1. Heparin sodium 800 units/hr IV
Supply: infusion pump, sol'n 25,000 units in 250 mL D5W

a. rate? $\left(\dfrac{250 \text{ mL}}{25,000 \text{ units}}\right)\left(\dfrac{800 \text{ units}}{hr}\right) = \boxed{8 \text{ mL/hr.}}$

b. hours? $\dfrac{250 \text{ mL}}{8 \text{ mL/hr}} = \boxed{31 \text{ hrs.}}$

2. ayclovir (Zovirax) 500 mg in 100 mL D5W IV over 1 hr.
Supply: pump, Zovirax 500 mg in 100 mL D5W

rate? $\boxed{100 \text{ mL/hr}}$

3. aminocaproic acid (Amicar) 24 g over 24 hr IV
have 24 g in 1,000 mL D5W

rate? $\dfrac{1000 \text{ mL}}{24 \text{ hr}} = 41.\overline{6} = \boxed{42 \text{ mL/hr}}$

4. diltiazem 10 mg/hr IV
supply: 125 mg in 100 mL D5W $\dfrac{10 \text{ mg}}{hr}\left(\dfrac{100 \text{ mL}}{125 \text{ mg}}\right) = \boxed{\dfrac{8 \text{ mL}}{hr.}}$

5. furosemide 4 mg/hr.
supply: 100 mg in 100 mL D5W $\dfrac{4 \text{ mg}}{hr}\left(\dfrac{100 \text{ mL}}{100 \text{ mg}}\right) = \boxed{4 \text{ mL/hr}}$

6. insulin 15 units/hr
supply: 125 units in 250 mL $\dfrac{15 \text{ units}}{hr}\left(\dfrac{250 \text{ mL}}{125 \text{ units}}\right) = \boxed{\dfrac{30 \text{ mL}}{hr}}$

$\dfrac{250}{30} = 8.3 \text{ hrs}$ or $\boxed{8 \text{ hr. 20 mins}}$

7. nitroglycerin 50 mg in 250 mL D5W over 24 hrs.

$$\frac{250mL}{24hrs} = \boxed{10.4 \, mL/hr.}$$

8. heparin 1200 units/hr
   supply: 25,000 units in 500 mL D5W

$$\frac{1200 \, units}{1 hr} \left(\frac{500 \, mL}{25,000 \, units} \right) = \boxed{24mL/hr}$$

$$\frac{500mL}{24} = 20.8 \, hrs. \rightarrow \boxed{21 \, hrs}$$

9. insulin 23 units/hr.
   supply: 250 units in 250 mL NS

$$\frac{23 \, units}{hr} \left(\frac{250mL}{250 \, units} \right) = \boxed{\frac{23mL}{hr}}$$

$$\frac{250mL}{23mL} = 10.9 \, hrs. \quad \boxed{11 \, hrs}$$

10. Streptase 100,000 international units/hr for 24 hrs IV
    supply: 750,000 international units in 250mL NS

$$100,000 \left(\frac{250 \, mL}{750,000} \right) = \boxed{33mL/hr}$$

Proficiency Test

1. 1000mL D5NS run 150 mL/hr.
   supply: IV bag 1000 mL D5NS

$$\frac{1000mL}{150mL} = \boxed{6.6 \, hrs}$$

$$\frac{150mL}{hr} \left(\frac{10 \, gtt}{1 \, mL} \right) \left(\frac{1 \, hr}{60 \, min} \right) = \boxed{25 \, gtt/min} \quad macro$$

   tubing size: macrotubing

2. 100 mL LR   12 noon - 6pm IV = 6 hrs/360 mins

$$\frac{100\,mL}{360\,min}\left(\frac{60\,gtt}{1\,mL}\right) = 16.7\,gtt/min$$

tubing size: microtubing

3. 150 mL NS over 3 hrs.
Supply: 250 mL

   a. drain 100 mL through tubing

   b. $\frac{150\,mL}{3\,hr}\left(\frac{1\,hr}{60\,min}\right)\left(\frac{15\,gtt}{1\,mL}\right) = \frac{2250\,gtt}{180\,min} = 12.5 \rightarrow \boxed{13\,gtt/min}$

   c. macrotubing

4. 500 mL D5W IV KVO. For 24 hrs.
   $\frac{500\,mL}{24\,hr} = \boxed{21\,mL/hr}$

5. doxycycline 100mg IVPB daily   directions: 250mL/D5W
   Supply: 100mg powder   over 1 hr. 10 gtt/mL
   reconstitute 250mL D5W w/ powder

   $\frac{250\,mL}{1\,hr}\left(\frac{10\,gtt}{1\,mL}\right)\left(\frac{1\,h}{60\,min}\right) = 41.6 \rightarrow \boxed{42\,gtt/min}$

6. aminophylline 500mg in 250mL D5W   8 hrs.
Supply: vial labeled 1g in 10mL   microdrip tubing

   $\frac{10\,mL}{1\,g}\left(\frac{500\,mg}{1}\right)\left(\frac{1\,g}{1000\,mg}\right) = \boxed{5\,mL}$

                                    micro tube: 31 gtt/min

   $\frac{250\,mL}{8\,hr} = 31.2 \rightarrow \boxed{31\,hrs}$

7. 125mL/hr. Mefoxin 1g in 75mL DSW q6h   p. 498
   over 1 hr.   24 hr intake?   4 times

$125(24) = 3,000 \text{ mL}$
           +
$75(4) = \underline{300 \text{ mL}}$
          3300 mL

8. 1000mL D51/2NS @ 90 mL/hr

   90mL/hr $\dfrac{1000 \text{ mL}}{90 \text{ mL}} = 11.1 \text{ hrs} = \sim 11 \text{ hrs}$

9. 500 mL aminophylline 0.5g @ 50mL/hr.   mg/hr?

   $0.5g \left(\dfrac{1000 \text{ mg}}{1 g} \right) = \dfrac{500 \text{ mg}}{500 \text{ mL}} = 1 \text{ mg/mL}$ $\dfrac{50 \text{ mL}}{\text{hr}} = 50 \text{ mg/hr}$

10. Bactrim 5mL IVPB q6h
    supply: 5mL, one 5-mL vial per 75mL DSW   over 60-90mins

       drain about 25mL, add the 5mL Bactrim. 75mL/hr.
    60mins 75mL @ 75mL/hr.

11. $\dfrac{150}{4} \times 3 = 112.5 \text{ mL}$ Isocal $150 - 112.5 = 37.5 \text{ mL}$
                                                              H_2O

12. $\dfrac{500}{2} = 250 \text{ mL}$ Vivonex $500 - 250 = 250 \text{ mL } H_2O$

13. $\dfrac{400}{4} = 100 \text{ mL}$ Osmolite $400 - 100 = 300 \text{ mL } H_2O$

14. 500mL Isocal
     no H_2O