

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY****B.Tech Degree S3 (R, S) / S3 (PT) (R, S) Examination December 2023 (2019 Scheme) (p. 1)****Course Code: MCN201****Course Name: Sustainable Engineering****Max. Marks: 100 Duration: 3 Hours (p. 1)****PART A****Answer all questions. Each question carries 3 marks (p. 1)**

- 1. List any three Sustainable Development Goals. (p. 1)**
- 2. What do you mean by the concept of sustainable development? (p. 1)**
- 3. Mention any three legal provisions for Environmental Protection. (p. 1)**
- 4. A few island nations including Maldives are on the verge of getting submerged in the ocean. How will you link this unfortunate phenomenon to greenhouse gases? (p. 1)**
- 5. What do you mean by circular economy? (p. 1)**
- 6. Why is it important to do Life Cycle Analysis for a product? (p. 1)**
- 7. Do you think that it is necessary to focus more on non-conventional energy sources? Justify your answer. (p. 1)**
- 8. Nuclear energy does not result in any greenhouse gas emissions. Is this fact alone sufficient to consider it as a clean and sustainable energy source? (p. 1)**
- 9. Explain your idea of a sustainable transportation. (p. 1)**
- 10. Mention any three qualities that can be expected for a sustainable building material. (p. 1)**

**PART B****Answer any one full question from each module. Each question carries 14 marks (p. 1)**

**Module 1 (p. 1)**

**11. Government has recently banned Diesel Auto-rikshaws older than 15 years from the roads. Analyse this action by considering the three pillars of sustainable development. (14 marks) (p. 1)**

**12. There exists an unavoidable nexus between technology and sustainable engineering. Explain with any four examples. (14 marks) (p. 1)**

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**Page 2****Module 2 (p. 2)**

**13. (a) List any four water pollutants. (4 marks) (p. 2)**

**(b) Explain in detail the ill effects of any five major water pollutants. (10 marks) (p. 2)**

**14. (a) Explain the relationship between Zero Waste concept and the 3R concept. (5 marks) (p. 2)**

**(b) How the Zero Waste concept and the 3R concept are interrelated? How are these concepts inevitable in Sustainable Development? (9 marks) (p. 2)**

**Module 3 (p. 2)**

**15. Explain ISO 14001:2015 framework and its benefits. (14 marks) (p. 2)**

**16. Elaborate on the scope and goal of Life Cycle Assessment with an example. (14 marks) (p. 2)**

**Module 4 (p. 2)**

**17. As far as the present technological advancements are concerned, it is not practical to rely on non-conventional energy sources alone for an Industry. Do you agree with this? Provide**

arguments based on this statement with proper examples. (14 marks) (p. 2)

18. Do and express a detailed comparison between conventional and non-conventional energy sources with examples for the same. (14 marks) (p. 2)

Module 5 (p. 2)

19. List and explain in detail any four methods to increase energy efficiency inside a building. (14 marks) (p. 2)

20. Imagine a city with all the amenities including schools, industries, offices, recreational facilities, beaches etc. What are the different points that you will look into before calling it a sustainable city? (14 marks) (p. 2)