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AMERICAN SOCIETY OF PENSION ACTUARIES

JOINT BOARD FOR THE ENROLLMENT OF ACTUARIES

ENROLLED ACTUARIES PENSION EXAMINATION, SEGMENT A

NOVEMBER 2002 EA-2, SEGMENT A, EXAMINATION

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2002

Data for Question 1 (3 points)

Effective date: 1/1/1996.

Actuarial cost method: Frozen initial liability.

Valuation interest rate: 7% per year.

Credit balance in funding standard account as of 12/31/2001: $0.

Selected valuation results and other information as of 1/1/2002:

Actuarial value of assets	$2,100,000
Market value of assets	2,000,000
Accrued liability, entry age normal method	2,325,000
Normal cost, entry age normal method	150,000
Expected benefit payments	0

Net charges in funding standard account as of 12/31/2002: $445,600.

Normal cost plus limit adjustment as of 12/31/2002: $534,000.

Current liability as of 12/31/2002: $1,625,000.

Question 1

In what range is the deductible limit for 2002?

(A) Less than $380,000

(B) $380,000 but less than $430,000

(C) $430,000 but less than $480,000

(D) $480,000 but less than $530,000

(E) $530,000 or more

2002

Data for Question 2 (5 points)

Plan effective date: 1/1/1995.

Actuarial cost method: Frozen initial liability.

Valuation interest rate: 7% per year.

Initial accrued liability: $500,000.

Credit balance in the funding standard account as of 12/31/2001: $0.

Selected valuation results and funding standard account items as of 1/1/2002:

Present value of future benefits	$1,460,000
Market value of assets	610,000
Actuarial value of assets	630,000
Present value of future compensation	1,700,000
Expected compensation for 2002	200,000
Accrued liability, entry age normal method	625,000
Normal cost, entry age normal method	50,000
Expected benefit payments for year	0

OBRA '87 current liability (including expected increase due to benefits accruing during the plan year) projected to 12/31/2002: $700,000

RPA '94 current liability (including expected increase due to benefits accruing during the plan year) projected to 12/31/2002: $750,000

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Question 2

In what range is the deductible limit for 2002?

(A) Less than $55,000

(B) $55,000 but less than $75,000

(C) $75,000 but less than $95,000

(D) $95,000 but less than $115,000

(E) $115,000 or more

Data for Question 3 (5 points)

Plan effective date: 1/1/1987.

Actuarial cost method: Frozen initial liability.

Valuation interest rate: 7% per year.

Credit balance in funding standard account as of 12/31/2001: $25,000.

The plan was amended to increase benefits effective 1/1/2002.

Selected valuation results as of 1/1/2002:

Present value of benefits after amendment	$4,000,000
Actuarial (market) value of assets	2,200,000
Present value of future compensation	8,800,000
2002 compensation	780,000

Amortization charges for all bases in the funding standard account as of 1/1/2002:

Initial unfunded liability	$86,000
1/1/1998 base due to a change in assumed retirement rates	(15,500)
1/1/2002 base due to benefit increase	35,000

Question 3

In what range is the minimum required contribution for 2002 as of 1/1/2002?

(A) Less than $132,000

(B) $132,000 but less than $142,000

(C) $142,000 but less than $152,000

(D) $152,000 but less than $162,000

(E) $162,000 or more

Data for Question 4 (5 points)

Plan effective date: 1/1/1975.

Valuation interest rate: 7% per year.

Current liability interest rate: 5.75% per year.

Credit balance in funding standard account as of 12/31/2001: $20,000.

Selected valuation results and other information as of 1/1/2002:

Normal cost	$75,000
Actuarial (market) value of assets	1,100,000
Amortization charges:	
Due to initial accrued liability	75,000
Due to net experience losses	30,000
Due to change in actuarial assumptions	(10,000)
RPA '94 current liability	1,850,000
Expected increase in RPA '94 current liability due to benefits accruing during the plan year	60,000
Balance of unfunded old liability	250,000
Remaining amortization period for unfunded old liability	5 years
Applicable percentage of unfunded new liability	30%

Highest number of participants:

During 2001	145
During 2002	148

The plan is not exempt from the additional funding charge for 2002.

Question 4

In what range is the additional funding charge for 2002 as of 12/31/2002?

(A) Less than $91,800

(B) $91,800 but less than $97,800

(C) $97,800 but less than $103,800

(D) $103,800 but less than $109,800

(E) $109,800 or more

2002

Data for Question 5 (4 points)

Plan effective date: 1/1/1986.

Actuarial cost method: Frozen initial liability.

Valuation interest rate: 7% per year.

All amortization bases in funding standard account:

Base	Date established	Initial amount
Initial unfunded	1/1/1986	$600,000
Assumption change (charge base)	1/1/1996	60,000

Credit balance in funding standard account as of 12/31/2001: $30,000.

Selected valuation results as of 1/1/2002:

Present value of benefits	$2,000,000
Actuarial value of assets	900,000
Present value of future compensation	20,000,000
Expected compensation for 2002	1,000,000

Question 5

In what range is the minimum required contribution for 2002 as of 12/31/2002?

(A) Less than $60,000

(B) $60,000 but less than $75,000

(C) $75,000 but less than $90,000

(D) $90,000 but less than $105,000

(E) $105,000 or more

Data for Question 6 (5 points)

Normal retirement benefit: $100 per month times years of service.

Early retirement benefit: None.

Vesting schedule:

Years of service	Percent vested
Less than 3	0%
3	20%
4	40%
5	60%
6	80%
7	100%

Selected actuarial assumptions:

Valuation interest rate	7% per year
Pre-retirement decrements other than turnover	None

Selected turnover rates, applied at the beginning of the year:

Age	Turnover
63	0.03
64	0.01

Data for participant Smith:

Date of birth	1/1/1939
Date of hire	1/1/1997

Selected annuity value: $\ddot{a}_{65}^{(12)} = 9.24$

Question 6

In what range is the present value of Smith's future benefits, including withdrawal benefits, as of 1/1/2002?

(A) Less than $66,500

(B) $66,500 but less than $69,300

(C) $69,300 but less than $72,100

(D) $72,100 but less than $74,900

(E) $74,900 or more

Data for Question 7 (5 points)

Normal retirement benefit:

1.2% × final salary for each year of service up to 15 years
plus
1.45% × final salary for each year of service in excess of 15 years

Actuarial cost method: Unit credit.

Selected valuation assumptions:

Valuation interest rate	7% per year
Compensation increases:	
Before 2002	3% per year
After 2001	4% per year
Pre-retirement decrements	None

Data for sole participant as of 1/1/2002:

Date of birth	1/1/1962
Date of hire	1/1/1982
2001 compensation	$20,000

Actuarial (market) value of assets as of 1/1/2002: $8,000.

Credit balance in funding standard account as of 12/31/2001: $0.

Selected annuity value:

$\ddot{a}_{65}^{(12)} = 9.24$

Question 7

In what range is the absolute value of the change in the 2002 minimum contribution as of 12/31/2002 due to the change in assumptions?

(A) Less than $760

(B) $760 but less than $850

(C) $850 but less than $940

(D) $940 but less than $1,030

(E) $1,030 or more

2002

Data for Question 8 (4 points)

Participant entry dates: January 1 and July 1.

Valuation interest rate: 7% per year.

Current liability interest rate: 5.75% per year.

Normal cost as of 1/1/2002: $ 30,000.

Amortization charges in the funding standard account as of 1/1/2002:

Initial unfunded	$ 25,000
Experience (gain)/loss	(15,000)
Plan amendments due to increase in benefits	5,000
Waived deficiency	20,000
Increase due to change in assumptions	10,000

Deficit reduction contribution for 2002: $270,000.

Amount necessary to increase funded current liability percentage to 100% for 2002: $310,000.

Number of participants as of:

1/1/2001	143
7/1/2001	146
12/31/2001	144
1/1/2002	148
7/1/2002	149

The plan is not exempt from the additional funding charge for 2002.

Question 8

In what range is the additional funding charge for 2002 as of 12/31/2002?

(A) Less than $184,500

(B) $184,500 but less than $191,500

(C) $191,500 but less than $198,500

(D) $198,500 but less than $205,500

(E) $205,500 or more

2002

Data for Question 9 (4 points)

Plan effective date: 1/1/2002.

Normal retirement benefit: 2% of highest three-year average compensation times years of service.

Actuarial cost method: Level dollar entry age normal cost based on all years of service.

Actuarial assumptions:

Valuation interest rate	7% per year
Annual compensation increases	4% per year
Pre-retirement decrements	None

Data for sole participant as of 1/1/2002:

Date of birth	1/1/1952
Date of hire	1/1/1987
2002 compensation	$50,000

Selected annuity value:

$$\ddot{a}_{65}^{(12)} = 9.24$$

Question 9

In what range is the minimum required contribution for 2002 as of 12/31/2002?

(A) Less than $11,000

(B) $11,000 but less than $14,000

(C) $14,000 but less than $17,000

(D) $17,000 but less than $20,000

(E) $20,000 or more

2002

Data for Question 10 (3 points)

Plan effective date: 1/1/1995.

Actuarial cost method first effective 1/1/1998: Entry age normal.

Asset valuation method effective 1/1/1995: Three-year smoothing of (gains)/losses.

Selected valuation results as of January 1, 2002:

Accrued liability (entry age normal)	$1,500,000
Accrued liability (unit credit)	1,350,000
Actuarial value of assets	1,300,000
Market value of assets	1,550,000

Credit balance in funding standard account as of 12/31/2001: $0.

The following method changes are being considered for the 2002 valuation:

I. Changing the actuarial cost method to unit credit.

II. Changing the asset valuation method to market value.

III. Changing the valuation date to December 31.

Restrictions on automatic approval under Revenue Procedure 2000-40 that are not addressed in the above data do not apply.

Question 10

Which (if any) of the above changes are eligible for automatic approval pursuant to Revenue Procedure 2000-40?

(A) None

(B) I only

(C) II only

(D) III only

(E) The correct answer is not given by (A), (B), (C), or (D) above.

Data for Question 11 (2 points)

Each of questions 11 through 13 consists of an assertion in the left-hand column and a reason in the right-hand column.

ASSERTION		REASON
Mortality experience for disabled lives varies with the definition of disability and the manner in which it is administered.	BECAUSE	If the definition of disability is "total and permanent disability" and it is strictly administered, at least in the short term, the mortality experienced by disabled lives is expected to be lower than if a more liberal interpretation is used.

Question 11

Which of the following statements is true?

(A) Both the assertion and the reason are true statements and the reason is a correct explanation of the assertion.

(B) Both the assertion and the reason are true statements, but the reason is NOT a correct explanation of the assertion.

(C) The assertion is a true statement, but the reason is a false statement.

(D) The assertion is a false statement, but the reason is a true statement.

(E) Both the assertion and the reason are false statements.

Data for Question 12 (2 points)

Each of questions 11 through 13 consists of an assertion in the left-hand column and a reason in the right-hand column.

ASSERTION		REASON
When setting an assumption for expenses paid from a pension plan, past expenses should not be considered.	BECAUSE	Past expenses may have been affected by extraordinary events, such as a change in whether the PBGC variable rate premium applied or a change in the plan sponsor's policy as to which expenses are paid by the plan.

Question 12

Which of the following statements is true?

(A) Both the assertion and the reason are true statements and the reason is a correct explanation of the assertion.

(B) Both the assertion and the reason are true statements, but the reason is NOT a correct explanation of the assertion.

(C) The assertion is a true statement, but the reason is a false statement.

(D) The assertion is a false statement, but the reason is a true statement.

(E) Both the assertion and the reason are false statements.

Data for Question 13 (2 points)

Each of questions 11 through 13 consists of an assertion in the left-hand column and a reason in the right-hand column.

ASSERTION		REASON
It is not necessary to consider the number of participants electing a lump sum option when setting the assumptions for determining minimum funding requirements.	BECAUSE	Current liability cannot reflect the interest rate subsidy, if any, inherent in lump sum distributions.

Question 13

Which of the following statements is true?

(A) Both the assertion and the reason are true statements and the reason is a correct explanation of the assertion.

(B) Both the assertion and the reason are true statements, but the reason is NOT a correct explanation of the assertion.

(C) The assertion is a true statement, but the reason is a false statement.

(D) The assertion is a false statement, but the reason is a true statement.

(E) Both the assertion and the reason are false statements.

Data for Question 14 (4 points)

Plan effective date: 1/1/1990.

Normal retirement benefit: 1% of highest three-year average compensation times years of service.

Actuarial cost method: Aggregate.

Selected actuarial assumptions:

Valuation interest rate	7% per year
Compensation increases	4% per year
Pre-retirement decrements	None

Data for sole participant as of 1/1/2002:

Date of birth	1/1/1952
Date of hire	1/1/1995
2002 Compensation	$30,000

Credit balance in funding standard account as of 12/31/2001: $500.

Actuarial (market) value of assets as of 1/1/2002: $10,000.

Selected annuity factor:

$$\ddot{a}_{65}^{(12)} = 9.24$$

The full funding limitation does not apply.

Question 14

In what range is the minimum required contribution for 2002 as of 1/1/2002?

(A) Less than $1,675

(B) $1,675 but less than $1,800

(C) $1,800 but less than $1,925

(D) $1,925 but less than $2,050

(E) $2,050 or more

2002

Data for Question 15 (4 points)

Plan effective date: 1/1/1998.

Normal retirement benefit:

Effective 1/1/1998	1.00% times final average earnings times years of service
Effective 1/1/2002	1.15% times final average earnings times years of service

Actuarial cost method: Unit credit.

Valuation interest rate: 7% per year.

Information relating to all amortization bases in funding standard account as of 1/1/2001:

Net outstanding balance	$250,000
Net amortization charge	25,000

Selected valuation results as of 1/1/2002, reflecting plan amendment:

Accrued liability	$1,025,000
Actuarial (market) value of assets	710,000

Contribution for 2001: Amount equal to the minimum required contribution for 2001 paid on 12/31/2001.

All participants were active employees as of 1/1/2002.

Question 15

In what range is the absolute value of the experience (gain)/loss during 2001 as of 1/1/2002?

(A) Less than $40,000

(B) $40,000 but less than $55,000

(C) $55,000 but less than $70,000

(D) $70,000 but less than $85,000

(E) $85,000 or more

Data for Question 16 (4 points)

Plan effective date: 1/1/1996.

Actuarial cost method:

Before 2002	Unit credit
After 2001	Entry age normal

Valuation interest rate: 7% per year.

Initial accrued liability: $150,000.

There were no experience gains or losses before 1/1/2001.

Credit balance in funding standard account as of 12/31/2001: $0.

Selected valuation results as of 1/1/2002:

Accrued liability, unit credit method	$540,000
Normal cost, entry age normal method	75,000
Accrued liability, entry age normal method	600,000
Actuarial (market) value of assets	380,000

Question 16

In what range is the minimum required contribution for 2002 as of 12/31/2002?

(A) Less than $101,000

(B) $101,000 but less than $103,000

(C) $103,000 but less than $105,000

(D) $105,000 but less than $107,000

(E) $107,000 or more

2002

Data for Question 17 (5 points)

Plan effective date: 1/1/2001.

Actuarial cost method: Entry age normal.

Valuation interest rate: 7% per year.

175% Federal mid-term rate for 2002: 7.92% per year.

Selected valuation results as of:

	1/1/2001	1/1/2002
Normal cost	$400,000	$500,000
Accrued liability	5,200,000	

Credit balance as of 12/31/2001: $403,099.

Contribution for 2001: Paid by 12/31/2001.

Contribution for 2002: Deductible limit, paid on 12/31/2002.

There were no gains or losses during the 2001 plan year.

The plan is not exempt from quarterly contribution requirements for 2002.

Question 17

In what range is the additional charge in the 2002 funding standard account for interest on late quarterly contributions?

(A) $0

(B) $1 but less than $400

(C) $400 but less than $1,800

(D) $1,800 but less than $3,200

(E) $3,200 or more

2002

Data for Question 18 (5 points)

Plan effective date: 1/1/2001.

Normal retirement benefit:

Before 1/1/2002	$50 per month for each year of service
After 12/31/2001	$60 per month for each year of service

Actuarial cost method: Individual level premium.

Selected actuarial assumptions:

Valuation interest rate	7% per year
Pre-retirement decrements	None

Data for sole participant as of 1/1/2002:

Date of birth	1/1/1950
Date of hire	1/1/1998

Credit balance in funding standard account as of 12/31/2001: $0.

Actuarial (market) value of assets as of 1/1/2002: $1,800.

Selected annuity factor:

$$\ddot{a}_{65}^{(12)} = 10.00$$

Question 18

In what range is the minimum required contribution for 2002 as of 12/31/2002?

(A) Less than $4,000

(B) $4,000 but less than $5,000

(C) $5,000 but less than $6,000

(D) $6,000 but less than $7,000

(E) $7,000 or more

2002

Data for Question 19 (3 points)

Plan effective date: 1/1/1980.

Actuarial cost method: Frozen initial liability.

Valuation interest rate: 7% per year.

150% of Federal mid-term rate for 2002: 6.77% per year.

Initial unfunded liability: $400,000.

A funding waiver was granted for 2001 in the amount of $47,800 which was the amount necessary to avoid a funding deficiency at the end of the plan year.

Normal cost for 2002 as of 1/1/2002: $45,000.

Question 19

In what range is the minimum required contribution for 2002 as of 12/31/2002?

(A) Less than $85,000

(B) $85,000 but less than $88,500

(C) $88,500 but less than $92,000

(D) $92,000 but less than $95,500

(E) $95,500 or more

Data for Question 20 (4 points)

Mandatory employee contributions: 1% of compensation.

Actuarial cost method: Aggregate.

Valuation interest rate: 7% per year.

Selected valuation results as of 1/1/2002:

Present value of projected benefits provided by employer contributions	$1,280,000
Present value of projected benefits provided by mandatory employee contributions	100,000
Actuarial (market) value of assets excluding accumulated employee contributions	195,000
Accumulated employee contributions	30,000
Present value of future compensation	5,400,000
2002 compensation	600,000

Credit balance in funding standard account as of 12/31/2001: $0.

Question 20

In what range is the minimum required employer contribution for 2002 as of 12/31/2002?

(A) Less than $124,000

(B) $124,000 but less than $129,000

(C) $129,000 but less than $134,000

(D) $134,000 but less than $139,000

(E) $139,000 or more

2002

Data for Question 21 (4 points)

Plan effective date: 1/1/1980.

Valuation interest rate: 7% per year.

Actuarial value of assets:

Prior to 2002	Fair market value
After 2001	Smoothed market value (without phase-in) with a 3-year smoothing period as defined in Revenue Procedure 2000-40 (smoothing of difference between expected and actual market value of assets)

Reconciliation of market value of assets:

	2000	2001
Market value of assets, 1/1	$6,900,000	$6,900,000
Contributions	250,000	150,000
Benefit payments	250,000	350,000
Investment return	0	(900,000)
Market value of assets, 12/31	$6,900,000	$5,800,000

Contributions and benefit payments are evenly distributed during each plan year.

All administrative expenses are paid directly by plan sponsor.

Question 21

In what range is the actuarial value of assets as of 1/1/2002?

(A) Less than $5,900,000

(B) $5,900,000 but less than $6,200,000

(C) $6,200,000 but less than $6,500,000

(D) $6,500,000 but less than $6,800,000

(E) $6,800,000 or more

2002

Data for Question 22 (4 points)

Normal retirement benefit: 50% of final compensation.

Actuarial cost method: Aggregate.

Selected actuarial assumptions:

Valuation interest rate	7% per year
Compensation increases	4% per year
Pre-retirement decrements	None

Data for only participants in the plan as of 1/1/2002:

	Smith	Jones
Date of birth	1/1/1933	1/1/1947
Status	Retired	Active
2001 compensation		$28,500
Monthly benefit (life annuity)	$1,000	

Actuarial (market) value of assets as of 1/1/2002: $95,000.

Credit balance in the funding standard account as of 12/31/2001: $1,500.

Selected annuity values:

$\ddot{a}_{65}^{(12)} = 9.70$

$\ddot{a}_{69}^{(12)} = 7.83$

Question 22

In what range is the minimum required contribution for 2002 as of 12/31/2002?

(A) Less than $10,900

(B) $10,900 but less than $11,500

(C) $11,500 but less than $12,100

(D) $12,100 but less than $12,700

(E) $12,700 or more

2002

Data for Question 23 (5 points)

Effective date: 1/1/1995.

Normal retirement benefit: 1% of final 5-year average compensation for each year of service.

Actuarial cost method: Frozen initial liability.

Valuation interest rate: 7% per year.

Assumed compensation increases: 4% per year.

Selected valuation results as of:

	1/1/2001	1/1/2002
Present value of benefits	$2,000,000	
Present value of future compensation	20,000,000	
2001 compensation	2,000,000	
Expected benefit payments	0	
Unfunded liability		615,000
Actuarial (market) value of assets		1,335,000

Credit balance in funding standard account as of 12/31/2001: $0.

During 2001, actual compensation increases were 2%. There were no other gains or losses during the year.

All participants are active and under age 60. There were no new entrants or terminations during 2001.

Question 23

In what range is the 2002 normal cost as of 1/1/2002?

(A) Less than $15,500

(B) $15,500 but less than $16,000

(C) $16,000 but less than $16,500

(D) $16,500 but less than $17,000

(E) $17,000 or more

2002

Data for Question 24 (5 points)

Plan effective date: 1/1/1980.

Actuarial cost method: Frozen initial liability.

Valuation interest rate:

Before 2002	8.50% per year
After 2001	6.75% per year

All amortization charges in funding standard account as of 1/1/2001:

Initial unfunded actuarial accrued liability	$50,000
Plan amendment effective 1/1/1999	8,500

Credit balance in funding standard account as of 12/31/2001: $0.

Selected valuation results as of 1/1/2002:	8.50%	6.75%
Entry age normal actuarial accrued liability	$900,000	$1,100,000
Actuarial (market) value of assets	400,000	400,000
Frozen initial liability normal cost		60,000

Question 24

In what range is the minimum required contribution for 2002 as of 12/31/2002?

(A) Less than $138,500

(B) $138,500 but less than $146,500

(C) $146,500 but less than $154,500

(D) $154,500 but less than $162,500

(E) $162,500 or more

Data for Question 25 (3 points)

Type of plan: Multiemployer.

Plan effective date: 1/1/1990.

Actuarial cost method: Unit credit.

Valuation interest rate: 7% per year.

Credit balance in funding standard account as of 12/31/2000: $0.

Selected valuation results:

	1/1/2001	1/1/2002
Normal cost	$5,000,000	$7,000,000
Accrued liability	196,000,000	209,000,000
Actuarial (market) value of assets	202,000,000	205,000,000

ERISA and RPA'94 override full funding limitation for 2000 and 2001: $0.

Contribution for 2001: $0.

Question 25

In what range is the minimum required contribution for 2002 as of 12/31/2002?

(A) Less than $8,000,000

(B) $8,000,000 but less than $8,200,000

(C) $8,200,000 but less than $8,400,000

(D) $8,400,000 but less than $8,600,000

(E) $8,600,000 or more

Data for Question 26 (5 points)

Valuation date: 12/31/2002.

Actuarial cost method: Aggregate.

Valuation interest rate: 7% per year.

Credit balance in funding standard account as of 12/31/2001: $0.

Selected valuation results as of 12/31/2002:

Present value of projected benefits	$2,000,000
Actuarial value of assets	880,000
Market value of assets	850,000
Compensation for 2002	140,000
Present value of future compensation	1,400,000
Entry age normal accrued liability (including normal cost for 2002)	950,000
OBRA '87 current liability (including expected increase for 2002 due to benefits accruing during the plan year)	1,025,000
RPA '94 current liability (including expected increase for 2002 due to benefits accruing during the plan year)	1,000,000

Question 26

In what range is the deductible limit for 2002?

(A) Less than $93,000

(B) $93,000 but less than $113,000

(C) $113,000 but less than $133,000

(D) $133,000 but less than $153,000

(E) $153,000 or more

2002

Data for Question 27 (5 points)

Normal retirement benefit: 1% times final salary for each year of service.

Actuarial cost method: Aggregate.

Selected actuarial assumptions:

Valuation interest rate	7% per year
Compensation increases	4% per year
Pre-retirement decrements	None

Credit balance in funding standard account as of 12/31/2000: $20,000.

Selected valuation results as of 1/1/2001:

Present value of future benefits	$500,000
Actuarial (market) value of assets	350,000
Present value of future compensation	2,000,000
Expected compensation for 2001	300,000
Expected benefit payments for 2001	0

Contribution for 2001: $7,000 paid on 12/31/2001.

Plan experience for 2001:

Actual investment returns	8.5% per year
Actual compensation increases	8.0% per year
All other experience was as expected	

All participants are active and there were no retirements or new entrants during 2001 or 2002.

Question 27

In what range is the minimum required contribution for 2002 as of 12/31/2002?

(A) Less than $24,900

(B) $24,900 but less than $27,900

(C) $27,900 but less than $30,900

(D) $30,900 but less than $33,900

(E) $33,900 or more

Data for Question 28 (4 points)

Plan year: 1/1 – 12/31.

Plan sponsor's tax year: 10/1 – 9/30.

Actuarial cost method: Aggregate.

Valuation interest rate: 7% per year.

Credit balance in the funding standard account as of 12/31/2001: $75,000.

Selected valuation results under IRC section 412, as of 1/1/2002:

Present value of future benefits	$4,000,000
Actuarial (market) value of assets	750,000
Present value of future compensation	3,000,000
Expected compensation for 2002	250,000

The deductible limit for any tax year is based upon the valuation for the plan year beginning in that tax year.

Of the contribution for the 2002 plan year, $50,000 was paid on 6/15/2002 and deducted for the tax year ending 9/30/2001.

Question 28

In what range is the deductible limit for the tax year ending 9/30/2002?

(A) Less than $280,000

(B) $280,000 but less than $284,000

(C) $284,000 but less than $288,000

(D) $288,000 but less than $292,000

(E) $292,000 or more

Data for Question 29 (4 points)

Selected valuation results as of 1/1/2002:

Current liability	$800,000
Actuarial (market) value of assets	275,000

Selected information on plan assets:

	12/31/2001	3/31/2002
Value of marketable securities	$245,000	$250,000

	2001	2002
Monthly annuity payments from plan	$7,000	$7,100
Monthly expense payments from plan	50	100

	3/01/2001	3/01/2002
Single sum distributions	$9,000	$8,000

Quarterly contribution due 4/15/2002 without regard to liquidity requirement: $5,000.

The plan has always had 250 participants.

Question 29

In what range is the quarterly contribution due 4/15/2002?

(A) Less than $18,700

(B) $18,700 but less than $21,400

(C) $21,400 but less than $24,100

(D) $24,100 but less than $26,800

(E) $26,800 or more

Data for Question 30 (4 points)

Plan effective date: 1/1/1977.

Actuarial cost method: Frozen initial liability.

Valuation interest rate: 7% per year.

Current liability interest rate: 6% per year.

Initial accrued liability: $106,000.

Credit balance in funding standard account as of 12/31/2001: $0.

Selected valuation results as of 1/1/2002:

Actuarial value of assets	$92,500
Market value of assets	94,000
Normal cost	1,660
Entry age normal accrued liability	118,000
Entry age normal normal cost	2,000
Current liability	62,000
Expected increase in current liability due to benefits accruing during the plan year	4,000
Expected benefit payments	0

Question 30

In what range is the deductible limit for 2002?

(A) Less than $13,800

(B) $13,800 but less than $14,800

(C) $14,800 but less than $15,800

(D) $15,800 but less than $16,800

(E) $16,800 or more

Data for Question 31 (5 points)

Plan effective date: 1/1/1996.

Actuarial cost method: Frozen initial liability.

Assumed interest rates:

Valuation interest rate	7% per year
Current liability interest rate	6% per year

Credit balance in funding standard account as of 12/31/2001: $0.

Selected valuation results and other information as of 1/1/2002:

Actuarial (market) value of assets	$1,740,000
Expected benefit payments	0
Normal cost	112,273
Accrued liability under entry age normal method (including normal cost for 2002)	2,150,000
Current liability (including expected increase for 2002 due to benefits accruing during the plan year)	2,180,000

Initial balance of all amortization bases in the funding standard account:

Initial accrued liability	$2,100,000
Increase in liability due to 1/1/2000 change in assumed rates of withdrawal	340,000

Question 31

In what range is the deductible limit for 2002?

(A) Less than $445,000

(B) $445,000 but less than $455,000

(C) $455,000 but less than $465,000

(D) $465,000 but less than $475,000

(E) $475,000 or more

2002

Data for Question 32 (4 points)

Normal retirement benefit: $35 per month per year of service.

Early retirement eligibility: Age 60.

Early retirement benefit: Accrued benefit reduced by 6% for each year by which the benefit commencement date precedes the normal retirement date.

Actuarial cost method: Unit credit.

Selected actuarial assumptions:

Valuation interest rate	7% per year
Pre-retirement decrements	None

Retirements occur at the beginning of the year based on the following table:

Age	Probability of Retirement
63	0.20
64	0.40
65	1.00

Data for participant Smith as of 1/1/2002:

Date of birth	1/1/1939
Date of hire	1/1/1969

Selected annuity values:

$\ddot{a}_{63}^{(12)} = 9.72$ $\ddot{a}_{64}^{(12)} = 9.48$ $\ddot{a}_{65}^{(12)} = 9.24$

Question 32

In what range is Smith's accrued liability as of 1/1/2002?

(A) Less than $115,000

(B) $115,000 but less than $140,000

(C) $140,000 but less than $165,000

(D) $165,000 but less than $190,000

(E) $190,000 or more

Data for Question 33 (4 points)

Plan effective date: 1/1/1980.

Actuarial cost method: Aggregate.

Valuation rate of interest: 7% per year.

Credit balance in funding standard account as of 12/31/2001: $0.

Selected valuation results as of 1/1/2002:

Present value of future benefits	$8,500,000
Actuarial value of assets	6,600,000
Market value of assets	6,500,000
Present value of future compensation	32,500,000
Expected compensation for 2002	2,700,000
Expected benefit payments	0

Selected valuation results projected to 12/31/2002:

Entry age normal accrued liability (including normal cost)	$7,275,000
Current liability (including expected increase due to benefits accruing during the plan year)	4,300,000

Question 33

In what range is the full funding credit for 2002?

(A) $0

(B) $1 but less than $29,000

(C) $29,000 but less than $104,000

(D) $104,000 but less than $179,000

(E) $179,000 or more

2002

Data for Question 34 (3 points)

Normal retirement benefit: 2.5% of final three-year average compensation for each year of service.

Actuarial cost method: Unit credit.

Selected actuarial assumptions:

Valuation interest rate	7% per year
Compensation increases	5% per year

Selected valuation results as of 1/1/2001:

Unfunded accrued liability	$195,000
Actuarial (market) value of assets	225,000
Normal cost	25,000

Actual compensation increases during 2001: 8.75%.

All other actuarial assumptions were exactly realized.

All participants are active and are under age 60, and there are no new entrants as of 1/1/2002.

No distributions were made from the plan during 2001.

Question 34

In what range is the actuarial loss as of 1/1/2002 due to compensation increases?

(A) Less than $6,500

(B) $6,500 but less than $16,500

(C) $16,500 but less than $26,500

(D) $26,500 but less than $36,500

(E) $36,500 or more

Data for Question 35 (5 points)

Plan effective date: 1/1/2002.

Accrued benefit: 1% times final three-year average compensation per year of service.

Termination benefit: Accrued benefit, payable at age 65.

Actuarial cost method: Unit credit.

Valuation interest: 7% per year.

Assumed compensation increases: 3% per year.

Assumed probabilities of death, termination and retirement:

Age	Probability of Death	Probability of Termination	Probability of Retirement
Prior to age 63	0.00	0.00	0.00
63	0.00	0.10	0.00
64	0.00	0.15	0.00
65	0.00	0.00	1.00

Decrements are assumed to apply at the beginning of the plan year.

Data for sole participant:

Date of birth	1/1/1952
Date of hire	1/1/1982
2001 compensation	$60,000

Selected annuity value:

$\ddot{a}_{65}^{(12)} = 10.0$

Question 35

In what range is the normal cost for 2002 as of 1/1/2002?

(A) Less than $3,275

(B) $3,275 but less than $3,500

(C) $3,500 but less than $3,725

(D) $3,725 but less than $3,950

(E) $3,950 or more

2002

Data for Question 36 (3 points)

Normal retirement benefit: $1,500 per month.

Normal form of payment: Life annuity.

Optional form of payment: Joint & survivor benefit paying:

(1) a reduced benefit to the participant for life, plus
(2) 66 2/3% of the participant's reduced benefit to the beneficiary for his/her remaining lifetime after the participant's death.

Reduction factor to adjust life annuity to the optional form of payment: 90%.

Data for participant Smith as of 1/1/2002:

Date of birth	1/1/1937
Spouse's date of birth	1/1/1942
Date of retirement	1/1/2002

Selected annuity values:

$\ddot{a}_{60}^{(12)} = 9.815$ $\ddot{a}_{65}^{(12)} = 8.736$ $\ddot{a}_{\overline{60:65}}^{(12)} = 11.117$

For valuation purposes, the actuary assumes all participants will take the life annuity form of payment. However, Smith elects the optional form of payment upon retirement.

Question 36

In what range is the absolute value of the (gain)/loss in the total present value of benefits due to Smith's election of the only optional form of payment?

(A) Less than $1,000

(B) $1,000 but less than $9,500

(C) $9,500 but less than $18,000

(D) $18,000 but less than $26,500

(E) $26,500 or more

Data for Question 37 (5 points)

Plan effective date: 1/1/1996.

Actuarial cost method: Frozen initial liability.

Valuation interest rate: 7% per year.

Initial accrued liability: $250,000.

Credit balance in funding standard account as of 12/31/2000: $0.

Normal cost as of:

1/1/2001	$40,000
1/1/2002	35,000

Contribution for 2001 plan year: $40,000 paid on 8/1/2001.

Change in entry age normal accrued liability due to 1/1/2002 plan amendment: ($30,000).

Contributions for 2002 plan year are paid after 12/31/2002.

Question 37

In what range is the deductible limit for 2002?

(A) Less than $70,000

(B) $70,000 but less than $73,000

(C) $73,000 but less than $76,000

(D) $76,000 but less than $79,000

(E) $79,000 or more

2002

Data for Question 38 (4 points)

Normal retirement benefit: $30 per month for each year of service.

Normal retirement age:

Before 2002	65
After 2001	64

Actuarial cost method: Aggregate.

Valuation interest rate: 7% per year.

Assumed retirement age is equal to the normal retirement age.

No pre-retirement decrements are assumed.

Data for sole participant:

Date of birth	1/1/1947
Date of hire	1/1/1972

Credit balance in the funding standard account as of 12/31/2001: $0.

Actuarial (market) value of assets as of 1/1/2002: $45,000.

Selected annuity values: $\ddot{a}_{64}^{(12)} = 9.48$ $\ddot{a}_{65}^{(12)} = 9.24$

Question 38

In what range is the increase in normal cost for 2002 as of 1/1/2002 due to the change in normal retirement age?

(A) Less than $200

(B) $200 but less than $500

(C) $500 but less than $800

(D) $800 but less than $1,100

(E) $1,100 or more

Data for Question 39 (3 points)

Plan effective date: 1/1/1995.

Actuarial cost method: Frozen initial liability.

Valuation interest rate: 7% per year.

Selected valuation results as of 1/1/2002:

Present value of benefits	$1,500,000
Actuarial (market) value of assets	250,000
Present value of future compensation	1,800,000
Expected compensation for 2002	180,000
Normal cost	55,000

Credit balance in funding standard account as of 12/31/2001: $7,500.

Question 39

In what range is the 2002 minimum required contribution as of 12/31/2002?

(A) Less than $106,000

(B) $106,000 but less than $113,000

(C) $113,000 but less than $120,000

(D) $120,000 but less than $127,000

(E) $127,000 or more

Data for Question 40 (3 points)

Normal retirement benefit: 2% of final 3-year average compensation for each year of service.

Actuarial cost method: Unit credit.

Selected actuarial assumptions:

Valuation interest rate	7% per year
Compensation increases	6% per year
Pre-retirement decrements	None

Data for sole participant in the plan as of 1/1/2002:

Date of birth	1/1/1942
Date of hire	1/1/1982
2002 compensation	$35,000

Selected annuity value:

$\ddot{a}_{65}^{(12)} = 9.70$

Question 40

In what range is the normal cost as of 1/1/2002?

(A) Less than $5,450

(B) $5,450 but less than $5,750

(C) $5,750 but less than $6,050

(D) $6,050 but less than $6,350

(E) $6,350 or more

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NOVEMBER 2002 EA-2, SEGMENT A

ANSWER KEY

1. D
2. C
3. B
4. B
5. B
6. A
7. D
8. B
9. C
10. C
11. C
12. D
13. D
14. B
15. C
16. D
17. B
18. D
19. D
20. C
21. E
22. B
23. C
24. C
25. A
26. C
27. C
28. B
29. B
30. D
31. B
32. A
33. B
34. C
35. A
36. C
37. D
38. D
39. C
40. C