FEB 2006 Aux Equipment

State three factors that determine the rotating speed of a single phase motor in service:
Frequency
Load
# of pairs of poles on the rotar

State the meaning of the word SLIP
Difference between the revolutions between the synchronous speed of the stator field and the rotator

SLIP in a propeller:
The difference between the distance the boat should travel for a number of revolutions and the actual distance traveled of a period of time.

State FIVE devices fitted to a main distribution switchboard in order to protect AC generators that can be operated in single or parallel mode:

- Overcurrent: protects against overheating damage to machine windings
- Under Voltage: is fitted when a seveir voltage dip is experienced to protect against the machine motoring the engine. Also provides backup protection against short circuit protection. If there is no voltage being produced from the generator, it can act as a short circuit
- Reverse Power to prevent the slower machine from being motored by the faster machine
- Pref Trip Breakers: to prevent overloading the generators and to ensure the safety of essential services
- Main Closing breaker: The main source of disconnect the generator when one of the safety systems senses an error.

DESCRIBE HOW A CENTRIFUGAL PUMP OPERATES
Water enters the pump axially through the eye, then by centrifugal action continues radially and discharges around the entire circumference, the fluid in passing through the impeller receives energy from the vanes giving an increase in pressure and velocity. The velocity which is kinetic energy is partly converted into pressure energy by suitable design of the impeller vanes and the pumps volute casing

State why centrifugal pumps are not self priming
Centrifugal pumps are not sealed impellors. There is no vacuum created by the movement of the centrifugal pump alone. The force of a centrifugal pump relies on the presence of liquid to react to the centrifugal action developed by the impellor. If the water is not surrounding the impellor, it can not use the force of suction to draw in more liquid.

What is Cavatation:

Cavitation is very high pressure hammer blows caused by pressure regions occurring in the fluid flow at points where high local velocity exists, it vaporization occurs due to low pressure areas, then bubbles occur, these expand as they move with the flow and collapse when they reach a high pressure region caused by high pressure hammer blows. This can lead to pitting, noise, vibration and fall in pump efficiency.

6Advantages of CPP

- Blade Damages limited to one blade
- No need for reversing engine
- Engine can be tested in place
- Pitch can be adjusted for optimum speed
- Quicker maneuvering
- Lower maintenance cost
- Use for Engine Driven Auxilaries… PTO's off the Main Engine

4 Disadvantages of CPP

Proximity to oil to water
Initial cost is expensive
Possibility of failure
Poor steering in neutral pitch

Reference to Eletcro-Hydraulic Steering gear:

Use the solenoid valves on the steering flat, manually active the solenoids in communications with the bridge to determine course heading. There should be