

# Marine Internal Combustion Engines-II VTU CBCS Question Paper Set 2018

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10MR61

**Sixth Semester B.E. Degree Examination, June/July 2015**  
**Marine Internal Combustion Engines - II**

Time: 3 hrs.

Max. Marks:100

**Note:** Answer any FIVE full questions, selecting atleast TWO questions from each part.

**PART - A**

- 1 a. Draw and explain fuel pump of sulzer (wartsila) engine. (10 Marks)  
b. Write a note on different types of vibrations acting on main engine and measures to counter vibration. (10 Marks)
- 2 a. Draw Wartsila maneuvering diagram and explain the following : (10 Marks)  
i) Reversing servomotor ii) Rotation direction safeguard iii) Reversing valve.  
b. Explain Safety precautions for starting and reversing. (10 Marks)
- 3 What are performance characteristic curves? With diagram explain atleast 8 characteristic curves. (20 Marks)
- 4 a. Why lube oil testing is done? Explain the following tests : (14 Marks)  
i) Water content test ii) Viscosity test iii) PH test iv) Flash point test.  
b. Draw and explain electronic cylinder lubrication. (06 Marks)

**PART - B**

- 5 a. Write a short note on heat exchangers. Draw the following : (12 Marks)  
i) Shell and tube type heat exchanger ii) Plate type heat exchanger.  
b. Write a note on free piston engine gasifiers. (08 Marks)
- 6 a. What are the checks to be carried before going UMS? (14 Marks)  
b. Checks to be carried out to test alarms. (06 Marks)
- 7 a. Write a note on crankshaft host deflection and alignment. (10 Marks)  
b. Write a note on electronic speed governors. (10 Marks)
- 8 a. What is Hot and cold corrosion? (08 Marks)  
b. Write down the Marpol Annex 6 regulations for control of NOx (Tier I, Tier II , Tier III). (12 Marks)

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**Sixth Semester B.E. Degree Examination, June/July 2016**  
**Marine Internal Combustion Engine – II**

Time: 3 hrs.

Max. Marks: 100

**Note: Answer FIVE full questions, selecting  
at least TWO questions from each part.**

**PART – A**

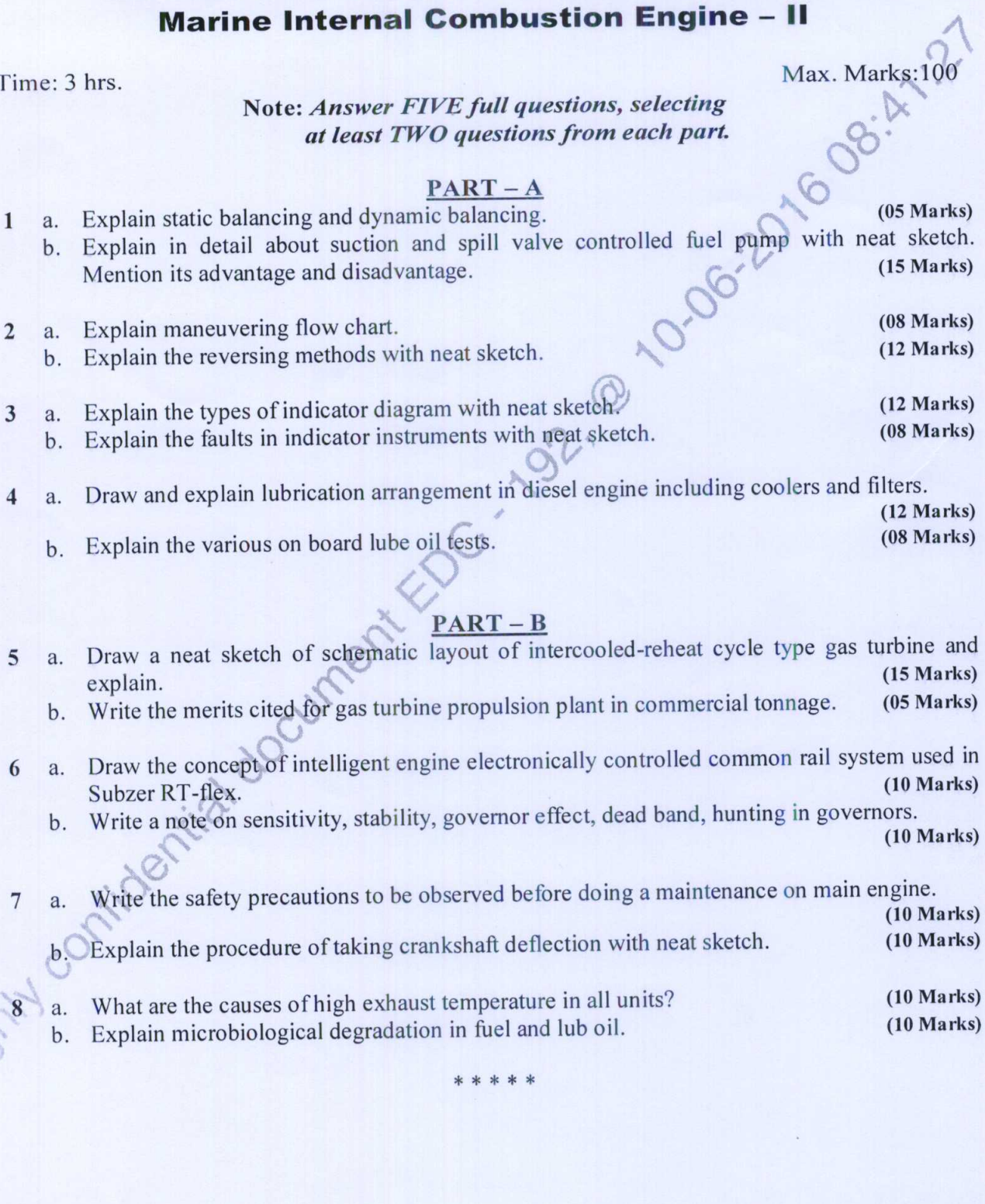
- 1 a. Explain static balancing and dynamic balancing. (05 Marks)
- b. Explain in detail about suction and spill valve controlled fuel pump with neat sketch. (15 Marks)  
Mention its advantage and disadvantage.
- 2 a. Explain maneuvering flow chart. (08 Marks)
- b. Explain the reversing methods with neat sketch. (12 Marks)
- 3 a. Explain the types of indicator diagram with neat sketch. (12 Marks)
- b. Explain the faults in indicator instruments with neat sketch. (08 Marks)
- 4 a. Draw and explain lubrication arrangement in diesel engine including coolers and filters. (12 Marks)
- b. Explain the various on board lube oil tests. (08 Marks)

**PART – B**

- 5 a. Draw a neat sketch of schematic layout of intercooled-reheat cycle type gas turbine and explain. (15 Marks)
- b. Write the merits cited for gas turbine propulsion plant in commercial tonnage. (05 Marks)
- 6 a. Draw the concept of intelligent engine electronically controlled common rail system used in Subzer RT-flex. (10 Marks)
- b. Write a note on sensitivity, stability, governor effect, dead band, hunting in governors. (10 Marks)
- 7 a. Write the safety precautions to be observed before doing a maintenance on main engine. (10 Marks)
- b. Explain the procedure of taking crankshaft deflection with neat sketch. (10 Marks)
- 8 a. What are the causes of high exhaust temperature in all units? (10 Marks)
- b. Explain microbiological degradation in fuel and lub oil. (10 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.



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**Sixth Semester B.E. Degree Examination, June/July 2017**  
**Marine Internal Combustion Engine – II**

Time: 3 hrs.

Max. Marks: 100

**Note: Answer any FIVE full questions, selecting  
atleast TWO questions from each part.**

**PART – A**

- 1 a. With sketch explain how jerk type fuel pump works. (08 Marks)  
b. Draw and explain common rail system. (08 Marks)  
c. What is vibration? Mention engine vibration causes. (04 Marks)
- 2 a. Explain reversing procedure of main diesel engine. (08 Marks)  
b. What is crash maneuvering? Explain the procedure of crash maneuvering operation. (07 Marks)  
c. What are interlocks? Mention safety interlocks on marine diesel engine. (05 Marks)
- 3 a. Describe types of indicated diagram with neat sketch. (10 Marks)  
b. Explain various tests conducted during sea trial of marine diesel engine on new ships. What are the parameters observed during test? (10 Marks)
- 4 a. Explain lines wear and the preventive measures. (10 Marks)  
b. Explain the tests conducted to determine the condition of lube oil on-board ship. (10 Marks)

**PART – B**

- 5 a. Explain with diagram the heat exchanger and reheat arrangement in gas turbine plant. (12 Marks)  
b. Give advantages and disadvantages of marine gas turbine over marine diesel engine. (08 Marks)
- 6 a. Describe with sketch how a mechanical hydraulic governor works. (10 Marks)  
b. State minimum requirements of automation for UMS operation. (10 Marks)
- 7 a. Describe with sketch the procedure for removal of main bearing of marine diesel engine. (12 Marks)  
b. Describe the procedure for tie rod tensioning of marine diesel engine. (08 Marks)
- 8 a. What do you understand by microbiological degradation? What are preventive measures? (06 Marks)  
b. What is 'Intelligent engine'? Explain 'Camless concept' for marine diesel engine and its advantages. (10 Marks)  
c. Explain hot corrosion and cold corrosion on marine diesel engine. (04 Marks)

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**Sixth Semester B.E. Degree Examination, Dec.2016/Jan.2017**  
**Marine Internal Combustion Engine – II**

Time: 3 hrs.

Max. Marks:100

**Note: Answer FIVE full questions, selecting at least TWO questions from each part.**

**PART – A**

- 1 a. Write a note on different types of vibrations acting on main engine? Also state the measures to counter vibration. (10 Marks)
- b. What is balancing of an engine? What will be the effect of an unbalanced engine? (10 Marks)
- 2 Draw and explain starting air system. (20 Marks)
- 3 What is an indicator diagram? List its significance. Draw the diagrams for following 4 faults and explain their causes, indications and effects.  
i) Early ignition.  
ii) Late Ignition  
iii) After Burning  
iv) Leaky fuel injector. (20 Marks)
- 4 a. Explain following lube oil additives in detail:  
i) Detergents  
ii) Dispersants  
iii) Antioxidants  
iv) Antifoam additives (12 Marks)
- b. Explain the reasons for liner wear. (08 Marks)

**PART – B**

- 5 a. Write a short note on heat exchangers? Draw the following:  
i) Shell and tube type heat exchanger. (12 Marks)
- ii) Plate type heat exchanger. (08 Marks)
- b. Write a note on free piston engine gasifiers. (08 Marks)
- 6 a. What are the checks to be carried out to test alarms? (Daily, Monthly and Annually). (06 Marks)
- b. Explain the concept of intelligent engine and its goals. (14 Marks)
- 7 a. Write the procedure for liner removal. (14 Marks)
- b. Write the checks to be carried out on piston rings during maintenance. (06 Marks)
- 8 a. What are the main goals of intelligent engines? (08 Marks)
- b. Write the Marpol Annex 6 regulations for control of NO<sub>x</sub>.  
i) Tier I  
ii) Tier II  
iii) Tier III (12 Marks)

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**Sixth Semester B.E. Degree Examination, Dec.2017/Jan.2018**  
**Marine Internal Combustion Engine – II**

Time: 3 hrs.

Max. Marks:100

**Note: Answer any FIVE full questions, selecting  
atleast TWO questions from each part.**

**PART – A**

- 1 a. Draw and explain spill valve type fuel pump? (08 Marks)  
b. What do you understand by 'variable injection timing'? (07 Marks)  
c. What are the causes for engine vibration? (05 Marks)
- 2 a. Describe starting procedure of auxiliary engine. (10 Marks)  
b. What is crack maneuvering? Explain crash maneuvering procedure? (07 Marks)  
c. Mention safety interlocks on a marine diesel engine. (03 Marks)
- 3 a. Draw and explain, construction and working of a engine indicator instrument in detail. (10 Marks)  
b. Discuss with related indicator diagram, causes of poor combustion in a diesel engine cylinder when  
(i) Fuel injection too late (10 Marks)  
(ii) Fuel injection too early.
- 4 a. Explain linear wear and the preventive measures? (10 Marks)  
b. Name and briefly describe the various types of couplings used with geared diesel propulsion machinery. (10 Marks)

**PART – B**

- 5 a. Explain with diagram the heat exchanger and reheat arrangement in gas turbine plant. (12 Marks)  
b. Give advantages and disadvantages of marine gas turbine over marine diesel engine. (08 Marks)
- 6 a. With sketch explain how a mechanical-hydraulic governor works. (10 Marks)  
b. State minimum requirement of automation for UMS operation. (10 Marks)
- 7 a. Describe the procedure of cylinder lines removal. Explain the inspections and calibration carried on cylinder lines. (12 Marks)  
b. With sketch explain electronic governor. (06 Marks)  
c. Give trials carried on engine during test bed tests. (02 Marks)
- 8 a. What is 'Intelligent engine'? Explain 'camless concept' for modern diesel engine and its advantages. (10 Marks)  
b. Explain how lube oil qualities are damaged by microbiological degradation. Explain microbiological degradation indication, prevention measures and treatment. (10 Marks)

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2. Any revealing of identification, appeal to evaluator and/or equations without sign