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Reg. No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
FIRST SEMESTER B.TECH DEGREE EXAMINATION, JUNE 2016

Course Code: BE101-02

Course Name: INTRODUCTION TO MECHANICAL ENGINEERING SCIENCES

Max. Marks: 100

Duration: 3 Hours

PART A

Answer ALL questions. Each question carries 3 marks

1. State two classical statements of second law of thermodynamics.
2. List the broad classification of air compressor and give the application of each type.
3. List the application of refrigeration in construction industry.
4. What is meant by chassis of an automobile?
5. Define the following : (i) Rigid Body, (ii) Resistant Body
6. What is Grashof's law?
7. Differentiate between BCC and FCC structures.
8. Give any three advantages of composites.

PART B

Answer any 2 complete questions from each module

MODULE 1

9. Define the terms (a) Thermodynamic System, (b) State, (c) Process, (d) Control mass (e) Control volume (f) Control surface (6)
10. Explain first law of thermodynamics, its limitations and how these limitations are addressed by the second law of thermodynamics. (6)
11. a) A man inside a closed room switched on the ceiling fan hoping to reduce the temperature of the room. Is his intuition justified thermodynamically? Give reason for your answer. (3)
- b) The use of electric heaters to heat up living spaces in colder countries is said to be thermodynamically inefficient. Discuss the reason. (3)

MODULE 2

12. List the various components of IC engine and their functions with the aid of a neat diagram. (6)
13. Explain the working of two stroke CI engine with neat sketch. (6)
14. a) Differentiate between Solid Propellant Rockets and Liquid Propellant Rockets? (3)
- b) Discuss the recent (last decade) space programmes of ISRO? (3)

MODULE 3

15. What are the different methods of food preservation? Which is the best method?(6)
16. Explain the components of Air conditioning systems. (6)
17. a) Give 3 historically significant inventions in the development of refrigeration. (3)
- b) What are the different types of refrigerated storages? (3)

MODULE 4

18. List the major components required to transmit power from the engine to an automobiles wheels. Mention the function of each component. (6)
19. a) Differentiate between Front wheel drive, Back wheel drive and All wheel drive in automobiles. (3)
- b) List the various applications of automobiles. (3)
20. a) What is aerodynamics? (2)
- b) Compare turbo prop and turbo jet engines (4)

MODULE 5

21. Define machine, mechanism and structure. Give examples for each. (7)
22. Explain the different types of load considered for engineering design purpose. (7)
23. Define link, pair and kinematic chain. Differentiate between kinematic chain and mechanism. (7)

MODULE 6

24. Explain the classification of engineering materials. (7)
25. List any 4 material testing methods and their applications. (7)
26. Explain computer integrated manufacturing and its applications. (7)