

Reg. No.

B.Tech. DEGREE EXAMINATION, JUNE 2023

Fifth to Seventh Semester

18MEO103T – ENERGY SYSTEMS FOR BUILDINGS*(For the candidates admitted from the academic year 2018-2019 to 2021-2022)***Note:**

- (i) **Part - A** should be answered in OMR sheet within first 40 minutes and OMR sheet should be handed over to hall invigilator at the end of 40th minute.
- (ii) **Part - B & Part - C** should be answered in answer booklet.

Time: 3 hours

Max. Marks: 100

PART – A (20 × 1 = 20 Marks)Answer **ALL** Questions

	Marks	BL	CO	PO
1. The most sustainable building is (A) Zero Energy Buildings (B) Low Energy Buildings (C) Plus Energy Buildings (D) Passive Energy Buildings	1	2	1	1
2. The human thermal comfort is about (A) 20°C, 60%, RH (B) 20°C, 80%, RH (C) 30°C, 60%, RH (D) 30°C, 40%, RH	1	2	1	1
3. Which system produces forced ventilation? (A) Windows (B) Blowers (C) Chimneys (D) Doors	1	1	1	1
4. The _____ forced glazings can produce more passive heating effect. (A) East (B) West (C) South (D) North	1	1	1	1
5. The value of cooling load factor varies in a range of _____ (A) 0 to 1 (B) 1 to 10 (C) 10 to 100 (D) 100 to 1000	1	2	2	1
6. In filtration is move problematic during (A) Day (B) Night (C) Summer (D) Winter	1	2	2	1
7. The percentage of heating and cooling load share of windows in a building is about (A) 5% (B) 10% (C) 20% (D) 30%	1	2	2	1
8. Solar Chimney works based on _____ (A) Conduction (B) Convection (C) Radiation (D) No Heat Transfer	1	2	2	1
9. The unit of luminous intensity is (A) Lux (B) Lumen (C) Candela (D) $\frac{cd}{m^2}$	1	1	3	1

10. A light can produce maximum lumens per wattage of input power is
 (A) Candle (B) Incandescent Lamp
 (C) LED (D) Florescent Lamp
11. Day lighting aims to minimize
 (A) Heating Requirement (B) Electrical Power for Lighting
 (C) Cooling Requirement (D) Diesel Power for Heating
12. How many 60W lamps would be required to produce the same amount of light as in a clear sky of window size of 0.9m × 1.5m
 (A) 1000 (B) 500
 (C) 100 (D) 50
13. Preventing water leak is one of the rule of
 (A) Passive Cooling (B) Passive Heating
 (C) Ventilation (D) Indoor Air Quality
14. The time lag of 0.3m thick wall of a common building brick material would be in _____ hours.
 (A) 6 (B) 8
 (C) 10 (D) 20
15. Dry air has only
 (A) Sensible Heat (B) Latent Heat
 (C) Moisture (D) Both Sensible and Latent Heat
16. A building's ability for minimize solar heat gain is measured by
 (A) Overall thermal (heat) transfer value (B) Environmental Assessment
 (C) Indoor Air Quality (D) Reduction of Environmental impact
17. In sustainable planning, site appraisals evaluate the
 (A) Site Cleanliness (B) Indoor Air Quality
 (C) Land Value (D) Relationship between the Buildings and its surroundings
18. LEED related to
 (A) Agriculture (B) Building
 (C) Chemical industry (D) Vehicles
19. GRIHA means that Green Rating for
 (A) Information Habitat Assessment (B) International Habitat Assessment
 (C) Vehicles (D) Integrated habitat assessment
20. The first 'R' in the following sustainability factors.
 (A) Reuse (B) Recycle
 (C) Regenerate (D) Reduce

PART – B (5 × 4 = 20 Marks)

Answer ANY FIVE Questions

21. Discuss on Low and Zero Energy Buildings.
22. Compare Water Wall and Evaporative Cooling Methods.
23. State the desirable properties of glazing materials.
24. Compare Natural and Forced Ventilation Methods.
25. Discuss about green building rating tools.
26. Define: Energy Balance of a building.
27. Discuss about Green building Materials.

Marks	BL	CO	PO
4	3	1	1
4	3	2	1
4	3	3	1
4	2	4	1
4	2	5	7
4	2	5	7
4	3	5	7

PART – C (5 × 12 = 60 Marks)

Answer ALL Questions

28. a. Explain the concepts of Energy Efficient Buildings and Systems.

Marks	BL	CO	PO
12	3	1	1,7

(OR)

- b. Explain various heating and Cooling load Calculations in a building.

12	4	1	1,7
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29. a. Explain the constructions and working of Trombe Mass Wall.

12	3	2	1
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(OR)

- b. Discuss the operation of connective Air Loops and Solar Chimney Effects

12	3	4	1,2
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30. a. Discuss on Selection criteria for Luminaries and analyze performance parameters.

12	3	2	1,7
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(OR)

- b. Explain day light factors and provide the recommended day light factors.

12	3	3	1,7
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31. a. Explain the various components of Heat Transmission in Buildings.

12	3	4	1
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(OR)

- b. Explain various design parameters influencing building thermal comfort.

12	3	4	1,7
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32. a. Explain sustainable sites and landscaping.

12	3	5	1,7
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(OR)

- b. Explain Enviro – Energy – Economic benefits of Green Buildings.

12	3	5	7
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