HW 4.3 Key

$n = 36$

1. A 1000 par value 18-year bond with semiannual coupons of 55 is purchased to yield 4% convertible semiannually. 7 years and 4 months after purchase, the bond is sold at a price which maintains the same yield for the buyer. Calculate this price. [7.d-e #01]

A) 1640 B) 1631 C) 1648 D) 1656 E) 1664

$$B_{14} = 55\,a_{\overline{22}|2\%} + 1000v^{22}$$

$$= 1618.03$$

$$B_{14\,2/3} = B_{14}(1.02)^{2/3} = \boxed{1639.53}$$

↑ 4 months is 2/3 of a semi-annual period.

2. A 100 par value 15 year bond provides 10% semiannual coupons. The yield rate is 8% convertible semiannually. What is the flat price (i.e., the money that actually changes hands if the bond is sold, ignoring expenses) 9.3 years after issue at the same yield rate? [7.d-e #06]

A) 111.99 B) 109.75 C) 110.31 D) 110.87 E) 111.43

$n = 30 \quad F = 100 \quad r = 0.05 \quad i = 0.04$

$$B_{18} = 5\,a_{\overline{12}|4\%} + 100v^{12}$$

$$= 109.39$$

$$B_{18.6} = B_{18}(1.04)^{0.6} = \boxed{111.99}$$

3. A 1000 par value 11-year bond with semiannual coupons of 55 is purchased to yield 6% convertible semiannually. Find the market price of the bond 4 years and 5 months after purchase using the same yield rate.

A) 1269 B) 1250 C) 1256 D) 1262 E) 1275

$n = 22 \quad F = 1000 \quad Fr = 55 \quad i = 3\%$

$$B_8 = 55\,a_{\overline{14}|3\%} + 1000v^{14}$$

$$= 1282.4018$$

$$B_{8\,5/6} = B_8(1.03)^{5/6} = 1314.3826$$

$$\text{Clean Price} = B_{8\,5/6} - \tfrac{5}{6}(55) = \boxed{1268.55}$$

4. A 1000 par value 11-year bond with semiannual coupons of 65 is purchased to yield 9% convertible semiannually. Find the dirty price of the bond 5 years and 5 months after purchase using the same yield rate.

A) 1227 B) 1233 C) 1239 D) 1245 E) 1251

$$P = 65\,a_{\overline{22}|4.5\%} + 1000v^{22}$$

$$B_{10} = 65\,a_{\overline{12}|4.5\%} + 1000v^{12} = 1182.3716$$

$$B_{10\,5/6} = B_{10}(1.045)^{5/6} = \boxed{1226.55}$$

5. A 1000 par value 18-year bond with semiannual coupons of 50 is purchased to yield 6% convertible semiannually. Find the clean price of the bond 4 years and 5 months after purchase using the same yield rate.

A) 1368 B) 1361 C) 1375 D) 1382 E) 1388

$$P = 50\,a_{\overline{36}|3\%} + 1000v^{36}$$

$$B_8 = 50\,a_{\overline{28}|3\%} + 1000v^{28} = 1375.2822$$

$$B_{8\,\frac{5}{6}} = B_8(1.03)^{5/6} = 1409.5793$$

$$\text{Clean Price} = B_{8\,5/6} - \tfrac{5}{6}(50) = \boxed{1367.91}$$