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JOINT BOARD FOR THE ENROLLMENT OF ACTUARIES

ENROLLED ACTUARIES PENSION EXAMINATION, SEGMENT A

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2001

Data for Question 1 (2 points)

Actuarial cost method: Unit credit.

Valuation interest rate: 7% per year.

Selected valuation results:

	1/1/2000	1/1/2001
Actuarial (market) value of assets	$400,000	$500,000
Accrued liability	800,000	950,000
Normal cost	50,000	

Contribution for 2000: $54,000 paid 12/31/2000.

Benefit payments during 2000: $13,000 paid on 12/31/2000.

Question 1

In what range is the absolute value of the experience (gain)/loss during 2000 as of 1/1/2001?

(A) Less than $25,000

(B) $25,000 but less than $45,000

(C) $45,000 but less than $65,000

(D) $65,000 but less than $85,000

(E) $85,000 or more

2001

<u>Data for Question 2</u> (4 points)

Actuarial cost method: Unit credit.

Valuation interest rate: 7% per year.

Selected valuation results as of 1/1/2001:

Accrued liability	$1,700,000
Actuarial (market) value of assets	1,600,000

Amortization charges and (credits) for all bases in funding standard account as of 1/1/2001:

Change in funding method effective 1/1/1999	$20,000
Actuarial (gain)/loss during 1999 plan year	5,000
Actuarial (gain)/loss during 2000 plan year	(4,000)

Total reconciliation account balance as of 1/1/2000: $0.

Interest charge due to late quarterly payments for 2000 plan year: $4,200.

<u>Question 2</u>

In what range is the credit balance as of 1/1/2001?

(A) Less than $24,000

(B) $24,000 but less than $25,500

(C) $25,500 but less than $27,000

(D) $27,000 but less than $28,500

(E) $28,500 or more

2001

<u>Data for Question 3</u> (4 points)

Valuation interest rate: 7% per year.

Credit balance as of 12/31/1999: $0.

Minimum contribution for 2000 as of 12/31/2000: $120,000.

Credit balance as of 12/31/2000: $0.

Market value of assets as of 3/31/2001: $420,000.

Selected valuation results as of 1/1/2001:

Current liability	$900,000
Actuarial (market) value of assets	400,000
Minimum contribution for 2001 as of 1/1/2001	125,000

Distributions paid from trust:

	Periodic Payments	Lump Sums	Value of Annuities Purchased	Administrative Expenses
4/1/1998 – 3/31/1999	$175,000	$25,000	$0	$10,000
4/1/1999 – 3/31/2000	160,000	0	75,000	10,000
4/1/2000 – 3/31/2001	150,000	25,000	10,000	10,000

All assets are "liquid assets" as defined in IRC section 412(m).

The plan is subject to the liquidity requirement of IRC section 412(m)(5).

<u>Question 3</u>

In what range is the quarterly contribution payable 4/15/2001, including liquidity shortfall payment?

(A) Less than $90,000

(B) $90,000 but less than $110,000

(C) $110,000 but less than $130,000

(D) $130,000 but less than $150,000

(E) $150,000 or more

<u>Data for Question 4</u> (3 points)

Plan effective date: 1/1/1995.

Actuarial cost method: Frozen initial liability.

Valuation interest rate: 7% per year.

Credit balance as of 12/31/2000: $150,000.

Selected valuation results as of 1/1/2001:

Actuarial (market) value of assets	$1,750,000
Present value of future benefits	8,500,000
Present value of future compensation	30,000,000
Expected compensation for 2001	1,500,000
IRC section 412 amortization charge for the initial unfunded liability	100,000

<u>Question 4</u>

In what range is the deductible limit for 2001?

(A) Less than $400,000

(B) $400,000 but less than $430,000

(C) $430,000 but less than $460,000

(D) $460,000 but less than $490,000

(E) $490,000 or more

2001

<u>Data for Question 5</u> (4 points)

Plan effective date: 1/1/1990.

Actuarial cost method: Frozen initial liability.

Valuation interest rate: 7% per year.

Plan A is split into Plans B and C effective 12/31/2000. The sponsors of Plans B and C are members of the same controlled group of corporations.

Selected valuation results as of 1/1/2001:

	Plan A	Plan B	Plan C
Entry age normal accrued liability	$600,000	$250,000	$350,000
Current liability	330,000	130,000	200,000
Present value of accrued benefits on plan termination basis	480,000	160,000	320,000
Funding standard account credit balance	20,000	8,300	11,700
Allocation of actuarial (market) value of assets reduced by credit balance	385,000	128,000	257,000

Outstanding amortization bases as of 1/1/2001:

Initial unfunded liability	$150,000
Increase due to 1/1/1995 assumption change	60,000

<u>Question 5</u>

In what range is the total amortization payment for 2001 allocated to Plan C as of 1/1/2001?

(A) Less than $11,700

(B) $11,700 but less than $13,000

(C) $13,000 but less than $14,300

(D) $14,300 but less than $15,600

(E) $15,600 or more

Data for Question 6 (2 points)

Consider the following descriptions for determining the actuarial value of assets of a pension plan. For each description, the actuarial value of assets is adjusted when necessary to be between 80% and 120% of current fair market value.

I. 60% of the current year fair market value plus 40% of the previous year actuarial value, adjusted for contributions and payments from the plan during the previous year.

II. The fair market value of the assets at the prior valuation date plus contributions less disbursements of the prior year, adjusted for interest at the valuation interest rate.

III. The current year fair market value of assets less 2/3 of the prior year capital appreciation and less 1/3 of the capital appreciation in the year before the prior year.

Question 6

Which, if any, of the above asset valuation methods are considered reasonable pursuant to IRC section 412 and regulations thereunder?

(A) None

(B) I and II only

(C) I and III only

(D) II and III only

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

2001

<u>Data for Question 7</u> (5 points)

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

Actuarial cost method: Unit credit.

Actuarial (market) value of assets as of 1/1/2000: $225,000.

Actuarial (market) value of assets as of 1/1/2001: $226,000.

Actuarial assumptions:

Valuation interest rate	7% per year
Retirement age	65
Annual compensation increases	6% per year
Pre-retirement decrements	None

Data for only participants in the plan:

	Smith	Jones
Participant status as of 1/1/2000 and 1/1/2001	Active	Retired
Age as of 1/1/2000	56	65
Service as of 1/1/2000	20	
Expected compensation for 2000	$75,000	
Annual retirement benefit		$20,000
Accrued liability as of 1/1/2001	119,500	164,000

Retirement benefits are paid annually on the first day of the plan year.

Contribution for 2000: $8,000 paid on 12/31/2000.

Selected annuity value: $\ddot{a}_{65} = 8.578$.

<u>Question 7</u>

Rank, from smallest to largest, the absolute value of experience (gains)/losses during 2000 due to compensation increases, mortality, and assets.

(A) Assets, compensation, mortality

(B) Mortality, assets, compensation

(C) Assets, mortality, compensation

(D) Compensation, assets, mortality

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

2001

Data for Question 8 (3 points)

Plan effective date: 1/1/1993.

Valuation interest rate: 7% per year.

Actuarial cost method:

Before 2001	Aggregate
After 2000	Frozen initial liability

Credit balance in the funding standard account as of 12/31/2000: $5,000.

Selected valuation results as of 1/1/2001:

Present value of benefits	$241,000
Entry age normal accrued liability	202,000
Actuarial (market) value of assets	123,000
Present value of future compensation	494,000
2001 compensation	60,000

Question 8

In what range is the minimum required contribution for 2001 as of 12/31/2001?

(A) Less than $8,500

(B) $8,500 but less than $11,500

(C) $11,500 but less than $14,500

(D) $14,500 but less than $17,500

(E) $17,500 or more

2001

<u>Data for Question 9</u> (3 points)

Plan effective date: 1/1/1990.

Accrued benefit: $40 per month times years of service.

Vesting: 100% vested in accrued benefit after five years of service; benefit commences at normal retirement date.

Actuarial cost method: Unit credit.

Selected actuarial assumptions:

Valuation interest rate	7% per year
Withdrawal (assumed to occur at the beginning of each year):	
Before age 41	5% per year
Age 41 and later	None
Retirement age	65
Preretirement decrements other than withdrawal	None

Selected annuity value: $\ddot{a}_{65}^{(12)} = 10.00$

On 1/1/2000 there are 200 participants, all active, age 40 with 10 years of service.

Three participants terminated employment on 1/2/2000, there were no benefits paid and there were no new participants.

<u>Question 9</u>

In what range is the absolute value of the experience (gain)/loss associated with withdrawal during 2000 as of 1/1/2001?

(A) Less than $5,000

(B) $5,000 but less than $15,000

(C) $15,000 but less than $25,000

(D) $25,000 but less than $35,000

(E) $35,000 or more

2001

<u>Data for Question 10</u> (3 points)

Plan effective date (all plans): 1/1/1990.

Selected valuation results as of 1/1/2001 for the following plans maintained by the same employer:

	Plan A	Plan B	Plan C	Plan D
Number of participants on each day of the plan year	110	110	110	9
Current liability using maximum permitted interest rate	$1,000,000	$1,000,000	$1,040,000	$100,000
Current liability using rate selected for the valuation	1,020,000	1,000,000	1,075,000	102,000
Actuarial value of assets	790,000	890,000	850,000	74,000
Market value of assets	830,000	930,000	810,000	77,000
Credit balance in funding standard account as of 12/31/2000	0	0	30,000	0

Selected funded current liability percentages from gateway test for past valuations:

Valuation date	Plan A	Plan B	Plan C	Plan D
1/1/2000	93%	93%	78%	95%
1/1/1999	92%	88%	92%	91%
1/1/1998	88%	92%	93%	93%

<u>Question 10</u>

How many of these plans are exempt from the requirement to calculate an additional funding charge for 2001?

(A) 0

(B) 1

(C) 2

(D) 3

(E) 4

<u>Data for Question 11</u> (2 points)

Actuarial cost method: Aggregate.

Valuation interest rate: 7% per year.

Actuarial (market) value of assets as of 1/1/2000: $385,000.

Contribution for 2000: $3,000 paid on 1/1/2000.

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

Actual investment return during 2000: 4%.

Selected valuation results as of 1/1/2001:

Present value of future benefits	$1,400,000
Present value of future compensation	12,000,000
Expected compensation for 2001	1,000,000

There were no benefit payments during 2000.

<u>Question 11</u>

In what range is the increase in the 2001 minimum contribution as of 12/31/2001 due to the experience loss on investments?

(A) Less than $1,000

(B) $1,000 but less than $2,000

(C) $2,000 but less than $3,000

(D) $3,000 but less than $4,000

(E) $4,000 or more

Data for Question 12 (4 points)

Plan effective date: 1/1/1985.

Normal retirement benefit: $50 per month per year of service.

Actuarial cost method: Aggregate.

Actuarial assumptions:

Valuation interest rate	7% per year
Retirement age	65
Pre-retirement decrements	None

Data for sole participant:

Date of birth:	1/1/1947
Date of hire:	1/1/1985

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

Selected valuation results and other data as of 1/1/2001:

Market value of assets	$57,000
Actuarial value of assets	60,000
OBRA ‘87 current liability projected to 12/31	72,000
RPA ’94 current liability projected to 12/31	75,000

Selected annuity value:

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

Question 12

In what range is the full funding limitation for 2001 as of 12/31/2001?

(A) Less than $1,700

(B) $1,700 but less than $3,200

(C) $3,200 but less than $4,700

(D) $4,700 but less than $6,200

(E) $6,200 or more

2001

Data for Question 13 (5 points)

Plan effective date: 1/1/1996.

Normal retirement benefit before amendment: $50 per month for each year of service.

Actuarial cost method: Attained age normal.

Valuation interest rate: 7% per year.

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

Selected valuation results as of 1/1/2001 under the above benefit formula:

Present value of all future benefits	$7,000,000
Present value of accrued benefits	5,000,000
Entry age normal accrued liability	6,800,000
Actuarial (market) value of plan assets	4,950,000
Amortization payment for initial unfunded liability	16,000
Present value of future service	2,500 years

The plan sponsor has requested the actuary to prepare a cost study for the following proposals so that the 2001 minimum required contribution for "A" and "B" are equal:

Normal retirement benefit, formula "A": $65 per month for each year of service
Normal retirement benefit, formula "B": $50 per month for each year of service prior to 2001, plus
$X per month for each year of service after 2000.

As of 1/1/2001 there were 300 active participants, all under age 64, and no inactive participants.

Question 13

In what range is $X?

(A) Less than $86.00

(B) $86.00 but less than $90.00

(C) $90.00 but less than $94.00

(D) $94.00 but less than $98.00

(E) $98.00 or more

2001

<u>Data for Question 14</u> (5 points)

Plan effective date: 1/1/1982.

Valuation interest rate: 7% per year.

Current liability interest rate for 1/1/2001: 6.1% per year.

Credit balance in funding standard account as of 12/31/2000: $25,000.

Reconciliation account balance as of 12/31/2000: $50,500.

Selected valuation results and funding standard account items as of 1/1/2001:

Normal cost	$45,000
Net amortization charges	50,400
Actuarial value of assets	975,000
Market value of assets	925,000
Current liability	1,300,000
Expected increase in current liability	60,000
Current liability at maximum interest rate	1,250,000
Benefits expected to be paid during 2001	0
Unfunded new liability	240,000

Additional interest charge for late quarterly contributions for 2001: $800.

There have always been 140 participants in the plan.

<u>Question 14</u>

In what range is the reconciliation account balance as of 1/1/2002?

(A) Less than $79,000

(B) $79,000 but less than $86,000

(C) $86,000 but less than $93,000

(D) $93,000 but less than $100,000

(E) $100,000 or more

Data for Question 15 (5 points)

Plan effective date: 1/1/1990.

Actuarial cost method: Unit credit.

Valuation interest rate: 7% per year.

There were no actuarial gains or losses from any source prior to 1/1/2000.

Credit balance in funding standard account as of 12/31/1999: $0.

The minimum required contribution for 2000 was made on 12/31/2000.

Effective 1/1/2001, the plan sponsor retained a new enrolled actuary from another firm. The new enrolled actuary uses the same assumptions and substantially the same methods as the prior actuary. The deemed change in funding method resulting from the change in enrolled actuary is made pursuant to Rev. Proc. 2000-40.

Selected valuation results:

	Prior Actuary	New Actuary	
Valuation date	1/1/2000	1/1/2000	1/1/2001
Actuarial accrued liability	$2,400,000	$2,375,000	$2,650,000
Actuarial value of assets	1,500,000	1,500,000	1,850,000
Normal cost	162,000	165,000	177,000

Question 15

In what range is the minimum required contribution for 2001 as of 12/31/2001?

(A) Less than $253,000

(B) $253,000 but less than $255,000

(C) $255,000 but less than $257,000

(D) $257,000 but less than $259,000

(E) $259,000 or more

Data for Question 16 (4 points)

Plan effective date: 1/1/1978.

Normal retirement benefit: 50% of final three-year average compensation.

Accrued benefit: Normal retirement benefit prorated on service to normal retirement.

Pre-retirement death benefit: Accrued benefit beginning immediately without reduction for early commencement, payable for the lifetime of the spouse.

Actuarial cost method: Unit credit.

Assumed compensation increases: 0% per year.

Selected actuarial functions:

n	x	q_x	$v^n({}_np_{62})$	$\ddot{a}_x^{(12)}$
0	62	0.015	1.000	9.80
1	63	0.017	0.928	9.64
2	64	0.019	0.860	9.47

Decrements are applied at the beginning of the plan year.

For funding purposes, the participant and spouse are assumed to be the same age and 90% of active participants are assumed to be married at the time of death.

Data for participant Smith:

Date of birth	1/1/1939
Date of hire	1/1/1978
Compensation for each of the last three years	$45,000

Question 16

In what range is the accrued liability as of 1/1/2001 for Smith's death benefit?

(A) Less than $8,200

(B) $8,200 but less than $8,500

(C) $8,500 but less than $8,800

(D) $8,800 but less than $9,100

(E) $9,100 or more

2001

<u>Data for Question 17</u> (5 points)

Plan effective date: 1/1/1996.

Valuation date: 12/31.

Actuarial cost method: Aggregate.

Valuation interest rate: 7% per year.

Current liability interest rate for 1/1/2001: 6% per year.

Credit balance in funding standard account as of 12/31/1999: $0.

Selected valuation results as of 12/31/2001:

Normal cost	$50,000
Actuarial (market) value of assets, excluding 2001 contributions	870,000
Entry age normal accrued liability, including 2001 normal cost	935,000
Current liability, excluding 2001 expected increase in current liability	1,000,000
2001 expected increase in current liability	40,000

Contributions for 2001: Four quarterly contributions of $40,000 each, paid on quarterly contribution due dates.

Gateway funded current liability percentage for prior years:

1998	91%
1999	88%
2000	92%

Number of participants on each day of the 2000 plan year: 200.

<u>Question 17</u>

In what range is the credit balance in the funding standard account as of 12/31/2001, including all contributions for the 2001 plan year?

(A) Less than $96,000

(B) $96,000 but less than $103,000

(C) $103,000 but less than $110,000

(D) $110,000 but less than $117,000

(E) $117,000 or more

2001

Data for Question 18 (5 points)

Normal retirement benefit: 1% of final three-year average pay for each year of service.

Actuarial cost method: Aggregate.

Actuarial assumptions:

Valuation interest rate	7% per year
Retirement age	65
Compensation increases	5% per year
Pre-retirement decrements	None

Data for the sole participants Smith and Jones:

	2001 Compensation	Age on 1/1/2001	Years of Service on 1/1/2001
Smith	$30,000	35	5
Jones	100,000	55	20

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

Actuarial (market) value of assets as of 1/1/2001: $50,000.

Selected annuity value:

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

Following completion of the 2001 valuation, it was discovered that Smith's 2001 compensation was $60,000 and that his age on 1/1/2001 was 45.

IRC section 401(a)(17) limitation for 2001: $170,000.

Question 18

In what range is the absolute value of the change in the minimum required contribution for 2001 as of 12/31/2001 that results from correcting Smith's data?

(A) Less than $3,700

(B) $3,700 but less than $3,900

(C) $3,900 but less than $4,100

(D) $4,100 but less than $4,300

(E) $4,300 or more

2001

Data for Question 19 (4 points)

Plan effective date: 1/1/2000.

Actuarial cost method: Frozen initial liability.

Actuarial assumptions:

Valuation interest rate:	
After 2000	7% per year
Before 2001	6% per year
Compensation increases	4% per year
Pre-retirement decrements	None

Selected valuation results as of 1/1/2000:

Initial unfunded liability	$84,000
Normal cost	6,000

Contribution for 2000: $18,000 paid on 12/31/2000.

Selected valuation results as of 1/1/2001:

	6%	7%
Present value of benefits	$155,000	$136,000
Present value of accrued benefits	61,000	57,000
Entry age normal accrued liability	93,000	85,000
Present value of future compensation	260,000	250,000
Current compensation	56,000	56,000

The limit adjustment for 1/1/2001 is calculated using the fresh start alternative.

The contribution for 2000 was less than the unfunded current liability for that year.

Question 19

In what range is the deductible limit for 2001?

(A) Less than $21,000

(B) $21,000 but less than $21,500

(C) $21,500 but less than $22,000

(D) $22,000 but less than $22,500

(E) $22,500 or more.

2001

<u>Data for Question 20</u> (4 points)

Plan effective date: 1/1/1990.

Actuarial cost method: Frozen initial liability.

Valuation interest rate: 7% per year.

150% Federal mid-term rate:

1/1/2000	9.43% per year
1/1/2001	8.47% per year

Initial accrued liability: $600,000.

Minimum required contribution for 1999 as of 12/31/1999: $100,000.

Credit balance in funding standard account as of 12/31/1999: $0.

Normal cost as of 1/1/2000: $100,000.

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

The minimum required contributions for 1999 and 2000 were waived to the maximum extent allowable under IRC section 412. There were no other funding waivers granted.

<u>Question 20</u>

In what range is the portion of the accumulated reconciliation account due to waived funding deficiencies as of 1/1/2002?

(A) Less than $2,300

(B) $2,300 but less than $4,300

(C) $4,300 but less than $6,300

(D) $6,300 but less than $8,300

(E) $8,300 or more

2001

<u>Data for Question 21</u> (4 points)

Plan effective date: 1/1/1996.

Actuarial cost method: Frozen initial liability.

Valuation interest rate:

Before 2001	8% per year
After 2000	7% per year

Credit balance in funding standard account as of 12/31/1999: $10,000.

Selected valuation results as of 1/1/2000:

Normal cost	$90,000
Amortization charge due to initial accrued liability	39,000
Amortization charge due to plan amendment effective 1/1/1998	11,000

Contribution for 2000: $150,000 paid on 7/1/2000.

Selected valuation results as of 1/1/2001:

Normal cost after assumption change	$100,000
Increase in entry age normal accrued liability due to assumption change	60,000

<u>Question 21</u>

In what range is the 2001 minimum required contribution as of 12/31/2001?

(A) Less than $142,000

(B) $142,000 but less than $149,000

(C) $149,000 but less than $156,000

(D) $156,000 but less than $163,000

(E) $163,000 or more

2001

Data for Question 22 (4 points)

Plan effective date: 1/1/1975.

Accrued benefit: 3% of final compensation per year of service, up to 25 years.

Early retirement eligibility: Age 55.

Early retirement benefit: Accrued benefit reduced by 5% for each year that benefit commencement date precedes normal retirement. Unreduced benefits are available if participant's age plus service total at least 80.

Actuarial cost method: Unit credit.

Selected actuarial assumptions:

Interest rate	7% per year
Compensation increases	0% per year
Pre-retirement decrements	None
Retirement age	65

Data for selected participants:	Smith	Jones
Date of birth	1/1/1939	1/1/1939
Date of hire	1/1/1975	1/1/1985
Date of retirement	1/1/2001	1/1/2001
Projected normal retirement benefit	\$30,000	\$30,000

Compensation for Smith and Jones has not increased since 1999.

Selected annuity values:

$\ddot{a}_{62}^{(12)} = 8.84$

$\ddot{a}_{65}^{(12)} = 8.12$

Effective 1/1/2001, both Smith and Jones elected to retire early and start receiving benefits immediately.

Question 22

In what range is the absolute value of the actuarial (gain)/loss resulting from the early retirement of Smith and Jones as of 1/1/2001?

(A) Less than \$25,000

(B) \$25,000 but less than \$55,000

(C) \$55,000 but less than \$85,000

(D) \$85,000 but less than \$115,000

(E) \$115,000 or more

2001

Data for Question 23 (3 points)

Plan effective date: 1/1/1999.

Actuarial cost method: Unit credit.

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

Actuarial assumptions:

Valuation interest rate	7% per year
Retirement age	65
Compensation increases	4% per year
Pre-retirement decrements	None

Data for sole participant as of 1/1/2000:

Date of birth	1/1/1946
Date of participation	1/1/1999
1997 compensation	\$42,000
1998 compensation	50,000
1999 compensation	52,000

Selected annuity value:

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

At 1/1/2001, the participant's 2000 compensation was reported as \$56,000.

Question 23

In what range is the absolute value of the liability (gain)/loss for 2000 as of 1/1/2001?

(A) Less than \$500

(B) \$500 but less than \$650

(C) \$650 but less than \$800

(D) \$800 but less than \$950

(E) \$950 or more

Data for Question 24 (4 points)

Type of plan: Collectively bargained single employer plan with annual bargaining agreements commencing January 1 of each year.

Plan effective date: 1/1/2000.

Actuarial cost method: Entry age normal with shortfall.

Valuation interest rate: 7% per year.

Selected valuation results as of:

	1/1/2000	1/1/2001
Normal cost	\$30,000	\$36,000
Unfunded actuarial liability	300,000	315,000
Estimated base units	10,000	12,000

Actual base units in 2000 and 2001: 10,000 each year.

Credit balance in the funding standard account as of 12/31/2000: \$3,600.

Question 24

In what range is the 2001 shortfall loss as of 12/31/2001?

(A) Less than \$10,400

(B) \$10,400 but less than \$10,700

(C) \$10,700 but less than \$11,000

(D) \$11,000 but less than \$11,300

(E) \$11,300 or more

2001

Data for Question 25 (5 points)

Type of plan: Cash balance.

Plan provisions: The cash balance account is equal to the accumulation of compensation credits and interest credits.
Compensation credits are credited at end of year based on compensation at beginning of year.
Interest credits are credited at end of year.

Compensation credit rate:	4% per year
Interest credit rate:	Applicable 30-year Treasury rate
Termination benefit:	Cash balance account
Vesting:	100% immediately

Actuarial assumptions:

Valuation interest rate:	7% per year
Applicable 30-year Treasury rate:	6% per year
Retirement age:	65
Compensation increases:	3% per year

Probability of withdrawal:

x	$q_x^{(w)}$
30	30%
31	20%
32	10%
33 and over	0%

Pre-retirement decrements other than withdrawal: None

Termination/withdrawal assumed to occur on first day of plan year.

Termination benefit: Paid as lump-sum on date of termination.

Data for participant Smith as of 1/1/2001:

Age	30
Date of hire	1/1/2001
Compensation	\$30,000

Question 25

In what range is the present value of Smith's projected withdrawal benefits as of 1/1/2001?

(A) Less than \$300

(B) \$300 but less than \$500

(C) \$500 but less than \$700

(D) \$700 but less than \$900

(E) \$900 or more

<u>Data for Question 26</u> (4 points)

Plan effective date: 1/1/1990.

Actuarial cost method: Unit credit.

Valuation interest rate: 7% per year.

175% of Federal mid-term rate as of 1/1/2001: 9.91% per year.

Selected valuation results and funding standard account entries:

	1/1/2000	1/1/2001
Normal cost	\$310,000	\$350,000
Net amortization charges	60,000	45,000

Credit balance as of 12/31/2000: \$50,000.

No contribution was required for 2000.

The minimum required contribution for 2001 is to be paid in its entirety on 2/15/2002.

Quarterly contributions are required in 2001.

<u>Question 26</u>

In what range is the additional interest charge in the 2001 funding standard account due to late quarterly contributions?

(A) Less than \$3,600

(B) \$3,600 but less than \$6,000

(C) \$6,000 but less than \$8,400

(D) \$8,400 but less than \$10,800

(E) \$10,800 or more

2001

<u>Data for Question 27</u> (3 points)

Actuarial cost method: Unit credit.

Valuation interest rate: 7% per year.

Selected valuation results:

	1/1/2000	1/1/2001
Normal cost	$100,000	$120,000
Accrued liability	800,000	
Actuarial (market) value of assets	600,000	
Funded current liability percentage	85%	92%

Net outstanding balance of all amortization bases in funding standard account as of 1/1/2000: $205,000.

Net amortization charge as of 1/1/2000 for all amortization bases in 2000 funding standard account: $25,000.

No bases were fully amortized during 2000.

There were no gains or losses during 2000.

There was no additional funding charge for 2000.

Contribution for 2000: $125,000 paid on 4/15/2000.

<u>Question 27</u>

In what range is the quarterly contribution due 4/15/2001?

(A) Less than $29,500

(B) $29,500 but less than $30,500

(C) $30,500 but less than $31,500

(D) $31,500 but less than $32,500

(E) $32,500 or more

2001

<u>Data for Question 28</u> (4 points)

Plan effective date: 1/1/1996.

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

Actuarial cost method:

Prior to 2001	Aggregate
After 2000	Unit credit

Actuarial assumptions:

Valuation interest rate	7% per year
Retirement age	65
Compensation increases	4% per year
Pre-retirement decrements	None

Data for sole participant as of 1/1/2001:

Date of birth	1/1/1946
Date of hire	1/1/1996
Annual compensation for 2001 and for each prior year	$150,000

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

Actuarial (market) value of assets as of 1/1/2001: $135,000.

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

The change in funding method was made in accordance with Rev. Proc. 2000-40.

IRC section 401(a)(17) limitation for 2001: $170,000.

IRC section 415(b) limitation for 2001: $140,000.

<u>Question 28</u>

In what range is the minimum required contribution for 2001 as of 1/1/2001?

(A) Less than $36,000

(B) $36,000 but less than $46,000

(C) $46,000 but less than $56,000

(D) $56,000 but less than $66,000

(E) $66,000 or more

Data for Question 29 (3 points)

Type of plan: Multiemployer plan.

Plan effective date: 1/1/1996.

Actuarial cost method: Entry age normal.

Valuation interest rate: 7% per year.

Credit balance as of 12/31/2000: $55,000.

Experience (gain)/loss for plan year ending 12/31/2000: ($20,000).

Actuarial (market) value of assets as of 1/1/2001: $700,000.

Amortization charges for all amortization bases in the 2000 funding standard account:

Nature of base	Effective date	Amortization charge at 1/1/2001
Initial accrued liability	1/1/1996	$90,000
Increase due to change in assumptions	1/1/1997	30,000
Increase due to plan amendment	1/1/1998	50,000
Actuarial (gain)/loss	1/1/2000	40,000

Question 29

In what range is the accrued liability as of 1/1/2001?

(A) Less than $2,950,000

(B) $2,950,000 but less than $3,050,000

(C) $3,050,000 but less than $3,150,000

(D) $3,150,000 but less than $3,250,000

(E) $3,250,000 or more

2001

<u>Data for Question 30</u> (4 points)

Plan effective date: 1/1/1982.

Current liability interest rate for 1/1/2001: 6.1% per year.

Funding deficiency in funding standard account as of 12/31/2000: $150,000.

Selected data and valuation results as of 1/1/2001:

Actuarial (market) value of assets	$1,475,000
Current liability (including liability for unpredictable contingent event benefits)	3,000,000
Expected increase in current liability	75,000
Unfunded new liability amount	150,000
Unpredictable contingent event benefits liability for event that occurred in 2001	325,000

Benefits paid during 2001 due to unpredictable contingent event: $65,000.

Transition percentage in 2001 is 100%.

The additional funding charge applies in 2001.

The employer elects not to apply the special first-year rule to calculate the unpredictable contingent event amount.

<u>Question 30</u>

In what range is the sum of the deficit reduction contribution and the unpredictable contingent event amount as of 1/1/2001?

(A) Less than $360,000

(B) $360,000 but less than $395,000

(C) $395,000 but less than $430,000

(D) $430,000 but less than $465,000

(E) $465,000 or more

2001

<u>Data for Question 31</u> (3 points)

Plan effective date: 1/1/1995.

Normal retirement benefit:

Effective 1/1/1995	\$20 per month for each year of service
Effective 1/1/2001	\$25 per month for each year of service

Actuarial cost method: Individual level premium.

Actuarial assumptions:

Valuation interest rate	7% per year
Retirement age	65
Pre-retirement decrements	None

There have been no experience gains or losses since the inception of the plan.

Data for sole participant:

Date of birth	1/1/1961
Date of hire	1/1/1986

Selected annuity value:

$\ddot{a}_{65}^{(12)} = 9.873$

<u>Question 31</u>

In what range is the 2001 normal cost as of 1/1/2001?

(A) Less than \$675

(B) \$675 but less than \$975

(C) \$975 but less than \$1,275

(D) \$1,275 but less than \$1,575

(E) \$1,575 or more

2001

<u>Data for Question 32</u> (4 points)

Plan effective date: 1/1/2000.

Normal retirement benefit: $40 per month per year of service.

Actuarial cost method: Attained age normal.

Actuarial assumptions:

Valuation interest rate	7% per year
Pre-retirement decrements	None
Retirement age	65

Actuarial (market) value of assets as of 1/1/2001: $2,700.

Valuation data for sole participant:

Date of birth	1/1/1954
Date of hire	1/1/1989

The contribution for the 2000 plan year was paid on 1/1/2000 in an amount equal to the minimum required contribution payable as of that date.

There were no experience gains or losses during 2000 from any source other than investments.

Selected annuity value:

$$\ddot{a}_{65}^{(12)} = 8.74$$

<u>Question 32</u>

In what range is the normal cost for 2001 as of 1/1/2001?

(A) Less than $2,000

(B) $2,000 but less than $2,400

(C) $2,400 but less than $2,800

(D) $2,800 but less than $3,200

(E) $3,200 or more

Data for Question 33 (3 points)

Valuation interest rate: 7% per year.

Selected valuation results as of December 31, 2000:

	Plan A	Plan B	Plan C
Present value of accrued benefits on a termination basis	$350,000	$225,000	$125,000
Liability component of the full funding limitation (including normal cost)	500,000	350,000	150,000
Actuarial (market) value of assets	440,000		
Credit balance in funding standard account	80,000		

As of December 31, 2000, Plan A is split into Plans B and C. The plan sponsor continues to maintain both Plans B and C.

Question 33

In what range is the market value of assets *minus* the credit balance for Plan C as of 1/1/2001?

(A) Less than $107,000

(B) $107,000 but less than $117,000

(C) $117,000 but less than $127,000

(D) $127,000 but less than $137,000

(E) $137,000 or more

2001

Data for Question 34 (3 points)

Plan effective date: 1/1/1993.

Normal retirement benefit:

Before 2001	2% times final three-year average salary per year of service
After 2000	3% times final three-year average salary per year of service

Actuarial cost method: Frozen initial liability.

Valuation interest rate:

Before 2001	7% per year
After 2000	8% per year

Entry age normal accrued liability on 1/1/1993: $110,000.

Actuarial (market) value of assets as of 1/1/2001: $170,000.

Entry age normal accrued liability as of 1/1/2001:

Old formula and old assumptions	$202,000
Old formula and new assumptions	180,000
New formula and new assumptions	248,000

The effect of the assumption change is measured before the effect of the plan amendment.

Question 34

In what range is the absolute value of the net amortization charge in the 2001 funding standard account as of 1/1/2001?

(A) Less than $11,000

(B) $11,000 but less than $11,500

(C) $11,500 but less than $12,000

(D) $12,000 but less than $12,500

(E) $12,500 or more

2001

Data for Question 35 (4 points)

Plan effective date: 1/1/1996.

Actuarial cost method: Entry age normal.

Valuation interest rate: 7% per year.

Selected entries from 2000 Schedule B as of 1/1/2000:

Credit balance in funding standard account	$20,000
Normal cost	9,000
Net amortization charges	8,000
Outstanding amortization balances	95,000

Contribution for 2000: $12,000 paid on 12/31/2000.

Selected valuation results and other data as of 1/1/2001:

Actuarial value of assets	$420,000
Market value of assets	396,000
Accrued liability	530,000
Normal cost	10,500

Question 35

In what range is the minimum required contribution for 2001 as of 12/31/2001?

(A) Less than $5,000

(B) $5,000 but less than $11,000

(C) $11,000 but less than $17,000

(D) $17,000 but less than $23,000

(E) $23,000 or more

2001

Data for Question 36 (4 points)

Plan effective date: 1/1/1998.

Actuarial cost method: Entry age normal.

Valuation interest rate:

Before 2000	8% per year
After 1999	7% per year

Initial balance of all amortization bases in 2001 funding standard account:

Initial accrued liability	$185,000
Experience (gain)/loss during 1998	0
Experience (gain)/loss during 1999	(10,000)
Experience (gain)/loss during 2000	(8,000)
Increase in unfunded accrued liability due to plan amendment effective 1/1/1999	20,000
Increase in unfunded accrued liability due to assumption change as of 1/1/2000	15,000

Selected valuation results as of 1/1/2001:

Accrued liability	$375,000
Actuarial (market) value of assets	200,000

Question 36

In what range is the credit balance in the funding standard account as of 12/31/2000?

(A) Less than $21,000

(B) $21,000 but less than $21,400

(C) $21,400 but less than $21,800

(D) $21,800 but less than $22,200

(E) $22,200 or more

2001

Data for Question 37 (4 points)

Actuarial cost method: Unit credit.

Valuation date: 1/1/2001.

Normal retirement benefit: $75 per month for each year of service.

Early retirement benefit: Accrued benefit reduced by 1/30 for each year by which commencement of payments precedes age 65.

Actuarial assumptions:

Interest rate	7% per year
Retirement age:	
Before 2001	Age 65
After 2000	Age 62
Preretirement decrements	None

Data for sole plan participant:

Date of birth	1/1/1940
Date of hire	1/1/1991

Selected annuity values:

$\ddot{a}_{62}^{(12)} = 10.74$

$\ddot{a}_{65}^{(12)} = 10.10$

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

The minimum required contribution for 2001 is not restricted by the full funding limit.

Question 37

In what range is the increase in the minimum required contribution for 2001 payable 12/31/2001 due to the change in assumed retirement age?

(A) Less than $1,500

(B) $1,500 but less than $2,500

(C) $2,500 but less than $3,500

(D) $3,500 but less than $4,500

(E) $4,500 or more

Data for Question 38 (2 points)

Consider the following statements:

I. The asset valuation method cannot be changed if it has been changed in any of the four preceding plan years.

II. The actuarial value of assets must be within 20% of the market value of assets.

III. Under the procedures for automatic approval of funding method changes, the amortization period is ten years for a base established due to a change in asset valuation method.

Question 38

Which, if any, of the above statement(s) is (are) true?

(A) I and II only

(B) I and III only

(C) II and III only

(D) I, II and III

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

2001

Data for Question 39 (5 points)

Types of plans: Defined benefit and profit sharing.

Valuation interest rate, defined benefit plan: 7% per year.

Actuarial cost method: Unit credit.

Selected valuation results for defined benefit plan as of 1/1/2001:

Accrued liability	$900,000
Normal cost	50,000
Actuarial value of assets	750,000
Market value of assets	825,000
OBRA ’87 current liability projected to 12/31	1,000,000
RPA ‘94 current liability projected to 12/31	1,250,000
Expected benefit payments for the year	0

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

Compensation, as defined in IRC section 404, for employees during 2001:

Compensation for employees in defined benefit plan only	$200,000
Compensation for employees in profit sharing plan only	560,000
Compensation for employees in both defined benefit and profit sharing plans	1,500,000
Compensation for employees not covered by either plan	1,000,000

The defined benefit plan covers more than 100 participants at all times during 2001.

Defined benefit plan contribution for 2001: Amount equal to the full funding limitation, paid on 12/31/2001.

The limit adjustment for 2001 is calculated using the fresh start alternative.

Question 39

In what range is the deductible limit for the profit sharing plan for the 2001 tax year?

(A) Less than $100,000

(B) $100,000 but less than $200,000

(C) $200,000 but less than $300,000

(D) $300,000 but less than $400,000

(E) $400,000 or more

Data for Question 40 (3 points)

Actuarial cost method: Entry age normal.

Valuation interest rate: 7% per year.

Current liability interest rate for 1/1/2001: 6% per year.

Selected valuation results as of 1/1/2001:

Actuarial (market) value of assets	$1,100,000
Accrued liability	1,070,000
Normal cost	90,000
Current liability	1,200,000
Expected increase in current liability	130,000
Expected benefit payments	0

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

There are no amortization charges or credits in the funding standard account as of 1/1/2001.

Question 40

In what range is the 2001 minimum required contribution as of 12/31/2001?

(A) Less than $75,000

(B) $75,000 but less than $82,000

(C) $82,000 but less than $89,000

(D) $89,000 but less than $96,000

(E) $96,000 or more

<u>Data for Question 41</u> (3 points)

Actuarial cost method: Unit credit.

Valuation interest rate: 7% per year.

Current liability interest rate for 1/1/2001: 6.1% per year.

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

Selected valuation results as of 1/1/2001:

Normal cost	$8,000
Accrued liability	95,000
Current liability	57,000
Expected increase in current liability	9,000
Actuarial value of assets	101,000
Market value of assets	97,000
Benefits expected to be paid during 2001	0

A contribution of $200 was credited to the 2000 plan year but was not deducted in the 2000 tax year. This contribution is included in the above asset values.

<u>Question 41</u>

In what range is the full funding limitation for 2001 for maximum tax deductible purposes?

(A) Less than $2,000

(B) $2,000 but less than $3,500

(C) $3,500 but less than $5,000

(D) $5,000 but less than $6,500

(E) $6,500 or more

2001

<u>Data for Question 42</u> (4 points)

Plan effective date: 1/1/2000.

Accrued benefit: $50 per month per year of service for the first 10 years of service plus $65 per month per year of service for service over 10 years.

Actuarial cost method: Unit credit.

Selected actuarial assumptions:

Valuation interest rate	7% per year
Retirement age	65
Pre-retirement decrements	None

Accrued liability as of 1/1/2000: $50,000.

Data for sole participant:

Date of birth	1/1/1939
Date of hire	1/1/1990

Contribution for 2000: Paid 4/1/2000 in an amount equal to the maximum deductible contribution.

There were no gains or losses during 2000.

<u>Question 42</u>

In what range is the minimum required contribution for 2001 as of 1/1/2001?

(A) Less than $5,700

(B) $5,700 but less than $6,200

(C) $6,200 but less than $6,700

(D) $6,700 but less than $7,200

(E) $7,200 or more

2001

Data for Question 43 (4 points)

Actuarial cost method: Frozen initial liability.

Valuation interest rate: 7% per year.

The plan was amended effective 1/1/2001 to improve benefits.

The asset valuation method was changed effective for the 2001 valuation.

Selected valuation results and funding standard account items as of 1/1/2001:

	Before amendment and method changes	After amendment and method changes
Present value of future benefits	$1,000,000	$1,035,000
Entry age normal accrued liability	700,000	720,000
Actuarial value of assets	610,000	620,000
Present value of future compensation	33,200,000	33,200,000
Expected compensation for 2001	4,000,000	4,000,000
Outstanding balance for all amortization bases in 2000 funding standard account	275,000	
Net amortization charge for all amortization bases in 2000 funding standard account	21,200	
Credit balance in funding standard account as of 12/31/2000	0	

Question 43

In what range is the absolute value of the change in the 2001 minimum required contribution payable 12/31/2001 due to the plan amendment and method change?

(A) Less than $1,500

(B) $1,500 but less than $2,700

(C) $2,700 but less than $3,900

(D) $3,900 but less than $5,100

(E) $5,100 or more

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ANSWER KEY

1. A
2. B
3. C
4. E
5. B

6. E
7. D
8. C
9. B
10. B

11. B
12. D
13. B
14. D
15. C

16. A
17. dropped
18. D
19. C
20. C

21. B
22. D
23. B
24. B
25. A

26. B
27. B
28. C
29. C
30. D

31. C
32. B
33. C
34. B
35. C

36. C
37. C
38. C
39. C
40. D

41. E
42. D
43. B