

1988

Data for Question 7

Normal retirement benefit: \$10 per month for each year of service.

Actuarial cost method: Frozen initial liability.

Actuarial assumptions:

Interest: 6%.

Preretirement deaths and terminations: None.

Retirement age: Normal retirement age.

Date of birth of sole participant: 1/1/38.

The plan is amended effective 1/1/88 to change the normal retirement age from 65 to 62 and to increase the benefit rate for all years of service from \$10 to \$12.

Valuation results as of 1/1/88, based on \$10 benefit rate:

	<u>Assumed Retirement Age</u>	
	<u>65</u>	<u>62</u>
Present value of future benefits	\$15,000	\$18,400
Unfunded liability	6,150	-
Actuarial value of assets	5,000	5,000
Accrued liability under entry age normal method	13,100	16,350

Question 7

In what range is the normal cost for 1988 as of 1/1/88?

- (A) Less than \$400
- (B) \$400 but less than \$475
- (C) \$475 but less than \$550
- (D) \$550 but less than \$625
- (E) \$625 or more

1988

Data for Question 12

Plan effective date: 1/1/87.

Normal retirement benefit: \$15 per month for each year of service up to 20 years plus \$20 per month for each subsequent year of service.

Death benefit: None.

Actuarial cost method: Attained age normal.

Actuarial assumptions:

Interest: 6%.

Preretirement deaths and terminations: None.

Retirement age: 65.

Participant data as of 1/1/87:

	<u>Smith</u>	<u>Brown</u>
Date of birth	1/1/37	1/1/27
Date of hire	1/1/62	1/1/72

Brown dies on 12/31/87. There were no new participants during 1987.

Contribution for 1987: Normal cost as of 1/1 plus \$3,000 paid on 1/1/87.

Selected annuity value:

$${}_{12a}^{(12)}_{65} = 112$$

Question 12

In what range is the unfunded liability as of 1/1/88?

- (A) Less than \$36,500
- (B) \$36,500 but less than \$37,000
- (C) \$37,000 but less than \$37,500
- (D) \$37,500 but less than \$38,000
- (E) \$38,000 or more

2000

Data for Question 9

Normal retirement benefit: 50% times the average of final 3 calendar years' compensation, less the amount of an annuity from a prior plan.

Plan effective date: 1/1/1999.

Actuarial valuation date: 1/1/2000.

Actuarial cost method: Individual aggregate (level dollar).

Actuarial assumptions:

Interest rate:	7% per year
Compensation increases:	3.5% per year
Preretirement decrements:	None
Retirement age:	65

Valuation data for sole participant:

Date of birth:	1/1/1950
Date of hire:	1/1/1995
1999 compensation:	\$50,000
Paid-up annuity (payable at age 65):	\$1,250/month (from prior plan)

Actuarial value of assets as of 1/1/2000: \$7,500

Selected annuity value:

$$\ddot{a}_{65}^{(12)} = 8.736$$

Question 9

In what range is the normal cost as of 1/1/2000?

- (A) Less than \$6,600
- (B) \$6,600 but less than \$7,400
- (C) \$7,400 but less than \$8,200
- (D) \$8,200 but less than \$9,000
- (E) \$9,000 or more

2003

Data for Question 17 (5 points)

Plan effective date: 1/1/2002.

Normal retirement benefit: \$35 per month for each year of service.

Early retirement benefit: Accrued benefit reduced by 4% for each year by which commencement of payments precedes age 65.

Actuarial cost method: Attained age normal.

Valuation interest rate: 7% per year.

Data for all plan participants:

<u>Name</u>	<u>Date of Birth</u>	<u>Date of Hire</u>
Smith	1/1/1963	1/1/1989
Jones	1/1/1941	1/1/1978

Contribution for 2002 made on 12/31/2002: \$16,000.

Selected annuity values:

$$\ddot{a}_{62}^{(12)} = 10.60$$

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

Participant Jones retired on 12/31/2002.

Question 17

In what range is the minimum required contribution for 2003 payable on 1/1/2003?

- (A) Less than \$3,800
- (B) \$3,800 but less than \$4,300
- (C) \$4,300 but less than \$4,800
- (D) \$4,800 but less than \$5,300
- (E) \$5,300 or more

2004

Data for Question 4 (3 points)

Normal retirement benefit:

Prior to 2004	\$30 per month for each year of service.
After 2003	\$30 per month for each year of service as of 1/1/2004, plus \$33 per month for each year of service after 1/1/2004.

Actuarial cost method: Attained age normal.

Selected valuation results as of 1/1/2004 before plan change:

Present value of future benefits	\$2,900,000
Unit credit accrued liability	1,500,000
Present value of future service	16,000
Number of active participants	1,000

All participants are active employees.

Question 4

In what range is the increase in the normal cost as of 1/1/2004 as a result of the plan amendment?

- (A) Less than \$9,000
- (B) \$9,000 but less than \$12,000
- (C) \$12,000 but less than \$15,000
- (D) \$15,000 but less than \$18,000
- (E) \$18,000 or more

2011

Data for Question 30 (4 points)

Plan type: Multiemployer.

Valuation date: 1/1/2012.

Normal retirement benefit: 1.25% of final year compensation times years of service.

Actuarial cost method: Frozen initial liability.

As of 1/1/2012, assumptions were changed.

The unfunded liability is adjusted as of 1/1/2012 to reflect the change in assumptions.

The 12/31/2011 credit balance is \$0.

Selected valuation results as of 1/1/2012:

	<u>Old assumptions</u>	<u>New assumptions</u>
Present value of future benefits	\$7,700,000	\$8,900,000
Present value of future salaries	43,400,000	41,000,000
Unfunded liability	1,500,000	
Actuarial value of assets	3,400,000	3,400,000
Normal cost as of 1/1	165,000	
Entry age normal accrued liability	5,300,000	6,100,000

Question 30

In what range is the normal cost as of 1/1/2012 based on the new assumptions?

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

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2012

Data for Question 34 (3 points)

Type of plan: Multiemployer.

Actuarial cost method: Frozen initial liability.

Valuation interest rate: 7.0%.

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

Selected valuation results as of 1/1/2012:

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

Selected valuation results as of 1/1/2013:

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

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

Question 34

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

- (A) Less than \$167,000
- (B) \$167,000 but less than \$182,000
- (C) \$182,000 but less than \$197,000
- (D) \$197,000 but less than \$212,000
- (E) \$212,000 or more

2014

Data for Question 39 (3 points)

Type of plan: Multiemployer.

Actuarial cost method: Frozen initial liability.

Interest rate: 7.0%.

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

Selected information as of 1/1/2015:

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

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

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

The plan's formula is unrelated to compensation.

Selected annuity factor:

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

Question 39

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

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

2015

Data for Question 26 (3 points)

Type of plan: Multiemployer.

Valuation date: 1/1/2016.

Actuarial cost method: Frozen initial liability.

There are no inactive participants.

Selected valuation results at 1/1/2016 (before plan amendment):

Present value of future benefits	\$500,000
Present value of future normal costs	200,000

The plan was amended on 12/20/2015, effective 1/1/2016, to increase benefits for all service by 10%.

Increase in entry age normal accrued liability at 1/1/2016 due to plan amendment: \$20,000.

$\$X$ is the present value of future normal costs after the plan amendment.

Question 26

In what range is $\$X$?

- (A) Less than \$215,500
- (B) \$215,500 but less than \$225,500
- (C) \$225,500 but less than \$235,500
- (D) \$235,500 but less than \$245,500
- (E) \$245,500 or more

2016

Data for Question 7 (3 points)

Type of plan: Multiemployer.

Valuation date: 1/1/2017.

Actuarial cost method: Frozen initial liability.

Normal retirement benefits: 2.0% of final three year average compensation for each year of service.

Valuation interest rate: 7.0%

Selected information as of 1/1/2016:

Unfunded accrued liability	\$2,500,000
Normal cost	185,000

Contributions for 2016 plan year:

<u>Date</u>	<u>Amount</u>
1/1/2016	\$200,000
4/1/2016	100,000
10/1/2016	100,000

Credit balance as of 12/31/2016: \$0.

Selected information as of 1/1/2017:

Actuarial (market) value of assets	\$8,000,000
Present value of future benefits	12,000,000
Present value of expected 2017 compensation	5,850,000
Present value of expected future compensation	50,000,000

Question 7

In what range is the normal cost as of 1/1/2017?

- (A) Less than \$180,000
- (B) \$180,000 but less than \$185,000
- (C) \$185,000 but less than \$190,000
- (D) \$190,000 but less than \$195,000
- (E) \$195,000 or more