

INDIAN MARITIME UNIVERSITY
(A CENTRAL UNIVERSITY, GOVT. OF INDIA)
END Semester EXAMINATIONS DEC 2017
SEMESTER- VI, B.TECH. (MARINE ENGINEERING)
ADVANCED MARINE HEAT ENGINES (UG11E 1602/E2602)

Date: 03.01.2018
Time:-3 Hrs

Max.Marks:100
Pass Marks: 50

PART – A
(Compulsory Questions)

(3 x10 = 30 Marks)

1. a) Explain: Free Piston Gas Generator.
- b) Explain: cascade refrigeration plant
- c) What is the function of a compressor?
- d) Define atomization and combustion chamber.
- e) Why and where is air pre-heaters used?
- f) Why steam propulsion is preferred on LNG ship?
- g) What is the purpose of Gas and Oil heaters?
- h) Mention different types of heat exchangers?
- i) How LNG boil off gas is cooled?
- j) What is the function of a heat exchanger?

PART – B
(Answer any five of the following)

(5 x14 = 70 Marks)

- 2 a) Sketch & describe combined steam turbine & diesel engine cycles. (7)
- b) Briefly describe how the overall thermal efficiency of a plant can improved (7)

3. a) What are the ideal conditions for efficient burning of fuel in a diesel engine?
b) How the shape of combustion space effects combustion
c) Briefly explain methods of reducing NOx (5+4+5)
- 4 a) what are the different types of heat exchangers and explain?
b) How the overall heat transfer coefficient and fouling factor can be determined? (7+7)
- 5 a) How does a cascade refrigeration plant work?
b) Sketch and describe such a plant. (7+7)
- 6 a) with a suitable sketch describe how efficiently waste heat is recovered
From a marine diesel engine plant.
b) How LNG boil off gas is cooled? (12+2)
- 7 For axial flow impulse-reaction gas turbine, derive an expression for load coefficient with
flow coefficient. Find the same for 50% reaction turbine. (14)
- 8 a) Sketch and describe operation of a free piston gas generator.
b) What is the thermal efficiency of such a generator? (12+2)
