28 CREDIT ANALYSIS MODELS

1. To analyze the credit risk of a company with significant off-balance sheet liabilities, which credit model is most appropriate?
   (A) Reduced form model.
   (B) Structural model.
   (C) Econometric model.

2. Under the structural model, owning risky debt is equivalent to a long position in a similar risk-free bond and a:
   (A) long position in a call option on the assets of the company.
   (B) short position in a put option on the assets of the company.
   (C) long position in a put option on the assets of the company.

3. Which key input into a reduced form model can be estimated using a regression model?
   (A) Recovery rate.
   (B) Loss intensity.
   (C) Default intensity.

4. An ABS security backed by a highly granular collateral pool composed of hundreds of clearly defined loans, analysis of collateral pool can be done using:
   (A) summary statistics for analyzing credit risk.
   (B) examination of individual loans.
   (C) distribution waterfall analysis.

5. Which of the following factors is least likely a determinant of term structure of credit spreads?
   (A) Financial conditions in the market.
   (B) Equity market volatility.
   (C) Existence of off-balance sheet liabilities.

6. If investors are expecting an impending recession, credit spreads would most likely:
   (A) widen.
   (B) remain unchanged.
   (C) narrow.

7. Using the structural model, the value of the put option on the assets of the company is equal to:
   (A) value of the risky bond minus value of the risk-free bond.
   (B) the value of the call option on assets of the company.
   (C) credit valuation adjustment of the bond.

8. Credit scores and credit ratings are both:
   (A) qualitative ratings.
   (B) cardinal rankings.
   (C) ordinal rankings.

9. A corporate bond has one year to maturity with a probability of default of 2.05% and a recovery rate of $32.00 per $100 par value. If an investor holds $100,000 of par value, what is the expected loss?
   (A) $2,050.
   (B) $1,394.
   (C) $656.

10. Credit valuation adjustment is most likely:
   (A) higher when the probability of survival is higher.
   (B) higher when the recovery rate is higher.
   (C) the sum of present values of expected losses.

11. Fico scores are inversely related to the:
   (A) number of 'hard' inquiries.
   (B) length of credit history.
   (C) variety of credit types used.

12. Alan Barding is a bank analyst currently reviewing data on the credit scores of 3 individuals who have applied for a bank loan. The credit scores for the 3 individuals are shown below:

Individual	Credit score
A	700
B	440
C	350

Which of the following conclusions is Barding least likely to draw?
   (A) Individual B is less likely to default than individual C.
   (B) Individual C is twice as likely to default as individual A.
   (C) Individual A has a lower credit risk than individual B.

13. If the annual hazard rate for a bond is 1.80%, the probability that the bond does not default over the next three years is closest to:
    (A) 95.20%
    (B) 94.70%
    (C) 96.30%

14. Higher rated bonds have lower:
    (A) price.
    (B) returns.
    (C) credit spreads.

15. Under the structural model, owning equity in a company is equivalent to:
    (A) long position in a call option on the assets of the company.
    (B) short position in a put option on the assets of the company.
    (C) long position in a call option on the firm's debt.

16. As compared to other secured debt, investors in a covered bond have
    (A) an embedded conversion option.
    (B) recourse rights.
    (C) an embedded put option.

17. Mihor Kotak is evaluating the impact of a ratings upgrade on 1Team bonds. The bonds have a modified duration of 5.88 and the current credit spread on the bonds is 60 bps. After the upgrade, Kotak expects that the spreads will narrow by 15bps. Based on Kotak's expectations, what will be the estimated change in the price of the bond if the upgrade occurs?
    (A) 0.38%
    (B) 8.82%
    (C) 0.88%

18. Which of the following statements regarding evaluating credit risk of Asset Backed Securities (ABS) is least accurate?
    (A) Unlike for corporate debt, structural and reduced form models are not appropriate.
    (B) The analysis should entail consideration of the composition of the collateral pool and the cash flow waterfall.
    (C) Credit rating agencies do not use the same credit ratings for ABS as for corporate debt.

19. Upward sloping credit curve is most likely an indication of:

(A) upward sloping benchmark curve.
(B) expectations of an economic expansion.
(C) expectations of a recession.

20. Credit scores are most likely to be used for:
(A) small businesses.
(B) ABS.
(C) sovereign bonds.

21. Zack Ma is evaluating a five-year, 4% Zem bond, Ma has calculated the CVA on the bond to be $2.12 per $100 par. Current benchmark rates are flat at 3%. The credit spread on the bond is closest to:
(A) 0.21%
(B) 0.46%
(C) 0.97%

22. An investor in an ABS would face which risks on account of the ABS servicer?
(A) Operational and counterparty risk.
(B) Credit and concentration risk.
(C) Operational and concentration risk.

23. Which of the assumptions stated by Scowen regarding the reduced form model is most accurate?
(A) Assumption 3.
(B) Assumption 2.
(C) Assumption 1.

24. Calculate the CVA on a 1.75%, 1-year, $100 par annual pay bond with recovery rate of 70% and probability of default of 2%. Assume that the 1-year risk-free rate is 2%.
(A) $0.59
(B) $1.12
(C) $1.89

25. Perez Zinta has collected the following information on a 3-year, 3% corporate bond.

Year	Exposure	LGD	PD	PS	Expected Loss	DF	PV of Expected Loss
1	103.96	41.585	1.80%	98.200%	0.749	0.9756	0.73
2	103.49	41.395	1.77%	96.432%	0.732	0.9518	0.70
3	103.00	41.200	1.74%	94.697%	0.715	0.9286	0.66
						CVA	**2.091**

Given a 3-year risk-free rate of 1.50%, Calculate the IRR of the bond assuming that default

occurs in year 2.

(A) -20.60%

(B) -13.37%

(C) -25.48%

26. Using the information in Exhibit 1, the expected exposure after one year is closest to:

(A) $1,146.98.

(B) $1,066.98.

(C) $1,023.76.

27. Using information in Exhibit 2, the value of the Sleepy Bond is closest to:

(A) $9,500.00.

(B) $9,433.50.

(C) $9,566.27.

28. As compared to otherwise identical corporate debt, securitized debt is least likely to have:

(A) the same risk premium.

(B) lower cost for the issuer.

(C) higher leverage for the issuer.

29. Scowen's comment regarding option pricing theory and structural models is best described as:

(A) inaccurate, as structural models value risky debt by deducting the value of a call option on the company's assets from the value of risk free debt.

(B) accurate.

(C) inaccurate, as structural models value risky debt by adding the value of a put option on the company's assets to the value of risk-free debt.

30. When assessing a company's credit risk using structural models, which of the following statements is most accurate?

(A) Owning equity is economically equivalent to owning a risk free bond and simultaneously selling a put option on the assets of the company.

(B) Owning debt is economically equivalent to owning a European call option on the company's assets.

(C) Structural models do not account for the impact of interest rate risk of the value of a company's assets.

Freeman LLC, is a large investment firm based on the East Coast of the United States. The company manages a range of investment funds with several different objectives

but focuses mainly on fixed income investments. Josh Scowen is a credit analyst who has just taken up a position with the firm and is currently familiarizing himself with the various models and techniques used by Freeman.

Scowen's first task is to assess the present value of the expected loss (CVA) on a bond issued by Dreamy, Inc., an online retailer of designer fashion products. The company expanded rapidly two years ago, but business conditions have deteriorated recently. Scowen's supervisor is concerned that the company may run into serious trouble soon.

Exhibit 1: Dreamy Bond

Par	$1,000
Annual coupon	8%
Time to maturity	2 years

Note: the risk-free rate of return is 1.22% (assume a flat yield curve).

Freeman also makes extensive use of reduced form and structural models to assess credit risk. Scowen's supervisor has asked him to review the details of the approaches Freeman uses.

Scowen recalls using a reduced from model at a previous firm and believes that the following three assumptions are valid:

Assumption 1: The company's liabilities can be modelled as a single zero-coupon bond.

Assumption 2: The risk-free interest rate is constant.

Assumption 3: The probability of default and the recovery rate are not constant.

Freeman has recently used a reduced form model to analyze the credit risk of a zero-coupon bond issued by Sleepy, Inc. Exhibit 2 lists some of the details of the simple reduced form model.

Exhibit 2: Sleepy Bond, Reduced Form Model

Coupon:	Zero
Face value:	$10,000
Time to maturity:	1 year
Hazard rate:	0.02
Loss given default:	35%
One-year, default-free, zero-coupon bond price ($1 par):	0.95
Credit valuation adjustment:	66.50

Scowen also has a background in option pricing theory from a previous role and is confident that he can put this experience to good use when using a structural model. He believes that structural models value risky debt of a company by deducting the

value of a put option on a company's assets from the value of otherwise identical risk-free debt.

31. Zack Ma is evaluating a 10-year, 4% Tesa bond. Ma has calculated the CVA on the bond to be $1.19 per $100 par. Ma is considering the impact of a new patent granted to Tesa. After careful analysis, Ma concludes that the probability of default would most likely decrease on the bond. After incorporating the revised probability in his analysis, Ma will most likely conclude that:

(A) both the CVA and the credit spread will be higher.

(B) both the CVA and the credit spread will be lower.

(C) only the credit spread will be lower; the impact on CVA will depend on changes in benchmark rates.

32. Which of the following two securities are most likely used to calculate the term structure of credit spreads?

(A) A corporate issuer's zero coupon bond and a default free zero coupon bond.

(B) A corporate issuer's coupon paying bond and the same issuer's zero coupon bond.

(C) A corporate issuer's senior debt and the same issuer's subordinated debt.