

# Indian Maritime University

(A Central University, Govt of India)

## B.SC (Nautical Science)

May/June 2018 End Semester Examinations

Semester IV

### Marine Engineering, Automation and Control System Paper IV

UG21T2412

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Time: 3 Hours

Max Marks: 70

Date: 29.06.2018

Pass Marks: 35

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Question no.1 is compulsory

Attempt any 6 out of the remaining questions.

All questions carry equal marks

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1. a) Mention the classifications of various types of engines (2 Marks)  
b) Name the groups into which chemical cargoes are divided (2 Marks)  
c) Name the different types of fuels (2 Marks)  
d) Name the different types of turbines (2 Marks)  
e) Name the different types of Propellers (2 Marks)
  
2. a) With neat sketches explain the working of a 4-stroke diesel engine (5 Marks)  
b) Draw and explain the PV diagram of a 4-stroke diesel engine (5 marks)
  
3. a) With neat sketches explain the working of a 2- stroke diesel engine (5 Marks)  
b) Draw and explain the PV diagram of a 2-stroke diesel engine (5 Marks)
  
4. a) Name the differences between a 2-stroke and a 4-stroke diesel engine. (5 Marks)  
b) Explain the following terms with respect to chemical cargoes  
(i) Flammability (2½ Marks)  
(ii) Toxicity (2½ Marks)
  
5. a) Explain the following terms with respect to chemical cargoes  
(i) Reactivity (2½ Marks)  
(ii) Corrosivity (2½ Marks)  
b) Explain High Pressure w.r.t. Chemical Cargoes (5 Marks)

6. a) What is ICS Cargo Data Sheet and what are the details given in it  
(5 Marks)
- b) Draw and label the fuel oil line from storage tank to main engine  
fuel pump (5 Marks)
6. a) Explain the procedure for warming through a Steam Turbine used  
as a prime mover for Cargo Pump (5 Marks)
- b) With respect to propeller, explain the following:
- (i) Pitch (2½ Marks)
- (ii) Real Slip (2½ Marks)
8. a) List out the various types of deck machinery onboard ship along with  
safety features incorporated in them (5 Marks)
- b) What are the regulations governing the disposal of sewage from  
ships? (5 Marks)
9. a) What are the regulations governing the discharge of machinery  
space bilges from ship? (5 Marks)
- b) Sketch and describe a Bilge Oily Water Separator (5 Marks)