



BOARD OF EXAMINATIONS FOR SEAFARERS TRUST QUESTION FOR MOTOR ENGINEER

TIME: 2HOURS

MAX. MARKS: 100

Notes:

- 1) Question Paper is divided into three groups i.e. Arithmetic, Drawings and Elementary Question.
- 2) A Candidate must obtain minimum 60% each in Arithmetic and Drawing Part and answer ten elementary questions with VIVA to the satisfaction of the Examiner.

Arithmetic (Total 42 Marks)

1. The length, breadth and height of a fuel oil tank is 4.5 Meter, 3.5 Meter and 5 Meter respectively.

a. Calculate the volume of the tank. (4)

b. If the tank is 80% full with Fuel Oil, what is the quantity of the Fuel Oil in the tank? (3)

c. If the specific Gravity of the Fuel Oil is 980 Kg per Meter Cube, what is the total weight of fuel Oil? (3)

2. Calculate the decimal points of any two of the following fractions:

$$\frac{67}{7} \quad \frac{88}{6} \quad \frac{185}{12}$$

3. Find out the Square root any two of the following number

a) 484 b) 1089 c) 676

4. One new engine consumes 145 Gms of oil in 1 hour to produce 1 BHP, then calculate:-

(a) If the engine consumed 10 Metric tons of oil in 24 Hours, How much BHP it was producing? (5)

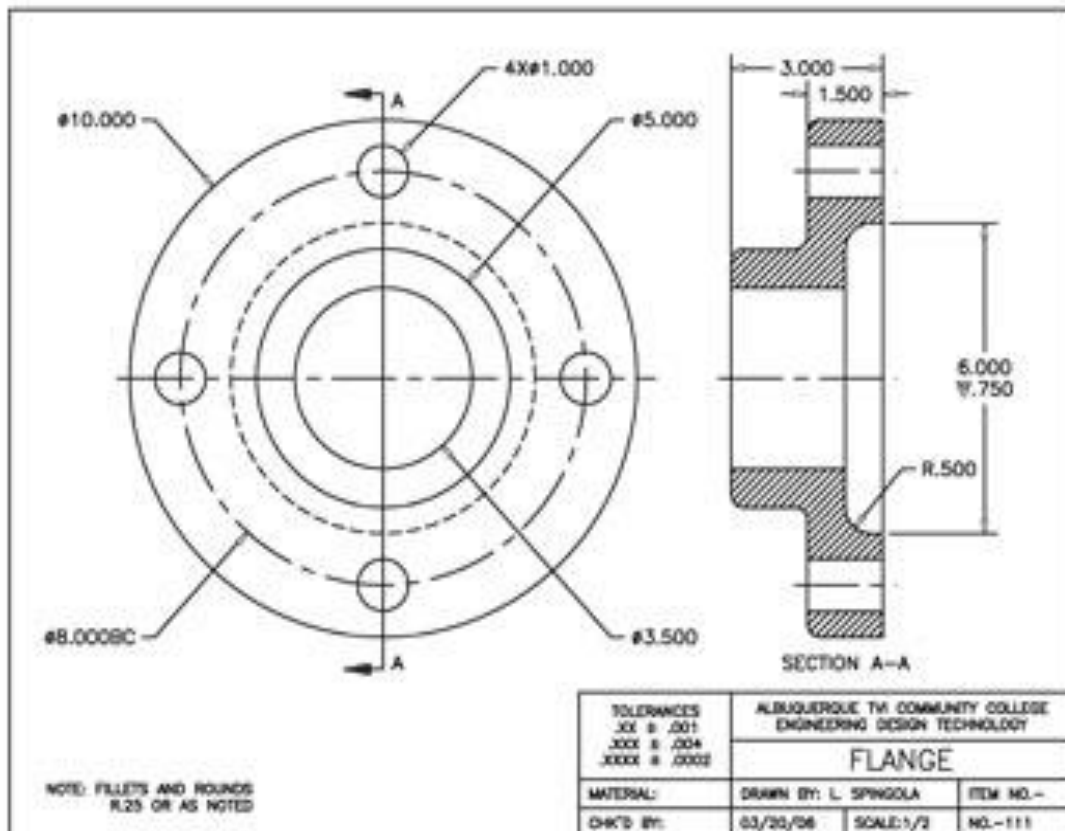
(b) If the efficiency is reduced to 80% then how much power it is producing assuming fuel consumption same. (5)

5. Total fuel oil tank capacity of vessel is 488 Meter Cube. Bunker is being supplied at the rate 85 meter Cube per hour. How long it will take to fill tanks up to 95% of the total capacity. (10)

Drawing (Total 20 Marks)

1. Sketch a Piston of a diesel Engine with the following Dimensions: **(10 Marks)**
(Mark the dimensions with double ended arrows)
 - a) Outer Diameter of Piston: 23 cms
 - b) Height of the Piston : 32 cms
 - c) Top most Ring Groove 4 cms below from top of the piston.
 - d) Gap between Grooves 1 cm (Total 3 Grooves)
 - e) Piston ring grooves width 0.8 cms.

2. From the below Drawing of a flange answer the following? **(10 Marks)**
 - a. What is the Diameter of the Flange?
 - b. What is the PCD of holes for coupling bolts?
 - c. What is the hole diameter for the Shaft?
 - d. How many holes are provided for coupling bolts?
 - e. What is total length of the coupling?



(Note: All dimensions are in centimeter)

Elementary Questions (Total 40 Marks)

1. What is the pitch of a screw type propeller? What is the material of Propellers and why?
2. What is called short Circuit in electrical system? Why it is dangerous?
3. Briefly describe the following terms of I.C. engines
 - a. Atomization of fuel.
 - b. Peak Pressure
 - c. Compression pressure
 - d. Blow Past.
 - e. Crankcase explosion.
4. What is a tele motor in Steering system? What types of pumps are used in hydraulic steering system?
5. What means are provided to prevent any part of electrical circuit becoming over heated ?
6. Define the following terms : Ampere, volt, ohm, watt.
7. Describe any type steering gear you are familiar with.
8. When the helm is put hard over and ship is going full speed ahead, what prevents the rudder returning to the midship position.
9. Name the principal parts of I. C. Engines and briefly describe their functions.
10. Describe how and oil engine is started.
11. How frequently should an I. C. Engine be opened up for examination, cleaning and its parts readjusted?
12. What instrument is used on board ship to ascertain the strength of electric current ?
13. Describe a centrifugal pump.
14. What material is used in making propeller?
15. Explain the function of air vessel fitted to a reciprocating pump.
16. In a built crankshaft how webs are rigidly secured to the pins?
17. Why a thrust block is provided in the shafting of a ship?
18. What is the slip of a propeller?
19. Describe how an alternator builds up voltage?
20. How a Transformer works?

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