12. (2.5 points)

The following information is taken from a company's 2016 Annual Statement (all dollar figures are in millions):

Statutory surplus	\$200
Deferred tax assets	\$25
Unearned premium reserve	\$150
Undiscounted loss reserve	\$400

Assume the following:

Written premium per year	\$300
Cost of capital	12%
Tax rate	35%
Pre-paid acquisition cost	25%
Discount factor for loss reserves	80%
Pre-tax income earned per year	\$50
Cost of liquidation	\$30

a. (1 point)

Calculate the invested capital used for valuation of the company as of December 31, 2016.

b. (0.5 point)

Calculate the present value of future net income as of December 31, 2016.

c. (1 point)

Based on the calculations in part a. and part b. above, fully describe whether shareholders would prefer liquidation or continuous operation of this company.

CONTINUED ON NEXT PAGE

- Premium in Schedule P Part 1 is calendar year
- Loss & LAE includes: Paid, Case Basis Unpaid, Bulk & IBNR for Loss, DCC, A&O
- Schedule P data is presented net of paid (and possibly unpaid S&S) so S&S is not used in the ratio calculation process

Common errors included:
- Not including prior accident year premium earned during calendar year 2016
- Adding and subtracting S&S from paid and/or unpaid loss
- Not including A&O
- Not including paid amounts in the loss ratio

QUESTION: SPRING 2018 EXAM 6U, QUESTION 12	
TOTAL POINT VALUE: 2.5	**LEARNING OBJECTIVES: C1**
SAMPLE ANSWERS	
Part a: 1 point	

Sample 1
Equity in UEPR = 150 x 25% = 37.5
Equity in Undiscounted loss reserve = 400 x (1-80%) = 80
Total = 37.5 + 80 + 200 = 292.5
Invested Capital = 317.5 – 25 = 292.5

Sample 2
Surplus + UEPR (acq cost %) + rsv (discount factor) – DTA
200 + 150(.25) + 400(1-.8) – 25 = 292.5 Million

Sample 3
UEPR equity = .25 x 150 = 37.5
Un Disc Rx equity = 400 - .8 x 400 = 80
PHS = 200
DTA = 25
Invested capital = 37.5 + 80 + 200 – 25 = 292.5

Sample 4
Figures in $M
1 – Equity from UEPR -> 150(.25) = 37.5
2 – Equity from reserve discount -> 400(1-.8) = 80
3 – DTA -> 25
4 – Surplus -> 200
Invested Capital = 1 + 2 – 3 + 4 = 292.5.

Sample 5
Invested capital = 200 + 25% * 150 + 400*(1-80%) – 25 = 292.5

SAMPLE ANSWERS AND EXAMINER'S REPORT

Part b: 0.5 point

Sample 1
50 x (1-35%) / 12% = 270.83

Sample 2
$50 x (1-35%) = 32.5
32.5 x (1 / (1-1/1.12)) – 32.5 = 303.3 – 32.5, 270.8

Sample 3
50(1-.35) / .12 = 270.83

Sample 4
((50/12%) (1-35%)) = 270.83 mil

Sample 5
(50)(.65) / 0.12 = 270.8

Sample 6
$50 (1-.35) = $32.5
$32.5 / 0.12 = $271

Sample 7
Income after tax = 32.5
PV of future income of 32.5 in perpetuity = 32.5 / .12 = 270.83

Part c: 1 point

Sample 1
Difference between invested capital and PV Future net Income = 292.5-270.83=21.67
Cost of liquidation = 30
As the cost of liquidation is higher, it only makes sense for shareholders to continue with the operation of this company.

Sample 2
NPV Income < Invested Capital   so company is unprofitable
270.83   292.5

292.5-270.83 = 21.67 <30   so cannot liquidate yet

Sample 3
Shareholders prefer to liquidate the company as the amount they would receive in liquidation (net of liquidation costs) is greater than the company value i.e. 317.5-30=287.5>270.83

Sample 4
Note – correctly used the results calculated for parts a. and b. even if the answers for parts a. and b. were incorrect.

300.83 (before liq cost)
270.83>251.9 do not liquidate profitable.

The income post tax is greater than the inv cap.

EXAMINER'S REPORT

Candidates were expected to calculate the invested capital used for valuation as well as the present value of future net income and relate it to whether shareholders would prefer liquidation or continuous operation.

Part a

Candidates were expected to calculate the invested capital used for valuation of the company

Common errors included:
- Not including a component: UEPR, Surplus, Loss Reserve, DTA
- Miscalculating UEPR or Loss Reserve. For example, using 80% instead of (1-80%) for the Loss Reserve calculation

Part b

Candidates were expected to calculate the after-tax income then use the cost of capital to get NPV.

Common errors included:
- Not doing the present value of the income or incorrect formula
- Not reducing the income for taxes

Part c

Candidates were expected to compare the profitability of the company with the cost of liquidation, then decide if to continue operations or liquidate.

Common errors included:
- Not comparing the company's profitability to the cost of liquidation.
- Drawing the correct conclusion but using assets and liabilities vs. Invested capital and Present Value of Net Income.

QUESTION: SPRING 2018 EXAM 6U, QUESTION 13	
TOTAL POINT VALUE: 4	LEARNING OBJECTIVES: C1
SAMPLE ANSWERS	