STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI-86
(For candidates admitted during the academic year 2016–2017& thereafter)

B.Voc. DEGREE EXAMINATION, NOVEMBER 2024
SUSTAINABLE ENERGY MANAGEMENT
FIFTH SEMESTER

COURSE : MAJOR CORE
PAPER : GREEN BUILDING AND PASSIVE ARCHITECTURE
SUBJECT CODE : 16VS/VM/PA56
TIME : 3 HOURS MAX.MARKS:100

SECTION – A

ANSWER ALL QUESTIONS: (20 x 1 = 20)

I CHOOSE THE CORRECT ANSWER:

1. In liquids and gases, heat transmission is primarily caused by
   (a) Convection (b) Radiation
   (c) Conduction (d) Conduction as well as convection
2. What is the full form of IGBC ?
   (a) Indian Green Building Control (b) Indian Green Building Council
   (c) International Green Building Control (d) International Green Building Council
3. Which of the following statement is NOT true:
   (a) Reflectors in a direct heat gain system improve efficiency.
   (b) Insulation prevents heat loss.
   (c) U-value of the building material should be high.
   (d) Shadings avoid overheating of the system.
4. In what way is active solar heating better than passive solar heating?
   (a) It enhances the solar energy conversion.
   (b) It is less expensive.
   (c) It uses less equipment than passive solar heating.
   (d) It does not cause greenhouse effect.
5. Which of the following is not used in a passive solar heating/cooling system?
   a) Building walls (b) Building roofs
   c) Air conditioners (d) Building floors

II FILL IN THE BLANKS:

6. The sources of internal heat gain are_____.
7. The amount of energy required to heat or cool a building is called_____.
8. The glazed windows and thermal walls are preferably placed in the _____ face of the building to receive maximum radiation.
9. Change in humidity due to infiltration contributes to _____ heat.
10. Trombe walls can be made of materials such as _____.

III. STATE TRUE OR FALSE

11. If $T_{out} > T_{out,bal}$, the building needs to be heated.
12. Thermal resistance of a building should be high.
13. LEDs and CFLs are better than traditional incandescent light bulbs.
14. Human thermal comfort lies with temperatures between 35 °C–45 °C.
15. Passive solar design is a method of using nuclear energy for heating and cooling buildings.

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IV ANSWER IN A SENTENCE OR TWO

16. Define Green Building.
17. Expand LEED.
18. Define Sensible heat transfer.
19. What is an Energy plus building?
20. Water walls are efficient than Trombe wall. Why?

SECTION – B

ANSWER ANY FOUR QUESTIONS: **(4 x 10 = 40)**

21. Write short notes on energy efficiency of a building and its importance.
22. Draw and explain in detail about the energy flow inside a building.
23. Explain in detail about the thermal storage wall.
24. Explain in detail about the key features of a Green building.
25. Write short notes on the different types of domestic solar water heaters?
26. What is a heat pump and how does it work?

SECTION – C

ANSWER ANY TWO QUESTIONS: **(2 x 20 = 40)**

27. Explain how to calculate the cooling load of a building.
28. Draw and explain the working of a direct and indirect gain passive heating system.
29. Explain in detail about the IGBC rating system.
30. Explain in detail about the sizing, Installation and maintenance of solar water heaters.

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