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

Enrolled Actuaries Pension Examination, Segment F

EA-2, Segment F

Date: Tuesday, November 9, 2021

INSTRUCTIONS TO CANDIDATES

1. Special conditions generally applicable to all questions on this examination are found in a separate .PDF on the computer screen.

2. All questions should be answered in accordance with laws, rules and regulations in effect as of May 31, 2021.

3. This examination consists of 60 multiple-choice questions of varying value. The point value for each question is shown in parentheses at the beginning of each question. Total point value is 160.

4. 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.

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

6. 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 computer screen.

7. Use the scratch paper booklets provided by Prometric for your scratch work. Extra scratch paper booklets are available if you run out of scratch paper in the booklet provided to you.

Answer Key EA-2F Fall 2021
August 22, 2021

Question	Answer		Question	Answer
1	C		31	B
2	B		32	B
3	D		33	A
4	C		34	A
5	C		35	B
6	D		36	C
7	B		37	B
8	B		38	B
9	A		39	B
10	D		40	B
11	B		41	A
12	C		42	C
13	B		43	E
14	C		44	D
15	D		45	B
16	C		46	B
17	D		47	C
18	C		48	B
19	A		49	B
20	B		50	C
21	C		51	D
22	B		52	B
23	B		53	A
24	A		54	D
25	B		55	B
26	A		56	C
27	A		57	C
28	D		58	A
29	D		59	D
30	D		60	B

Exam EA-2 (Segment F) Fall 2021
Pension

Data for Question 1 (3 points)

Type of plan: Multiemployer

Actuarial cost method: Entry age normal

Valuation interest rate: 7.00%

Credit balance as of 12/31/2020: $0

Actual rate of return on assets during both 2021 and 2022: 3.00% per year

Selected information:

	1/1/2021	1/1/2022
Normal cost	$750,000	$700,000
Total amortization charges	350,000	200,000
Total amortization credits	300,000	250,000

Contribution information:

Plan Year	Date	Amount
2021	1/1/2021	$900,000
2022	7/1/2022	975,000

There were no other contributions made for the 2021 and 2022 plan years.

$X is the credit balance as of 12/31/2022.

Question 1

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

(A) Less than $425,000

(B) $425,000 but less than $427,000

(C) $427,000 but less than $429,000

(D) $429,000 but less than $431,000

(E) $431,000 or more

Data for Question 2 (4 points)

Type of plan: Multiemployer

Valuation date: 1/1/2022

Actuarial cost method: Entry age normal

Normal retirement age: 62

Normal retirement benefit: 30% of final year's compensation

Selected valuation information:

Assume retirement age	62
Valuation interest rate	6.00%
Assumed annual rate of compensation increases	1.50%

Selected data for active participant Smith:

Gender	Male
Date of birth	1/1/1972
Date of hire	1/1/2016
2021 compensation	$30,000

$X is the accrued liability for Smith as of 1/1/2022.

Question 2

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

(A) Less than $26,000

(B) $26,000 but less than $28,000

(C) $28,000 but less than $30,000

(D) $30,000 but less than $32,000

(E) $32,000 or more

Data for Question 3 (3 points)

Valuation date: 1/1/2022

Normal retirement benefit: 1.50% of final three-year average compensation per year of service

Segment rates: {5.00%, 6.00%, 7.00%}

Assumed rate of compensation increases: 3.50% per year

Selected data for active participant Smith:

Gender	Male
Date of birth	1/1/1972
Date of hire	1/1/2002
2019 compensation	$80,000
2020 compensation	85,000
2021 compensation	90,000

$X is the target normal cost for Smith as of 1/1/2022.

Question 3

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

(A) Less than $8,000

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

(C) $9,000 but less than $10,000

(D) $10,000 but less than $11,000

(E) $11,000 or more

Data for Question 4 (4 points)

Type of plan: Multiemployer

Valuation date: 1/1/2022

Actuarial cost method: Frozen initial liability

Selected assumptions:

Valuation interest rate	6.00%
Rate of compensation increases	3.50% per year

Selected valuation results:

	1/1/2021	1/1/2022
Actuarial value of assets	$150,000	$160,000
Present value of future benefits	320,000	
Unfunded accrued liability	100,000	
Present value of expected 2021 compensation	150,000	
Present value of expected future compensation	1,200,000	

As of both 1/1/2021 and 1/1/2022, all participants are active and under the assumed retirement age. There have been no new participants since 1/1/2021.

No benefit payments were made during 2021.

There were no actuarial gains or losses for the 2021 plan year except for the return on plan assets.

Sole contribution for the 2021 plan year, made on 6/30/2021: $14,500

$X is the normal cost as of 1/1/2022.

Question 4

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

(A) Less than $10,500

(B) $10,500 but less than $10,800

(C) $10,800 but less than $11,100

(D) $11,100 but less than $11,400

(E) $11,400 or more

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Data for Question 5 (2 points)

Valuation date: 1/1/2022

Effective 1/1/2017, the plan was amended to offer a lump sum as an optional form of payment.

Over the past 5 years, every year the percentage of new retirees electing the lump sum form of payment has ranged from 20% to 30%.

This experience is expected to continue in the future.

The plan has 6,500 active participants as of 1/1/2022.

Consider the following sets of proposed form of payment assumptions:

	Current	I	II	III
Single life annuity	100%	95%	75%	50%
Lump sum	0%	5%	25%	50%

Question 5

Based on the information provided, which set of assumed forms of payment would be the most reasonable assumption for the 1/1/2022 valuation?

(A) Current

(B) I

(C) II

(D) III

Data for Question 6 (2 points)

Type of plan: Multiemployer

Valuation date: 1/1/2022

Normal retirement benefit: 60% of final compensation

The plan's benefits and participation were frozen as of 12/31/2020.

As of the valuation date, all 5,000 participants have retired.

Question 6

Which of the following actuarial assumptions should the plan actuary review for the 1/1/2022 valuation?

(A) Rate of compensation increases

(B) Retirement rates

(C) Termination rates

(D) Mortality rates

(E) None of the above

Data for Question 7 (4 points)

Valuation date: 1/1/2022

Selected information as of 1/1/2022:

Prefunding balance	$200,000
Minimum required contribution	700,000
Required quarterly installment	150,000
Effective interest rate	5.50%

Prefunding balance was applied timely to meet 2022 quarterlies until exhausted.

No contributions for the 2022 plan year were made before 1/15/2023.

$X is the **smallest amount that satisfies the minimum funding standard** as of 1/15/2023 for the 2022 plan year.

Question 7

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

(A) Less than $532,000

(B) $532,000 but less than $533,000

(C) $533,000 but less than $534,000

(D) $534,000 but less than $535,000

(E) $535,000 or more

Data for Question 8 (4 points)

Valuation date: 1/1/2022

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

Selected information:

	1/1/2021	1/1/2022
Segment rates:	{4.00%, 5.00%, 6.00%}	{4.75%, 5.00%, 6.00%}
$\ddot{a}_{65}^{(12)}$ using third segment rate:	11.2382	11.2382

Assumed termination rate at age 35: 15%.

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

Active participant data as of 1/1/2021:

Count	100
Gender	Male
Age	35
Service	10

During 2021, no new participants entered the plan and five participants terminated on 1/2/2021.

$X is the absolute value of the change in the funding target as of 1/1/2022 due to the actual number of terminations during 2021 differing from assumed terminations.

Question 8

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

(A) Less than $10,000

(B) $10,000 but less than $45,000

(C) $45,000 but less than $80,000

(D) $80,000 but less than $115,000

(E) $115,000 or more

Data for Question 9 (1 point)

Valuation date: 1/1/2022

Asset valuation method: Market value

The plan sponsor made a single contribution on 4/1/2022 for the 2021 plan year.

Consider the following statement:

> To determine the asset value for the 1/1/2022 valuation, this contribution is discounted from the date deposited to 1/1/2022 using the 2021 effective interest rate.

Question 9

Is the above statement true or false?

(A) True

(B) False

Data for Question 10 (3 points)

Type of plan: Multiemployer

Valuation date: 1/1/2022

Actuarial cost method: Aggregate

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

Valuation interest rate: 5.00%

Credit balance as of 12/31/2021: $180,000

Selected data for all active participants as of 1/1/2022:

Count	10
Gender	Female
Date of birth	1/1/1962
Date of hire	1/1/2002

Selected valuation results as of 1/1/2022:

Actuarial (market) value of assets	$1,000,000
Present value of future benefits for inactive participants	750,000
Outstanding balance of waiver base	100,000

$X is the normal cost as of 1/1/2022.

Question 10

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

(A) Less than $225,000

(B) $225,000 but less than $255,000

(C) $255,000 but less than $285,000

(D) $285,000 but less than $315,000

(E) $315,000 or more

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Data for Question 11 (1 point)

Valuation date: 1/1/2022

Ancillary death benefit for actives: Lump sum payment equal to $1,000 per year of service

Consider the following statement:

> The ancillary death benefit included in the determination of the funding target equals $1,000 multiplied by an active participant's projected years of service at normal retirement.

Question 11

Is the above statement true or false?

(A) True

(B) False

Data for Question 12 (4 points)

Valuation date: 1/1/2022

Segment rates: {5.00%, 6.00%, 7.00%}

ARPA 15-year amortization was adopted for the 2019 plan year.

15-year amortization factor for 2022 plan year: 10.3758

Selected information as of 1/1/2022:

Funding balances	$0
Actuarial (market) value of assets	800,000
Funding target	920,000
Target normal cost	20,000

Shortfall amortization installments as of 1/1/2022:

Year established	Installment
2019	$6,000
2020	6,000
2021	7,000
	$19,000

$X is the **minimum required contribution** as of 1/1/2022.

Question 12

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

(A) Less than $20,000

(B) $20,000 but less than $30,000

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

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

(E) $50,000 or more

Data for Question 13 (1 point)

A plan is amended to increase benefits.

Plan amendment effective date: 1/1/2022

Plan amendment adoption date: 2/1/2022

Consider the following statement:

> The plan amendment must be reflected in the plan's funding target and target normal cost for the 2022 plan year.

Question 13

Is the above statement true or false?

(A) True

(B) False

Data for Question 14 (2 points)

Consider the following three statements regarding setting a retirement assumption:

I. It is generally reasonable to use relatively higher retirement rates at ages before early retirement subsidies are first available than at ages after subsidies become available.

II. It is generally reasonable to use relatively higher retirement rates at ages at which retirees can also receive fully subsidized retiree medical benefits than at ages before retiree medical benefits become available.

III. It is generally reasonable to select retirement rates based only on historical experience without regard to anticipated future experience.

Question 14

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

Data for Question 15 (2 points)

Type of plan: Statutory hybrid (cash balance)

Valuation date: 1/1/2022

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

Selected information as of 1/1/2022:

Interest crediting rate	6.00% per year
Segment rates	{5.00%, 6.00%, 7.00%}
Assumed form of payment	Lump Sum

Selected data for active participant Smith as of 1/1/2022:

Age	62
Hypothetical account balance	$650,000

Question 15

In what range is the funding target for participant Smith as of 1/1/2022?

(A) Less than $620,000

(B) $620,000 but less than $640,000

(C) $640,000 but less than $660,000

(D) $660,000 but less than $680,000

(E) $680,000 or more

Data for Question 16 (3 points)

Selected information as of 1/1/2021:

Funding standard carryover balance	$25,000
Prefunding balance	4,000
Minimum required contribution	20,000
Effective interest rate	5.00%
Actual rate of return on assets during 2021	6.00%

The plan sponsor elected to apply $20,000 of the funding balances towards the 2021 minimum required contribution on 1/1/2021.

Sole contribution for the 2021 plan year, made on 12/31/2021: $28,000

Question 16

In what range is the prefunding balance on 1/1/2022?

(A) Less than $32,000

(B) $32,000 but less than $32,250

(C) $32,250 but less than $32,500

(D) $32,500 but less than $32,750

(E) $32,750 or more

Data for Question 17 (4 points)

Valuation date: 1/1/2022

Segment rates: {5.00%, 6.00%, 7.00%}

Normal form of payment: Single life annuity

Selected data for participant Smith:

Gender	Male
Date of birth	1/1/1957
Date of retirement	1/1/2022
Elected form of payment	20-year certain and life
Monthly benefit in elected form	$3,600

Assuming the normal form of payment, the funding target for Smith as of 1/1/2022 is $602,000.

$X is the absolute value of the change in the 1/1/2022 funding target due to Smith's elected form of payment.

Question 17

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

(A) Less than $45,000

(B) $45,000 but less than $50,000

(C) $50,000 but less than $55,000

(D) $55,000 but less than $60,000

(E) $60,000 or more

Data for Question 18 (3 points)

Valuation date: 1/1/2022

Asset valuation method: Fair market value

Effective interest rate for the 2021 plan year: 5.00%

Actual rate of return on assets during 2021: 6.00%

Effective interest rate for the 2022 plan year: 5.25%

Fair market value of assets as of 1/1/2022 (excluding receivables): $15,500,000

Summary of all contributions for the 2021 plan year:

Date	Amount
6/15/2022	$2,000,000
8/15/2022	1,000,000

$X is equal to the actuarial value of assets as of 1/1/2022.

Question 18

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

(A) Less than $18,414,500

(B) $18,414,500 but less than $18,424,500

(C) $18,424,500 but less than $18,434,500

(D) $18,434,500 but less than $18,444,500

(E) $18,444,500 or more

Data for Question 19 (1 point)

Type of plan: Multiemployer

Actuarial cost method: Unit credit

Effective 1/1/2022, the plan is amended to increase the monthly benefit from $35 to $40 per year of service for all years of service.

The amendment increases the unfunded actuarial accrued liability.

Consider the following statement:

> The increase in the unfunded actuarial accrued liability due to this amendment is amortized over 15 years.

Question 19

Is the above statement true or false?

(A) True

(B) False

Data for Question 20 (4 points)

Type of plan: Multiemployer

Valuation date: 1/1/2022

Actuarial cost method: Projected unit credit

Normal retirement benefit: 2.5% of final compensation per year of service

Early retirement eligibility: Age 55 with 5 years of service

Early retirement reduction: 2% for each year that the benefit commencement age precedes age 65

Selected assumptions:

Valuation interest rate	6.00%
Annual rate of compensation increases	3.50%
Assumed retirement rates (beginning of the year)	
Age 62	25%
Ages 63-64	0%
Age 65	100%

Selected annuity factors:

$\ddot{a}_{62}^{(12)} = 11.93$ $\ddot{a}_{65}^{(12)} = 11.24$

Data for active participant Smith as of 1/1/2021:

Date of birth	1/1/1959
Date of hire	1/1/2014
2020 compensation	$60,000

Smith retired on 12/31/2021. Smith's accrued liability on 1/1/2022 is $142,000.

Question 20

In what range is the absolute value of the experience gain/loss during 2021 for Smith as of 1/1/2022?

(A) Less than $10,000

(B) $10,000 but less than $12,500

(C) $12,500 but less than $15,000

(D) $15,000 but less than $17,500

(E) $17,500 or more

Data for Question 21 (2 points)

A short plan year begins on 1/1/2022 and ends on 7/31/2022.

Consider the following statements regarding the calculation of the plan's minimum required contribution for the 2022 short plan year:

I. Any target normal cost is multiplied by a fraction (the numerator of which is the duration of the short plan year and the denominator of which is 1 year).

II. Any waiver amortization installments are multiplied by a fraction (the numerator of which is the duration of the short plan year and the denominator of which is 1 year).

III. Any shortfall amortization installments are multiplied by a fraction (the numerator of which is the duration of the short plan year and the denominator of which is 1 year).

Question 21

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

Data for Question 22 (3 points)

A plan offers a lump sum option.

2021 AFTAP: 85.00%

Selected information as of 1/1/2022:

Prefunding balance	$50,000
Actuarial (market) value of assets	300,000

As of 4/1/2022, the actuary has not issued a 2022 AFTAP certification.

$X is the deemed reduction to the prefunding balance on 4/1/2022 to avoid the limitation on accelerated benefit distributions under IRC section 436(d).

Question 22

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

(A) Less than $10,000

(B) $10,000 but less than $20,000

(C) $20,000 but less than $30,000

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

(E) $40,000 or more

Data for Question 23 (2 points)

The plan had more than 100 participants on each day during the 2021 plan year.

Required quarterly installments for the 2022 plan year: $50,000

The plan has a liquidity shortfall of $75,000 as of 3/31/2022.

Sole contribution for the 2022 plan year, made on 4/15/2022: $60,000

Consider the following statement:

> There is an initial excise tax due of $7,500 due to failure to meet the liquidity

Question 23

Is the above statement true or false?

(A) True

(B) False

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Data for Question 24 (3 points)

Valuation date: 1/1/2022

Optional benefit form: Lump sum calculated using the applicable interest rate and applicable mortality

Valuation segment rates: {5.00%, 6.00%, 7.00%}

IRC section 417(e) segment rates: {3.00%, 4.00%, 5.00%}

Assumed form of payment: 100% lump sum

The plan has fewer than 100 participants.

Selected data for participant Smith:

Gender	Male
Age	45
Monthly accrued benefit	$2,500

$\ddot{a}_{65}^{(12)}$ using IRC section 417(e) mortality:

Interest rate	Factor
4.00%	13.38
5.00%	12.23
6.00%	11.24
7.00%	10.38

$X is the funding target for Smith as of 1/1/2022.

Question 24

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

(A) Less than $90,000

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

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

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

(E) $150,000 or more

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Data for Question 25 (3 points)

Type of plan: Statutory hybrid (cash balance)

Valuation date: 1/1/2022

Segment rates: {4.75%, 5.00%, 6.00%}

Interest crediting rate: 4.25% per year

Assumed form of payment: Single life annuity

Fixed plan factor to convert account balance to single life annuity at normal retirement age: 14.21

Selected data for participant Smith as of 1/1/2022:

Gender	Female
Age	44
Hypothetical account balance	$100,000

$X is the funding target for Smith as of 1/1/2022.

Question 25

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

(A) Less than $56,000

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

(C) $66,000 but less than $76,000

(D) $76,000 but less than $86,000

(E) $86,000 or more

Data for Question 26 (1 point)

A plan is subject to the liquidity requirement and has a liquidity shortfall at the end of a quarter.

Consider the following statement:

> The prefunding balance cannot be applied to satisfy the liquidity shortfall requirements.

Question 26

Is the above statement true or false?

(A) True

(B) False

Data for Question 27 (1 point)

Plan effective date: 1/1/2022

Valuation date: 12/31/2022

Asset valuation method: Fair market value

Effective interest rate: 5.00%

Sole contribution for the 2022 plan year, made on 7/1/2022: $200,000

Market value of assets as of 12/31/2022: $150,000

Consider the following statement:

> The actuarial value of assets for the 12/31/2022 valuation is $0.

Question 27

Is the above statement true or false?

(A) True

(B) False

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Data for Question 28 (4 points)

Type of plan: Multiemployer

Valuation date: 1/1/2022

Actuarial cost method: Entry age normal

Valuation interest rate: 6.00%

Credit balance as of 12/31/2021: $0

Normal cost as of 1/1/2022: $25,000

Amortization information as of 1/1/2022 for all bases established before 2022:

	Years remaining	Outstanding balance
Combined charge base	8	$900,000
Experience gain	10	(500,000)
Experience loss	12	300,000

Experience loss for 2021 as of 1/1/2022: $250,000

$X is the **smallest amount that satisfies the minimum funding standard** that can be contributed on 12/31/2022 for the 2022 plan year.

Question 28

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

Data for Question 29 (3 points)

Valuation date: 1/1/2022

Selected information:

	1/1/2021	1/1/2022
Funding balances	$0	$0
Minimum required contribution	100,000	110,000
Effective interest rate	5.00%	5.50%

Quarterly installments are required for the 2022 plan year.

The plan sponsor makes contributions equal to the required quarterly installments on their respective due dates.

The final contribution for the 2022 plan year is made on 6/30/2023.

$X is the **smallest amount that satisfies the minimum funding standard** that can be contributed on 6/30/2023 for the 2022 plan year.

Question 29

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

(A) Less than $14,500

(B) $14,500 but less than $15,000

(C) $15,000 but less than $15,500

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

(E) $16,000 or more

Data for Question 30 (4 points)

Type of plan: Multiemployer

Plan effective date: 1/1/2019

The plan was amended, with the amendment adopted and effective on 1/1/2021.

Valuation date: 1/1/2022

Actuarial cost method: Entry age normal

Valuation interest rate: 7.00%

Credit balance as of 12/31/2021: $15,000

Normal cost as of 1/1/2022: $40,000

Initial amounts of all amortization bases:

Type of base	Initial amount
Initial accrued liability	$500,000
Experience loss during 2019	15,000
Experience gain during 2020	20,000
Experience gain during 2021	25,000
Increase in 1/1/2021 accrued liability due to plan amendment	50,000

$X is the **smallest amount that satisfies the minimum funding standard** for 2022 as of 12/31/2022.

Question 30

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

(A) Less than $73,000

(B) $73,000 but less than $77,000

(C) $77,000 but less than $81,000

(D) $81,000 but less than $85,000

(E) $85,000 or more

Data for Question 31 (3 points)

Valuation date: 1/1/2022

The plan was amended to freeze benefit accruals on 12/31/2021.

No quarterly contributions are required for the 2022 plan year.

Segment interest rates for 2022: {4.75%, 5.00%, 6.00%}

15-year amortization factor for the 2022 plan year: 10.9193

Selected information as of 1/1/2022:

Funding standard carryover balance	$3,000
Prefunding balance	2,700
Actuarial value of assets	330,000
Funding target	370,000
Expected expenses paid from plan trust during 2022	6,000
Effective interest rate	5.00%

$X is the **smallest amount that satisfies the minimum funding standard** that can be contributed on 7/1/2022 for the 2022 plan year.

Question 31

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

(A) Less than $4,500

(B) $4,500 but less than $6,500

(C) $6,500 but less than $8,500

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

(E) $10,500 or more

Data for Question 32 (4 points)

Valuation date: 1/1/2022

ARPA 15-year amortization was adopted for the 2021 plan year.

Selected information:

	1/1/2021	1/1/2022
Segment interest rates	{5.00%, 6.00%, 7.00%}	{4.75%, 5.00%, 6.00%}
Prefunding balance	$10,000	
Funding target	1,100,000	$1,220,000
Actuarial value of assets	950,000	1,100,000

15-year amortization factor for 2021 plan year: 10.3758

15-year amortization factor for 2022 plan year: 10.9193

Actual rate of return on assets during 2021: 10.00%

The plan sponsor did not elect to use the prefunding balance to offset the minimum required contribution for 2021.

The plan sponsor did not elect to add to the prefunding balance at 1/1/2022.

$X is the shortfall amortization charge as of 1/1/2022.

Question 32

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

(A) Less than $12,700

(B) $12,700 but less than $13,700

(C) $13,700 but less than $14,700

(D) $14,700 but less than $15,700

(E) $15,700 or more

Data for Question 33 (1 point)

Type of plan: Multiemployer

Consider the following statement:

> An asset valuation method where valuation assets equal the fair market value multiplied by 95% is not a reasonable asset valuation method.

Question 33

Is the above statement true or false?

(A) True

(B) False

Data for Question 34 (2 points)

Valuation date: 1/1/2022

A plan amendment is adopted on 3/14/2022 that increases the benefit accrual for service completed after 5/31/2022.

The plan amendment is effective 6/1/2022.

If increases to target normal cost from this amendment were treated as an increase to the funding target, this amendment would be able to take effect under the provisions of IRC section 436.

Consider the following statement:

> The plan sponsor can elect to include the effect of the amendment in the 1/1/2022 target normal cost.

Question 34

Is the above statement true or false?

(A) True

(B) False

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Pension

Data for Question 35 (3 points)

Valuation date: 1/1/2022

Segment rates for 2022: {5.00%, 6.00%, 7.00%}

15-year amortization factor for the 2022 plan year: 10.3758

Selected information:

	1/1/2021	1/1/2022
Prefunding balance	$0	$30,000
Actuarial (market) value of assets	1,000,000	1,015,000
Funding target	950,000	1,000,000
Target normal cost	80,000	70,000
Effective interest rate	6.20%	6.00%

$X is the **smallest amount that satisfies the minimum funding standard** as of 9/1/2022 for the 2022 plan year.

Question 35

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

(A) Less than $42,000

(B) $42,000 but less than $56,000

(C) $56,000 but less than $70,000

(D) $70,000 but less than $84,000

(E) $84,000 or more

Data for Question 36 (5 points)

Valuation date: 1/1/2022

Segment rates for 2022: {5.00%, 6.00%, 7.00%}

ARPA 15-year amortization was adopted for the 2019 plan year.

15-year amortization factor for the 2022 plan year: 10.3758

The plan is only in at-risk status for the 2019, 2021 and 2022 plan years.

Selected information as of 1/1/2022:

Prefunding balance	$200,000
Actuarial (market) value of assets	3,800,000
Funding target without regard to at-risk assumptions	4,000,000
At-risk funding target without regard to load	4,700,000
Target normal cost without regard to at-risk assumptions	780,000
At-risk target normal cost without regard to load	920,000
Number of participants	750

Shortfall amortization installments established before 2022:

Year established	Installment	Outstanding balance as of 1/1/2022
2019	$22,000	$197,290
2020	4,000	37,859
2021	20,000	198,671
Totals	$46,000	$433,820

$X is the **minimum required contribution** as of 1/1/2022.

Question 36

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

(A) Less than $880,000

(B) $880,000 but less than $940,000

(C) $940,000 but less than $1,000,000

(D) $1,000,000 but less than $1,060,000

(E) $1,060,000 or more

Data for Question 37 (1 point)

A plan sponsor makes an election to use funding balances to exactly satisfy a required quarterly contribution. The election is made after the due date for the quarterly contribution.

Consider the following statement:

> The portion of the minimum required contribution that is satisfied by the funding balance election is equal to the amount of the required quarterly contribution discounted from the date of the election to the valuation date using the plan's effective interest rate plus 5 percentage points.

Question 37

Is the above statement true or false?

(A) True

(B) False

Data for Question 38 (2 points)

Valuation date: 1/1/2022

Consider the following elections:

I. On 2/1/2022, an election is made to apply a portion of the 2021 prefunding balance to offset the remaining 2021 minimum required contribution.

II. On 4/15/2022, an election is made to apply a portion of the 2022 prefunding balance to offset the quarterly installment due on 4/15/2022.

III. The enrolled actuary's certification of the AFTAP on 7/1/2022 results in a deemed election to reduce the 1/1/2022 prefunding balance.

Question 38

From first to last, in what order are the elections taken into account under IRC section 430?

(A) I, II, III

(B) I, III, II

(C) III, I, II

(D) III, II, I

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

Data for Question 39 (3 points)

Type of plan: Multiemployer

Valuation date: 1/1/2022

Actuarial cost method: Projected unit credit

Consider the following statements regarding plan amendments adopted 12/31/2021 and effective 1/1/2022:

I. If a plan amendment provides a temporary retirement supplemental benefit for current retirees until 12/31/2024, the additional actuarial accrued liability is amortized in the funding standard account over 3 years.

II. If a plan amendment modifies the normal form of payment under the plan from a single life annuity to a 5-year certain and life annuity for future retirements, the additional actuarial accrued liability is amortized in the funding standard account over 5 years.

III. If a plan amendment provides a retirement supplemental benefit from age 62 to 65 for all future retirements, the additional actuarial accrued liability is amortized in the funding standard account over 15 years.

Question 39

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

Data for Question 40 (3 points)

Plan type: Multiemployer

Valuation date: 1/1/2022

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

Valuation interest rate: 7.00%

Asset loss during 2020: $6,000

Selected asset information:

	1/1/2021	1/1/2022
Market value of assets	$48,000	$75,000
Benefit payments, paid on 7/1/2021	6,000	
Sole contribution for 2021 plan year, paid on 4/1/2021	2,000	

Question 40

In what range is the actuarial value of assets as of 1/1/2022?

(A) Less than $59,000

(B) $59,000 but less than $64,000

(C) $64,000 but less than $69,000

(D) $69,000 but less than $74,000

(E) $74,000 or more

Data for Question 41 (2 points)

The funding target for a plan for the 2021 plan year was determined using the 24-month average segment rates for the month preceding the valuation date, subject to interest rate stabilization.

Consider the following statements regarding the interest rates that may be used (subject to IRS approval of any change, if required) to determine the plan's funding target for purposes of IRC section 430 for the 2022 plan year:

I. The plan sponsor may use the 24-month average segment rates for the month preceding the valuation date, adjusted to be not less than 95% and not more than 105% of the applicable 25-year average segment rates (with a minimum of 5% on each 25-year average segment rate).

II. The plan sponsor may elect to use the monthly corporate bond yield curve under IRC Section 430(h)(2)(D).

III. The plan sponsor may elect to use the 24-month average segment rates for the month preceding the valuation date without adjustment for interest rate stabilization.

Question 41

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

Data for Question 42 (3 points)

Valuation date: 1/1/2022

Selected information:

	1/1/2021	1/1/2022
Minimum required contribution	$475,000	$500,000
Funding shortfall	Yes	No
Effective interest rate	5.00%	5.50%

Contribution for the 2022 plan year paid on 2/15/2022: $102,000

$X is the smallest additional contribution made on 4/15/2022 that will satisfy the first quarterly installment for the 2022 plan year.

Question 42

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

(A) Less than $4,000

(B) $4,000 but less than $7,000

(C) $7,000 but less than $10,000

(D) $10,000 but less than $13,000

(E) $13,000 or more

Data for Question 43 (4 points)

Valuation date: 1/1/2022

Segment rates: {5.00%, 6.00%, 7.00%}

15-year amortization factor for the 2022 plan year: 10.3758

A correction to the calculated rate of return on assets for 2021 results in a change to the funding balances as of 1/1/2022.

Selected information as of 1/1/2022:

	Before correction	After correction
Funding standard carryover balance	$4,720	$4,040
Prefunding balance	35,400	30,300

Selected valuation information as of 1/1/2022:

Actuarial (market) value of assets	$535,000
Funding target	500,000
Target normal cost	40,000

The plan sponsor makes an election to apply funding balances to offset the minimum required contribution for the 2022 plan year to the extent possible.

$X is the absolute value of the change in the **minimum required contribution** as of 1/1/2022 due to the correction of funding balances.

Question 43

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

(A) Less than $500

(B) $500 but less than $700

(C) $700 but less than $900

(D) $900 but less than $1,100

(E) $1,100 or more

Exam EA-2 (Segment F) Fall 2021
Pension

Data for Question 44 (4 points)

Type of plan: Multiemployer

Valuation date: 1/1/2022

Actuarial cost method: Aggregate

Normal retirement benefit: $30 per month per year of service

The assumed retirement age is being changed for the 2022 valuation from age 65 to age 63.

Unreduced early retirement age: 63

Valuation interest rate: 6.50%

Credit balance as of 12/31/2021: $50,000

Actuarial (market) value of assets as of 1/1/2022: $300,000

Selected data for all 10 participants as of 1/1/2022:

Age at hire	45
Age on valuation date	59
Status	Active

Selected annuity factors at 6.50% interest:

$\ddot{a}_{63}^{(12)}$: 10.62
$\ddot{a}_{65}^{(12)}$: 10.17

$X is the change in the normal cost as of 1/1/2022 due to the change in retirement age assumption.

Question 44

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

(A) Less than $11,500

(B) $11,500 but less than $20,000

(C) $20,000 but less than $28,500

(D) $28,500 but less than $37,000

(E) $37,000 or more

Exam EA-2 (Segment F) Fall 2021
Pension

Data for Question 45 (1 point)

Type of plan: Multiemployer

Consider the following statement with respect to the maximum deductible limit as determined under IRC section 404:

The deductible limit is the greater of:

I. The normal cost plus a 15-year amortization of the unfunded accrued liability, and

II. 140% of the excess of the plan's current liability over the plan's actuarial value of assets.

Question 45

Is the above statement true or false?

(A) True

(B) False

Data for Question 46 (4 points)

Type of plan: Multiemployer

Valuation date: 1/1/2022

Actuarial cost method: Unit credit

Valuation interest rate: 7.00%

Funding deficiency as of 12/31/2020: $100,000

Selected valuation results:

	1/1/2021	1/1/2022
Actuarial value of assets	$900,000	$1,050,000
Actuarial accrued liability	1,200,000	1,300,000
Normal cost	150,000	
Amortization charges for all bases	50,000	

Sole contribution for the 2021 plan year, made on 12/31/2021: $160,000

The plan is projected to have a funding deficiency as of 12/31/2022.

Consider the following statements:

I. The plan's funded percentage as of 1/1/2022 is over 80%.

II. The plan's funding deficiency as of 12/31/2021 is less than $160,000.

III. The plan is in critical status as of 1/1/2022.

Question 46

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

Data for Question 47 (3 points)

Type of plan: Multiemployer

Valuation date: 1/1/2022

The plan first entered critical status as of 1/1/2021 and remained in critical status as of 1/1/2022.

The bargaining parties are unable to reach a new collective bargaining agreement incorporating a rehabilitation plan.

Selected data for Employer A:

	2021	2022
Hourly contribution rate	$5.00	$5.00
Hours subject to surcharge	5,000	6,000

$X is the sum of Employer A's surcharges for 2021 and 2022.

Question 47

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

(A) Less than $3,000

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

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

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

(E) $6,000 or more

Data for Question 48 (1 point)

Type of plan: Multiemployer

Valuation date: 1/1/2022

The plan is in critical status for the 2022 plan year.

Funding deficiency as of 12/31/2022: $200,000

Consider the following statement:

> The amount of the initial excise tax that must be paid for failing to meet minimum funding standards for the 2022 plan year is $10,000.

Question 48

Is the above statement true or false?

(A) True

(B) False

Exam EA-2 (Segment F) Fall 2021
Pension

Data for Question 49 (3 points)

Type of plan: Multiemployer

Valuation date: 1/1/2022

Actuarial cost method: Unit credit

Valuation interest rate: 6.00%

Credit balance as of 12/31/2021: $200,000

Selected information as of 1/1/2022:

Normal cost	$1,000,000
Net amortization charges	80,000

Sole contribution for the 2022 plan year, made on 12/31/2022: $900,000

$X is the initial excise tax that must be paid for failing to meet minimum funding standards for the 2022 plan year.

Question 49

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

(A) Less than $1,000

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

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

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

(E) $4,000 or more

Exam EA-2 (Segment F) Fall 2021
Pension

Data for Question 50 (3 points)

Type of plan: Multiemployer

Valuation date: 1/1/2022

Actuarial cost method: Entry age normal

The plan's asset valuation method was changed for the 1/1/2020 valuation.

The plan was amended to cease benefit accruals effective 12/31/2021.

Consider the following statements:

I. The plan can change to the individual aggregate funding method without requesting IRS approval for the 1/1/2022 valuation.

II. The plan can change to the unit credit funding method without requesting IRS approval for the 1/1/2022 valuation.

III. The amortization period for a change in funding method is 15 years.

Question 50

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

Data for Question 51 (3 points)

Valuation date: 1/1/2022

Segment rates for 2022: {5.00%, 6.00%, 7.00%}

The plan year is a short plan year that runs from 1/1/2022 to 9/30/2022.

15-year amortization factor for the short 2022 plan year: 10.3758

Selected information as of 1/1/2022:

Funding balances	$0
Actuarial (market) value of assets	1,600,000
Funding target	2,000,000
Present value of all benefits expected to accrue during the short plan year	100,000
Plan-related expenses expected to be paid from the trust during the short plan year	15,000

$X is the amount of the **minimum required contribution** as of 1/1/2022.

Question 51

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

(A) Less than $120,000

(B) $120,000 but less than $130,000

(C) $130,000 but less than $140,000

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

(E) $150,000 or more

Data for Question 52 (1 point)

Valuation date: 1/1/2022

Consider the following statement:

> The application deadline for a waiver of the minimum required contribution for the 2022 plan year is 9/15/2023.

Question 52

Is the above statement true or false?

(A) True

(B) False

Exam EA-2 (Segment F) Fall 2021
Pension

Data for Question 53 (3 points)

Valuation date: 1/1/2022

Segment rates: {5.00%, 6.00%, 7.00%}

Normal retirement benefit: 1.00% of final compensation per year of service

Pre-retirement death benefit: 100 times the accrued monthly benefit, payable at the end of the year of death

Assumed rate of compensation increases: 6.00% per year

Selected data for active participant Smith as of 1/1/2022:

Age	64
Years of service	19
2021 compensation	$100,000

Participant Smith is unmarried and is assumed to remain unmarried.

Selected mortality rate:

q_{64}: 0.0072

$X is the portion of the 1/1/2022 funding target for Smith attributable to the pre-retirement death benefit at age 64.

Question 53

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

(A) Less than $1,100

(B) $1,100 but less than $1,140

(C) $1,140 but less than $1,180

(D) $1,180 but less than $1,220

(E) $1,220 or more

Exam EA-2 (Segment F) Fall 2021
Pension

Data for Question 54 (2 points)

A controlled group sponsors several plans, including a statutory hybrid (cash balance) plan. The aggregate unfunded vested benefits for these plans (under ERISA section 4006(a)(3)(E)(iii)) as of the close of the prior plan year is less than $50,000,000.

The cash balance plan has active participants with existing hypothetical balances and expected future service.

No participant's benefits are currently at the IRC section 415 limit.

Consider the following statements regarding assumptions for funding valuations for the plans in this controlled group:

I. A 1% increase to the projected interest crediting rate for the cash balance plan will result in an increase to the funding target.

II. A plan is amended to provide a lump sum option and the actuary adds an assumption for the percentage electing lump sum payments. IRS approval is not required for this assumption change.

Question 54

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

(A) None

(B) I only

(C) II only

(D) Both I and II

Data for Question 55 (2 points)

For a multiemployer plan, consider the following scenarios and statements regarding changes in the valuation interest rates:

I. For the last several years the actual rates of return for the plan have been significantly lower than the expected rate of return. The actuary anticipates no improvement and expects the plan to become insolvent. To better reflect these anticipated experiences the actuary reduces the valuation interest rate.

II. The actuary increases the valuation interest rate. The increase in the valuation interest rate is not consistent with the actuary's expected return for the plan's assets.

III. For purposes of determining a plan's current liability for the full funding limitation, the prior year's current liability interest rate does not fall within the current year's permissible range. The actuary establishes a new interest rate that falls within the permissible range.

Question 55

Which, if any, of the above statements describe a reasonable change to valuation interest rates?

(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

Data for Question 56 (4 points)

Valuation date: 1/1/2022

Number of plan participants as of 1/1/2021: 550

FTAP for the 2021 and 2022 plan years: 83.00%

Selected information:

Required quarterly installments for 2022	$130,000
Liquid assets as of 3/31/2022	1,400,000
Illiquid assets as of 3/31/2022	1,350,000

Disbursements paid from the trust for the 12 months ending 3/31/2022:

Regular monthly annuity payments	$475,000
Single lump sum distributions	25,000
Annuity purchases	135,000
Administrative expenses	40,000

The amount of contribution on 3/31/2022 that would increase the plan's 2022 FTAP to 100% is $325,000. This amount takes into account the expected increase in the funding target due to benefits accruing during the plan year.

$X is the amount of liquid assets that, if deposited on 4/15/2022, will satisfy the required quarterly installment.

Question 56

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

(A) Less than $150,000

(B) $150,000 but less than $200,000

(C) $200,000 but less than $250,000

(D) $250,000 but less than $300,000

(E) $300,000 or more

Data for Question 57 (3 points)

Valuation date: 1/1/2022

The plan has always had over 500 participants and is not in at-risk status for 2022.

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

Selected valuation results at 1/1/2022:

Market value of assets	$11,000,000
Actuarial value of assets	10,000,000
Funding target	13,500,000
Funding target (without stabilization)	15,000,000
Target normal cost	1,300,000
Target normal cost (without stabilization)	1,400,000
Minimum required contribution	800,000
Effective interest rate	5.00%
Effective interest rate (without stabilization)	4.00%

$X is the deduction limit for 2022, disregarding the at-risk floor on the deduction limit.

Question 57

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

(A) Less than $12,500,000

(B) $12,500,000 but less than $13,500,000

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

(D) $14,500,000 but less than $15,500,000

(E) $15,500,000 or more

Data for Question 58 (3 points)

Consider the following statements regarding the use of substitute mortality tables for a single employer plan:

I. A plan uses a substitute mortality table for only one gender because of a lack of credible mortality information with respect to the other gender. A plan's substitute mortality table must not be used beginning with the first plan year for which there is credible mortality information with respect to the gender that had lacked credible mortality information.

II. A plan uses a substitute mortality table for the 2021 valuation. During 2021, there is a significant change in individuals covered by the plan. The plan cannot use the same substitute mortality table for the 2022 valuation.

III. A significant change in the individuals covered by a substitute mortality table for a plan year occurs if the number of individuals covered by the substitute mortality table for the plan year is less than 90 percent or more than 110 percent of the average number of individuals in that population over the years covered by the experience study on which the substitute mortality table is based.

Question 58

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

Data for Question 59 (2 points)

A single employer plan has not changed its funding methods or asset valuation methods in the preceding five years.

Consider the following statements:

I. Automatic IRS approval is granted for a change in asset valuation method to a method that determines the actuarial value of plan assets as fair market value.

II. Automatic IRS approval is granted for a change in asset valuation method to a method that determines the actuarial value of plan assets as the average of the fair market value on the valuation date and the adjusted fair market value of assets determined for the determination dates that are 6, 12, 18, and 24 months before the valuation date. The actuarial value of plan assets is restricted so that it is not greater than 110% and not less than 90% of the fair market value.

III. Automatic IRS approval is granted for a change in valuation date to a date that is the first day of the plan year.

Question 59

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

Data for Question 60 (1 point)

A multiemployer plan has an accumulated funding deficiency for the 2022 plan year and applies for an automatic amortization extension under IRC section 431(d)(1) for its charge bases.

Consider the following statement:

> The maximum length of the automatic amortization extension is 10 years.

Question 60

Is the above statement true or false?

(A) True

(B) False

****END OF EXAMINATION****