



INDIAN MARITIME UNIVERSITY

B.Tech (MARINE ENGINEERING)

June 2013 Examinations
FOURTH SEMESTER

MARINE HEAT ENGINES & AIR CONDITIONING

Old Subject Code: UG/ME/MS/T/226
Date: 24.06.2013
Time: 3 Hrs

QP Code: T0511406
Max. Marks: 100

Part A

(3 X 10 = 30 Marks)

Compulsory Question

1. (a) What is meant by compounding with respect to Steam turbine?

(b) What do you understand by the term "Degree of Reaction"?

(c) State the advantages of Reheat cycle.

(d) What is Binary vapour cycle?

(e) Differentiate closed cycle and open cycle gas turbine plant.

(f) How thermal efficiency of Gas turbine plants can be improved?

(g) What is Slip factor in Centrifugal compressor?

(h) What is Heat pump?

(i) What is the difference between Refrigeration and Air conditioning?

(j) What is meant by Comfort zone?

SPitting of the air into low or some other velocity. Velocity. Velocity compounding. Pressure compounding.

is h_1, h_2, h_3 in velocity of gas in the blade to the steam velocity.

*↓ reheat cycle
↓ mean temp of heat
↓ the dryness fraction of steam entering turbine.*

*closed cycle
condenser
is used*

ratio of energy in inlet steam to the energy in outlet steam.

heat from low temp source to high temp source.

Return temp / condensing temp / evaporation temp

Forth Sem.

Part B

(5 X 14 = 70 Marks)

Answer Any Five of the following

2. Explain the Pressure compounding of Impulse turbine with neat sketches. (14 Marks)
3. Compare Impulse and Reaction turbine in all aspects. (14 Marks)
4. With neat sketches explain working of a Regenerative cycle. (14 Marks)
5. Explain with arrangement of components and P-V diagram working of Constant Pressure Gas turbine cycle. (14 Marks)
6. Explain construction and working principle of Centrifugal compressor with suitable diagrams. (14 marks)
7. With a neat sketch of arrangement of components explain working of typical marine refrigeration plant with multiple evaporator at different temperatures. (14 Marks)
8. (a) Describe principles of Air conditioning. (7 Marks)
(b) Draw and mark the components of a typical marine central air conditioning system. (7 Marks)
