2007 MAHATMA GANDI UNIVERSITY
B.TECH DEGREE EXAMINATIONS
II SEMESTER ELECTRICAL AND ELECTRONICS ENGINEERING
BASIC MECHANICAL ENGINEERING

TIME : 3 HOUR
MARK : 100

ANSWER ALL QUESTIONS

EACH QUESTION CARRIES 4 MARKS. (10 X 4 = 40 MARKS)

1. Define specific heat. Why gases have two specific heats?

2. Derive an expression for the heat transfer in a polytropic process.

3. How IC engines are classified?

4. With a sketch, explain the vapour compression refrigeration system.

5. Obtain an expression for the length of a cross belt drive.

6. What are the advantages and disadvantages of a rope drive?

7. What is meant by 'Direct energy conversion systems'?

8. Differentiate between an impulse turbine and a reaction turbine.

9. What is the use of a chuck? Mention the different chuck used in a lathe.

10. What is the purpose of using additives in moulding sand?

EACH QUESTION CARRIES 12 MARKS. (5 X 12 = 60 MARKS)

11. (a) Derive an expression for the air standard efficiency of a diesel cycle
                   Or
(b) 2 kg of an ideal gas occupies a volume of 0.3m3 at 10 bar pressure and 500K
temperature. When this gas expands polytropically (PV1.2=C).The internal energy
decreases by 300KJ.Presuming adiabatic exponent r =1.4, determine.

a) Specific gas constant

b) Final temperature and pressure of the gas.

c) Heat and work inter actions across the system boundary

12. (a) With neat sketch, explain the different types of lubrication systems used in I.C
engines.
                     Or
(b)What is meant by air conditioning? Differentiate between winter air conditioning and
summer air conditioning

13(a) Derive an expression for the ratio of tensions for flat belt passing over a pulley.
                     Or
(b)Derive the equation for the minimum number of teeth in a spur gear.

14(a) Draw a general layout of a Thermal power plant and explain it.

Or

(b)Why are steam turbine compounded? Explain with sketches the different methods of compounding.

15(a) Briefly explains the working principle in milling with the help of a neat sketch. Explain horizontal milling machine.

Or

(b)What are the reasons for providing pattern allowances? Explain the important pattern allowances.