

MARINE DIESEL ENGINEERING

Attempt ALL questions
Marks for each part question are shown in brackets

1. With reference to starting air: (6)
 - (a) describe what is meant by the air admission period; (4)
 - (b) describe how the air admission period is determined and controlled.

2. With reference to air coolers, explain the purpose of EACH of the following: (3)
 - (a) zinc anodes; (3)
 - (b) vent cocks; (4)
 - (c) tube fins.

3. (a) Sketch a cross section through a resilient/flexible mounting for a diesel engine, labelling the MAIN components. (8)
 - (b) State the special considerations necessary with respect to the engine attachments and pipework when using the type of mounting in part (a). (2)

4. (a) Describe the events leading to a crankcase explosion. (4)
 - (b) State the methods of detecting the events of part (a) (2)
 - (c) State how the severity of a crankcase explosion may be limited. (4)

5. With reference to microbiological contamination of fuel oil, explain EACH of the following: (4)
 - (a) why modern fuels are more prone to infection; (4)
 - (b) the indications that there is contamination in the fuel; (3)
 - (c) the process of removing the contamination. (3)

6. With reference to diesel engine cooling water:
 - (a) explain why the water requires treatment; (6)
 - (b) describe the type of treatment that should be used. (4)

7. The air start pipework on a diesel engine attached to the cylinder head is becoming extremely hot.

Explain EACH of the following:

- (a) the probable cause; (3)
- (b) the consequences of this situation and the immediate action to be taken; (4)
- (c) how this problem can be minimised. (3)

8. With reference to the removal of a bottom end bearing of a large medium speed diesel engine:

- (a) describe the safety precautions necessary before commencement; (4)
- (b) describe the removal procedure. (6)

9. With reference to friction clutches, state EACH of the following:

- (a) THREE advantages of a wet clutch; (3)
- (b) THREE disadvantages of a wet clutch; (3)
- (c) ONE advantage of multiple plates; (1)
- (d) THREE disadvantages of multiple plates. (3)

10. With reference to reduction gearing, explain EACH of the following:

- (a) the purpose of the magnetic filter in the lubricating oil system; (3)
- (b) why the surface finish of the gear teeth is important; (4)
- (c) why EP lubricating oil is preferred. (3)