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UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN
Actuarial Science Program
DEPARTMENT OF MATHEMATICS

Math 370 (Z)
Exam 2/FM Preparation

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Bonds
Summary Quiz

- (1) A 30-year 1,000 par value bond with 10% annual coupons has an annual effective yield rate of 8%. Find the price of the bond.

(A) 1,175 (B) 1,200 (C) 1,225 (D) 1,250 (E) 1,275

$$P = 100 \cdot a_{\overline{30}|.08} + 1000 \cdot v_{.08}^{30} = \underline{\underline{1,225.16}}$$

- (2) A 20-year 1,000 par value bond with 6% annual coupons is selling for 900. Find the annual effective yield rate on this bond.

(A) 6.54% (B) 6.74% (C) 6.94% (D) 7.14% (E) 7.34%

$$900 = 60 \cdot a_{\overline{20}|i} + 1000 \cdot v_i^{20} \Rightarrow i = \underline{\underline{6.9395\%}}$$

- (3) A 30-year 1,000 par value bond has 12% coupons payable semi-annually. The annual effective rate of interest is 9%. Find the price of the bond.

(A) 1,135 (B) 1,235 (C) 1,335 (D) 1,435 (E) 1,535

$$j = (1.09)^{1/2} - 1 = .044031$$
$$P = 60 \cdot a_{\overline{60}|j} + 1000 \cdot v_j^{60} = \underline{\underline{1,335.35}}$$