

Energy Conservation and Green Building (315316)

MSBTE Diploma · K-Scheme · Model Question Paper — Set A

Time: 3 Hours**Max. Marks: 70****Instructions:**

1. All questions are compulsory.
2. Answer each next main question on a new page.
3. Illustrate your answers with neat sketches wherever necessary.
4. Figures to the right indicate full marks.
5. Assume suitable data, if necessary.
6. Mobile phone, pager and any other electronic communication devices are not permissible in the examination hall.

Q.1 Attempt any FIVE of the following:**10**

- a) Define energy conservation.
- b) Define green building.
- c) State any four principles of green building.
- d) Define Indoor Environmental Quality (IEQ). State any two factors affecting it.
- e) Enlist any four sustainable materials used in green building.
- f) Define the term 'green building audit'.
- g) State any two ethical responsibilities of a civil engineer in sustainable construction.

Q.2 Attempt any THREE of the following:**12**

- a) Explain the salient features of the Energy Conservation Act, 2001.
- b) Explain the role of green building in sustainable development.
- c) Explain any four salient features of a green building with a neat sketch.
- d) Explain the environmental, economic and social benefits of green building.

Q.3 Attempt any THREE of the following:**12**

- a) Discuss the characteristics of bamboo, hempcrete, ferrock and cross-laminated timber as green building materials.
- b) Explain the role of HVAC system in a green building with a neat schematic sketch.
- c) Explain the key elements involved in planning a green building audit.
- d) Explain passive solar design of a building for a hot climate with a neat sketch.

Q.4 Attempt any THREE of the following:**12**

- a) Differentiate between GRIHA and IGBC rating systems (any four points).

- b) State the functions of the Ministry of New and Renewable Energy (MNRE).
- c) Explain the LEED credit categories and its certification levels.
- d) Explain the role of Bureau of Energy Efficiency (BEE) in energy conservation.
- e) Suggest any four corrective actions you would recommend after the green building audit of an office building.

Q.5 Attempt any TWO of the following:

12

- a) Explain how the principles of green building can be applied in the design of a college hostel building.
- b) Explain green roof with a neat sketch showing its layers. State its benefits.
- c) A school building has a built-up area of 2,400 m² and an average electricity consumption of 9,600 kWh per month. It has 180 tube lights, each consuming 48 W (including choke), used 8 hours a day for 250 days a year. They are to be replaced by 20 W LED tubes costing ₹450 each. Electricity tariff is ₹9 per kWh. Calculate: i) Energy Performance Index (EPI) of the building, ii) annual energy and cost saving, iii) simple payback period, iv) EPI after retrofit.

Q.6 Attempt any TWO of the following:

12

- a) Explain the role of MEDA in energy conservation in Maharashtra.
- b) Explain the benefits to a college after getting a green rating (IGBC / GRIHA) for its campus building.
- c) Explain the need for conducting a green building audit of your college. Draw a flow chart showing the steps of the audit.

Note: This is a **model question paper prepared by Ananda Technologies** only for practice and exam preparation, based on the pattern of previous MSBTE question papers and the K-scheme syllabus. It is **not an official MSBTE paper**, and it does **not** mean that these questions will come in the exam. Answers follow standard textbook points; marks shown are indicative. Free for students — anandatechnologies.in