Combined First and Second Semester B.Tech. Degree Examination,
January 2019
(2008 Scheme)
08-107 : BASIC MECHANICAL ENGINEERING
(CMNPHTARUFBS)

Time : 3 Hours
Max. Marks : 100

Instructions : 1) Answer all questions from Part – A. Each question carries 4 marks.
2) Answer any two questions from each Module of Part – B. Each question carries 10 marks.

PART – A

1. Define temperature with the help of Zeroth law of thermodynamics.

2. For light load operations petrol engine is more suitable than diesel engine. Why?

3. Is it possible to construct an engine which develops 2.4 kW work if input power is 3.5 kW, available maximum temperature limit is 522°C and minimum temperature limit is 45°C. Justify your answer.


5. Explain the working of Roots blower.

6. What is the maximum suction height possible with a single centrifugal pump? Explain the reasons for this limitation.

7. Write any four differences between open cycle gas turbine and closed cycle gas turbine.

8. Discuss the various types of belts used for power transmission.

9. Write the advantages of CNC machines.

10. What are the uses of sprue and riser in casting process? (10×4=40 Marks)
PART – B
Module – I

11. a) With a neat sketch explain the working of Benson boiler.  
   b) Write any four differences between four stroke and two stroke engine.  
   6  

12. a) Explain the working of one of the ignition systems in petrol engine.  
    b) Write a short note on reversibility and entropy.  
    6  

13. a) Draw the P-V and T-S diagram of diesel cycle and mark the processes.  
     b) Write down the equations for work done during an adiabatic process and explain each term.  
     c) What is hybrid vehicle? List its advantages.  
     3  

Module – II

14. a) Explain the working and fields of application of a jet pump with neat sketch.  
    b) Write a short note on Kaplan turbine.  
    6  

15. a) Explain vapour compression refrigeration system.  
    b) What are the factors to be controlled for air conditioning?  
    6  

16. a) Explain pressurised water nuclear reactor.  
    b) Write the advantages and disadvantages of thermal power plants.  
    6  

Module – III

17. a) Explain the working of a single plate clutch with sketch.  
    b) Find circular pitch, diametral pitch and module of a gear if it has 6 cm pitch circle diameter and 20 teeth.  
    6  

18. a) Explain the methods used for taper turning in lathe.  
    b) Distinguish between up milling and down milling.  
    6  

19. a) Explain the working of Electro discharge machining method with a neat sketch.  
    b) What is welding? Name different types of welding methods.  
    6