



Reg. No. :

Name :

Combined First and Second Semester B.Tech. Degree Examination, May 2009
(2008 Scheme)
08-107 BASIC MECHANICAL ENGINEERING
(2008 admission)

Time: 3 Hours

Max. Marks: 100

Answer all questions from **Part A** and **any two** questions from **each** Module of **Part B** :

PART – A**(4 Marks × 10)**

1. Write down an expression for the air-standard efficiency of Diesel cycle. What are the factors affecting the efficiency ?
2. Sketch the p-v and T-s diagram of the Carnot cycle and name the different processes and what is its efficiency ?
3. Explain CRDI system.
4. Compare two stroke and four stroke engines.
5. What are the important properties needed for refrigerants ?
6. Differentiate between impulse and reaction steam turbines.
7. Explain the terms slip and velocity ratio with respect to belt drive.
8. Explain rolling and forging processes.
9. What is the working principle of EDM ?
10. What are the elements of CNC machines ?



PART – B

Module – I

(10 Marks × 2)

11. Derive an expression for the air-standard thermal efficiency of an Otto cycle.
12. An IC engine working on Otto cycle takes the air in at 0.97 bar and 35° C. The compression ratio is 7. The heat supplied during the cycle is 1.5 MJ/Kg. of the working fluid. Determine
 - i) The air standard efficiency
 - ii) The maximum temperature attained and
 - iii) The work done per kg of the working fluid.
13. With the help of neat sketches (including p-v and t-s diagrams) explain the working of four stroke diesel engine.

Module – II

(10 Marks × 2)

14. With necessary sketches explain open and closed gas turbine cycles.
15. With the help of flow and p-h diagram explain the working of a vapour compression refrigeration system.
16. Sketch the general layout of a thermal power plant and explain its working.

Module – III

(10 Marks × 2)

17. With a neat sketch explain the working of a single plate clutch.
 18. Describe the following machining operations :
 - i) Drilling
 - ii) Grinding
 19. Describe the following production processes :
 - i) Casting
 - ii) Brazing.
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