

FORMULA/INFORMATION SHEET

NOTE: This information is allowed for use in the exam to assist the candidate with some questions which may appear on the examination. Some formulas may have to be transposed or changed to solve for the unknown.

THERMODYNAMICS:

$$^{\circ}\text{F} = 9/5^{\circ}\text{C} + 32 \text{ or } 1.8^{\circ}\text{C} + 32$$

$$^{\circ}\text{C} = 5/9 (^{\circ}\text{F} - 32) \text{ or } 0.56 (^{\circ}\text{F} - 32)$$

$$\text{K} = 5/9 \times ^{\circ}\text{R} \text{ or } 0.56 \times ^{\circ}\text{R}$$

Latent Heat of Evaporation for water = 2257 kJ/kg. Therefore, it takes this amount of heat to change a unit mass of a substance (water) from liquid to vapour (steam) without changing its temperature.

ELECTRICITY:

$$1 \text{ watt} = 1 \text{ volt} \times 1 \text{ ampere}$$

$$\text{Power} = \text{volts} \times \text{amperes}$$

$$\text{Transposing: amperes} = \text{power} / \text{volts} \text{ OR } \text{volts} = \text{Power} / \text{amperes}$$

*The candidate should be able to transpose (change the formula) to solve for the unknown for higher level Power Engineering examinations.

Power is expressed in watts or kW (kilowatts). 1000 watts = 1 kilowatt

Energy = power x time i.e. the answer will be in kilowatt hours.

COMBUSTION:

Air is composed of 21% oxygen and 79% nitrogen by volume.

TSASK has approved this formula sheet for use in the Fireman Boiler Operator Exam.

DO NOT MAKE ANY ADDITIONAL WRITINGS OR MARKS ON THIS SHEET OR CANDIDATES WILL NOT BE ALLOWED TO USE THE MARKUP DURING THE EXAMINATION.