

# **Problem Sets**

## **Group 5**

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**BSCS 4-4**

# Problem sets

I.  $18.31E^6 \times 2.5E^{-2}$

$\rightarrow 4.5775 \times 10^5$

Solution:  $18.31 \times 10^6$   
 $\times 2.5 \times 10^{-2}$   


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 $45.775 \times 10^{(6+(-2))}$   
 $45.775 \times 10^4$   
 $4.5775 \times 10^5$

2.  $1.45E^{-5} + 0.00502$

$\rightarrow 5.0345 \times 10^{-3}$

Solution:  $1.45 \times 10^{-5}$   
 $+ 502.0 \times 10^{-5}$   


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 $503.45 \times 10^{-5}$   
 $5.0345 \times 10^{-3}$

3.  $3.1415E^2 / 2.001E^2$

$\rightarrow 1.569965017 \times 10$

Solution:  $3.1415 \times 10^2$   
 $\div 2.001 \times 10^2$   


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 $1.569965017 \times 10^{(2-2)}$   
 $1.569965017 \times 10$

4.  $10.18E^7 - 2.12E^4$

$\rightarrow 1.017788 \times 10^8$

Solution:  $10.18 \times 10^{7-2}$   
 $- 2.12 \times 10^{4+1}$   


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 $1018.0 \times 10^5$   
 $- 0.212 \times 10^5$   


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 $1017.788 \times 10^5$   
 $1.017788 \times 10^8$

5.  $331E^{-2} \times 19.93E^{-3} \rightarrow 6.59683 \times 10^{-2}$

Solution:  $331 \times 10^{-2}$   
 $19.93 \times 10^{-3}$   


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 $6596.83 \times 10^{(-2+(-3))}$   
 $6596.83 \times 10^{-5}$   
 $6.59683 \times 10^{-2}$

II.  $313 \rightarrow 100111001 \rightarrow 1.00111001 \times 2^8$

Solution:  $313 \div 2 = 156.5$  1  
 $156 \div 2 = 78$  0  
 $78 \div 2 = 39$  0  
 $39 \div 2 = 19.5$  1  
 $19 \div 2 = 9.5$  1  
 $9 \div 2 = 4.5$  1  
 $4 \div 2 = 2$  0  
 $2 \div 2 = 1$  0  
 $1 \div 2 = 0.5$  1

2.  $1000.75 \rightarrow 111101000.11 \rightarrow 1.1110100011 \times 2^9$

Solution:

|                     |   |                        |
|---------------------|---|------------------------|
| $1000 \div 2 = 500$ | 0 | $0.75 \times 2 = 1.50$ |
| $500 \div 2 = 250$  | 0 | $0.50 \times 2 = 1.00$ |
| $250 \div 2 = 125$  | 0 |                        |
| $125 \div 2 = 62.5$ | 1 |                        |
| $62 \div 2 = 31$    | 0 |                        |
| $31 \div 2 = 15.5$  | 1 |                        |
| $15 \div 2 = 7.5$   | 1 |                        |
| $7 \div 2 = 3.5$    | 1 |                        |
| $3 \div 2 = 1.5$    | 1 |                        |
| $1 \div 2 = 0.5$    | 1 |                        |

3.  $0.5625 \rightarrow .1001 \rightarrow 1.001 \times 2^{-1}$

Solution:  $0.5625 \times 2 = 1.1250$   
 $0.1250 \times 2 = 0.2500$   
 $0.2500 \times 2 = 0.5000$   
 $0.5000 \times 2 = 1.0000$



$$4. 115.125 \rightarrow 1110011.001 \rightarrow 1.110011001 \times 2^6$$

Solution:

$$\begin{array}{rcl} 115 \div 2 & = & 57.5 & 1 \\ 57 \div 2 & = & 28.5 & 1 \\ 28 \div 2 & = & 14 & 0 \\ 14 \div 2 & = & 7 & 0 \\ 7 \div 2 & = & 3.5 & 1 \\ 3 \div 2 & = & 1.5 & 1 \\ 1 \div 2 & = & 0.5 & 1 \end{array}$$

$$\begin{array}{rcl} 0.125 \times 2 & = & 0.250 \\ 0.250 \times 2 & = & 0.500 \\ 0.500 \times 2 & = & 1.000 \end{array}$$

$$5. 55.1 \rightarrow 110111.0001100110... \rightarrow 1.101110001100110... \times 2^5$$

Solution:

$$\begin{array}{rcl} 55 \div 2 & = & 27.5 & 1 \\ 27 \div 2 & = & 13.5 & 1 \\ 13 \div 2 & = & 6.5 & 1 \\ 6 \div 2 & = & 3 & 0 \\ 3 \div 2 & = & 1.5 & 1 \\ 1 \div 2 & = & 0.5 & 1 \end{array}$$

$$\begin{array}{rcl} 0.1 \times 2 & = & 0.2 \\ 0.2 \times 2 & = & 0.4 \\ 0.4 \times 2 & = & 0.8 \\ 0.8 \times 2 & = & 1.6 \\ 0.6 \times 2 & = & 1.2 \\ 0.2 \times 2 & = & 0.4 \\ 0.4 \times 2 & = & 0.8 \\ 0.8 \times 2 & = & 1.6 \\ 0.6 \times 2 & = & 1.2 \\ 0.2 \times 2 & = & 0.4 \end{array}$$