

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

ENROLLED ACTUARIES PENSION EXAMINATION, SEGMENT F

NOVEMBER 2014 EA-2, SEGMENT F, EXAMINATION

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IMPORTANT

**THESE FACTORS MAY BE USED FOR ALL QUESTIONS UNLESS OTHER FACTORS ARE PROVIDED,
FOR BOTH SINGLE EMPLOYER AND MULTIEMPLOYER PLANS**

2014 EA-2 (Segment F) Examination - Selected Commutation Factors Interest Rates: 3.0%, 4.0%, and 5.0%

MALES	Interest Rate = 3.0%		Interest Rate = 4.0%		Interest Rate = 5.0%		MALES
Age	D_x	$N_x^{(12)}$	D_x	$N_x^{(12)}$	D_x	$N_x^{(12)}$	Age
60	162,371	2,658,791	90,937	1,340,228	51,213	684,044	60
61	156,901	2,498,928	87,029	1,251,083	48,545	634,053	61
62	151,492	2,344,506	83,220	1,165,800	45,979	586,684	62
63	146,148	2,195,463	79,513	1,084,278	43,512	541,836	63
64	140,836	2,051,750	75,886	1,006,428	41,132	499,414	64
65	135,583	1,913,322	72,353	932,161	38,844	459,331	65
66	130,379	1,780,124	68,907	861,387	36,641	421,497	66
67	125,183	1,652,127	65,525	794,031	34,511	385,832	67
68	120,037	1,529,303	62,227	730,017	32,462	352,260	68
69	114,973	1,411,587	59,029	669,256	30,500	320,698	69
70	109,959	1,298,912	55,912	611,656	28,614	291,062	70
71	105,032	1,191,212	52,893	557,128	26,812	263,274	71
72	100,146	1,088,419	49,948	505,585	25,078	237,257	72
73	95,292	990,498	47,069	456,957	23,407	212,945	73
74	90,457	897,422	44,251	411,179	21,797	190,276	74
75	85,635	809,175	41,490	368,193	20,242	169,192	75
76	80,779	725,766	38,761	327,954	18,730	149,643	76
77	75,938	647,206	36,087	290,418	17,272	131,581	77
78	71,068	573,500	33,448	255,541	15,857	114,958	78
79	66,174	504,676	30,846	223,285	14,484	99,730	79
80	61,264	440,752	28,282	193,614	13,153	85,856	80
81	56,348	381,741	25,763	166,487	11,868	73,292	81
82	51,418	327,652	23,283	141,860	10,623	61,995	82
83	46,499	278,489	20,853	119,691	9,424	51,922	83
84	41,695	234,192	18,519	99,909	8,289	43,018	84
85	36,971	194,662	16,263	82,424	7,210	35,224	85

FEMALES	Interest Rate = 3.0%		Interest Rate = 4.0%		Interest Rate = 5.0%		FEMALES
Age	D_x	$N_x^{(12)}$	D_x	$N_x^{(12)}$	D_x	$N_x^{(12)}$	Age
60	163,946	2,815,736	91,820	1,409,832	51,710	715,452	60
61	158,455	2,654,307	87,891	1,319,814	49,026	664,972	61
62	153,040	2,498,334	84,071	1,233,674	46,449	617,127	62
63	147,696	2,347,743	80,355	1,151,306	43,973	571,812	63
64	142,409	2,202,470	76,734	1,072,610	41,591	528,931	64
65	137,188	2,062,454	73,210	997,492	39,304	488,388	65
66	132,027	1,927,631	69,778	925,855	37,104	450,092	66
67	126,914	1,797,948	66,431	857,611	34,988	413,958	67
68	121,864	1,673,349	63,174	792,673	32,956	379,901	68
69	116,876	1,553,771	60,006	730,951	31,005	347,839	69
70	111,948	1,439,153	56,923	672,358	29,132	317,693	70
71	107,073	1,329,440	53,921	616,811	27,333	289,385	71
72	102,271	1,224,568	51,007	564,226	25,610	262,842	72
73	97,500	1,124,484	48,160	514,523	23,950	237,993	73
74	92,792	1,029,141	45,394	467,631	22,359	214,773	74
75	88,114	938,493	42,691	423,476	20,828	193,115	75
76	83,512	852,489	40,072	381,985	19,364	172,959	76
77	78,949	771,068	37,519	343,083	17,957	154,239	77
78	74,383	694,211	35,009	306,715	16,596	136,906	78
79	69,860	621,902	32,564	272,827	15,290	120,908	79
80	65,379	554,096	30,182	241,355	14,037	106,193	80
81	60,944	490,749	27,864	212,235	12,836	92,706	81
82	56,559	431,815	25,610	185,403	11,685	80,398	82
83	52,225	377,242	23,421	160,797	10,584	69,218	83
84	47,950	326,976	21,297	138,349	9,533	59,115	84
85	43,741	280,955	19,241	117,995	8,530	50,042	85

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2014 EA-2 (Segment F) Examination - Selected Commutation Factors Interest Rates: 5.0%, 6.0%, and 7.0%

MALES	Interest Rate = 5.0%		Interest Rate = 6.0%		Interest Rate = 7.0%		MALES
Age	D_x	$N_x^{(12)}$	D_x	$N_x^{(12)}$	D_x	$N_x^{(12)}$	Age
60	51,213	684,044	28,999	353,283	16,509	184,514	60
61	48,545	634,053	27,229	325,094	15,356	168,534	61
62	45,979	586,684	25,547	298,636	14,273	153,674	62
63	43,512	541,836	23,948	273,822	13,254	139,868	63
64	41,132	499,414	22,424	250,573	12,295	127,054	64
65	38,844	459,331	20,977	228,812	11,394	115,172	65
66	36,641	421,497	19,601	208,466	10,547	104,166	66
67	34,511	385,832	18,287	189,467	9,748	93,985	67
68	32,462	352,260	17,039	171,752	8,998	84,580	68
69	30,500	320,698	15,858	155,254	8,296	75,904	69
70	28,614	291,062	14,738	139,909	7,638	67,909	70
71	26,812	263,274	13,679	125,657	7,023	60,553	71
72	25,078	237,257	12,673	112,439	6,446	53,795	72
73	23,407	212,945	11,718	100,203	5,904	47,597	73
74	21,797	190,276	10,808	88,902	5,395	41,927	74
75	20,242	169,192	9,943	78,491	4,917	36,751	75
76	18,730	149,643	9,113	68,928	4,464	32,042	76
77	17,272	131,581	8,325	60,176	4,040	27,772	77
78	15,857	114,958	7,570	52,197	3,639	23,915	78
79	14,484	99,730	6,850	44,957	3,262	20,449	79
80	13,153	85,856	6,162	38,423	2,907	17,349	80
81	11,868	73,292	5,507	32,561	2,574	14,595	81
82	10,623	61,995	4,883	27,340	2,261	12,164	82
83	9,424	51,922	4,291	22,728	1,968	10,037	83
84	8,289	43,018	3,739	18,691	1,699	8,193	84
85	7,210	35,224	3,221	15,189	1,450	6,608	85

FEMALES	Interest Rate = 5.0%		Interest Rate = 6.0%		Interest Rate = 7.0%		FEMALES
Age	D_x	$N_x^{(12)}$	D_x	$N_x^{(12)}$	D_x	$N_x^{(12)}$	Age
60	51,710	715,452	29,281	367,702	16,669	191,248	60
61	49,026	664,972	27,499	339,237	15,508	175,111	61
62	46,449	617,127	25,808	312,513	14,418	160,103	62
63	43,973	571,812	24,202	287,442	13,395	146,153	63
64	41,591	528,931	22,675	263,940	12,432	133,200	64
65	39,304	488,388	21,225	241,929	11,529	121,181	65
66	37,104	450,092	19,849	221,335	10,680	110,041	66
67	34,988	413,958	18,540	202,086	9,883	99,726	67
68	32,956	379,901	17,298	184,115	9,135	90,186	68
69	31,005	347,839	16,121	167,356	8,434	81,372	69
70	29,132	317,693	15,004	151,747	7,776	73,240	70
71	27,333	289,385	13,945	137,229	7,159	65,747	71
72	25,610	262,842	12,942	123,744	6,583	58,852	72
73	23,950	237,993	11,989	111,238	6,041	52,517	73
74	22,359	214,773	11,087	99,662	5,534	46,709	74
75	20,828	193,115	10,231	88,968	5,059	41,392	75
76	19,364	172,959	9,422	79,108	4,615	36,537	76
77	17,957	154,239	8,655	70,037	4,200	32,111	77
78	16,596	136,906	7,924	61,718	3,809	28,090	78
79	15,290	120,908	7,231	54,112	3,444	24,449	79
80	14,037	106,193	6,576	47,181	3,103	21,161	80
81	12,836	92,706	5,956	40,889	2,784	18,205	81
82	11,685	80,398	5,371	35,201	2,487	15,557	82
83	10,584	69,218	4,819	30,083	2,211	13,197	83
84	9,533	59,115	4,300	25,502	1,954	11,104	84
85	8,530	50,042	3,811	21,426	1,716	9,259	85

2014 EA-2 (Segment F) Examination - Selected Amortization Factors

Segment Rates = {3.0%, 4.0%, 5.0%}

<u>Remaining Period</u>	<u>Amortization Factor</u>
7 years	6.3293
6 years	5.5390
5 years	4.7171
4 years	3.8286
3 years	2.9135
2 years	1.9709

Segment Rates = {5.0%, 6.0%, 7.0%}

<u>Remaining Period</u>	<u>Amortization Factor</u>
7 years	5.9982
6 years	5.2932
5 years	4.5460
4 years	3.7232
3 years	2.8594
2 years	1.9524

LIMITS AND TABLES
(Included with the 2014 EA-2 (Segment F) examination)

Maximum Benefit Limit IRC section 415(b)	
<u>Year</u>	<u>Limit at SSRA</u>
2000	135,000
2001	140,000
<u>Year</u>	<u>Limit at 65</u>
2002-2003	160,000
2004	165,000
2005	170,000
2006	175,000
2007	180,000
2008	185,000
2009-2011	195,000
2012	200,000
2013	205,000
2014	210,000

Compensation Limit IRC section 401(a)(17)	
<u>Year</u>	<u>Limit</u>
2000-2001	170,000
2002-2003	200,000
2004	205,000
2005	210,000
2006	220,000
2007	225,000
2008	230,000
2009-2011	245,000
2012	250,000
2013	255,000
2014	260,000

Key Employee Compensation IRC section 416		
<u>Year</u>	<u>Officer</u>	<u>1% owner</u>
2003	130,000	150,000
2004	130,000	150,000
2005	135,000	150,000
2006	140,000	150,000
2007	145,000	150,000
2008	150,000	150,000
2009-2011	160,000	150,000
2012-2013	165,000	150,000
2014	170,000	150,000

Highly Compensated Employee Compensation IRC section 414(q)	
<u>Year</u>	<u>Limit</u>
2000-2001	85,000
2002-2004	90,000
2005	95,000
2006	100,000
2007	100,000
2008	105,000
2009-2011	110,000
2012-2014	115,000

2014

Data for Question 1 (4 points)

Valuation date: 1/1/2015.

The plan provides a temporary \$1,000 monthly supplement payable from retirement to age 62 to participants who complete 15 years of service and retire from active employment after attaining age 60.

Segment rates: {5.0%, 6.0%, 7.0% }.

Selected data for participant Smith:

Gender	Male
Date of birth	1/1/1955
Date of hire	1/1/1995

Assumed rates of retirement:

<u>Age</u>	<u>Rate</u>
60	35%
61	25%

No preretirement death is assumed.

$\$X$ is the portion of the funding target as of 1/1/2015 attributable to Smith's temporary supplement.

Question 1

In what range is $\$X$?

- (A) Less than \$9,500
- (B) \$9,500 but less than \$9,750
- (C) \$9,750 but less than \$10,000
- (D) \$10,000 but less than \$10,250
- (E) \$10,250 or more

2014

Data for Question 2 (3 points)

Selected information as of 1/1/2015:

Funding standard carryover balance	\$25,000
Prefunding balance	75,000
Minimum required contribution	\$100,000
Effective interest rate	6.0%

Actual rate of return on assets during 2015: (5.0%)

No quarterly installments are required for the 2015 plan year.

An election is made on 1/1/2015 to apply \$15,000 of the funding balances to the 2015 minimum required contribution.

A contribution of \$115,000 is made on 12/1/2015.

Question 2

In what range is the prefunding balance as of 1/1/2016?

- (A) Less than \$94,000
- (B) \$94,000 but less than \$95,000
- (C) \$95,000 but less than \$96,000
- (D) \$96,000 but less than \$97,000
- (E) \$97,000 or more

2014

Data for Question 3 (3 points)

Type of plan: Multiemployer.

Actuarial cost method: Projected unit credit.

Valuation interest rate: 7.0%.

Compensation increase assumption: 3.0% per year.

Benefit formula: 2% of final year's compensation times years of service, maximum 25 years.

Selected data for participant Smith as of 1/1/2015:

Date of birth	1/1/1975
Date of hire	1/1/2005
Compensation for 2014 plan year	\$77,000

Selected annuity factor:

$$\ddot{a}_{65}^{(12)} = 10.11$$

Question 3

In what range is the normal cost for Smith as of 1/1/2015?

- (A) Less than \$5,000
- (B) \$5,000 but less than \$7,000
- (C) \$7,000 but less than \$9,000
- (D) \$9,000 but less than \$11,000
- (E) \$11,000 or more

2014

Data for Question 4 (4 points)

Type of plan: Multiemployer.

Early retirement provisions:

Eligibility	Age 55
Benefit amount for retirements:	
Before 1/1/2015	Accrued benefit, reduced 5.0% per year by which benefits commence before age 65
On and after 1/1/2015	Accrued benefit, reduced 3.0% per year by which benefits commence before age 65

Actuarial cost method: Unit credit.

Credit balance as of 12/31/2014: \$15,000.

Selected actuarial assumptions for 1/1/2015 valuation:

Interest rate	7.0%
Retirement	100% at age 62

Selected information (before plan amendment) as of 1/1/2015:

Actuarial (market) value of assets	\$1,270,000
Accrued liability for all active participants	1,170,000
Accrued liability for all other participants	410,000
Normal cost	240,000
Total amortization charges	140,000
Total amortization credits	60,000

All active participants are under age 60 as of 1/1/2015.

Question 4

In what range is the **smallest amount that satisfies the minimum funding standard** as of 12/31/2015?

- (A) Less than \$336,000
- (B) \$336,000 but less than \$342,000
- (C) \$342,000 but less than \$348,000
- (D) \$348,000 but less than \$354,000
- (E) \$354,000 or more

2014

Data for Question 5 (4 points)

Valuation date: 1/1/2015.

Funding standard carryover balance as of 1/1/2015: \$170,000.

Prefunding balance as of 1/1/2015: \$110,000.

Actual rate of return on assets for 2015: 22.50%.

Selected information as of 1/1/2015:

Minimum required contribution	\$260,000
Effective interest rate	6.20%

On 1/1/2015, the plan sponsor elects to apply \$250,000 of balances to offset the minimum required contribution for 2015.

For the 2015 plan year, the plan sponsor contributes \$300,000 on 7/1/2015 and \$200,000 on 7/1/2016.

$\$X$ is the maximum permissible amount the plan sponsor may elect to add to prefunding balance as of 1/1/2016, assuming the election takes place after the 7/1/2016 contribution.

Question 5

In what range is $\$X$?

- (A) Less than \$460,000
- (B) \$460,000 but less than \$490,000
- (C) \$490,000 but less than \$520,000
- (D) \$520,000 but less than \$550,000
- (E) \$550,000 or more

2014

Data for Question 6 (2 points)

Type of plan: Multiemployer.

Valuation date: 1/1/2015.

Actuarial cost method: Aggregate.

There are no pre-retirement decrements other than mortality.

On 1/1/2015, the plan is amended to increase the pre-retirement death benefit.

Consider the following statements with respect to the 2015 valuation for this defined benefit pension plan:

- I. The increase in the plan liability due to this amendment will be amortized over 15 years.
- II. The plan amendment and any assumption changes may establish one single amortization base for minimum funding purposes.
- III. The plan actuary must change the valuation assumptions.

Question 6

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

- (A) None
- (B) I only
- (C) II only
- (D) III only
- (E) The correct answer is not given by (A), (B), (C), or (D) above.

2014

Data for Question 7 (1 point)

Consider the following statement concerning the deductible limit for a multiemployer plan:

In determining the maximum deductible limit, an amendment increasing benefits adopted after the close of such plan year but no later than 2 years after the close of such plan year may be deemed to have been made on the first day of such plan year, at the election of the plan administrator.

Question 7

Is the above statement true or false?

- (A) True
- (B) False

2014

Data for Question 8 (4 points)

Valuation date: 1/1/2014.

Normal retirement benefit: 3% of highest consecutive three-year average compensation multiplied by years of service.

Segment rates: {5.0%, 6.0%, 7.0% }.

Assumed compensation increases: 3.0% per year.

Selected data for participant Smith:

Gender	Female
Date of birth	1/1/1950
Date of hire	1/1/2011
Date of participation	1/1/2013
2011 compensation	\$275,000
2012 compensation	275,000
2013 compensation	245,000

Question 8

What is the target normal cost for Smith?

- (A) Less than \$94,000
- (B) \$94,000 but less than \$98,000
- (C) \$98,000 but less than \$102,000
- (D) \$102,000 but less than \$106,000
- (E) \$106,000 or more

2014

Data for Question 9 (2 points)

An enrolled actuary is setting the retirement rate assumptions for a plan.

The plan offers actuarially reduced early retirement benefits starting at age 55.

The plan provides unreduced early retirement benefits starting at age 60.

The plan has 5,000 active participants.

Over the past 5 years, there has been a distribution of retirements from ages 55 through 65, and the average retirement age has been 62. The actuary knows of no reason to expect patterns to change significantly in the future.

Consider the following three sets of retirement rates:

<u>Age</u>	<u>I</u>	<u>II</u>	<u>III</u>
55	5%	0%	20%
56	2%	0%	20%
57	2%	8%	20%
58	2%	8%	12%
59	2%	10%	12%
60	15%	10%	10%
61	15%	10%	10%
62	30%	30%	30%
63	15%	0%	20%
64	15%	0%	20%
65	100%	100%	100%
Average Retirement Age	62	62	59

Question 9

Which of these sets of retirement rates would be most reasonable for the plan's funding valuation?

- (A) I
- (B) II
- (C) III

2014

Data for Question 10 (4 points)

Valuation date: 1/1/2015.

Normal retirement benefit: 1.5% times final year compensation times years of service.

Segment rates: {5.0%, 6.0%, 7.0% }.

Selected information as of 1/1/2015:

Funding standard carryover balance	\$1,000
Prefunding balance	5,000
Actuarial (market) value of assets	55,000
Compensation increase assumption	3% per year
Effective interest rate	7%
Shortfall amortization bases arising in prior years	None

Selected data for sole participant Smith:

Date of birth	1/1/1972
Date of hire	1/1/2000
2014 compensation	\$100,000

Selected annuity factors:

	<u>5.0%</u>	<u>6.0%</u>	<u>7.0%</u>
$\ddot{a}_{65}^{(12)}$	11.83	10.91	10.11

The plan sponsor did not make any election to use funding balances to meet the 2015 minimum requirement.

Question 10

In what range is the **minimum required contribution**?

- (A) Less than \$2,300
- (B) \$2,300 but less than \$3,300
- (C) \$3,300 but less than \$4,300
- (D) \$4,300 but less than \$5,300
- (E) \$5,300 or more

2014

Data for Question 11 (3 points)

Prefunding balance as of 1/1/2014: \$25,000.

Selected information as of 1/1/2014:

Actuarial (market) value of assets	\$1,100,000
Funding target	1,000,000
Minimum required contribution	100,000
Effective interest rate	6%

Actual rate of return on plan assets for 2014: 10%.

Required quarterly installments for 2014 plan year: \$0.

There was no election made to use the prefunding balance for the 2014 plan year.

Contribution paid on 2/1/2015 for the 2014 plan year: \$150,000.

$\$X$ is the maximum prefunding balance as of 1/1/2015.

Question 11

In what range is $\$X$?

- (A) Less than \$66,000
- (B) \$66,000 but less than \$68,000
- (C) \$68,000 but less than \$70,000
- (D) \$70,000 but less than \$72,000
- (E) \$72,000 or more

2014

Data for Question 12 (5 points)

Type of plan: Multiemployer.

Normal retirement benefit: 2% of final compensation per year of service.

Actuarial cost method: Projected unit credit.

Selected actuarial assumptions as of 1/1/2015:

Interest rate	7.5%
Compensation increases	3.5% per year

Data for active participant Smith as of 1/1/2015:

Date of birth	1/1/1973
Date of hire	1/1/2011
2014 compensation	\$78,000

Selected annuity factors:

	<u>7.0%</u>	<u>7.5%</u>
$\ddot{a}_{65}^{(12)}$	10.11	9.72

$\$X$ is the change in Smith's normal cost as of 1/1/2015 if the sole assumption change is a reduction in the assumed interest rate from 7.5% to 7.0% for the 2015 valuation.

$\$Y$ is the change in Smith's normal cost as of 1/1/2015 if the sole assumption change is a reduction in the assumed compensation increase from 3.5% to 3.0% for the 2015 valuation.

Question 12

In what range is $|\$X| + |\$Y|$?

- (A) Less than \$500
- (B) \$500 but less than \$1,000
- (C) \$1,000 but less than \$1,500
- (D) \$1,500 but less than \$2,000
- (E) \$2,000 or more

2014

Data for Question 13 (4 points)

Valuation date: 1/1/2015.

Segment rates: {5.0%, 6.0%, 7.0% }.

Compensation increase assumption: 10% per year

Accrued benefit: 8% of final three-year average compensation multiplied by years of service.

Data for sole participant Smith:

Gender	Male
Date of birth	1/1/1952
Date of hire	1/1/2012

	<u>Compensation</u>
2012	\$100,000
2013	150,000
2014	200,000

Question 13

In what range is the target normal cost as of 1/1/2015?

- (A) Less than \$220,000
- (B) \$220,000 but less than \$240,000
- (C) \$240,000 but less than \$260,000
- (D) \$260,000 but less than \$280,000
- (E) \$280,000 or more

2014

Data for Question 14 (4 points)

Valuation date: 1/1/2015.

Type of plan: Multiemployer.

Disability benefit: Immediate accrued benefit reduced 5% for each year benefit commencement precedes age 65.

Actuarial cost method: Unit credit.

Interest rate: 7.0%.

Pre-retirement decrements: None, other than disability occurring at beginning of year.

<u>Age</u>	<u>Disability rate</u>
63	0.065
64	0.075

Data for participant Smith:

Date of birth	1/1/1952
Monthly accrued benefit	\$4,500

Selected annuity factors:	$\ddot{a}_{63}^{(12)}$	$\ddot{a}_{64}^{(12)}$	$\ddot{a}_{65}^{(12)}$
Disabled mortality	9.00	8.65	8.35
Healthy mortality	10.55	10.33	10.11

Question 14

In what range is the accrued liability for Smith as of 1/1/2015?

- (A) Less than \$467,000
- (B) \$467,000 but less than \$474,000
- (C) \$474,000 but less than \$481,000
- (D) \$481,000 but less than \$488,000
- (E) \$488,000 or more

2014

Data for Question 15 (2 points)

Valuation date: 1/1/2015.

The plan sponsor elected to apply \$200,000 in funding standard carryover balance on 1/1/2015 to offset the minimum required contribution for 2015.

The 2015 minimum required contribution was later determined to be \$180,000 as of 1/1/2015, so an excess election of \$20,000 exists for the 2015 plan year.

Consider the following statements regarding the excess funding balance usage:

- I. If such an excess election is not timely revoked, it has the same effect as an election to reduce the applicable balance to the extent of the excess.
- II. One of the conditions for the revocation of the excess election to be valid is that written notification of the revocation must be provided to the plan's enrolled actuary and the plan administrator.
- III. The revocation of the excess election must be completed on or before 9/15/2016 to be considered timely.

Question 15

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.

2014

Data for Question 16 (3 points)

Valuation date: 1/1/2015.

Asset valuation method: Fair market value.

Effective interest rate for 2014: 6.5%.

Rate of return on plan assets during 2014: 8.5%.

Effective interest rate for 2015: 5.0%.

Fair market value of assets as of 1/1/2015 (excluding receivables): \$2,500,000.

Contributions deposited for the 2014 plan year:

<u>Date</u>	<u>Amount</u>
6/15/2015	\$100,000
8/15/2015	300,000

$\$X$ is equal to the actuarial value of assets as of 1/1/2015.

Question 16

In what range is $\$X$?

- (A) Less than \$2,875,000
- (B) \$2,875,000 but less than \$2,879,000
- (C) \$2,879,000 but less than \$2,883,000
- (D) \$2,883,000 but less than \$2,887,000
- (E) \$2,887,000 or more

2014

Data for Question 17 (3 points)

Plan type: Statutory hybrid (cash balance).

The plan permits an immediate lump sum payment equal to the participant's hypothetical account balance upon termination of employment.

Selected assumptions as of 1/1/2015:

Interest crediting rate	5.5%
Segment rates	{4.0%, 5.0%, 6.0% }
Form of payment	Lump sum

Data for participant Smith as of 1/1/2015:

Age	62
Account balance	\$500,000

Question 17

In what range is the funding target for participant Smith as of 1/1/2015?

- (A) Less than \$500,000
- (B) \$500,000 but less than \$520,000
- (C) \$520,000 but less than \$540,000
- (D) \$540,000 but less than \$560,000
- (E) \$560,000 or more

2014

Data for Question 18 (5 points)

Plan effective date: 1/1/2010.

Segment rates for 2015: {5.0%, 6.0%, 7.0%}.

The plan is determined to be at-risk only in 2012, 2014 and 2015.

Selected information as of 1/1/2015:

Number of participants	1,130
Prefunding balance	\$400,000
Actuarial (market) value of assets	16,500,000
Funding target without regard to at-risk assumptions	15,300,000
At-risk funding target disregarding 5-year transition and loads	17,700,000

Information about the remaining shortfall amortization installments as of 1/1/2015:

<u>Year established</u>	<u>Installment</u>	<u>Outstanding balance</u>
2011	\$120,000	\$343,128
2012	15,000	55,848
2013	82,000	372,772
2014	75,000	<u>396,990</u>
Total		\$1,168,738

$\$X$ is the 2015 shortfall installment as of 1/1/2015.

Question 18

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

- (A) Less than \$40,000
- (B) \$40,000 but less than \$70,000
- (C) \$70,000 but less than \$100,000
- (D) \$100,000 but less than \$130,000
- (E) \$130,000 or more

2014

Data for Question 19 (1 point)

Consider the following statement with respect to selection of actuarial assumptions for a single-employer plan:

Combined mortality tables (annuitants and non-annuitants) are only permitted for plans with 500 or fewer participants.

Question 19

Is the above statement true or false?

- (A) True
- (B) False

2014

Data for Question 20 (4 points)

Valuation date: 1/1/2015.

Type of plan: Multiemployer.

Normal retirement benefit: 1.25% of final three-year average compensation per year of service.

Late retirement benefit: 1.25% of final three-year average compensation per year of service without actuarial increases.

Actuarial cost method: Projected unit credit.

Selected assumptions:

Valuation interest rate	5.0%
Compensation increases	2.5% per year
Retirement age	Normal retirement or current age if later

Data for selected plan participants:	<u>Smith</u>	<u>Jones</u>
Date of birth	1/1/1948	1/1/1960
Date of hire	1/1/2000	1/1/2008
2012 compensation	\$40,000	\$62,000
2013 compensation	\$49,000	\$65,000
2014 compensation	\$52,000	\$68,000

Selected annuity factors:

$$\ddot{a}_{65}^{(12)} = 11.83 \quad \ddot{a}_{66}^{(12)} = 11.50 \quad \ddot{a}_{67}^{(12)} = 11.18$$

The plan sponsor has distributed all required suspension of benefits notices.

\$X is the total accrued liability for Smith and Jones as of 1/1/2015.

Question 20

In what range is \$X?

- (A) Less than \$145,000
- (B) \$145,000 but less than \$155,000
- (C) \$155,000 but less than \$165,000
- (D) \$165,000 but less than \$175,000
- (E) \$175,000 or more

2014

Data for Question 21 (4 points)

Plan year: 1/1/2015.

Selected information as of 1/1/2015:

Minimum required contribution	\$820,000
Required quarterly installment	150,000
Effective interest rate	5.0%

All contributions made for the 2015 plan year:

<u>Date</u>	<u>Amount</u>
7/15/2015	\$300,000
10/15/2015	150,000
1/15/2016	150,000
9/15/2016	\$X

\$X is the smallest amount that satisfies the minimum funding standard as of 9/15/2016.

Question 21

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

- (A) Less than \$243,000
- (B) \$243,000 but less than \$253,000
- (C) \$253,000 but less than \$263,000
- (D) \$263,000 but less than \$273,000
- (E) \$273,000 or more

2014

Data for Question 22 (4 points)

Asset valuation method: The average of the market value of assets on the valuation date and the adjusted market value of assets for the preceding valuation date.

Segment rates for 2014: {5.5%, 6.5%, 7.5% }.

Segment rates for 2015: {5.0%, 6.0%, 7.0% }.

Selected information:

	<u>1/1/2014</u>	<u>1/1/2015</u>
Market value (excluding receivables)	\$250,000	\$328,000
Benefit payments, paid on 7/1	20,000	
Expenses, paid on 7/1	4,000	
Assumed rate of return	6.50%	
Effective interest rate	6.25%	5.50%

For the 2014 plan year, a contribution of \$20,000 is deposited on 1/2/2014 and another contribution of \$10,000 is deposited on 9/1/2015.

$\$X$ is the actuarial value of assets for the plan year beginning 1/1/2015.

Question 22

In what range is $\$X$?

- (A) Less than \$304,500
- (B) \$304,500 but less than \$304,750
- (C) \$304,750 but less than \$305,000
- (D) \$305,000 but less than \$305,250
- (E) \$305,250 or more

2014

Data for Question 23 (1 point)

Plan expenses are paid from the pension trust.

The plan requires mandatory employee contributions.

The plan has a funding shortfall.

Consider the following statement:

The target normal cost cannot be less than the present value of all benefits expected to accrue or be earned during the plan year.

Question 23

Is the above statement true or false?

(A) True

(B) False

2014

Data for Question 24 (1 point)

Consider the following statement:

Any funding standard carryover balance must be reduced to zero prior to using the prefunding balance to reduce the minimum required contribution.

Question 24

Is the above statement true or false?

- (A) True
- (B) False

2014

Data for Question 25 (1 point)

Consider the following statement with respect to selection of actuarial assumptions for a single-employer plan:

Regardless of size, a plan is permitted to use either the static mortality table or the generational mortality table for funding purposes.

Question 25

Is the above statement true or false?

- (A) True
- (B) False

2014

Data for Question 26 (3 points)

Valuation segment rates for the 1/1/2011 valuation: {5.0%, 6.0%, 7.0% }.

Effective interest rate for 2011: 6.0%.

Shortfall amortization base established as of 1/1/2011: \$55,000.

In 2011 an election is made to use a 15-year alternative amortization schedule under the Pension Relief Act of 2010. The 2011 amortization schedule was not treated as fully amortized in any year from 2012-2015.

Extraordinary dividend and redemption payments for 2014: \$17,500.

There were no installment acceleration amounts before 2014.

$\$X$ is the required installment for the 2015 plan year with respect to the shortfall amortization base established 1/1/2011.

Question 26

In what range is $\$X$?

- (A) Less than \$6,100
- (B) \$6,100 but less than \$7,100
- (C) \$7,100 but less than \$8,100
- (D) \$8,100 but less than \$9,100
- (E) \$9,100 or more

2014

Data for Question 27 (2 points)

Type of plan: Multiemployer.

Plan year: 10/1 – 9/30.

Valuation date: 10/1/2014.

Date of projected funding deficiency: 9/30/2022.

The plan sponsor has adopted a plan to improve the plan's funding status.

The plan is projected to have sufficient assets to pay benefits timely for at least the next 30 years.

The plan sponsor provided notice to affected parties on 12/14/2014.

The plan sponsor filed for the automatic extension of amortization on 12/15/2014.

Consider the following statement:

The plan sponsor is eligible for the automatic extension of amortization periods for multiemployer plans.

Question 27

Is the above statement true or false?

(A) True

(B) False

2014

Data for Question 28 (3 points)

Type of plan: Multiemployer.

Actuarial cost method: Unit credit.

Valuation date: 1/1/2015.

Annual normal retirement benefit: \$60 per month for each year of service, payable monthly.

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

Valuation interest rate: 6.0%.

Data for plan participant Smith:

Gender	Male
Date of birth	1/1/1952
Date of hire	1/1/1994
Date of retirement	12/31/2014

$\$X$ is the absolute value as of 1/1/2015 of the total gain or loss attributable to Smith's retirement.

Question 28

In what range is $\$X$?

- (A) Less than \$10,000
- (B) \$10,000 but less than \$15,000
- (C) \$15,000 but less than \$20,000
- (D) \$20,000 but less than \$25,000
- (E) \$25,000 or more

2014

Data for Question 29 (3 points)

Plan type: Multiemployer.

Asset valuation method (adopted 1/1/2005): Smoothed market value using a smoothing period of three years, as described in Rev. Proc. 2000-40.

Valuation interest rate: 7.0%.

Asset gain for 2013: \$3,000.

Selected asset information:

	<u>1/1/2014</u>	<u>1/1/2015</u>
Market value of assets	\$50,000	\$40,000
Benefit payments and expenses, paid on 7/1	1,500	
Contribution, paid 11/1	5,000	

Question 29

In what range is the actuarial value of assets as of 1/1/2015?

- (A) Less than \$35,000
- (B) \$35,000 but less than \$40,000
- (C) \$40,000 but less than \$45,000
- (D) \$45,000 but less than \$50,000
- (E) \$50,000 or more

2014

Data for Question 30 (4 points)

Valuation date: 1/1/2015.

Accrued benefit: 10% of final three-year average compensation multiplied by years of service.

Segment rates: { 1.7%, 4.3%, 5.5% }.

Adjusted segment rates: { 5.0%, 6.0%, 7.0% }.

Actuarial (market) value of plan assets: \$200,000.

Compensation increase assumption: 0% per year.

Data for sole participant Smith:

Date of birth	1/1/1970
Date of hire	1/1/2012
2012 compensation	\$100,000
2013 compensation	150,000
2014 compensation	175,000

Selected annuity factors:

	<u>5.5%</u>	<u>7.0%</u>
$\ddot{a}_{65}^{(12)}$	11.35	10.11

$\$X$ is equal to the deduction limit as of 1/1/2015.

Question 30

In what range is $\$X$?

- (A) Less than \$75,000
- (B) \$75,000 but less than \$105,000
- (C) \$105,000 but less than \$135,000
- (D) \$135,000 but less than \$165,000
- (E) \$165,000 or more

2014

Data for Question 31 (2 points)

Consider the following statements with respect to a waiver of the minimum required contribution for the 2014 plan year:

- I. The amortization period is 5 years beginning with the 2015 plan year.
- II. The interest rate used to determine the waiver amortization installments is the effective interest rate for the 2014 plan year.
- III. If the funding shortfall is zero for a plan year after the 2014 plan year, the waiver amortization bases and installments are reduced to zero.

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.

2014

Data for Question 32 (1 point)

Valuation date: 1/1/2015.

Normal retirement benefit: \$48 per month for each year of service.

The plan sponsor adopts an amendment on 11/15/2014 to increase the benefit rate to \$60 per month for service completed after 5/31/2015, effective 6/1/2015.

No action is required under the provisions of IRC section 436 for the amendment to take effect.

Consider the following statement:

The amendment must be reflected in the 1/1/2015 target normal cost.

Question 32

Is the above statement true or false?

(A) True

(B) False

2014

Data for Question 33 (3 points)

Selected valuation results:

	<u>1/1/2014</u>	<u>1/1/2015</u>
Minimum required contribution	\$500,000	\$600,000
Effective interest rate	7.0%	6.0%
Funding shortfall	Yes	No
Funding balances	None	None

A 2015 plan year contribution of \$50,000 was made on 2/15/2015.

\$X is the smallest amount necessary to satisfy the first quarterly contribution installment on 4/15/2015.

Question 33

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

- (A) Less than \$74,000
- (B) \$74,000 but less than \$74,500
- (C) \$74,500 but less than \$75,000
- (D) \$75,000 but less than \$75,500
- (E) \$75,500 or more

2014

Data for Question 34 (4 points)

Valuation date: 1/1/2015.

Segment rates for 2014: {4.0%, 5.0%, 6.0%}.

Segment rates for 2015: {3.0%, 4.0%, 5.0%}.

Selected information as of 1/1/2015:

Actuarial (market) value of assets	\$1,500,000
Funding target	1,900,000
Target normal cost	100,000
Funding balances	None

Data for existing funding waivers:

	Year for which Funding <u>Waiver was Granted</u>	
	<u>2013</u>	<u>2014</u>
Funding waiver amount	\$200,000	\$100,000
Funding waiver installment	44,000	22,658

No funding waiver was granted to the plan sponsor before the 2013 plan year. There are no shortfall amortization bases for 2014 or earlier plan years.

\$X is the maximum funding waiver as of 1/1/2015 permitted under IRC section 412(c) for 2015.

Question 34

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

- (A) Less than \$120,000
- (B) \$120,000 but less than \$124,000
- (C) \$124,000 but less than \$128,000
- (D) \$128,000 but less than \$132,000
- (E) \$132,000 or more

2014

Data for Question 35 (1 point)

Consider the following statement:

The plan actuary should consider the plan's definition of what constitutes a disability (for example, Social Security disability benefit eligibility) in setting a disability incidence assumption for funding purposes.

Question 35

Is the above statement true or false?

- (A) True
- (B) False

2014

Data for Question 36 (1 point)

Consider the following statement related to IRC section 4971 taxes for failure to meet minimum funding standards:

Only the employer responsible for contributing to or under the plan, not other controlled group members, is liable for the tax.

Question 36

Is the above statement true or false?

- (A) True
- (B) False

2014

Data for Question 37 (4 points)

Valuation date: 1/1/2015.

Type of plan: Multiemployer.

Asset valuation method adopted 1/1/2005: Smoothed market value using a smoothing period of five years, as described in Rev. Proc. 2000-40.

Selected asset information:

Asset (gain)/loss amounts:

During 2013	\$59,000
During 2012	33,000
During 2011	19,000

	<u>1/1/2014</u>	<u>1/1/2015</u>
Market value of assets	\$620,000	\$635,000
Actuarial value of assets	650,000	

Assumed rate of return for 2014: 6.0%.

Contribution paid on 8/1/2014 for the 2014 plan year: \$55,000.

Benefit payments and expenses paid uniformly throughout 2014: \$80,000.

Question 37

In what range is the actuarial value of assets as of 1/1/2015?

- (A) Less than \$610,000
- (B) \$610,000 but less than \$635,000
- (C) \$635,000 but less than \$660,000
- (D) \$660,000 but less than \$685,000
- (E) \$685,000 or more

2014

Data for Question 38 (1 point)

Type of plan: Multiemployer.

The plan is in endangered status at 1/1/2014.

Consider the following statement:

The plan sponsor must adopt and implement a rehabilitation plan.

Question 38

Is the above statement true or false?

- (A) True
- (B) False

2014

Data for Question 39 (3 points)

Type of plan: Multiemployer.

Actuarial cost method: Frozen initial liability.

Interest rate: 7.0%.

Credit balance as of 12/31/2014: \$0.

Selected information as of 1/1/2015:

Unfunded accrued liability	\$34,000
Actuarial (market) value of assets	261,000

Data for all participants as of 1/1/2015:

	<u>Smith</u>	<u>Jones</u>	<u>Brown</u>
Status	Active	Active	Retired
Age	50	60	65
Projected monthly benefit at normal retirement	\$2,500	\$3,500	\$1,250

The plan's formula is unrelated to compensation.

Selected annuity factor:

$$\ddot{a}_{65}^{(12)} = 10.11$$

Question 39

In what range is the normal cost as of 1/1/2015?

- (A) Less than \$25,000
- (B) \$25,000 but less than \$40,000
- (C) \$40,000 but less than \$55,000
- (D) \$55,000 but less than \$70,000
- (E) \$70,000 or more

2014

Data for Question 40 (1 point)

Plan freeze date: 1/1/2007.

Current AFTAP: 75.00%.

The plan provides a Social Security level income option.

Consider the following statement:

Valuations should not reflect an assumption that Social Security level income options will be elected until the AFTAP for that year is at least 80%.

Question 40

Is the above statement true or false?

- (A) True
- (B) False

2014

Data for Question 41 (1 point)

A plan sponsor makes an election on March 1, 2015 to use funding balance to meet quarterly required contributions and offset the minimum required contribution for the 2015 plan year. On June 1, 2015 a deemed reduction reduces the funding balance for 2015.

Consider the following statement:

The deemed reduction reduces the funding balance available to be applied to the 2015 minimum required contribution and may result in a late April 15, 2015 quarterly.

Question 41

Is the above statement true or false?

- (A) True
- (B) False

2014

Data for Question 42 (1 point)

Consider the following statement with regard to a plan sponsor who fails to make the minimum required contribution to a defined benefit plan within 8½ months after the close of the plan year:

A tax is imposed equal to 10% of the aggregate unpaid minimum required contributions as of the end of the plan year adjusted with interest at the plan's effective interest rate to the last date for making the minimum required contribution for the plan year.

Question 42

Is the above statement true or false?

- (A) True
- (B) False

2014

Data for Question 43 (5 points)

Type of plan: Multiemployer.

Valuation date: 1/1/2015.

Normal retirement benefit: 50% of final compensation.

Actuarial cost method: Entry age normal.

Valuation interest rate: 7.0%.

Assumed compensation increase: 3.0% per year.

Selected information for participant Smith:

Date of birth	1/1/1965
Date of hire	1/1/2000
2014 compensation	\$50,000

Selected annuity factor:

$$\ddot{a}_{65}^{(12)} = 10.11$$

Question 43

In what range is Smith's accrued liability as of 1/1/2015?

- (A) Less than \$85,000
- (B) \$85,000 but less than \$90,000
- (C) \$90,000 but less than \$95,000
- (D) \$95,000 but less than \$100,000
- (E) \$100,000 or more

2014

Data for Question 44 (3 points)

Valuation date: 1/1/2015.

Selected information as of 1/1/2015:

Actuarial (market) value of assets	\$5,000,000
Minimum required contribution	900,000
Effective interest rate	5.0%
Valuation results calculated for IRC 404 purposes	
Funding target	7,000,000
Target normal cost	600,000
Funding target with future compensation increases	10,000,000
At-risk funding target	9,000,000
At-risk target normal cost	800,000
At-risk funding target with future compensation increases	11,000,000

The plan is not at-risk for 2015 and has always had over 500 participants.

Question 44

In what range is the deduction limit for 2015?

- (A) Less than \$9,000,000
- (B) \$9,000,000 but less than \$9,650,000
- (C) \$9,650,000 but less than \$10,300,000
- (D) \$10,300,000 but less than \$10,950,000
- (E) \$10,950,000 or more

2014

Data for Question 45 (4 points)

Valuation date: 1/1/2015.

Type of plan: Statutory hybrid (cash balance).

Annual compensation credit: \$50,000, provided on the last day of each plan year.

Interest crediting rate: Actual rate of return on plan assets on the beginning of year balance.

Segment rates: {5.0%, 6.0%, 7.0% }.

Interest crediting rate assumption:

Prior to 1/1/2015	0.0%
On and after 1/1/2015	4.0%

Assumed form of payment: Lump sum.

Historical rate of return on plan assets:

2012	(10)%
2013	(12)%
2014	0%

Data for participant Smith:

Date of birth	1/1/1955
Date of hire	1/1/2012

\$X is the change in the 1/1/2015 funding target for Smith due to the assumption change.

Question 45

In what range is \$X?

- (A) Less than \$19,000
- (B) \$19,000 but less than \$21,000
- (C) \$21,000 but less than \$23,000
- (D) \$23,000 but less than \$25,000
- (E) \$25,000 or more

2014

Data for Question 46 (1 point)

A plan provides a post-retirement death benefit of \$200 per year of service.

Consider the following statement:

The 1/1/2015 funding target for the death benefit is determined based on a death benefit of \$200 multiplied by a participant's years of service as of 1/1/2015.

Question 46

Is the above statement true or false?

- (A) True
- (B) False

2014

Data for Question 47 (3 points)

Type of plan: Multiemployer.

Actuarial cost method: Aggregate.

Valuation interest rate: 7.0%.

Credit balance at 12/31/2014: \$20,000.

Selected information as of 1/1/2015:

Actuarial (market) value of assets	\$2,530,000
Present value of future benefits	3,930,000
Present value of future compensation	4,770,000
Total compensation for all employees	540,000

\$X is the smallest amount that satisfies the minimum funding standard as of 12/31/2015.

Question 47

In what range is \$X?

- (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

2014

Data for Question 48 (5 points)

Type of Plan: Multiemployer.

Normal retirement benefit: 2% of final compensation per year of service.

Actuarial cost method: Aggregate.

Credit balance at 12/31/2013: \$0.

Selected information as of 1/1/2014:

Actuarial (market) value of assets	\$10,000,000
Present value of future benefits	30,000,000
Present value of future compensation	200,000,000
Expected total compensation for 2014	10,000,000
Valuation interest rate	7.0%
Compensation increase assumption	6.0% per year

All participants are active and under age 50. There were no new entrants during 2014.

The contribution for 2014 was the normal cost paid at 1/1/2014.

Plan experience was as assumed for 2014 except salaries, which increased by 10%.

$\$X$ is the contribution in the **smallest amount that satisfies the minimum funding standard** as of 12/31/2015, if all assumptions had been met.

$\$Y$ is the contribution in the **smallest amount that satisfies the minimum funding standard** as of 12/31/2015, based on actual plan experience.

Question 48

In what range is $|\$X - \$Y|$?

- (A) Less than \$45,000
- (B) \$45,000 but less than \$55,000
- (C) \$55,000 but less than \$65,000
- (D) \$65,000 but less than \$75,000
- (E) \$75,000 or more

2014

Data for Question 49 (4 points)

Valuation date: 1/1/2015.

Effective interest rate: 7.0%.

Funding target attainment percentage for the 2015 plan year: 90%.

Required quarterly installment due 4/15/2015: \$300,000.

Contribution paid on 2/1/2015 in the form of liquid assets: \$250,000.

Value of the plan's liquid assets as of 3/31/2015 (prior to adjustment): \$900,000.

Disbursements paid from the trust over the past 12 months ending 3/31/2015:

Payments for monthly benefits	\$265,000
Payments for administrative expenses	22,000
Payments for lump sums	250,000
Purchase of annuities	200,000

The plan had more than 100 participants on each day during 2014.

$\$X$ is the liquidity shortfall as of 3/31/2015.

Question 49

In what range is $\$X$?

- (A) Less than \$35,000
- (B) \$35,000 but less than \$70,000
- (C) \$70,000 but less than \$105,000
- (D) \$105,000 but less than \$140,000
- (E) \$140,000 or more

2014

Data for Question 50 (4 points)

Type of plan: Multiemployer.

Actuarial cost method: Entry age normal.

Valuation interest rate: 7.00%.

Credit balance as of 12/31/2013: \$1,000,000.

Selected information:

Plan year beginning	<u>1/1/2014</u>	<u>1/1/2015</u>
Actuarial (market) value of assets	\$6,250,000	\$6,280,000
Accrued liability	7,000,000	7,000,000
Normal cost	350,000	375,000
Amortization of outstanding charge bases established on or before 1/1/2014	500,000	475,000
Amortization of outstanding credit bases established on or before 1/1/2014	100,000	80,000

A single contribution of \$300,000 is made on 12/31/2014 for the 2014 plan year.

A single contribution of **\$X** is made on 12/31/2015 in the **smallest amount that satisfies the minimum funding standard** for the 2015 plan year.

Question 50

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

- (A) Less than \$190,000
- (B) \$190,000 but less than \$200,000
- (C) \$200,000 but less than \$210,000
- (D) \$210,000 but less than \$220,000
- (E) \$220,000 or more

2014

Data for Question 51 (3 points)

Valuation date: 1/1/2014.

Plan effective date: 1/1/2009.

Benefit formula: 10% of high three-year average compensation per year of service.

Segment rates: {5.5%, 6.5%, 7.5% }.

Selected data for participant Smith:

Date of birth	1/1/1970
Date of hire	1/1/2007
High three-year average compensation	\$200,000

Selected annuity factors at age 65:

	<u>5.5%</u>	<u>6.5%</u>	<u>7.5%</u>
$\ddot{a}_{65}^{(12)}$	11.41	10.54	9.79

$\$X$ is the funding target for Smith as of 1/1/2014.

Question 51

In what range is $\$X$?

- (A) Less than \$220,000
- (B) \$220,000 but less than \$255,000
- (C) \$255,000 but less than \$290,000
- (D) \$290,000 but less than \$325,000
- (E) \$325,000 or more

2014

Data for Question 52 (4 points)

Type of plan: Multiemployer.

Valuation date: 10/1/2014.

Actuarial cost method: Unit credit.

Valuation interest rate: 7.0%.

Credit balance as of 9/30/2013: \$820,000.

Selected information:

	<u>10/1/2013</u>	<u>10/1/2014</u>
Actuarial (market) value of assets	\$5,750,000	\$4,700,000
Accrued liability	6,070,000	6,750,000
Normal cost	450,000	450,000
Amortization of outstanding base	525,000	
Contribution made on 9/30/2014	565,000	

All bases were combined and offset as of 10/1/2013, including bases established as of 10/1/2013.

A single contribution $\$X$ is made on 9/30/2015 for the plan year ending 9/30/2015 in the **smallest amount that satisfies the minimum funding standard** for that year.

Question 52

In what range is $\$X$?

- (A) Less than \$600,000
- (B) \$600,000 but less than \$671,500
- (C) \$671,500 but less than \$743,000
- (D) \$743,000 but less than \$814,500
- (E) \$814,500 or more

2014

Data for Question 53 (3 points)

Funding standard carryover balance as of 1/1/2014: \$50,000.

Prefunding balance as of 1/1/2014: \$0.

Effective interest rate for 2014: 6.00%.

Actual rate of return on assets for 2014: 4.00%.

Minimum required contribution for 2014: \$150,000.

No quarterly installments are required for the 2014 plan year.

The plan sponsor elects to apply \$20,000 of the funding standard carryover balance as of 1/1/2014 to offset the minimum required contribution for 2014 on 7/1/2014.

The plan sponsor contributes \$200,000 on 7/1/2014 allocated toward the remaining minimum required contribution for 2014.

$\$X$ is the maximum prefunding balance as of 1/1/2015.

Question 53

In what range is $\$X$?

- (A) Less than \$66,250
- (B) \$66,250 but less than \$66,750
- (C) \$66,750 but less than \$67,250
- (D) \$67,250 but less than \$67,750
- (E) \$67,750 or more

2014

Data for Question 54 (4 points)

Valuation date: 1/1/2015.

Annual normal retirement benefit: \$1,200 per year of service, payable monthly.

Early retirement eligibility: Age 55.

Early retirement reduction: 4% per year prior to age 65.

Selected data for participant Smith:

Date of birth	1/1/1951
Date of hire	1/1/2005
Date of retirement	12/31/2014
Elected form of annuity	Ten-year certain only

Selected annuity factors:

	$\ddot{a}_{64}^{(12)}$	${}_{10}\ddot{a}^{(12)}$
Plan assumptions	10.30	7.30
Funding assumptions	11.50	7.69

$\$X$ is the funding target as of 1/1/2015 assuming a single life annuity form of payment.

$\$Y$ is the funding target as of 1/1/2015 given the form of payment elected.

Question 54

In what range is $|\$X - \$Y|$?

- (A) Less than \$2,500
- (B) \$2,500 but less than \$5,000
- (C) \$5,000 but less than \$7,500
- (D) \$7,500 but less than \$10,000
- (E) \$10,000 or more

2014

Data for Question 55 (3 points)

Valuation date: 1/1/2015.

Normal retirement benefit: 1.5% times final-year compensation times years of service.

Segment rates for the 2014 and 2015 valuations: {5.5%, 6.5%, 7.5% }.

Compensation increase assumption: 3% per year.

Selected data for sole participant Smith:

Date of birth	1/1/1972
Date of hire	1/1/1998
2013 compensation	\$50,000
2014 compensation	75,000

Selected age 65 annuity factors for 2015:

<u>5.5%</u>	<u>6.5%</u>	<u>7.5%</u>
11.41	10.54	9.79

$\$X$ = 1/1/2015 funding target.

$\$Y$ = 1/1/2015 funding target calculated as if the actual 2014 compensation was equal to the expected compensation at 1/1/2014.

Question 55

In what range is $\$X - \Y ?

- (A) Less than \$10,500
- (B) \$10,500 but less than \$12,500
- (C) \$12,500 but less than \$14,500
- (D) \$14,500 but less than \$16,500
- (E) \$16,500 or more

Answer Key EA-2F Fall 2014
October 22, 2014

Question	Answer		Question	Answer
1	B		31	B
2	C		32	A
3	B		33	D
4	D		34	A
5	D		35	A
6	A		36	B
7	A		37	D
8	B		38	B
9	A		39	B
10	D		40	B
11	D		41	A
12	D		42	B
13	B		43	C
14	B		44	B
15	A		45	A
16	D		46	A
17	C		47	C
18	C		48	D
19	A		49	C
20	B		50	B
21	D		51	B
22	C		52	D
23	B		53	D
24	A		54	C
25	A		55	B
26	C			
27	A			
28	C			
29	D			
30	E			