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: Thursday, November 10, 2022

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, 2022.

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 2022
August 17, 2022

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

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Pension

Data for Question 1 (3 points).

Valuation date: 1/1/2023

Selected information as of 1/1/2023:

Prefunding balance	$0
Actuarial (market) value of assets	500,000
Funding target	450,000
Target normal cost	250,000
Effective interest rate	5.00%

There are no required quarterly installments for the 2023 plan year.

$X is the **smallest amount that satisfies the minimum funding standard** as of 9/15/2024.

Question 1

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

(A) Less than $215,000

(B) $215,000 but less than $230,000

(C) $230,000 but less than $245,000

(D) $245,000 but less than $260,000

(E) $260,000 or more

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Data for Question 2 (3 points)

Valuation date: 1/1/2023

Optional form of payment: Single sum based on the greater of the lump sum determined under the plan's actuarial equivalence or under IRC section 417(e)(3).

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

Plan's actuarial equivalence: Applicable mortality table under IRC section 417(e)(3) and 5.00%

The plan actuary assumes that 100% of participants elect a single sum.

Selected information for participant Smith as of 1/1/2023:

Date of birth	1/1/1958
Accrued benefit	$100 per month

Age 65 immediate annuity factor using the plan's actuarial equivalence: 12.621

Age 65 immediate annuity factor using 417(e) mortality and 417(e) segment rates: 11.461

$X is the funding target for Smith as of 1/1/2023.

Question 2

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

(A) Less than $13,000

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

(C) $14,000 but less than $15,000

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

(E) $16,000 or more

Data for Question 3 (1 point)

Valuation date: 1/1/2023

The prior plan year was a short plan year.

Quarterly contribution installments are required for the 2023 plan year.

Consider the following statement:

> In determining the quarterly contribution installments for the 2023 plan year, the required annual payment under IRC section 430(j)(3) is equal to the lesser of 90% of the minimum required contribution for the current plan year or 100% of the minimum required contribution for the preceding short plan year.

Question 3

Is the above statement true or false?

(A) True

(B) False

Data for Question 4 (3 points)

Valuation date: 12/31/2023

Asset valuation method: Market value

Prefunding balance: $0

Effective interest rate: 5.00%

Fair market value of assets as of 12/31/2023: $500,000

All contribution information for the 2023 plan year:

Date	Amount
4/30/2023	$30,000
9/30/2023	40,000

$X is the actuarial value of assets as of 12/31/2023.

Question 4

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

(A) Less than $379,000

(B) $379,000 but less than $429,000

(C) $429,000 but less than $479,000

(D) $479,000 but less than $529,000

(E) $529,000 or more

Data for Question 5 (3 points)

Valuation date: 1/1/2023

The plan actuary is changing the actuarial valuation software for the 2023 plan year.

There was no change in the software for the 2022 plan year.

No expenses are paid from the trust.

Selected information as of 1/1/2022 using the prior valuation software:

Actuarial value of assets	$500,000
Funding target	550,000
Target normal cost	100,000

Below is a table providing results of scenarios from the new software when trying to replicate the 2022 plan year information:

Scenario	Actuarial value of assets	Funding target	Target normal cost
I	$495,000	$555,000	$99,000
II	488,000	555,000	99,000
III	495,000	565,000	99,000
IV	495,000	555,000	97,000

Question 5

Which of the above scenarios, if any, from the new software would allow for an automatic approval for a funding method change for the 2023 plan year under Rev. Proc. 2017-56, assuming all other requirements were satisfied?

(A) I only

(B) II only

(C) III only

(D) IV only

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

Data for Question 6 (1 point)

Valuation date: 1/1/2023

Consider the following statements regarding actuarial assumptions:

I. If a plan's vesting schedule changes, the termination rate assumption should be reviewed.

II. If a plan's early retirement subsidies are changed, the retirement rate assumption should be reviewed.

III. If a plan's eligibility definition for disability benefits changes, the disability assumption should be reviewed.

Question 6

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 7 (1 point)

A large company offers subsidized early retirement and retiree medical benefits, but no enhanced disability benefits.

Consider the following statement:

> A table of assumed disability rates is required for the actuarial valuation.

Question 7

Is the above statement true or false?

(A) True

(B) False

Data for Question 8 (1 point)

Valuation date: 1/1/2023

A plan sponsor that is part of a controlled group fails to meet the minimum funding requirement for the plan year and is therefore subject to a non-deductible excise tax.

Consider the following statement:

> All members of the plan sponsor's controlled group are jointly and severally liable for the tax imposed.

Question 8

Is the above statement true or false?

(A) True

(B) False

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Data for Question 9 (5 points)

Valuation date: 1/1/2023

Asset valuation method: The average of the market value of assets on the valuation date and the adjusted market value of assets for the dates that are 12 and 24 months before the valuation date.

IRC section 430 interest rates for the following plan years:

	2021	2022	2023
3rd segment rate	5.00%	6.00%	6.00%
Effective interest rate	4.25%	5.20%	5.70%

Assumed rate of return on assets for all years: 7.50%

Selected asset information:

	2021	2022	2023
Market value (excluding receivables) at 1/1	$1,000,000	$1,250,000	$1,500,000
Benefit payments	50,000	62,500	
Expected expenses paid from plan assets	10,000	12,500	

Benefit payments and expenses are assumed to be paid in the middle of the year for each plan year.

No contributions were made for the 2020 or 2021 plan years.

Contribution information for the 2022 plan year:

Date	Amount
4/1/2022	$125,000
6/1/2023	75,000

Question 9

In what range is the actuarial value of assets as of 1/1/2023?

(A) Less than $1,400,000

(B) $1,400,000 but less than $1,410,000

(C) $1,410,000 but less than $1,420,000

(D) $1,420,000 but less than $1,430,000

(E) $1,430,000 or more

Data for Question 10 (5 points)

Type of plan: Multiemployer

Valuation date: 1/1/2023

Actuarial cost method: Entry age normal

Normal retirement benefit: 50% of final year's compensation

Valuation interest rate: 7.00%

Assumed rate of compensation increases: 3.50%

Selected data for participant Smith:

Gender	Female
Date of birth	1/1/1969
Date of hire	1/1/2003
2022 compensation	$150,000

$X is the accrued liability for Smith as of 1/1/2023.

Question 10

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

(A) Less than $400,000

(B) $400,000 but less than $415,000

(C) $415,000 but less than $430,000

(D) $430,000 but less than $445,000

(E) $445,000 or more

Data for Question 11 (4 points)

Type of plan: Multiemployer

Valuation date: 1/1/2023

Actuarial cost method: Frozen initial liability, as defined in Rev. Proc. 2000-40

The benefit formula is not related to compensation.

Valuation interest rate: 7.00%

Selected information:

	1/1/2022	1/1/2023
Market value of assets		$197,500
Actuarial value of assets		200,000
Present value of future benefits		400,000
Unfunded actuarial accrued liability	$150,000	
Normal cost	5,250	
Present value of future service		75
Number of actives		6

Sole contribution for 2022 plan year made on 6/30/2022: $20,500

$X is the normal cost as of 1/1/2023.

Question 11

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

(A) Less than $4,400

(B) $4,400 but less than $4,450

(C) $4,450 but less than $4,500

(D) $4,500 but less than $4,550

(E) $4,550 or more

Data for Question 12 (3 points)

Type of plan: Multiemployer

Valuation date: 1/1/2023

Actuarial cost method: Unit credit

Valuation interest rate: 6.50%

Funding deficiency as of 12/31/2022: $40,000

Selected information as of 1/1/2023:

Actuarial (market) value of assets	$1,015,000
Actuarial accrued liability	1,250,000
Normal cost	130,000
Combined amortization charges	40,000

Sole contribution for the 2023 plan year made on 12/31/2023: $180,000

The plan is projected to remain solvent for the next 30 years.

Consider the following statements:

I. The plan's funded percentage as of 1/1/2023 is over 80.00%.

II. The plan's funding deficiency as of 12/31/2023 is greater than $40,000.

III. The plan is in critical status as of 1/1/2023.

Question 12

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 13 (3 points)

Type of plan: Multiemployer

Valuation date: 1/1/2023

The plan first entered critical status on 1/1/2023.

Contributions paid during 2023 subject to surcharge (excluding surcharge): $125,000

Contributions paid during 2023 that are not subject to surcharge: $95,000

Contributions and surcharges are paid on the same date.

$X is the total contribution paid during 2023 with surcharges.

Question 13

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

(A) Less than $220,000

(B) $220,000 but less than $225,000

(C) $225,000 but less than $230,000

(D) $230,000 but less than $235,000

(E) $235,000 or more

Data for Question 14 (2 points)

Type of plan: Multiemployer

The plan first entered critical status on 1/1/2023.

The plan's zone status was certified on 3/15/2023.

The plan's rehabilitation plan was adopted on 11/30/2023.

Consider the following statement:

> An excise tax of $22,000 is due for failure to timely adopt a rehabilitation plan.

Question 14

Is the above statement true or false?

(A) True

(B) False

Data for Question 15 (1 point)

Type of plan: Multiemployer

Valuation date: 1/1/2023

Consider the following statement:

> For purposes of determining the maximum deductible limit for the plan year, the market value of assets must be used when calculating the unfunded current liability.

Question 15

Is the above statement true or false?

(A) True

(B) False

Data for Question 16 (3 points)

Type of plan: Multiemployer

Valuation date: 1/1/2023

Actuarial cost method: Entry age normal

Selected information as of 1/1/2023:

Market value of assets	$650,000
Actuarial value of assets	660,000
Accrued liability (entry age normal)	1,100,000
Accrued liability (unit credit)	1,000,000

The plan was not in endangered, seriously endangered, critical, or critical and declining status before 2023.

The plan is in endangered status as of 1/1/2023.

X% is the funded percentage the plan is required to reach at the close of its funding improvement period.

Question 16

In what range is ***X%***?

(A) Less than 73.00%

(B) 73.00% but less than 75.00%

(C) 75.00% but less than 77.00%

(D) 77.00% but less than 79.00%

(E) 79.00% or more

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Data for Question 17 (2 points)

Valuation date: 1/1/2023

A plan is in at-risk status for 5 consecutive years, including the current plan year.

Consider the following statements regarding the assumptions required to determine the at-risk funding target:

I. The early retirement eligibility for the plan is age 55. All active participants who have already reached early retirement eligibility as of 1/1/2023 are assumed to retire immediately.

II. Lump sums are not allowed to be used as the assumed form of payment when determining the most valuable benefit.

III. Active participants who will not be able to retire and receive fully vested benefits within the next 11 years are assumed to elect the normal form of benefit at retirement.

Question 17

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 18 (3 points)

Type of plan: Statutory hybrid (cash balance)

Valuation date: 1/1/2023

Death benefit: Hypothetical account balance payable as of the date of death

Selected information as of 1/1/2023:

Segment rates	{5.00%, 6.00%, 7.00%}
Interest crediting rate	3.00% per year

Selected data for participant Smith as of 1/1/2023:

Date of birth	1/1/1965
Hypothetical account balance	$500,000

No pre-retirement decrements other than mortality are assumed.

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

Selected actuarial information:

${}_6p_{58}$	0.977
q_{64}	0.006

$X is the portion of the funding target for Smith as of 1/1/2023 attributable to the death benefit payable at age 64.

Question 18

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

(A) Less than $2,200

(B) $2,200 but less than $2,350

(C) $2,350 but less than $2,500

(D) $2,500 but less than $2,650

(E) $2,650 or more

Data for Question 19 (4 points)

Valuation date: 1/1/2023

Disability eligibility: Age 55 with 10 years of service

Selected valuation assumptions:

Segment rates: {5.00%, 6.00%, 7.00%}
Disabled mortality is the same as healthy mortality

Once a participant becomes disabled, the participant receives the disability benefit as an immediate single life annuity.

On reviewing the valuation results, the plan's actuary discovers that participant Smith became disabled on 12/31/2022 but had been incorrectly valued as an active employee.

Smith's incorrectly calculated funding target was $105,000 as of 1/1/2023.

Selected data for Smith as of 1/1/2023:

Gender	Male
Date of birth	1/1/1963
Date of hire	1/1/2000
Monthly disability benefit	$833.33

$X is the increase in the 1/1/2023 funding target for Smith to reflect that Smith is disabled.

Question 19

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

(A) Less than $16,000

(B) $16,000 but less than $21,000

(C) $21,000 but less than $26,000

(D) $26,000 but less than $31,000

(E) $31,000 or more

Data for Question 20 (2 points)

Valuation date: 7/1/2023

Plan year: Calendar year

No changes were made to funding methods or asset valuation methods in the preceding five plan years.

Consider the following potential changes to the valuation methods and assumptions used for the plan:

I. Changing the asset method from an average of adjusted fair market value to the fair market value of assets

II. Changing the valuation date from 7/1/2023 to 1/1/2023

III. Changing the interest assumption from the use of segment rates to the use of the full yield curve

Question 20

Which, if any, of the above changes are granted automatic approval?

(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 21 (4 points)

Type of plan: Multiemployer

Valuation date: 1/1/2023

Asset valuation method: Smoothed market value using a smoothing period of five years (smoothing of difference between expected and actual market value of assets), as described in Rev. Proc. 2000-40

Valuation interest rate: 7.00%

Selected asset information:

	1/1/2022	1/1/2023
Market value of assets	$208,000	$245,000
Actuarial value of assets	230,000	

Sole contribution for the 2022 plan year made on 4/1/2022: $25,000

Benefit payments for the 2022 plan year made on 7/1/2022: $27,000

Market value asset gain/loss amounts:

	Type	Amount
During 2019	Loss	$15,000
During 2020	Gain	20,000
During 2021	Gain	35,000

Question 21

In what range is the actuarial value of assets as of 1/1/2023?

(A) Less than $199,500

(B) $199,500 but less than $217,500

(C) $217,500 but less than $235,500

(D) $235,500 but less than $253,500

(E) $253,500 or more

Data for Question 22 (2 points)

Valuation date: 1/1/2023

All plans have always had more than 600 participants.

Selected information as of 1/1/2023:

	Plan I	Plan II	Plan III
Prefunding balance	$50,000	$0	$100,000
Actuarial value of assets	972,000	1,300,000	1,700,000
Funding target (without regard for at-risk assumptions)	1,200,000	1,600,000	2,100,000
Funding target (determined using at-risk assumptions)	1,325,000	1,885,000	2,200,000

Question 22

Which, if any, of the plans are in at-risk status for the 2024 plan year?

(A) None

(B) Plan I only

(C) Plan II only

(D) Plan III only

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

Data for Question 23 (2 points)

Valuation date: 1/1/2023

Death benefit: $10,000 lump sum payable the first day of the month following date of death

No pre-retirement decrements other than mortality are assumed.

Selected data for active participant Smith as of 1/1/2023:

Age	50
Years of service	12
Projected years of service at age 60	22
Projected years of service at normal retirement age	27

Consider the following statement with regard to determination of the portion of the 1/1/2023 funding target attributable to the death benefit for Smith:

> The portion of the death benefit taken into account for the mortality decrement at age 60 is equal to $10,000 multiplied by 12/27.

Question 23

Is the above statement true or false?

(A) True

(B) False

Data for Question 24 (3 points)

Valuation date: 1/1/2023

Selected information as of 1/1/2023:

Actuarial (market) value of assets	$269,800
Funding target for IRC 404 purposes	258,000
Target normal cost for IRC 404 purposes	8,900
Funding target with future compensation increases	279,400
At-risk funding target for IRC section 404 purposes	309,600
At-risk target normal cost for IRC section 404 purposes	11,100
Minimum required contribution	0
Effective interest rate	5.50%

The plan has never been in at-risk status for any plan year.

$X is the deduction limit for the 2023 plan year.

Question 24

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

(A) Less than $95,000

(B) $95,000 but less than $145,000

(C) $145,000 but less than $195,000

(D) $195,000 but less than $245,000

(E) $245,000 or more

Data for Question 25 (1 point)

Type of plan: Multiemployer

Consider the following statement:

> The funding standard account credit balance is adjusted with interest to the end of the plan year with the actual rate of investment return on plan assets for the plan year.

Question 25

Is the above statement true or false?

(A) True

(B) False

Data for Question 26 (3 points)

Type of plan: Multiemployer

Valuation date: 1/1/2023

Actuarial value of assets: Smoothed market value with a 5-year smoothing period (smoothing of difference between expected and actual market value of assets), as described in Rev. Proc. 2000-40

Market value of assets as of 1/1/2023: $2,400,000

Market value asset gain/loss amounts:

	Type	Amount
During 2019	Gain	$181,250
During 2020	Gain	450,000
During 2021	Loss	80,000
During 2022	Gain	462,500

Question 26

In what range is the actuarial value of assets as of 1/1/2023?

(A) Less than $1,900,000

(B) $1,900,000 but less than $1,970,000

(C) $1,970,000 but less than $2,040,000

(D) $2,040,000 but less than $2,110,000

(E) $2,110,000 or more

Data for Question 27 (3 points)

Valuation date: 1/1/2023

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

Selected information for the 2023 plan year:

Segment rates	{5.00%, 6.00%, 7.00%}
Assumed rate of compensation increases	3.00% per year

Selected data for active participant Smith as of 1/1/2023:

Gender	Male
Age	60
Service	10
2022 compensation	$60,000

Question 27

In what range is the funding target for Smith as of 1/1/2023?

(A) Less than $95,000

(B) $95,000 but less than $110,000

(C) $110,000 but less than $125,000

(D) $125,000 but less than $140,000

(E) $140,000 or more

Data for Question 28 (3 points)

Type of plan: Statutory hybrid (cash balance)

Valuation date: 1/1/2023

Optional form of payment: Lump sum payment equal to the participant's hypothetical account balance

Assumed form of payment: Lump sum

Selected information for the 2023 plan year:

Segment rates	{5.00%, 6.00%, 7.00%}
Interest crediting rate	5.50% per year

Selected data for participant Smith as of the valuation date:

Age	62
Hypothetical account balance	$575,000

Question 28

In what range is the funding target for participant Smith as of 1/1/2023?

(A) Less than $565,000

(B) $565,000 but less than $573,000

(C) $573,000 but less than $581,000

(D) $581,000 but less than $589,000

(E) $589,000 or more

Data for Question 29 (1 point)

Valuation date: 1/1/2023

The plan sponsor filed for an extension of the Form 5500 due date for the 2023 plan year to 10/15/2024.

Consider the following statement:

> The plan sponsor may elect to add to the plan's prefunding balance for the 2024 plan year up to the extended due date of the 2023 plan year Form 5500.

Question 29

Is the above statement true or false?

(A) True

(B) False

Data for Question 30 (3 points)

Valuation date: 1/1/2023

Selected information as of 1/1/2023:

Prefunding balance	$3,500
Minimum required contribution	120,000
Effective interest rate	6.00%

Sole contribution made for the 2023 plan year on 12/31/2023: $120,000

There are no unpaid minimum required contributions before the 2023 plan year.

There are no required quarterly installments for the 2023 plan year.

$X is the initial excise tax on the unpaid minimum required contribution for the 2023 plan year.

Question 30

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

(A) Less than $200

(B) $200 but less than $400

(C) $400 but less than $600

(D) $600 but less than $800

(E) $800 or more

Data for Question 31 (1 point)

Type of plan: Multiemployer

Valuation date: 1/1/2023

The plan was amended on 7/1/2022 to provide an early retirement subsidy.

The plan amendment is effective on 1/1/2023.

Consider the following statement:

> The plan actuary should review whether the current retirement rate assumption remains reasonable for the 2023 plan year valuation.

Question 31

Is the above statement true or false?

(A) True

(B) False

Data for Question 32 (3 points)

Valuation date: 1/1/2023

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

FTAP as of 1/1/2021: 100%

Selected information:

	1/1/2022	1/1/2023
Prefunding balance	$0	$0
Actuarial (market) value of assets	1,300,000	1,900,000
Funding target	1,500,000	1,875,000
Target normal cost	275,000	300,000
Fifteen-year shortfall amortization factor	10.3758	10.3758

$X is the required quarterly installment for the 2023 plan year.

Question 32

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

(A) Less than $58,000

(B) $58,000 but less than $63,000

(C) $63,000 but less than $68,000

(D) $68,000 but less than $73,000

(E) $73,000 or more

Data for Question 33 (1 point)

Valuation date: 1/1/2023

A plan sponsor has received waivers of the plan's minimum required contributions for the 2009, 2010, and 2020 plan years.

Consider the following statement:

> It is possible for this plan sponsor to receive a waiver of the minimum required contribution for the 2023 plan year.

Question 33

Is the above statement true or false?

(A) True

(B) False

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Data for Question 34 (2 points)

Plan effective date: 1/1/1980

Valuation date: 1/1/2023

Based on conversations with the plan sponsor, the actuary assumes a 5% probability of an unpredictable contingent event occurring during the plan year.

On 2/15/2023, the actuary certifies that the 2023 AFTAP is 58.00%.

Consider the following statement:

> For purposes of determining the 2023 minimum required contribution, the funding target must not take into account the value of future unpredictable contingent event benefits.

Question 34

Is the above statement true or false?

(A) True

(B) False

Data for Question 35 (4 points)

Plan effective date: 1/1/2018

Valuation date: 1/1/2022

Normal retirement benefit: 6.00% of highest three-year average compensation times years of service

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

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

Gender	Male
Date of birth	1/1/1982
Date of hire	1/1/2014
Date of participation	1/1/2018
2018 compensation	$250,000
2019 compensation	275,000
2020 compensation	300,000
2021 compensation	200,000

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

Question 35

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

(A) Less than $200,000

(B) $200,000 but less than $225,000

(C) $225,000 but less than $250,000

(D) $250,000 but less than $275,000

(E) $275,000 or more

Data for Question 36 (3 points)

Type of plan: Multiemployer

Valuation date: 1/1/2023

Actuarial cost method: Projected unit credit

Normal retirement benefit: 2.00% of final three-year average compensation times years of service, limited to 35 years.

Selected assumptions:

Valuation interest rate	7.00%
Assumed rate of compensation increases	3.00% per year

Selected data for active participant Smith:

Gender	Male
Date of birth	1/1/1965
Date of hire	1/1/1987
2022 compensation	$75,000

$X is the actuarial accrued liability for Smith as of 1/1/2023.

Question 36

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

(A) Less than $375,000

(B) $375,000 but less than $415,000

(C) $415,000 but less than $455,000

(D) $455,000 but less than $495,000

(E) $495,000 or more

Data for Question 37 (4 points)

Type of plan: Multiemployer

Actuarial cost method: Entry age normal

Normal retirement benefit: $600 per year of service payable at the beginning of the year

Early retirement eligibility: Age 62

Early retirement benefit: Accrued benefit with no reduction

No pre-retirement decrements other than mortality are assumed.

Selected data for participant Smith:

Date of birth	1/1/1963
Date of hire	1/1/2003

Selected commutation functions:

Age	D_x	N_x
40	66,495	950,513
60	16,563	202,205
62	14,329	170,232
65	11,489	130,212

For the 1/1/2023 valuation, the assumed retirement age is changed from age 65 to age 62.

$X is the increase in Smith's 1/1/2023 accrued liability due to the change in assumed retirement age.

Question 37

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

(A) Less than $15,000

(B) $15,000 but less than $21,000

(C) $21,000 but less than $27,000

(D) $27,000 but less than $33,000

(E) $33,000 or more

Data for Question 38 (3 points)

Valuation date: 1/1/2023

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

No shortfall amortization bases were established before the 2023 valuation.

Selected information as of 1/1/2023:

Prefunding balance	$0
Actuarial (market) value of assets	15,000
Funding target	20,000
Present value of all benefits expected to accrue during the year	5,000
Administrative expenses expected to be paid from plan assets at beginning of year	200
Present value of mandatory employee contributions expected to be made during the year	300

Question 38

In what range is the **minimum required contribution** for 2023?

(A) Less than $5,200

(B) $5,200 but less than $5,450

(C) $5,450 but less than $5,700

(D) $5,700 but less than $5,950

(E) $5,950 or more

Data for Question 39 (4 points)

Valuation date: 1/1/2023

Normal retirement benefit: 8.00% of final consecutive three-year average compensation times years of service

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

Assumed rate of compensation increases:

1/1/2022 valuation	10.00% per year
1/1/2023 valuation	5.00% per year

Selected data for active participant Smith at 1/1/2023:

Gender	Male
Age	44
Years of service	6
Years of participation	5
2020 compensation	$105,000
2021 compensation	135,000
2022 compensation	155,000

$X is the absolute value of the change in the 1/1/2023 target normal cost for Smith due to the change in assumed compensation rate increases.

Question 39

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

(A) Less than $2,500

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

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

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

(E) $4,000 or more

Data for Question 40 (4 points)

Type of plan: Multiemployer

Valuation date: 1/1/2023

Actuarial cost method: Projected unit credit

Valuation interest rate: 7.00%

Amortization information as of 1/1/2023 for all bases established before 2023:

	Years remaining	Outstanding balance
Combined charge base eligible for extension	7	$9,000,000
Experience gain	11	800,000
Experience loss	13	700,000

Experience loss for 2022 as of 1/1/2023: $725,000

The plan meets the criteria for automatic extension of amortization periods. An application is submitted and approved for a 5-year extension as of 1/1/2023 for eligible bases established on or before 1/1/2023.

$X is the absolute value of the change in the **smallest amount that satisfies the minimum funding standard** as of 12/31/2023 as a result of the amortization extension.

Question 40

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

(A) Less than $525,000

(B) $525,000 but less than $540,000

(C) $540,000 but less than $555,000

(D) $555,000 but less than $570,000

(E) $570,000 or more

Data for Question 41 (1 point)

Consider the following statement:

> At each valuation date, the actuary should determine whether non-prescribed assumptions continue to be reasonable.

Question 41

Is the above statement true or false?

(A) True

(B) False

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Pension

Data for Question 42 (4 points)

Valuation date: 1/1/2023

The plan has always had 570 participants.

The plan is in at-risk status for only 2021, 2022, and 2023.

Selected information as of 1/1/2023 disregarding at-risk load and phase-in:

Funding target without regard to at-risk assumptions	$3,250,000
At-risk funding target	3,737,500

Question 42

In what range is the 1/1/2023 funding target?

(A) Less than $3,600,000

(B) $3,600,000 but less than $3,700,000

(C) $3,700,000 but less than $3,800,000

(D) $3,800,000 but less than $3,900,000

(E) $3,900,000 or more

Data for Question 43 (1 point)

Plan effective date: 1/1/2018

The plan has had a beginning of year valuation date for all plan years.

The plan has always had fewer than 50 participants.

The plan has had the same enrolled actuary in all years.

The plan has not terminated.

Consider the following statement:

> Automatic approval is granted for a change in the plan's valuation date to the last day of the plan year, effective beginning with the 2023 plan year.

Question 43

Is the above statement true or false?

(A) True

(B) False

Data for Question 44 (4 points)

Valuation date: 1/1/2023

Normal retirement benefit: 3.5% of the highest consecutive three-year average compensation per year of service

Plan vesting: 100% vested after 5 years of service; 0% vested before 5 years of service

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

Assumed rate of compensation increases: 10.00% per year

Assumed rate of termination: 2.5% at each age occurring at the beginning of the year

Selected data for active participant Smith:

Gender	Male
Date of birth	1/1/1968
Date of hire	1/1/2019
Compensation for all years before 2023	$200,000

$X is the target normal cost for Smith as of 1/1/2023.

Question 44

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

(A) Less than $43,000

(B) $43,000 but less than $44,600

(C) $44,600 but less than $46,200

(D) $46,200 but less than $47,800

(E) $47,800 or more

Data for Question 45 (4 points)

Valuation date: 1/1/2023

Selected plan provisions:

Plan actuarial equivalence	Plan mortality and 5.5% interest
Early retirement eligibility	Attainment of age 55
Early retirement benefit	Actuarial equivalent of accrued benefit

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

No pre-retirement decrements other than mortality are assumed.

Before 1/1/2023, retirement was assumed to be at age 65. On 1/1/2023, the plan actuary adds a retirement rate assumption at age 60 of 50%.

Selected data as of 1/1/2023 for active participant Smith:

Age	50
Gender	Male
Monthly accrued benefit commencing at age 65	$1,500

Selected commutation functions using valuation assumptions:

D_{50}, 5%	D_{50}, 6%	D_{50}, 7%
85,245	53,069	33,185

Selected commutation functions with plan mortality and 5.5% interest:

$N_{65}^{(12)}$	$N_{60}^{(12)}$	D_{65}	D_{60}
270,947	427,362	26,336	36,438

$X is the increase in the funding target as of 1/1/2023 for Smith due to the addition of the retirement rate assumption.

Question 45

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

(A) Less than $250

(B) $250 but less than $650

(C) $650 but less than $1,050

(D) $1,050 but less than $1,450

(E) $1,450 or more

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Pension

Data for Question 46 (3 points)

Type of plan: Multiemployer

Valuation date: 1/1/2023

Actuarial cost method: Entry age normal

Valuation interest rate: 7.00%

Funding standard account values for the 2022 plan year:

Charges	
Normal cost	$180,000
Credits	
12/31/2021 credit balance	$50,000
2022 plan year contribution deposited on 7/1/2023	200,000

Funding standard account values for the 2023 plan year:

Charges	
Normal cost	$185,000
Amortization charge	15,000
Credits	
2023 plan year contribution deposited on 7/1/2023	$150,000

$X is the credit balance as of 12/31/2023.

Question 46

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

(A) Less than $3,000

(B) $3,000 but less than $11,000

(C) $11,000 but less than $19,000

(D) $19,000 but less than $27,000

(E) $27,000 or more

Data for Question 47 (1 point)

Valuation date: 1/1/2023

The plan has been in at-risk status for two out of the four preceding plan years.

Participants as of 1/1/2023:

Active participants	550
Vested terminated participants	50
Retirees	200

Consider the following statement:

The loading factor for the plan's 1/1/2023 funding target is the sum of:

(i) $700 times the number of active participants in the plan as of 1/1/2023, and

(ii) 4% of the 1/1/2023 funding target determined without regard to at-risk assumptions.

Question 47

Is the above statement true or false?

(A) True

(B) False

Data for Question 48 (1 point)

Consider the following statement:

> In determining the cushion amount that is used in calculating the deduction limit for single-employer plans under IRC section 404(o), the funding target is calculated using stabilized segment interest rates for the plan year.

Question 48

Is the above statement true or false?

(A) True

(B) False

Data for Question 49 (4 points)

The plan offers a 100% lump sum option.

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

Selected valuation information as of 1/1/2023:

Prefunding balance	$130,000
Actuarial (market) value of assets	1,300,000
Funding target	1,600,000
Target normal cost	97,000
Effective interest rate	5.75%

2023 AFTAP certification date: 3/31/2023

Shortfall amortization installment for 2022: $38,000

$X is a contribution to be made on 4/15/2023, for the 2023 plan year, in the **smallest amount that satisfies the minimum funding standard.**

Question 49

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

(A) Less than $100,000

(B) $100,000 but less than $110,000

(C) $110,000 but less than $120,000

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

(E) $130,000 or more

Data for Question 50 (4 points)

Type of plan: Multiemployer

Valuation date: 1/1/2023

Actuarial cost method: Entry age normal

Valuation interest rate: 6.00%

Credit balance as of 12/31/2022: $600,000

Normal cost: $450,000

Funding standard account information as of 1/1/2023 for bases established before 2023:

Amortization charges	$50,000
Amortization credits	7,000

There was an experience gain of $375,000 for 2022 as of 1/1/2023.

Sole contribution for 2023 plan year made on 10/1/2023: $156,701

Question 50

In what range is the credit balance as of 12/31/2023?

(A) Less than $200,000

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

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

(D) $300,000 but less than $350,000

(E) $350,000 or more

Data for Question 51 (3 points)

Valuation date: 1/1/2023

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

Selected information as of 1/1/2023:

Prefunding balance	$2,000
Actuarial (market) value of assets	13,000
Funding target	14,000
Present value of benefits expected to accrue during the year	2,000
Administrative expenses expected to be paid from the plan assets at beginning of year	500
Amortization charges for all bases established before 1/1/2023	0

$X is the **smallest amount that satisfies the minimum funding standard** as of 1/1/2023.

Question 51

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

(A) Less than $450

(B) $450 but less than $700

(C) $700 but less than $950

(D) $950 but less than $1,200

(E) $1,200 or more

Data for Question 52 (4 points)

Valuation date: 1/1/2023

The plan had more than 100 participants on each day during 2022.

FTAP as of 1/1/2022: 85.00%

FTAP as of 1/1/2023: 85.00%

Effective interest rate for 2023: 5.00%

Required quarterly installment due 4/15/2023: $350,000

Contribution paid on 2/1/2023 in the form of liquid assets: $300,000

Value of the plan's liquid assets as of 3/31/2023: $1,000,000

Disbursements paid from the trust over the past 12 months ending 3/31/2023:

Payments for monthly benefits	$275,000
Payments for administrative expenses	15,000
Payments for lump sums	450,000
Purchase of annuities	130,000

$X is the liquidity shortfall as of 3/31/2023.

Question 52

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

(A) Less than $125,000

(B) $125,000 but less than $250,000

(C) $250,000 but less than $375,000

(D) $375,000 but less than $500,000

(E) $500,000 or more

Data for Question 53 (1 point)

Valuation date: 1/1/2023

On 12/15/2022, the plan sponsor adopted an amendment with an effective date of 7/1/2023. The amendment increases the 2023 target normal cost.

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

Consider the following statement:

> The plan's actuary must take into account the amendment adopted on 12/15/2022 when determining the plan's 2023 funding target and target normal cost.

Question 53

Is the above statement true or false?

(A) True

(B) False

Exam EA-2 (Segment F) Fall 2022
Pension

Data for Question 54 (4 points)

Plan effective date: 1/1/2019

Valuation date: 1/1/2022

Normal retirement benefit: 13.00% of highest consecutive three-year average compensation per year of service, maximum of 10 years

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

Assumed rate of compensation increases: 5.00% per year

Selected data for active participant Smith at 1/1/2022:

Gender	Male
Age	43
Years of service	4
Years of participation	3
2019 compensation	$35,000
2020 compensation	40,000
2021 compensation	45,000

Question 54

In what range is the 2022 target normal cost for Smith as of 1/1/2022?

(A) Less than $14,000

(B) $14,000 but less than $16,000

(C) $16,000 but less than $18,000

(D) $18,000 but less than $20,000

(E) $20,000 or more

Data for Question 55 (3 points)

Type of plan: Multiemployer

Valuation date: 1/1/2023

Valuation interest rate: 7.00%

Credit balance as of 12/31/2022: $35,000

Normal cost as of 1/1/2023: $250,000

Amortization information as of 1/1/2023 for all bases established before 2023:

	Years remaining	Outstanding balance
Combined charge base	7	$750,000
Experience loss	13	225,000
Experience gain	14	250,000

Experience loss for 2022 as of 1/1/2023: $150,000

$X is the **smallest amount that satisfies the minimum funding standard** as of 12/31/2023.

Question 55

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

(A) Less than $375,000

(B) $375,000 but less than $415,000

(C) $415,000 but less than $455,000

(D) $455,000 but less than $495,000

(E) $495,000 or more

Data for Question 56 (3 points)

Valuation date: 1/1/2023

Selected information as of 1/1/2023:

Prefunding balance	$0
Minimum required contribution	12,000,000
Required quarterly installment	2,000,000
Effective interest rate	5.00%

Contribution information for the 2023 plan year:

Date	Amount
3/31/2023	$6,500,000
12/31/2023	2,000,000

No other contributions for the 2023 plan year are made until 9/15/2024.

$X is the **smallest amount that satisfies the minimum funding standard** as of 9/15/2024 for the 2023 plan year.

Question 56

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

(A) Less than $3,850,000

(B) $3,850,000 but less than $3,900,000

(C) $3,900,000 but less than $3,950,000

(D) $3,950,000 but less than $4,000,000

(E) $4,000,000 or more

Data for Question 57 (3 points)

Plan effective date: 1/1/2000

Valuation date: 1/1/2023

The plan offers a 100% lump sum option.

Selected information as of 1/1/2023:

Funding standard carryover balance	$300,000
Prefunding balance	1,200,000
Actuarial (market) value of assets	4,800,000
Funding target	5,200,000

$X is the amount of the 2023 prefunding balance after the IRC section 436 deemed reduction.

Question 57

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

(A) Less than $500,000

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

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

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

(E) $1,250,000 or more

Data for Question 58 (3 points)

Valuation date: 1/1/2023

Normal retirement benefit before plan amendment: $80 per month per year of service

A plan amendment takes effect on 1/1/2023 that increases the benefit to $100 per month per year of service for all years of service.

Segment rates for 2023: {5.00%, 6.00%, 7.00%}

Selected data for sole participant Smith:

Gender	Female
Date of birth	1/1/1981
Date of hire	1/1/2013

$X is the increase in the funding target at 1/1/2023 due to this plan amendment.

Question 58

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

(A) Less than $5,300

(B) $5,300 but less than $10,300

(C) $10,300 but less than $15,300

(D) $15,300 but less than $20,300

(E) $20,300 or more

Data for Question 59 (1 point)

Valuation date: 1/1/2023

Selected data for active participant Smith:

2022 compensation $450,000

Consider the following statement for purposes of calculating the minimum required contribution for the 2023 plan year:

> Smith's accrued benefit must not reflect 2022 compensation in excess of the 2022 IRC section 401(a)(17) limit.

Question 59

Is the above statement true or false?

(A) True

(B) False

Exam EA-2 (Segment F) Fall 2022
Pension

Data for Question 60 (1 point)

Type of plan: Multiemployer

Actuarial cost method: Entry age normal

The plan provides a supplemental $200 per month benefit for participants who retire before age 62 due to disability.

Consider the following statement:

> For purposes of minimum funding standards, the cost of this supplemental benefit may not be computed using the unit credit cost method.

Question 60

Is the above statement true or false?

(A) True

(B) False

****END OF EXAMINATION****