

Answers of Assignment 3

1.

Version A:

- (a) The plant's thermal efficiency, **43%**
- (b) The mass flow rate of steam in kg/h, **68.86 kg/s**
- (c) The back work ratio. (Note: back work ratio = W_P/W_T) **0.0103**

Version B:

- (a) The plant's thermal efficiency, **36.4%**
- (b) The mass flow rate of steam in kg/h, **81.4 kg/s**
- (c) The back work ratio. (Note: back work ratio = W_P/W_T) **0.015**

2.

- (a) The net power developed, **270.8 MW**
- (b) The rate of heat transfer to the working fluid in the reheat process; **113.4 MW**
- (c) The thermal efficiency, **42.8%**
- (d) What would the rate of heat transfer be if steam were reheated to 550°C ? **129.7 MW**