Financial Accounting: Liabilities & Equities

The expected return is included in the pension expense unless you are told otherwise.

Question 1 (30 marks)

Computer question

This question is based on the following data.

Drebus Entertainments Ltd. instituted a defined benefit pension plan in the year 20X1, effective January 1, 20X2. Terms of the pension plan follow:

* Current service cost will be fully funded each December 31, plus or minus any actuarial or experience gains related to the pension obligation. Experience gains and losses related to the difference between actual and expected earnings on fund assets will not affect plan funding in the short run, as they are expected to offset over time.
* Employees will be granted past service. The past service obligation, valued using the projected benefit actuarial cost method, is €3,750,000 as of January 1, 20Xl.
* Past servicecost will be funded over 15 years, through payments of €480,000 made each December 31 beginning on December 31, 20Xl.
* The EPFE of the employee group earning past service is 16 years.
* The assumed earnings rate on plan assets is 7%.

Data for the first three years of the plan

**20X2 20X3 20X4**

Current service cost €915,000 €975,000 €1,074,000

Actual return on fund 0 68,250 280,800

Increase (decrease) in actuarial 0 (67,500) 0
liability at year end due to change in assumptions

Benefits paid to employees at end of year 0 15,000 52,500

ARWL for all employees 10 years 14 years 17 years

Required

1. Prepare a spreadsheet containing all relevant pension information for the years 20x2, 20x3, and 20x4. The company follows the practice of amortizing actuarial gains and losses to pension expense when the amount at the beginning of the year is outside the 10% corridor. (**27 marks**; 9 marks per year)

2. Prepare journal entries to record pension expense and funding for all years. **(3 marks)**

Procedure

1. Open the file FA3L7Q1 on your data disk. This file contains three spreadsheets, 20x2, 20x3, and 20x4. Click 20x2.

2. Note that the format is similar to Computer illustration 7-1. The data table is in cells A5 to B18, the calculations for pension funding are in cells A20 to B25, the corridor test is in cells A27 to D37, and the pension spreadsheet is in A39 to G57. There are three worksheets in this file, one for each of the three years.

3. In the 20x2 spreadsheet, enter the correct formulas in cells B22 to B25 to calculate pension funding.

4. Enter formulas or cell references in cells B47 to E56 to complete the worksheet for the year 20x2. The formulas in columns F and G and the totals have been entered for you.

5. Enter the correct formulas in cells B30 to D37 to complete the corridor test. The formulas in column D have been pre-entered for you to determine whether the amortization is to be included or not.

6. Save your file.

1. Copy and paste cells A20 to G57 into a word-processing document.
2. Using the 20x3 and 20x4 spreadsheets, complete the same calculations for the years 20x3 and 20x4.

Hint: If you used formulas in your previous calculations, you can copy the 20x2 year over to the worksheet pages 20x3 and 20x4 to make your calculations faster, with a few other changes to be made. Make these changes carefully and thoroughly.

9. Save your file.

10. Copy and paste cells A20 to G57 into your word-processing document for both the years 20x3 and 20x4.

11. Complete Requirement 2 and type the solution in your word-processing document.

**Source:** Thomas Beechy and Joan Conrod, *Intermediate Accounting*, Vol. 2, First Edition (Toronto: McGraw-Hill Ryerson, 2000), Question A20-26, page 1168. Adapted with permission.

Question 2 (8 marks)

Multiple choice (2 marks each)

a. What is the current service cost for 20X5 for a pension plan whose pension benefit formula considers estimates of future compensation levels?

1) The present value of benefits earned by employees in 20X5 based on current salary levels.

2) The increase in accrued pension obligation for 20X5 less interest cost on the beginning balance in the accrued pension obligation.

3) The nominal value of benefits earned by employees in 20X5 based on future salary levels.

4) The present value of benefits earned by employees in 20X5 based on future salary levels.

b. The following statements describe some aspect of accounting for defined benefit pension plans. Choose the *incorrect* statement.

1) A gain caused by a plan settlement is reported as part of the discontinued operations section when it is the result of ceasing to operate in a distinct operation.

2) Prior service cost must be amortized over the expected period to full eligibility.

3) Because several components of pension expense are derived from amortizing initial present values on a straight-line or similar basis, the true total cost of these items is not reflected in pension expense.

4) Pension expense can be negative.

c. Defined contribution plans and defined benefit plans are two common types of pension plans. Choose the *correct* statement concerning these plans.

1) The required annual contribution to the plan is determined by formula or contract in a defined contribution plan.

2) Both plans provide the same retirement benefits.

3) The retirement benefit is usually determinable well before retirement in a defined contribution plan.

4) In both types of plans, pension expense is generally the amount funded during the year.

d. The accumulated accrued pension obligation and plan assets at fair value are two values critical to the determination of the financial status of defined benefit plans. Choose the *correct* statement regarding items to be included in each (none of these statements is necessarily complete).

1) Ending accrued pension obligation relates primarily to past service cost.

2) Ending accrued pension obligation includes total service cost to date, interest cost to date, experience gains and losses, initial PSC, less amounts paid to the pension fund trustee.

3) Ending fair value of plan assets does not have to be the actual market value at the end of the period.

4) The difference between the ending accrued pension obligation and the market-related value of fund assets is reflected on the balance sheet as a deferred/ prepaid pension account.

**Source:** Thomas Beechy and Joan Conrod, *Intermediate Accounting*, Vol. 2, First Edition (Toronto: McGraw-Hill Ryerson, 2000), Question E20-3,
pages 1150–1157. Adapted with permission.

Question 3 (12 marks)

There are three methods to determine the annual funding requirement associated with a defined benefit pension:

a. Accrued benefits: accumulated benefit method

b. Accrued benefits: projected benefit method

c. Level contribution method

Jack Cruickshank earned €16,000 in 20X5, his first year with the TRM Company. The company’s pension plan allows 2% of final pay as a pension for each year of service rendered. Jack will likely work for 25 years, at which time his salary will be €51,602, based on a 5% annual increase. The actuarial present value of his pension entitlement, with pay projections, is €295,933 at that time. Jack is expected to live for 20 years after retirement. He will receive his pension at the end of each retirement year. The discount rate is 6%.

Required

1. Explain each of the actuarial cost methods, and calculate the funding requirement for Jack under each scheme. **(9 marks)**

2. Which funding method might Jack prefer? Why? **(1 mark)**

3. Assume that TRM Company wishes to conserve current cash balances. Which funding method would it likely prefer? Why? **(1 mark)**

4. Which actuarial cost method must be used for external reporting? **(1 mark)**

**Source:** Thomas Beechy and Joan Conrod, *Intermediate Accounting*, Vol. 2, Second Edition (Toronto: McGraw-Hill Ryerson, 2003), Question A20-29, page 1170. Adapted with permission.

Question 4 (10 marks)

Fox Company has a non-contributory defined benefit pension plan. The discount rate used by actuary was 8%. Plan amendments are expected every five years. On December 31, 20X6 (end of the accounting period and measurement date), the following information was available:

*Pension benefit obligation (actuary’s report)*

Balance, December 31, 20X5 € 90,000

Past service cost (due to plan amendment

 on January 1, 20X6) 10,000

Balance, January 1, 20X6 €100,000

Service cost 65,000

Interest cost 8,000

Pension benefits paid nil

Balance, December 31, 20X6 €173,000

*Funding report of the trustee*

Balance, January 1, 20X6 €105,000

Return on plan assets, actual 5,000

Cash received from employer 70,000

Pension benefits paid to retirees nil

Balance, December 31, 20X6, at market €180,000

Required

1. Compute net pension expense for 20X6. EPFE is 10 years. The unamortized actuarial losses to January 1 amounted to €9,700. The company wishes to use any shorter amortization period where possible. However, the company follows the practice of amortizing actuarial gains and losses to pension expense when the January 1 amount is outside the 10% corridor. Include a calculation of the corridor test and the unamortized actuarial losses carried forward at the end of the year. **(8 marks)**

2. The company uses the direct method to disclose operations on the cash flow statement. What amount will be shown as an outflow with respect to pensions? **(2 marks)**

**Source:** Thomas Beechy and Joan Conrod, *Intermediate Accounting*, Vol. 2, First Edition (Toronto: McGraw-Hill Ryerson, 2000), Question P20-5, page 1159. Adapted with permission.

Question 5 (10 marks)

The following information relates to the contributory defined benefit pension plan of Daniels Corporation. The information was prepared for the 20X5 annual financial statements and is accurate; the pension plan terms granted PSC entitlements in 20X2.

*Pension fund status as at December 31, 20X5*

Pension benefit obligation €(1,820)

Plan assets at fair value 1,017

Funded status € 803

*Financial accounting information, 20X5*

*Income statement*

Service cost €200

Interest cost 120

Return on plan assets (176)

Net amortization 163

 Net pension expense €307

*Balance sheet*

Deferred pension asset €373

*Items not yet recognized in income*

Unrecognized past service cost €950

Unrecognized loss €226

Required

The President of Daniels Corporation has asked for clarification of the following points:

a. (3 marks)

What likely caused the unrecognized loss of €226 and why is not recognized immediately?

b. (1 mark)

What is the net amortization in the calculation of net pension expense and why does it increase pension expense?

c. (3 marks)

If the plan is underfunded by €803, why does the company show a deferred pension asset of €373 on the balance sheet? That is, what does that €373 represent?

d. (2 marks)

Which of the numbers shown above are dependent on estimates? Explain.

e. (1 mark)

In general, how long is the amortization period for past period service costs?

**Source:** Thomas Beechy and Joan Conrod, *Intermediate Accounting*, Vol. 2, First Edition (Toronto: McGraw-Hill Ryerson, 2000), Question P20-6,
pages 1159–1160. Adapted with permission.

Question 6 (10 marks)

Fenerty Fabrics has a defined benefit pension plan that arose in 20X3. The following information relates to the plan:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **In thousands of €** | **20X3** | **20X4** | **20X5** | **20X6** | **20X7** |
| Plan assets (December 31) | €200 | €260 | €350 | €320 | €500 |
| Pension obligation (December 31) | 356 | 410 | 330 | 360 | 450 |
| New actuarial (gains)/losses arising in year | (4) | 56 | 21 | (45) | (46) |
| ARWL  | 10 yrs | 9 yrs | 12 yrs | 11 yrs | 15 yrs |

Required

1. Calculate the amount of actuarial gain and loss that should be included in pension expense each year, assuming that the company follows the practice of amortizing actuarial gains and losses to pension expense when the amount is outside the 10% corridor. Note that the amortization is included in pension expense in the year following the year in which it arose. Round to the nearest €100. **(4 marks)**

2. Prepare a schedule of unamortized actuarial gains and losses for carryforward, assuming that the company follows the accounting policy in Requirement (1). **(6 marks)**

**Source:** Thomas Beechy and Joan Conrod, *Intermediate Accounting*, Vol. 2, First Edition (Toronto: McGraw-Hill Ryerson, 2000), Question E20-10, page 1154. Adapted with permission.

Question 7 (20 marks)

Harrington Printers Ltd. established a formal pension plan 10 years ago to provide retirement benefits for all employees. The plan is non-contributory and is funded through a trustee, who invests all funds and pays all benefits as they become due. Vesting occurs when the employee reaches age 45 and has been employed by Harrington Printers for 10 years.

* At the inception of the plan, past service cost (PSC) amounted to €120,000.
* For accounting purposes, PSC is being amortized over 15 years (the EPFE of the employee group at the inception of the plan) on a straight-line basis.
* The past service cost is being funded over 10 years by level annual end-of-year payments calculated at 5% (see actuarial report, following).
* Each year, the company also funds an amount equal to current service cost less actuarial gains or plus actuarial losses.
* There have been no amendments to the plan since inception.
* At the beginning of 20X5, the accumulated actuarial obligation was €496,330. Opening unrecognized actuarial gains were €61,700.
* In 20X5, the average remaining service period of the employee group was estimated to be 20 years.
* The assumed average annual return on plan assets is projected at 5%.

The independent actuary’s biennial revaluation report follows.

**HARRINGTON PRINTERS LTD.**

**Non-Contributory Defined Benefit Pension Plan**

Actuarial Report, December 31, 20X5

*Current service cost*

 Computed by the projected benefits method €34,150

## Actuarial revaluation

 Experience gains for mortality €3,150

 Employee turnover 5,050 €8,200

 Reduction in pension obligation

 due to layoffs 8,000

 Decrease in accumulated pension obligation

 due to increase in discount rate 11,800

 Net actuarial gain €28,000

## 20X5 funding

 Current service cost 34,150

 Past service cost 15,541

 Less revaluation gains (28,000)

 Total cash contribution to plan €21,691

## Pension plan asset portfolio

 Market value, December 31, 20X4 €550,316

 Portfolio performance, 20X5

 Interest, dividends, and capital gains 60,674

 Market value, December 31, 20X5 €610,990

 Investment performance for 20X5 11.025%

Required

Calculate pension expense for 20X5, and the year-end balance of the accrued pension obligation. Also provide a calculation of the unrecognized actuarial gains and losses at the end of 20X5. The company follows the practice of amortizing actuarial gains and losses to pension expense when the January 1 amount is outside the 10% corridor.

**Source:** Thomas Beechy and Joan Conrod, *Intermediate Accounting*, Vol. 2, First Edition (Toronto: McGraw-Hill Ryerson, 2000), Question P20-9, pages 1161 and 1162. Adapted with permission.

Suggested solutions

Question 1 (30 marks)

**Requirement 1 (27 marks; 9 marks per year)**







**Requirement 2 (3 marks)**

20x2

Pension expense 1,411,875

 Deferred pension liability 1,411,875

Deferred pension liability 1,395,000

 Cash 1,395,000

20x3

Pension expense 1,456,650

 Deferred pension liability 1,456,650

Deferred pension liability 1,387,500

 Cash 1,387,500

20x4

Pension expense 1,541,417

 Deferred pension liability 1,514,417

Deferred pension liability 1,554,000

 Cash 1,554,000

Question 2 (8 marks)

**(2 marks each)**

1. d)

Current service cost is measured through present values, so (c) is incorrect. Projected salary must be used, so (a) is incorrect. Current service cost is calculated with reference to service, not growth in the liability, so (b) is incorrect.

2. b)

Prior service cost can also be amortized over the period to the next amendment. All other statements are correct.

3. a)

There is no assurance that both types of plans will provide the same benefits, so (b) is incorrect. The retirement benefit depends on actual contributions plus investment earnings for a defined contribution plan, so (c) is incorrect. Pension expense consists of six elements for defined benefit plans and is not equal to payments made to the trustee, so (d) is incorrect.

4. c)

Market-related values may be used, making (c) correct. The ending accrued pension obligation also includes current service cost and accrued interest, both of which are likely large, so (a) is incorrect. In (b), the statement is correct until the last phrase: amounts paid to the trustee are not deducted. The balance sheet account reflects the net status of the plan less unrecognized amounts, so (d) is incorrect.

Question 3 (12 marks)

**Requirement 1 (9 marks: 3 marks for each calculation)**

The accumulated benefit method calculates the contributions that an employer must make in order to fund the pension to which the employee is currently entitled, based on the years of service to date and on current salary.

Annual annuity earned = 2% × 1 year × €16,000.00 = € 320.00

APV = €320.00 × (PVIFA, 6%, 20) = €320.00 × 11.46992 = € 3,670.37

Funding = €3,670.37 × (PVIF, 6%, 24) = €3,670.37 × 0.24698 = € 906.51

The projected benefit method calculates the required funding based on the years of service to date but on a projected estimate of the employee’s salary at the retirement date.

Make the following changes to the projected benefit:

Life annuity earned = 2% × 1 year × €51,601.60 = € 1,032.03

APV = €1,032.03 × (PVIFA, 6%, 20) = €1,032.03 × 11.46992 = € 11,837.32

Funding = €11,837.32 × (PVIF, 6%, 24) = €11,837.32 × .24698 = € 2,923.58

The level contribution method projects both the final salary and the total years of service and then allocates the cost evenly over years of service.

For the level contribution method, the following changes are required:

Annual annuity = APV/(FVIFA, 6%, 25 years)

 = (€11,837.32 × 25) / 54.865

 = €295,933 / 54.865

 = €5,393.84

Requirement 2 (1 mark)

Jack would likely prefer the level contribution method, as it requires the largest up-front funding of his pension, making the pension more secure in the event of corporate failure. Excluding the risk of corporate failure, however, Jack should be indifferent, since his defined benefit plan specifies his eventual pension irrespective of funding.

Requirement 3 (1 mark)

The company, wishing to conserve current cash balances, would likely prefer the accumulated benefit method, which has the lowest cash requirement in early years.

Requirement 4 (1 mark)

The projected benefit (projected unit credit) method must be used for accounting and external reporting.

Question 4 (10 marks)

**Requirement 1 (8 marks: 5 for pension expense; 2 for the corridor test; and 1 for the actuarial balance carried forward)**

Pension expense

Current service cost € 65,000

Past service cost (€10,000/5\*) 2,000

Interest cost (€100,000 × 0.08) 8,000

Expected earnings (€105,000 × 0.08) (8,400)

Total expense € 66,600

\* Period until next amendment

Corridor test

Actuarial losses at January 1 € 9,700

Corridor: 10% of January 1 assets € 10,500

Amortization: 0

Balance forward: €9,700 + (€8,400 – €5,000) € 13,100

**Requirement 2 (2 marks)**

Operating activities

Cash paid to pension trustee (€ 70,000)

Note:

Outflow would likely be included in a grouping of expense outflows, but cash paid to the trustee does have to be disclosed somewhere in the financial statements, most likely in a disclosure note.

Question 5 (10 marks)

a. (3 marks)

The unrecognized loss of €226 was likely caused by experience (the experience of the plan in relation to expectations) or estimate changes (the forward effect of a change in basic assumptions). The amount need not be recognized in pension expense as long as it is less than 10% of the larger of the opening pension liability or the pension asset. The liability is larger than the assets; the corridor amount is €182 (€1,820 × 10%) at year end. Some amortization of the excess thus would likely be included annually. The amortization period is the average remaining service life. Amortization is not required for smaller unrecognized amounts because these items should average out over time. [The company may also choose to amortize a greater amount or recognize the actuarial gain or loss in income (pension expense) as incurred].

b. (1 mark)

Net amortization is amortization of PSC plus amortization of the excess portion of €226 net actuarial loss. It increases pension expense because it is an expense/loss itself.

c. (3 marks)

The plan is technically underfunded by €803, but this is not what is reflected in the financial statements to date. The balance sheet shows a deferred pension asset because payments have exceeded the amount expensed to date. That is, PSC and so on are being slowly amortized to income but being paid off faster. This is consistent with the
schedule — the plan is underfunded by €803 but still has €950 of cost to amortize.

d. (2 marks)

All pension numbers are based on estimates to some degree. Numbers that are dependent on estimates or the choice of actuarial cost method are service cost and the pension benefit obligation. As a result of the pension benefit obligation estimate, interest cost and (unrecognized) loss are also estimates. PSC is also an estimate. The return on plan assets may be based on an estimate of long-term returns or estimates of market values. While returns are more objective than other numbers, subjectivity remains. Estimates must be good faith estimates.

e. (1 mark)

Past service cost may be amortized over the EPFE or the period until the next expected revision.

Question 6 (10 marks)

**Requirements 1 and 2 (4 marks for pension expense; 6 marks for unamortized amounts)**

**Included in**

 **pension Unamortized**

 **expense amounts**

20x3

Opening balance € 0

Actuarial (gains)/losses (4,000)

Amortization of opening balance € 0 0

Closing balance (4,000)

**20x4**

Actuarial gains/losses 56,000

Amortization of opening balance

 [€(4,000) versus (€356,000 × 10%)]; 0 0

Closing balance 52,000

**20x5**

Actuarial gains/losses 21,000

Amortization of opening balance
[€52,000 versus (€410,000 × 10%)]; (€11,000/9) 1,200 (1,200)

Closing balance 71,800

**20x6**

Actuarial gains/losses (45,000)

Amortization of opening balance

[€71,800 versus (€350,000 × 10%)]; (€36,800/12) 3,100 (3,100)

Closing balance 23,700

**20x7**

Actuarial gains/losses (46,000)

Amortization of opening balance

[€23,700 versus (€360,000 × 10%)]; 0 0

Closing balance € (22,300)

Question 7 (20 marks)

**8 marks for pension expense; 6 marks for the year-end accrued obligation; and 6 marks for the unrecognized actuarial gains/losses at year end.**

Pension expense, income statement

Current service cost € 34,150

Past service cost (€120,000/15) 8,000

Interest on accrued obligation, beginning of year

(€496,330 × 5%) 24,817

Less: earnings on plan assets, estimated

(€550,316 × 5%) (27,516)

Amortization of actuarial gains (below) (333)

 € 39,118

Year-end accrued obligation

Accrued obligation, December 31, 20x4 € 496,330

Interest on accrued obligation @ 5% 24,817

Actuarial revaluation (28,000)

Current service cost 34,150

Accrued obligation, December 31, 20x5 € 527,297

Evaluation of the need for actuarial gain or loss amortization and carry forward

Cumulative unrecognized amounts, beginning of the year € 61,700 gain

Opening pension fund assets €550,316 × 10% 55,032

Excess € 6,668

Amortization (€6,668/20) € 333

New experience gains/losses, for 20x6

Actuarial revaluations (gain) € 28,000

Experience, pension assets (€27,516 – €60,674) 33,158

 € 61,158

Balance forward (€61,700 + €28,000 + €33,158 – €333) € 122,525

**100**

**100**