

INDIAN MARITIME UNIVERSITY
(A Central University, Govt. Of India)
B.Sc. (NAUTICAL SCIENCE)
End Semester Examinations June-July 2019
SEMESTER IV
Marine Engineering, Automation and Control System – PAPER IV
(UG21T2412)

Date:20-07-2019

Max Marks: 70

Time:3 Hrs

Pass Marks: 35

Note:

**Answer any 7. All questions carry 10 marks.
Scientific Calculator is permitted if required.**

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| 1 | a) Draw PV diagram of a diesel engine and mark the events | 5 |
| | b) With a neat diagram explain purpose of thrust block | 5 |
| 2 | a) What are the main components of a diesel engine | 5 |
| | b) Explain working of a 4-stroke diesel engine with a neat diagram | 5 |
| 3 | a) List out different types of cargoes carried on chemical carrier as cargo | 5 |
| | b) What are the hazards of carrying chemicals as cargo on ships? | 5 |
| 4 | a) What are the various deck machineries on ships? | 5 |
| | b) Draw a diagram of combined anchor windlass & mooring winch and label parts | 5 |
| 5 | a) Draw simple diagram of an impulse turbine and label parts | 5 |
| | b) What are the advantages and disadvantages of using gas turbines for propulsion on ships? | 5 |
| 6 | a) Draw a shafting diagram connecting main engine to propeller and label parts | 5 |
| | b) Compare fixed pitch and controllable pitch propellers | 5 |
| 7 | a) List out equipment provided as per MARPOL to prevent pollution from ships | 5 |
| | b) Draw and explain working of either a sewage treatment plant (or) oily Bilge water separator | 5 |
| 8 | A ship travels for 6000 nautical miles at 13 knots consuming 26 tons of fuel per day. Calculate fuel requirements for the voyage. Take into consideration five days reserve and un pump able | 10 |
| 9 | a) What are the properties of a marine fuel (Heavy fuel oil) used on ships? | 5 |
| | b) What are precautions to be taken while bunkering fuel oil on ships? | 5 |