AUXILIARY EQUIPMENT PART I

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

1. (a) Sketch a section through a bilge injection (emergency bilge) valve. (8)

   (b) Describe how the valve sketched in part (a) is tested. (2)

2. Describe, with the aid of a sketch, the operation of a double acting, piston type positive displacement pump. (10)

3. (a) Sketch a relief valve suitable for use on the air side of a compressor. (7)

   (b) Explain how the valve sketched in part (a) is reset after overhaul. (3)

4. With reference to accumulators in pneumatic control systems:

   (a) state the TWO main purposes; (2)

   (b) explain why EACH of the purposes stated in part (a) are required. (8)

5. With reference to a hydraulic steering gear, describe TWO methods that may be used to prevent the idle pump from motoring. (10)

6. (a) Describe, with the aid of a sketch, a pilgrim nut. (5)

   (b) Explain how the pilgrim nut is used to ensure correct fitting of a keyless propeller. (5)

7. Sketch a shaft coupling of the flexible diaphragm type, labelling the MAIN components. (10)

8. Describe, with the aid of sketches, the fitting of a hydraulically tensioned bolt suitable for main propulsion shaft flanges. (10)

9. With reference to a.c. generators:

(a) explain why they must be synchronised before connecting in parallel; (6)

(b) list TWO devices for ensuring that synchronising is correct; (2)

(c) state how the devices listed in part (b) indicated that synchronising is correct. (2)

10. (a) State THREE devices fitted to the main breakers to protect a.c. generators that are able to run in parallel. (3)

(b) Explain why EACH device stated in part (a) is fitted. (7)