AMERICAN SOCIETY OF PENSION PROFESSIONALS AND ACTUARIES
JOINT BOARD FOR THE ENROLLMENT OF ACTUARIES
SOCIETY OF ACTUARIES

Enrolled Actuaries Pension Examination, Segment A

EA-2, Segment A

Date: Wednesday, November 7, 2012
Time: 8:30 a.m. – 12:30 p.m.

INSTRUCTIONS TO CANDIDATES

1. Write your candidate number here ____________. Your name must not appear.

2. Do not break the seal of this book until the supervisor tells you to do so.

3. Special conditions generally applicable to all questions on this examination are found at the front of this book.

4. All questions should be answered in accordance with laws, rules and regulations in effect as of May 31, 2012.

5. This examination consists of 53 multiple-choice questions of varying value. The point value for each question is shown in parenthesis at the beginning of each question. Total point value is 160.

6. Your score will be based on the point values for the questions that you answer correctly. No credit will be given for omitted answers and no credit will be lost for wrong answers; hence, you should answer all questions even those for which you have to guess. Answer choices C, D, and E will be considered incorrect answers on True-False questions.

7. A separate answer sheet is inside the front cover of this book. During the time allotted for this examination, record all your answers on side 2 of the answer sheet. NO ADDITIONAL TIME WILL BE ALLOWED FOR THIS PURPOSE. No credit will be given for anything indicated in the examination book but not transferred to the answer sheet. Failure to stop writing or coding your answer sheet after time is called will result in the disqualification of your answer sheet or further disciplinary action.

8. Five answer choices are given with each question, each answer choice being identified by a key letter (A to E). For each question, blacken the oval on the answer sheet which corresponds to the key letter of the answer choice that you select.

9. Use a soft-lead pencil to mark the answer sheet. To facilitate correct mechanical scoring, be sure that, for each question, your pencil mark is dark and completely fills only the intended oval. Make no stray marks on the answer sheet. If you have to erase, do so completely.

10. Do not spend too much time on any one question. If a question seems too difficult, leave it and go on.

11. While every attempt is made to avoid defective questions, sometimes they do occur. If you believe a question is defective, the supervisor or proctor cannot give you any guidance beyond the instructions on the exam booklet.

12. Clearly indicated answer choices in the test book can be an aid in grading examinations in the unlikely event of a lost answer sheet.

13. Use the blank portions of each page for your scratch work. Extra blank pages are provided at the back of the examination book.

14. When the supervisor tells you to do so, break the seal on the book and remove the answer sheet.

    On side 1 of the answer sheet, space is provided to write and to code candidate information. Complete Blocks A through G as follows:

    (a) in Block A, print your name and the name of this test center;

    (b) in Block B, print your last name, first name and middle initial and code your name by blackening the ovals (one in each column) corresponding to the letters of your name; for each empty box, blacken the small rectangle immediately above the "A" oval;

    (c) write your candidate number in Block C (as it appears on your ticket of admission for this examination) and write the number of this test center in Block D (the supervisor will supply the number);

    (d) code your candidate number and center number by blackening the five ovals (one in each column) corresponding to the five digits of your candidate number and the three ovals (one in each column) corresponding to the last three digits of the test center number, respectively. Please be sure that your candidate number and the test center number are coded correctly;

    (e) in Block E, code the examination that you are taking by blackening the oval to the left of "Course EA-2, Segment A."

    (f) in Block F, blacken the appropriate oval to indicate whether you are using a calculator; and

    (g) in Block G, sign your name and write today's date. If the answer sheet is not signed, it will not be graded.

    On side 2 of your answer sheet, space is provided at the top for the number of this examination book. Enter the examination book number, from the upper right-hand corner of this examination book, in the four boxes at the top of side 2 marked "BOOKLET NUMBER."

15. After the examination, the supervisor will collect this book and the answer sheet separately. DO NOT ENCLOSE THE ANSWER SHEET IN THE BOOK. All books and answer sheets must be returned. THE QUESTIONS ARE CONFIDENTIAL AND MAY NOT BE TAKEN FROM THE EXAMINATION ROOM.

EA-2A Fall 2012
Answer Key (Revised 12/03/2012)

Question	Answer	Question	Answer
1	C	29	D
2	B	30	D
3	C	31	B
4	B	32	B
5	B	33	B
6	C	34	D
7	B	35	B
8	A	36	D
9	B	37	B
10	B	38	A
11	B	39	B
12	A	40	C
13	C	41	A
14	B	42	B
15	B	43	B
16	D	44	D
17	A	45	E
18	B	46	D
19	C	47	D
20	A	48	D
21	C	49	C
22	D	50	B
23	A	51	D
24	B	52	B
25	B	53	B
26	D		
27	D		
28	B		

****BEGINNING OF EXAMINATION****

Data for Question 1 (3 points)

Plan effective date: 1/1/2000.

Type of plan: Multiple employer.

The plan is maintained by 3 employers A, B, and C.

There are no funding balances at 1/1/2013.

Selected valuation results as of 1/1/2013:

	Employer A	Employer B	Employer C
Actuarial (market) value of assets	$505,000	$620,000	$ 600,000
Funding target	500,000	600,000	700,000
Target normal cost	10,000	15,000	20,000

There are no shortfall bases before 1/1/2013.

7-year amortization factor for 2013: 6.0000.

Question 1

In what range is the **minimum required contribution** as of 1/1/2013?

(A) Less than $30,000

(B) $30,000 but less than $40,000

(C) $40,000 but less than $50,000

(D) $50,000 but less than $60,000

(E) $60,000 or more

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Data for Question 2 (4 points)

Funding standard carryover balance as of 1/1/2012: $0.

Prefunding balance as of 1/1/2012 before any reductions in balance: $200,000.

Effective interest rate for 2012: 6%.

Actual rate of return on assets for 2012: 30%.

The 2011 AFTAP of 120% was certified on 7/30/2011.

No quarterly contributions are required for 2012.

Selected valuation results as of 1/1/2012:

Actuarial (market) value of assets	$950,000
Funding target	1,000,000
Minimum required contribution	250,000

The plan sponsor elects to apply $50,000 of the prefunding balance to offset the minimum required contribution for 2012 on 1/1/2012.

The plan sponsor contributes $300,000 on 12/31/2012 allocated towards the remaining minimum required contribution for the 2012 plan year.

The plan provides for accelerated distributions.

$X is the maximum permissible prefunding balance as of 1/1/2013.

Question 2

In what range is ***$X?***

(A) Less than $220,000

(B) $220,000 but less than $235,000

(C) $235,000 but less than $250,000

(D) $250,000 but less than $265,000

(E) $265,000 or more

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Data for Question 3 (3 points)

Asset valuation method: Average value on valuation date and the preceding valuation date.

Segment rates for 2012 and 2013: {4.0%, 5.0%, 6.0%}.

Effective interest rate for 2012 and 2013: 5.0%.

Assumed annual rate of return on assets for all years: 7.0%.

Data for all assets held by the plan:

	Cost basis	Fair market value as of 1/1/2012	2012 expenses paid on 12/31/2012	Fair market value as of 1/1/2013
Mutual Fund A	$3,500,000	$4,000,000	$8,000	$3,500,000
Mutual Fund B	300,000	300,000	6,000	750,000

A contribution of $500,000 was deposited into Mutual Fund A on 12/31/2012.

A benefit payment of $100,000 was made from Mutual Fund B on 12/31/2012.

Question 3

In what range is the actuarial value of assets as of 1/1/2013?

(A) Less than $4,300,000

(B) $4,300,000 but less than $4,450,000

(C) $4,450,000 but less than $4,600,000

(D) $4,600,000 but less than $4,750,000

(E) $4,750,000 or more

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Data for Question 4 (4 points)

Segment rates for 2012: {2.0%, 4.0%, 6.0%}.

Segment rates for 2013: {3.0%, 5.0%, 6.0%}.

There are no funding balances at 1/1/2013.

Selected valuation results as of 1/1/2013:

Actuarial (market) value of assets	$2,700,000
Funding target	3,000,000
Target normal cost	5,000

The plan sponsor was granted a funding waiver on the entire minimum required contribution for 2012 in the amount of $25,000.

The first funding waiver was granted to the plan sponsor for the 2012 plan year.
There are no shortfall bases for 2012 or prior plan years.

7-year amortization factor for 2013: 6.2468.

$X is the maximum funding waiver permitted under IRC section 412(c) for 2013.

Question 4

In what range is ***$X***?

(A) Less than $46,500

(B) $46,500 but less than $49,000

(C) $49,000 but less than $51,500

(D) $51,500 but less than $54,000

(E) $54,000 or more

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Data for Question 5 (3 points)

Plan effective date: 7/1/1990.

Plan year: 7/1 to 6/30.

Normal retirement benefit: 1.2% of final average compensation for each year of service.

Final average compensation: Average of highest 5 consecutive plan year compensation of the last 10 years.

Data for participant Smith:

Date of hire	7/1/2005
Date of retirement	7/1/2012

Annual compensation:

7/1/2005 – 6/30/2006	$217,000
7/1/2006 – 6/30/2007	240,000
7/1/2007 – 6/30/2008	250,000
7/1/2008 – 6/30/2009	255,000
7/1/2009 – 6/30/2010	230,000
7/1/2010 – 6/30/2011	210,000
7/1/2011 – 6/30/2012	205,000

Question 5

In what range is Smith's annual accrued benefit as of 6/30/2012?

(A) Less than $18,500

(B) $18,500 but less than $19,000

(C) $19,000 but less than $19,500

(D) $19,500 but less than $20,000

(E) $20,000 or more

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Data for Question 6 (4 points)

Plan effective date: 1/1/2012.

Type of plan: Multiemployer.

Normal retirement benefit: 25% of final year compensation.

Actuarial cost method: Aggregate.

Selected actuarial assumptions:

Interest rate	6.0%
Compensation increases	4.0%

Valuation data for each participant as of 1/1/2013:

Date of birth	1/1/1955
2012 compensation	\$31,200

There are 1,000 participants in the plan on 1/1/2013.

The minimum required contribution for 2012 of \$10,600,000 was made on 12/31/2012.

Selected annuity factor:

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

Question 6

In what range is the normal cost as of 1/1/2013?

(A) Less than \$8,000,000

(B) \$8,000,000 but less than \$8,500,000

(C) \$8,500,000 but less than \$9,000,000

(D) \$9,000,000 but less than \$9,500,000

(E) \$9,500,000 or more

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Data for Question 7 (3 points)

Funding standard carryover balance as of 1/1/2012: $0.

Prefunding balance as of 1/1/2012: $50,000.

Selected information:

	2012	2013
Effective interest rate	7.00%	7.00%
Actuarial (market) value of assets, 1/1	$460,000	$473,000
Minimum required contribution, 1/1	35,000	90,000
Contributions deposited 12/31	40,000	150,000
Benefit payments paid 12/31	50,000	55,000

There are no other cash flows into or out of the plan during 2012 and 2013.

The employer does not elect to use the prefunding balance to offset the minimum required contribution.

Question 7

In what range is the prefunding balance as of 1/1/2013?

(A) Less than $55,025

(B) $55,025 but less than $55,525

(C) $55,525 but less than $56,025

(D) $56,025 but less than $56,525

(E) $56,525 or more

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Data for Question 8 (1 point)

Consider the following statement:

> Plan amendments permitted under IRC section 436(c) adopted on or before the valuation date and effective at any time during the plan year must be reflected in the valuation for the plan year.

Question 8

Is the above statement true or false?

(A) True

(B) False

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Data for Question 9 (1 point)

Type of plan: Multiemployer.

Consider the following statement:

> Pursuant to IRC section 4971, employers that fail to meet their minimum funding requirements will incur a 10% excise tax.

Question 9

Is the above statement true or false?

(A) True

(B) False

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Data for Question 10 (1 point)

Consider the following statement relative to setting actuarial assumptions:

> For purposes of determining minimum required contributions, no preretirement mortality assumptions are required for plans with fewer than 500 participants and beneficiaries not yet in pay status.

Question 10

Is the above statement true or false?

(A) True

(B) False

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Data for Question 11 (1 point)

Consider the following statement relative to setting actuarial assumptions:

> The IRS must approve any change in actuarial assumptions if the total unfunded vested benefits of all plans in the employer's controlled group are in excess of $50,000,000, determined as of the close of the prior plan year.

Question 11

Is the above statement true or false?

(A) True

(B) False

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Data for Question 12 (4 points)

Type of plan: Multiemployer.

Actuarial cost method: Entry age normal.

Valuation interest rate: 7.0%.

Credit balance as of 12/31/2010: $350,000.

Selected valuation results as of:

	1/1/2011	1/1/2012
Actuarial (market) value of assets	$9,500,000	$11,300,000
Accrued liability	10,000,000	12,250,000
Normal cost	1,500,000	1,600,000
Total amortization charges	200,000	225,000
Total amortization credits	150,000	150,000

Contributions made for the 2011 plan year on 12/31/2011: $1,250,000.

Contributions made for the 2012 plan year on 12/31/2012: $1,850,000.

Question 12

In what range is the credit balance as of 12/31/2012?

(A) Less than $25,000

(B) $25,000 but less than $50,000

(C) $50,000 but less than $75,000

(D) $75,000 but less than $100,000

(E) $100,000 or more

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Data for Question 13 (4 points)

Benefit formula: 2% of highest 3-year average compensation for each year of service.

Assumed compensation increase: 3%.

There are no assumed pre-retirement decrements other than death.

Selected information for participant Smith:

Date of birth	1/1/1962
Date of hire	1/1/2002
Compensation history:	
2009	$90,000
2010	95,000
2011	100,000
2012	115,000

Selected commutation functions:

	Segment 2		Segment 3	
Age	$N_x^{(12)}$	D_x	$N_x^{(12)}$	D_x
50	75,939	5,336	42,761	3,337
51	70,745	5,028	39,526	3,115
65	23,241	2,103	11,679	1,142
66	21,202	1,965	10,576	1,057
70	14,326	1,479	6,940	766
71	12,896	1,372	6,202	705

$X = the funding target as of 1/1/2013 based on Smith's expected compensation for 2012.

$Y = the funding target as of 1/1/2013 based on Smith's actual compensation for 2012.

Question 13

In what range is the absolute value of ***$X-$Y***?

(A) Less than $3,000

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

(C) $3,500 but less than $4,000

(D) $4,000 but less than $4,500

(E) $4,500 or more

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Data for Question 14 (3 points)

Valuation date: 1/1/2013.

Plan type: Statutory hybrid (cash balance).

Pay credits and interest credits are made at the end of the year.

Benefits are assumed to be paid at normal retirement in the form of a lump sum.

Assumed cash balance crediting interest rate: 5%.

Segment rates for 1/1/2013: {5.0%, 6.0%, 6.5%}.

Selected information for participant Smith:

Date of birth	1/1/1963
Annual cash balance pay credit	$5,000

Question 14

In what range is the target normal cost as of 1/1/2013 for Smith?

(A) Less than $4,000

(B) $4,000 but less than $4,250

(C) $4,250 but less than $4,500

(D) $4,500 but less than $4,750

(E) $4,750 or more

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Data for Question 15 (1 point)

Consider the following statement:

> A Schedule SB does not have to be completed for a defined benefit plan that is eligible to file a Form 5500-EZ.

Question 15

Is the above statement true or false?

(A) True

(B) False

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Data for Question 16 (5 points)

Funding standard carryover balance as of 1/1/2012: $0.

Prefunding balance as of 1/1/2012: $11,150.

Effective interest rate for 2011: 6.1%.

Effective interest rate for 2012: 3.1%.

Minimum required contribution as of 1/1/2011: $50,000.

Minimum required contribution as of 1/1/2012: $50,000.

Quarterly installments are required for the 2012 plan year.

On 4/15/2012 the sponsor elected to apply the prefunding balance to the 2012 minimum required contribution.

The employer makes a single contribution of ***$X*** on 9/15/2013 in the **smallest amount that satisfies the minimum funding standard** for 2012.

Question 16

In what range is ***$X***?

(A) Less than $35,000

(B) $35,000 but less than $38,000

(C) $38,000 but less than $41,000

(D) $41,000 but less than $44,000

(E) $44,000 or more

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Data for Question 17 (2 points)

Valuation date: 1/1/2013.

Selected information as of 1/1/2013:

Funding standard carryover balance	$18,000,000
Prefunding balance	4,000,000
Funding target	65,000,000
Actuarial (market) value of assets	68,000,000

The plan offers a lump sum option.

The 2012 AFTAP was certified at 91% on 8/1/2012.

The 2013 AFTAP was certified on 8/1/2013.

In order to avoid benefit restrictions for the 2013 plan year when the 2013 AFTAP is certified, the funding standard carryover balance is automatically reduced by ***$X***.

Question 17

What is ***$X***?

(A) $0

(B) $1 but less than $1,800,000

(C) $1,800,000 but less than $3,600,000

(D) $3,600,000 but less than $5,400,000

(E) $5,400,000 or more

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Data for Question 18 (4 points)

Plan effective date: 1/1/1987.

Type of plan: Multiemployer.

Actuarial cost method: Frozen initial liability.

Valuation interest rate: 7.0%.

Initial unfunded accrued liability (30-year amortization period): $50,000,000.

Credit balance as of 12/31/2012: $700,000.

Selected valuation results as of 1/1/2013:

Present value of future benefits	$350,000,000
Actuarial (market) value of assets	300,000,000
Present value of future compensation	750,000,000
Plan compensation	75,000,000

The funding method used to determine the minimum funding requirement is changed to the level percent of compensation aggregate funding method effective with the 1/1/2013 valuation.

$X is the **smallest amount that satisfies the minimum funding standard** before the method change for the 2013 plan year as of 12/31/2013.

$Y is the **smallest amount that satisfies the minimum funding standard** after the method change for the 2013 plan year as of 12/31/2013.

Question 18

In what range is the absolute value of ***$X*** - ***$Y***?

(A) Less than $2,500,000

(B) $2,500,000 but less than $2,650,000

(C) $2,650,000 but less than $2,800,000

(D) $2,800,000 but less than $2,950,000

(E) $2,950,000 or more

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Data for Question 19 (3 points)

Effective date: 1/1/2004.

Type of plan: Multiemployer.

Annual normal retirement benefit: $4,000 for each year of service, payable monthly.

Early retirement benefit: Accrued benefit reduced by 3% for each year prior to age 65.

Actuarial cost method: Unit credit.

Pre-retirement decrements: None.

Valuation interest rate: 6.0%.

Data for plan participant Smith:

Date of birth	1/1/1958
Date of hire	1/1/2004
Date of retirement	1/1/2013

Selected commutation functions:

Age	$N_x^{(12)}$	D_x
55	508,056	38,635
65	220,966	20,301

$X is the absolute value of the gain or loss attributable to Smith's retirement on 1/1/2013.

Question 19

In what range is ***$X***?

(A) Less than $75,000

(B) $75,000 but less than $100,000

(C) $100,000 but less than $125,000

(D) $125,000 but less than $150,000

(E) $150,000 or more

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Data for Question 20 (4 points)

Type of plan: Multiemployer.

Actuarial cost method: Unit credit.

Normal retirement benefit: $120,000 per year, payable monthly.

Pre-retirement death benefit lump sum: $120,000, payable immediately upon death.

The plan does not allow for early retirement.

There are no pre-retirement decrements other than death at ages through age 64.

Deaths are assumed to occur at the beginning of the year.

Valuation interest rate: 6.0%.

Data for plan participant Smith:

Date of birth	1/1/1950
Date of hire	1/1/1996

Selected commutation functions and mortality rates:

Age	$N_x^{(12)}$	D_x	q_x
63	264,562	23,213	0.0083
64	242,034	21,718	0.0091
65	220,966	20,301	0.0101

Question 20

In what range is the accrued liability for Smith as of 1/1/2013?

(A) Less than $1,145,000

(B) $1,145,000 but less than $1,150,000

(C) $1,150,000 but less than $1,155,000

(D) $1,155,000 but less than $1,160,000

(E) $1,160,000 or more

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Data for Question 21 (4 points)

The asset valuation method is changed effective 1/1/2013.

Selected valuation results as of 1/1/2013:

Funding standard carryover balance	\$0
Prefunding balance	4,000,000
Actuarial value of assets:	
Before change in method	50,000,000
After change in method	47,000,000
Funding target	60,000,000
Target normal cost	1,300,000

7-year shortfall amortization factor for 2013: 5.9991.

The plan was exempt from establishing a shortfall amortization base in all plan years prior to 2013.

The plan offers a lump sum payment option.

\$X = Shortfall amortization installment for 2013 if asset method is not changed.

\$Y = Shortfall amortization installment for 2013 after change in asset method.

Question 21

In what range is the absolute value of ***\$X*** - ***\$Y***?

(A) Less than \$500,000

(B) \$500,000 but less than \$750,000

(C) \$750,000 but less than \$1,000,000

(D) \$1,000,000 but less than \$1,250,000

(E) \$1,250,000 or more

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Data for Question 22 (4 points)

No shortfall amortization bases were established prior to 1/1/2012.

Segment rates for 1/1/2012 and 1/1/2013: {5.0%, 6.0%, 7.0%}.

Selected information as of:

	1/1/2012	1/1/2013
Funding standard carryover balance	$0	$0
Prefunding balance	200,000	225,000
Actuarial (market) value of assets	2,200,000	2,400,000
Funding target	2,100,000	2,200,000
Target normal cost	85,000	95,000

The plan sponsor elected to use the prefunding balance to offset the 2012 and 2013 minimums.

7-year shortfall amortization factor: 5.9982.
6-year shortfall amortization factor: 5.2932.

$X = the **minimum required contribution** for the 2013 plan year.

Question 22

In what range is ***$X***?

(A) Less than $90,000

(B) $90,000 but less than $95,000

(C) $95,000 but less than $100,000

(D) $100,000 but less than $105,000

(E) $105,000 or more

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Data for Question 23 (4 points)

Effective date: 1/1/2005.

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

Early retirement age: 62.

Early retirement benefit: Accrued benefit reduced by 4.0% for each year prior to age 65.

Actuarial assumptions for 1/1/2013 valuation:

Segment interest rates	{6.0%, 7.0%, 8.0%}
Compensation increases	3.0%
Probability of retirement	
Age 62	40%
Age 65	100%

Data for plan participant Smith as of 1/1/2013:

Date of birth	1/1/1983
Date of hire	1/1/2006
2012 compensation	$125,000

Select annuity factors:

Interest rate	$\ddot{a}_{62}^{(12)}$	$\ddot{a}_{65}^{(12)}$
6.0%	11.85	11.09
7.0%	10.89	10.26
8.0%	10.07	9.53

Question 23

In what range is the target normal cost for Smith as of 1/1/2013?

(A) Less than $2,800

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

(C) $3,200 but less than $3,600

(D) $3,600 but less than $4,000

(E) $4,000 or more

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Data for Question 24 (5 points)

Effective date: 1/1/2002.

Type of plan: Multiemployer.

Normal retirement benefit: 1.5% of final year compensation for each year of service.
Early retirement age: 62.
Early retirement benefit: Accrued benefit reduced by 5.0% for each year prior to age 65.

Actuarial cost method: Projected unit credit.

Actuarial assumptions for 1/1/2013 valuation:

Interest rate	7.0%
Compensation increases	3.0%
Probability of retirement	
Age 62	50%
Age 63	25%
Age 64	0%
Age 65	100%

Data for participant Smith as of 1/1/2013:

Date of birth	1/1/1953
Date of hire	1/1/2003
2012 compensation	$101,000

Select annuity factors:

$\ddot{a}_{62}^{(12)}$	$\ddot{a}_{63}^{(12)}$	$\ddot{a}_{64}^{(12)}$	$\ddot{a}_{65}^{(12)}$
10.90	10.70	10.50	10.30

Question 24

In what range is the sum of Smith's accrued liability and normal cost as of 1/1/2013?

(A) Less than $140,000

(B) $140,000 but less than $150,000

(C) $150,000 but less than $160,000

(D) $160,000 but less than $170,000

(E) $170,000 or more

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Data for Question 25 (1 point)

Consider the following statement for the 2013 plan year:

> A plan is exempt from setting up a new shortfall amortization base only when plan assets offset by a plan's funding standard carryover balance and prefunding balance are greater than or equal to the plan's funding target.

Question 25

Is the above statement true or false?

(A) True

(B) False

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Data for Question 26 (3 points)

Type of plan: Multiemployer.

Valuation date: 1/1/2013.

Actuarial cost method: Aggregate.

Valuation interest rate: 6%.

Credit balance as of 12/31/2012: $300,000.

Selected valuation results as of 1/1/2013:

Present value of projected benefits	$10,000,000
Present value of future working years	8,000
Actuarial (market) value of assets	$4,000,000

Participants as of 1/1/2013:

Active	1,000
Vested terminated	200
Retired	100

For the 2013 plan year, a contribution of $500,000 was made on 7/1/2013 and a contribution of $200,000 was made on 7/1/2014.

Question 26

In what range is the credit balance at 12/31/2013?

(A) Less than $185,000

(B) $185,000 but less than $190,000

(C) $190,000 but less than $195,000

(D) $195,000 but less than $200,000

(E) $200,000 or more

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Data for Question 27 (3 points)

Selected information as of 1/1/2013:

Funding standard carryover balance	$3,700,000
Prefunding balance	0
Market value of assets	46,500,000
Actuarial value of assets	46,200,000
Funding target	45,700,000
Target normal cost	6,900,000
Prior year amortization payments	110,000
Present value of prior years' outstanding bases	400,000
7-year shortfall amortization factor	5.9982

The employer makes a single contribution of ***$X*** on 1/1/2013 in the **smallest amount that satisfies the minimum funding standard** for the 2013 plan year.

Question 27

In what range is ***$X***?

(A) Less than $3,100,000

(B) $3,100,000 but less than $3,200,000

(C) $3,200,000 but less than $3,300,000

(D) $3,300,000 but less than $3,400,000

(E) $3,400,000 or more

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Data for Question 28 (4 points)

A defined benefit plan requires mandatory employee contributions.

Selected information as of 1/1/2013:

Funding standard carryover balance	$500,000
Prefunding balance	0
Actuarial value of assets	95,700,000
Funding target	95,759,000
Present value of benefits expected to accrue during year	2,200,000
Expenses expected to be paid from plan assets during the year	0
Present value of mandatory employee contributions expected to be received during year	750,000
Present value of remaining shortfall amortizations from prior years	0
Effective interest rate	6.00%
7-year shortfall amortization factor	5.7800

No quarterly contributions were required for 2013.

A contribution of $100,000 for 2013 was made on 7/1/2013.

The employer makes an additional contribution of ***$X*** on 12/31/2013 in the **smallest amount that satisfies the minimum funding standard.**

Question 28

In what range is ***$X***?

(A) Less than $1,000,000

(B) $1,000,000 but less than $1,200,000

(C) $1,200,000 but less than $1,400,000

(D) $1,400,000 but less than $1,600,000

(E) $1,600,000 or more

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Data for Question 29 (3 points)

A plan was amended to freeze benefit accruals effective on 1/1/2013.

Selected information as of 1/1/2013:

Funding standard carryover balance	$0
Prefunding balance	12,000
Market value of assets	920,000
Actuarial value of assets	880,000
Funding target	1,140,000
Plan-related expenses paid 1/1/2013 from plan assets	9,000
Effective interest rates	6.0%
7-year shortfall amortization factor	5.9782

No shortfall amortization bases were established prior to 2013.

The employer makes a single contribution of ***$X*** on 1/1/2013 **in the smallest amount that satisfies the minimum funding standard** for the 2013 plan year.

Question 29

In what range is ***$X***?

(A) Less than $34,000

(B) $34,000 but less than $37,500

(C) $37,500 but less than $41,000

(D) $41,000 but less than $44,500

(E) $44,500 or more

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Data for Question 30 (3 points)

Plan effective date: 1/1/2008.

Normal retirement benefit: 5% of final compensation per year of service.

Early retirement age: 55.

Early retirement benefit: Accrued benefit, reduced 3% for each year prior to age 65.

IRC section 415 dollar maximum for 2013: $200,000.

Plan actuarial equivalence:

Interest rate:	6.0%
Mortality:	Applicable Mortality Table

Data for participant Smith:

Date of birth	1/1/1958
Date of hire	1/1/2000
Date of retirement	1/1/2013
2012 compensation	$125,000
High 3-year average compensation	128,000

Selected commutation functions (based on Applicable Mortality Table):

Age	5%		6%	
	$N_x^{(12)}$	D_x	$N_x^{(12)}$	D_x
55	989,900	66,554	529,404	39,515
62	598,284	46,091	303,872	25,609
65	470,592	38,961	233,862	21,040

Question 30

In what range is the annual benefit payable to Smith beginning on 1/1/2013?

(A) Less than $39,000

(B) $39,000 but less than $45,000

(C) $45,000 but less than $51,000

(D) $51,000 but less than $57,000

(E) $57,000 or more

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Data for Question 31 (2 points)

Consider the following statements with respect to a multiemployer plan:

I. The plan is in critical status if it has a funding deficiency for the current year.

II. A plan sponsor of a plan that is in critical status must adopt a funding improvement plan not later than 240 days after the actuarial certification that the plan is in critical status.

III. No later than 90 days after the beginning of the plan year, the plan actuary must certify whether or not the plan is in endangered status and whether or not the plan is in critical status.

Question 31

Which, if any, of the above statements 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.

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Data for Question 32 (4 points)

Plan effective date: 1/1/2012.

Type of plan: Multiemployer.

Actuarial cost method: Aggregate.

Plan formula: 50% of final compensation.

Selected assumptions:

Valuation interest rate	7.0%
Compensation increases	4.0%

Data for each participant as of 1/1/2012:

Date of birth	1/1/1962
2011 compensation used for the 2012 valuation	$43,000
Compensation increase during 2012	8.0%

There are 100 participants in the plan on 1/1/2012.

Selected annuity factor:

$$\ddot{a}_{65}^{(12)} = 8.33$$

The plan sponsor contributed the minimum required contribution for the 2012 plan year on 12/31/2012.

Question 32

In what range is the normal cost for 2013 as of 1/1/2013?

(A) Less than $1,000,000

(B) $1,000,000 but less than $1,100,000

(C) $1,100,000 but less than $1,200,000

(D) $1,200,000 but less than $1,300,000

(E) $1,300,000 or more

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Data for Question 33 (1 point)

Valuation date: 1/1/2013.

The funding target and target normal cost are determined using the monthly corporate bond yield curve described in IRC section 430(h)(2)(D)(ii).

Actuarial value of assets is calculated as of 1/1/2013 using the average of the values on the valuation date and the two prior valuation dates.

Consider the following statement with respect to the asset valuation method:

> The assumed rate of return for periods within the 2012 plan year must be limited to the September 2011 third segment rate.

Question 33

Is the above statement true or false?

(A) True

(B) False

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Data for Question 34 (3 points)

Type of plan: Multiemployer.

Actuarial cost method: Frozen initial liability.

Valuation interest rate: 7.0%.

Credit balance as of December 31, 2011: $0.

Selected valuation results as of 1/1/2012:

Unfunded accrued liability outstanding balance	$1,600,000
Normal cost	300,000

Selected valuation results as of 1/1/2013:

Market value of assets	$8,400,000
Actuarial value of assets	8,000,000
Present value of future benefits	11,500,000
Present value of future compensation	17,000,000
Total compensation for participants	1,700,000

The only contribution for the 2012 plan year of $500,000 was made on 4/1/2012.

Question 34

In what range is the normal cost as of 1/1/2013?

(A) Less than $167,000

(B) $167,000 but less than $182,000

(C) $182,000 but less than $197,000

(D) $197,000 but less than $212,000

(E) $212,000 or more

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Data for Question 35 (3 points)

Type of plan: Multiemployer.

Assumed rate of return on assets: 7%.

Contributions for 2011: $0.

Contributions for 2012: $90,000 paid 8/1/2012.
$10,000 paid 4/1/2013.

Actuarial (market) value of assets, excluding receivable contributions:

1/1/2012	1/1/2013
$870,000	$1,014,000

Data for all retired participants:

	Smith	Jones
Date of retirement	8/1/2010	5/1/1998
Monthly benefit	$1,000	$500

There were no deaths or new retirements during 2012.

$X is the gain or loss at 1/1/2013 due to investment earnings during 2012.

Question 35

In what range is ***$X***?

(A) Gain of $10,000 or more

(B) Gain of less than $10,000

(C) No gain or loss

(D) Loss of less than $10,000

(E) Loss of $10,000 or more

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Data for Question 36 (3 points)

Plan effective date: 1/1/2007.

Valuation date: 1/1/2013.

Funding standard carryover balance as of 1/1/2013: $100,000.

Prefunding balance as of 1/1/2013: $300,000.

History of annuity purchases:

	2011	2012
Highly compensated employees	$2,000,000	$3,350,000
All employees	2,850,000	3,500,000

Funding target as of 1/1/2013: $4,800,000.

The percentage used to determine whether funding balances can be applied to the minimum required contribution for the 2014 plan year is 97.91%.

Question 36

In what range is the AFTAP for 2013?

(A) Less than 98%

(B) 98% but less than 100%

(C) 100% but less than 102%

(D) 102% but less than 104%

(E) 104% or more

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Data for Question 37 (3 points)

Valuation date: 1/1/2013.

Normal retirement benefit: $120 per month for each year of service.

Funding standard carryover balance as of 1/1/2013: $8,000.

Prefunding balance as of 1/1/2013: $1,000.

Segment rates for 2013: {4.0%, 5.0%, 6.0%}.

Actuarial (market) value of assets as of 1/1/2013: $41,000.

No shortfall amortization bases were established prior to 2013.

Selected data for sole participant Smith:

Date of birth	1/1/1973
Date of hire	1/1/2003

Selected annuity factors at age 65:

4%	5%	6%
13.73	12.57	11.56

7-year shortfall amortization factor for 2013: 6.1596.

Question 37

In what range is the **minimum required contribution** as of 1/1/2013?

(A) Less than $1,500

(B) $1,500 but less than $4,000

(C) $4,000 but less than $6,500

(D) $6,500 but less than $9,000

(E) $9,000 or more

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Data for Question 38 (1 point)

Plan effective date: 5/1/2008.

A short plan year applies for the period beginning 5/1/2012 and ending 12/31/2012.

Quarterly installments are required for the plan year beginning 1/1/2013 (2013 plan year).

Consider the following statement:

> The calculation of the quarterly required installment for the 2013 plan year is based solely on the minimum required contribution for the 2013 plan year.

Question 38

Is the above statement true or false?

(A) True

(B) False

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Data for Question 39 (3 points)

Plan effective date: 1/1/2003.

Normal form of payment: 15-year certain and life annuity.

Normal retirement benefit: 1.25% of final 3-year average compensation for each year of service.

Data for participant Smith:

Date of birth	1/1/1955
Date of hire	1/1/2007
Compensation for all years	$75,000

Smith is not a key employee.

Plan actuarial equivalence annuity factors at age 65:

Single life annuity	10.86
15-year certain and life annuity	11.92

The plan was determined to be top-heavy for the 2008 plan year and all subsequent plan years.

$X is Smith's annual accrued benefit as of 1/1/2013 in the plan's normal form of payment.

Question 39

In what range is ***$X***?

(A) Less than $6,000

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

(C) $7,000 but less than $8,000

(D) $8,000 but less than $9,000

(E) $9,000 or more

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Data for Question 40 (3 points)

2012 segment rates: {4.00%, 5.00%, 6.00%}.

2013 segment rates: {4.75%, 5.25%, 6.00%}.

There are no funding balances at 1/1/2012 and 1/1/2013.

Selected valuation results as of:

	1/1/2012	1/1/2013
Actuarial (market) value of assets	$900,000	$925,000
Funding target	1,000,000	1,100,000
Target normal cost	50,000	54,000
Shortfall amortization charge	5,000	8,000
Effective interest rate	4.50%	5.00%

The plan sponsor obtained a funding waiver for the full amount of the minimum required contribution for the 2012 plan year.

No contributions were made for the 2012 plan year.

Question 40

In what range is the **minimum required contribution** as of 1/1/2013?

(A) Less than $73,500

(B) $73,500 but less than $74,000

(C) $74,000 but less than $74,500

(D) $74,500 but less than $75,000

(E) $75,000 or more

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Data for Question 41 (5 points)

Plan type: Multiemployer.

Valuation date: 1/1/2013.

Interest rate: 7%.

Selected participant data:

	Smith	Jones
Date of birth	1/1/1947	1/1/1947
Date of retirement	1/1/2012	1/1/2012
Annual benefit paid on 1/1	$30,000	$6,000
Form of benefit	10-year certain and life	10-year certain and life
Status on 1/1/2012	Alive	Alive
Status on 1/1/2013	Alive	Deceased

Selected commutation functions:

Age	N_x
65	102,245
66	92,585
67	83,649
75	33,380
76	29,238

$X = the gain (loss) due to mortality experience for Smith as of 1/1/2013.

$Y = the gain (loss) due to mortality experience for Jones as of 1/1/2013.

$Z = ***$X***+***$Y***

Question 41

In what range is the absolute value of ***$Z?***

(A) Less than $22,000

(B) $22,000 but less than $23,000

(C) $23,000 but less than $24,000

(D) $24,000 but less than $25,000

(E) $25,000 or more

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Data for Question 42 (3 points)

Applicable 417(e) segment rates: {4.5%, 5.0%, 6.0%}.

Selected data for participant Smith:

Date of birth	1/1/1963
Date of termination	1/1/2013
Vested accrued benefit	$20,000

Benefits are payable as a 5-year certain and life annuity, in annual installments, starting at age 65.

Participant Smith terminated and elected to receive a lump sum distribution on 1/1/2013 equal to the present value of the deferred vested accrued benefit.

The plan definition of actuarial equivalence is the Applicable Interest Rate and Applicable Mortality Table under 417(e) with no pre-retirement mortality.

Selected annuity values:

Interest rate	$\ddot{a}_{65}$	$\ddot{a}_{70}$
5%	12.11	10.50
6%	11.14	9.78

${}_5p_{65} = 0.90$

Question 42

In what range is lump sum distribution payable to Smith on 1/1/2013?

(A) Less than $96,000

(B) $96,000 but less than $102,000

(C) $102,000 but less than $108,000

(D) $108,000 but less than $114,000

(E) $114,000 or more

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Data for Question 43 (1 point)

Consider the following statement for the 2013 plan year:

A plan with more than 500 participants is at-risk if either:

(a) the FTAP using not-at-risk assumptions for the prior plan year is less than 80%,

or

(b) the FTAP using at-risk assumptions for the prior plan year is less than 70%.

Question 43

Is the above statement true or false?

(A) True

(B) False

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Data for Question 44 (4 points)

Type of plan: Multiemployer.
Valuation date: 1/1/2013.

Normal retirement benefit:	1% of final 3-year average compensation for each year of service.
Actuarial cost method:	Projected unit credit.

Actuarial assumptions:

Interest rate	7.5%
Compensation increases	2.0% per year

There are no pre-retirement decrements other than mortality.

Credit balance as of 12/31/2012: $100,000.

Selected information as of 1/1/2013:

Amortization of outstanding charges	550,000
Amortization of outstanding credits	200,000
Data for each participant:	
Date of birth	1/1/1973
Date of hire	1/1/2009
2012 compensation	$34,000

There are 1,000 participants in the plan on 1/1/2013.

Selected commutation functions:

Age	$N_x^{(12)}$	D_x
40	14,243,879	1,118,969
65	1,517,247	163,979

A single contribution of ***$X*** is made on 12/31/2013 in the **smallest amount that satisfies the minimum funding standard** for the 2013 plan year.

Question 44

In what range is ***$X***?

(A) Less than $850,000

(B) $850,000 but less than $925,000

(C) $925,000 but less than $1,000,000

(D) $1,000,000 but less than $1,075,000

(E) $1,075,000 or more

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Data for Question 45 (5 points)

Type of plan: Multiemployer.

Valuation date: 1/1/2013.

Benefit formula: \$100 per month for each year of service.

The plan provides an unreduced retirement benefit at age 62 with 15 years of service.

Retirements are assumed to occur at the beginning of the year.

Actuarial cost method: Aggregate.

Interest rate: 7.5%.

Credit balance as of 12/31/2012: \$500.

Actuarial (market) value of assets as of 1/1/2013: \$250,000.

Data for all plan participants:

	Date of birth	Date of hire
Smith	1/1/1958	1/1/2003
Jones	1/1/1950	1/1/1993

Retirement rates and selected annuity factors:

Age	q_r	$\ddot{a}_x^{(12)}$
62	25%	9.86
65	100%	9.25

A single contribution of ***\$X*** is made on 12/31/2013 in the **smallest amount that satisfies the minimum funding standard** for the 2013 plan year.

Question 45

In what range is ***\$X***?

(A) Less than \$5,500

(B) \$5,500 but less than \$7,000

(C) \$7,000 but less than \$8,500

(D) \$8,500 but less than \$10,000

(E) \$10,000 or more

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Data for Question 46 (3 points)

Valuation date: 1/1/2013.

Selected valuation results for IRC 404 purposes as of 1/1/2013:

Market value of assets	$14,000,000
Actuarial value of assets	12,750,000
Funding target	18,000,000
Funding target with future compensation increases	19,500,000
Target normal cost	600,000
Funding target (at-risk)	20,250,000
Target normal cost (at-risk)	800,000
Minimum required contribution	1,600,000
Effective interest rate	4.00%

Question 46

In what range is the deduction limit for 2013?

(A) Less than $13,000,000

(B) $13,000,000 but less than $14,500,000

(C) $14,500,000 but less than $16,000,000

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

(E) $17,500,000 or more

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Data for Question 47 (4 points)

Type of plan: Multiemployer.

Valuation date: 1/1/2013.

Actuarial cost method: Unit credit.

Interest rate: 7.0%.

Credit balance as of 12/31/2011: $100,000.

Selected valuation results:

	1/1/2012	1/1/2013
Actuarial (market) value of assets	$4,250,000	$4,280,000
Accrued liability	5,000,000	5,400,000
Normal cost	250,000	350,000
Amortization of outstanding charges/(credits) before any bases established 1/1/2013	500,000	500,000

Contributions of $300,000 for the 2012 plan year were made on 12/31/2012.

A single contribution of ***$X*** is made on 12/31/2013 in the **smallest amount that satisfies the minimum funding standard** for the 2013 plan year.

Question 47

In what range is ***$X***?

(A) Less than $1,310,000

(B) $1,310,000 but less than $1,335,000

(C) $1,335,000 but less than $1,360,000

(D) $1,360,000 but less than $1,385,000

(E) $1,385,000 or more

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Data for Question 48 (4 points)

Type of plan: Multiemployer.

Actuarial cost method: Entry age normal.

Valuation date: 1/1/2013.

Interest rate: 7.5%.

Selected information for all funding standard account bases as 1/1/2012:

	Years remaining	Outstanding balance
Method change	12	$3,000,000
Actuarial (gain)	14	(825,000)
Actuarial loss	15	750,000

The plan experiences an actuarial loss during 2012 of $900,000.

The plan implemented a 5-year extension as of 1/1/2013 for all charge bases established on or before 1/1/2012 under an automatic extension of amortization.

$X is the absolute value of the change in the **minimum required contribution** as of 12/31/2013 due to the amortization extension.

Question 48

In what range is ***$X***?

(A) Less than $65,000

(B) $65,000 but less than $75,000

(C) $75,000 but less than $85,000

(D) $85,000 but less than $95,000

(E) $95,000 or more

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Data for Question 49 (2 points)

Type of plan: Multiemployer.

Funding status on 1/1/2012: Neither critical nor endangered.

Funding status on 1/1/2013: Seriously endangered.

Selected data for all participating employers on 3/31/2013:

Employer	Number of actives covered by collective bargaining agreement	Collective bargaining agreement expiration date
Employer 1	150	10/1/2013
Employer 2	300	2/15/2014
Employer 3	500	12/31/2014
Employer 4	200	3/1/2016

There are no other employees.

All actives are covered by a collective bargaining agreement.

A funding improvement plan is adopted on 10/31/2013.

Question 49

When does the plan's funding improvement period start?

(A) 1/1/2013

(B) 1/1/2014

(C) 1/1/2015

(D) 1/1/2016

(E) None of the above

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Data for Question 50 (1 point)

Consider the following statement:

> A multiemployer plan is considered to be in critical status if the plan's funded percentage is less than 65%.

Question 50

Is the above statement true or false?

(A) True

(B) False

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Data for Question 51 (4 points)

Selected information:

	1/1/2011	1/1/2012	1/1/2013
Actuarial value of assets	\$450,000	\$455,075	\$549,500
Funding target	450,000	500,000	550,000
Target normal cost	45,000	50,000	60,000
6-year shortfall amortization factor			5.4100
7-year shortfall amortization factor		5.9900	6.1600

There were no funding balances as of 1/1/2011.

A contribution of \$45,000 was deposited for the 2011 plan year on 1/1/2011

The **smallest amount that satisfies the minimum funding standard** for the 2012 plan year was deposited on 1/1/2012.

\$X = the **smallest amount that satisfies the minimum funding standard** for the 2013 plan year as of 1/1/2013.

Question 51

In what range is ***\$X***?

(A) Less than \$59,500

(B) \$59,500 but less than \$60,100

(C) \$60,100 but less than \$60,700

(D) \$60,700 but less than \$61,300

(E) \$61,300 or more

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Data for Question 52 (3 points)

Selected valuation results:

	1/1/2012	1/1/2013
Funding standard carryover balance	$100,000	$0
Prefunding balance	250,000	157,500
Actuarial (market) value of plan assets	2,250,000	2,362,500
Funding target	2,000,000	2,300,000
Target normal cost	200,000	225,000
6-year shortfall amortization factor		5.4100
7-year shortfall amortization factor	5.9900	6.1600

The plan did not have a funding shortfall for the 2011 plan year.

The **smallest amount that satisfies the minimum funding standard** was made for the 2012 plan year.

The plan sponsor did not elect to use the prefunding balance to reduce the 2013 minimum required contribution.

Question 52

In what range is the **minimum required contribution** for the 2013 plan year?

(A) Less than $221,000

(B) $221,000 but less than $231,000

(C) $231,000 but less than $241,000

(D) $241,000 but less than $251,000

(E) $251,000 or more

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Data for Question 53 (3 points)

Type of plan: Multiemployer.

Actuarial cost method: Unit credit.

Annual required employee contributions: $500 payable at end of year.

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

Valuation interest rate: 6.0%.

Data for participant Smith:

Date of birth	1/1/1957
Date of hire	1/1/1987

Selected annuity value:

$$\ddot{a}_{65}^{(12)} = 10.85$$

Valuation and interest crediting rates for employee contributions are assumed to be equal for future years.

Question 53

In what range is the employer normal cost for Smith as of 1/1/2013?

(A) Less than $5,300

(B) $5,300 but less than $5,400

(C) $5,400 but less than $5,500

(D) $5,500 but less than $5,600

(E) $5,600 or more

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