

COCHIN UNIVERSITY OF SCIENCE AND TECHNOLOGY

**B.TECH. DEGREE V SEMESTER EXAMINATION IN MARINE ENGINEERING
DECEMBER 2020**

MRE 1504 MARINE INTERNAL COMBUSTION ENGINES – I
(2013 Scheme)

Time: 30 Minutes [for Answering and Scanning/Uploading the page of the Answer Sheet] per module
Max. Marks: 10 per module

INSTRUCTIONS

1. You have to be available in Google Meet Video Camera throughout the examination hours.
2. You have to share your '**live location**' to the faculty before uploading the answer sheet of Module I.
3. You have to answer only one question per module .
4. Answer may not exceed one page of an A4 size paper in a standard handwriting, as far as possible.
5. If at all an answer goes beyond one page, (due to your handwriting) another page can also be used. In such a situation, the page number should be given as 1/2, 2/2.
6. You have to put the Question Number correctly.
7. After answering the question, you have to scan in pdf format and upload the answer page in a format of <reg. no.><module/group no.><question no.>.pdf.

MODULE - I

(Answer **ANY ONE** question)

I(1). Enumerate the differences in design, operation and application of crosshead type and trunk type diesel engines used on board ships. (10)

OR

I(2). Explain the timing diagram of 2-stroke and 4-stroke engines. Also explain heat balance diagram of a marine diesel engine and its significance. (10)

MODULE - II

(Answer **ANY ONE** question)

II(1). Explain pulse type and constant pressure type turbocharging along with its application on different engines on board a ship. (10)

OR

II(2). Describe the different types of scavenging used in marine 2-stroke diesel engines along with their merits and demerits. (10)

MODULE - III

(Answer *ANY ONE* question)

III(1). Explain the various methods adopted to control SO_x emissions from marine diesel engines along with their advantages and disadvantages. (10)

OR

III(2). Write short notes on: (10)

- (i) Fuel atomization
- (ii) Ignition Delay
- (iii) After burning
- (iv) Penetration
- (v) Turbulence.

MODULE - IV

(Answer *ANY ONE* question)

IV(1). What are the safety devices fitted on an engine to prevent starting air line explosion? What are the safe practices to be adopted to avoid such an explosion? (10)

OR

IV(2). Write short notes on: (10)

- (i) Uptake fire
- (ii) Thermal stresses in IC engine components

MODULE - V

(Answer *ANY ONE* question)

V(1). Explain the significance of varying the fuel injection timing on a marine diesel engine. Sketch and explain how injection timing is varied in a helical groove type fuel pump. (10)

OR

V(2). Sketch and describe a spill valve type fuel pump with provision for varying the injection timing and the quantity of fuel injected. (10)
