

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Third Semester B.Tech Degree Examination December 2021 (2019 scheme)

Course Code: MCN201

Course Name: SUSTAINABLE ENGINEERING

Max. Marks: 100 Duration: 3 Hours

PART A

Answer all questions. Each question carries 3 marks

- 1. With the help of a schematic diagram, write about sustainability's three pillars (p. 1).**
- 2. Information technology-enabled paperless office is a big step to achieve sustainable development. Come out with three supporting and three opposing points for this statement (p. 1).**
- 3. State whether the statement "Zero waste concept should be a core strategy in sustainable development" is true or false. How does the 3R concept lead to zero waste concept? (p. 1)**
- 4. Explain how the greenhouse effect leads to global warming (p. 1).**
- 5. Explain the term bio-mimicking with the help of two examples (p. 1).**
- 6. Define Industrial symbiosis. How it is significant in sustainable industrial development (p. 1).**
- 7. "Large hydro-electric power plant is a sustainable power generation model"—state whether this statement is true or false. Justify your answer in two sentences (p. 1).**
- 8. "Clean energy is necessary for sustainable development". Justify this with three arguments (p. 1).**
- 9. Mention any three methods to improve energy efficiency in buildings (p. 1).**
- 10. List any three sustainable building materials and any three features of sustainable building materials (p. 1).**

PART B

Answer any one full question from each module. Each question carries 14 marks

Module 1

- 11. (a) Explain, "Sustainable Development Goals" (5 marks) (p. 1).**
(b) List any nine Sustainable Development Goals (9 marks) (p. 1).
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- 1. (a) Describe Clean Development Mechanism (CDM) (5 marks) (p. 2).**
(b) Give your views on the impact of CDM with respect to global warming (9 marks) (p. 2).

Module 2

- 13. Describe the term "air pollution". List any five air pollutants and explain their ill effects. Mention any two ways that can be adopted in the industry to reduce air pollution (14 marks) (p. 2).**
- 14. Explain the idea of carbon trading. Mention and explain the different options available for a developing country to gain certified emission reduction units (14 marks) (p. 2).**

Module 3

- 15. A firm named XYZ Pvt Ltd producing mobile phones wants to get itself ISO14001:2015 certified. What are the steps it should adopt in its organisational level to the product level for the certification? (14 marks) (p. 2).**
- 16. (a) Define circular economy and write its significance in sustainable engineering (5 marks) (p. 2).**
(b) Describe the major elements of circular economy (9 marks) (p. 2).

Module 4

17. (a) Write your views on solar energy as an alternate energy source (4 marks) (p. 2).

(b) Explain the various options to tap the energy from the sun (10 marks) (p. 2).

18. With necessary schematics explain the working of:

(a) A Geothermal Power Plant (7 marks) (p. 2).

(b) A Tidal Power Plant (7 marks) (p. 2).

Module 5

19. Check whether the "Green Building concept" is related to the "Concept of sustainable habitat". Explain any three key points to justify your answer (14 marks) (p. 2).

20. (a) Electric vehicle (EV) being run on electricity is claimed as emission-free. Still, the fact that significant share of Electrical Energy produced across the globe is of thermal origin put question marks on the emission-free claim. Justify this statement (4 marks) (p. 2).

(b) Give your views on the areas of improvement required for an EV to be called as a sustainable transportation option (10 marks) (p. 2).