Solution:

(1)

At the end of 2018, there are 2 million common stocks issued, and the common stockholders' equity is given by

$$Common\ Equity = Total - Preferred\ Equity = 120 - 15 = \$105\ million$$

, meaning that the book value will be:

$$Book\ Value\ Per\ Share\ (Common\ Stock) = \$\frac{105\ million}{2\ million} = \$52.50$$

(2)

The rate of return of common equity is given by:

$$ROCE = \frac{Net\ income - Preferred\ Dividend}{Average\ common\ equity}$$

Now, let us find the dividend.

The preferred dividend is given by:

$$Preferred\ dividend = \$15\ \times 0.08 = \$1.2\ million$$

Moreover, the net income is already given to be \$14 million. Also, the average common equity is calculated to be:

$$Average\ common\ equity = \frac{(120 - 15) + (112 - 15)}{2} = \$101\ million$$

Thus, we get the value as:

$$ROCE = \frac{\$14\ million - \$1.2\ million}{\$101\ million} = 12.67\%$$

(3)

Let us calculate the dividends declared as follows:

$$\begin{aligned} Dividends\ paid \\ &= Beginning\ Retained\ Earnings + Income \\ &\quad - Ending\ Retained\ Earnings \end{aligned}$$

$$= \$65.2 + \$14 - \$71 = \$8.2\ million$$

Since the dividends paid to the preferred holders is given by $\$1.2\ million$, the dividend paid to the common stockholders is given by $\$7\ million$.