c) Structural only
 - d) Colour
25. LEED is a green building rating system developed by the _____ Green Building Council.
- a) U.S.
 - b) Indian
 - c) British
 - d) Australian
26. BREEAM stands for Building Research Establishment _____ Environmental Assessment Method.
- a) Environmental
 - b) Energy
 - c) Engineering
 - d) Economic
27. GRIHA is primarily associated with green building assessment in _____.
- a) India
 - b) Japan
 - c) Canada
 - d) Brazil
28. One important objective of green building design is to improve _____ efficiency.
- a) Energy
 - b) Traffic
 - c) Structural
 - d) Furniture
29. Daylighting can reduce the need for _____ lighting during suitable daytime conditions.
- a) Artificial
 - b) Natural
 - c) Solar
 - d) Emergency
30. Water conservation is an important consideration in _____ building design.
- a) Green
 - b) Conventional only
 - c) Temporary
 - d) Industrial only

ANSWER KEY

1. a) Leadership in Energy and Environmental Design
2. d) Certified, Silver, Gold, and Platinum
3. a) 69
4. b) 33 to 38 points
5. c) 39 to 51 points
6. d) 52 to 69 points
7. a) 26 to 32 points
8. a) Green Rating for Integrated Habitat Assessment
9. c) GRIHA
10. a) BREEAM
11. d) 4
12. a) Olympia Tech Park, Guindy, Chennai
13. d) All the above
14. a) Indian Green Building Council
15. d) Certified, Silver, Gold, Platinum, and Platinum Plus
16. a) Natural cross
17. a) Large
18. a) Heat
19. a) Comfortable
20. a) Heat
21. a) Surface
22. a) Solar
23. a) Climatic
24. a) Resource
25. a) U.S.
26. a) Environmental
27. a) India
28. a) Energy
29. a) Artificial
30. a) Green

Unit 1

1. Explain in detail about the components of climate
2. Explain the human body heat balance with sketches
3. Explain the uses of c. Mahony's tables
4. Explain the factors that determine climate
5. Explain the classification of climate for building designers in tropics

Unit 2

1. Explain in detail about sun path diagram
2. Explain the advantages of sun path diagram
3. Explain with sketches about solar shading devices
4. Explain the uses of sun path diagram
5. Explain the uses of solar shading devices

Unit 3

1. Explain in detail about the transfer of heat through solids through sketches
2. Explain in detail about the purpose of air cavities
3. Explain in detail about U value with relevant sketches
4. Explain in detail about envelopes
5. Explain the importance of glass envelopes

Unit 4

1. Explain the effects of topography on wind patterns with sketches
2. Explain the air currents around and through the building with sketches
3. Explain in detail about Stack effect with sketches
4. Explain in detail about uses of court yard with sketches
5. Explain in detail about stack effect and venturi effect

Unit 5

1. Explain in detail about the design strategies in warm humid climate through sketches
2. Explain in detail about the design strategies in Cold climate through sketches
3. Explain in detail about the design strategies in Hot humid climate through sketches
4. Explain in detail about Green building rating system
5. Explain in detail about Green building rating system with relevant case study