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FALL 1994 EA-2
EXAM SOLUTIONS
(Course P-365U)

Solutions last revised December 13, 2004

See revision history on next page

Fall 1994 EA-2 Exam Solutions

These solutions use beginning of year amortization payments in setting up the Minimum Funding Standard Account. These solutions were prepared based on the law as in effect at June 30, 1994.

These solutions have been compared with those produced by other technical actuaries, and they represent my best understanding of the correct way to solve these problems. As usual, it seems easy to get an answer in the correct range as long as you are not actually taking the exam!

For problems involving the deductible limit you should use the following sequence of steps:

1. Calculate the normal cost plus limit adjustments with interest to the earlier of the end of the plan year or the end of the tax year.

2. Calculate the Full Funding Limitation under Section 404 with interest to the end of the plan year. If this is less than the result of step one, then you can skip to step four.

3. Calculate the absolute minimum amount necessary to produce a non-negative credit balance in the Minimum Funding Standard Account. This amount should never be based on the Alternative MFSA. This amount may be increased by the amount of any "includible employer contribution."

4. The maximum deductible limit is the greater of (1) and (3), but not greater than (2).

5. If the Unfunded Current Liability exceeds the final deductible limit and the plan has more than 100 participants, then the final deductible limit will be the UCL.

Revision History:

December 13, 2004	Clarified solution for problem 21
June 18, 2002	Corrected item 5 above, and clarified problems 12, 23, 26, 31
May 06, 2002	Added notes to solution for problem 15
July 06, 2000	Corrected minor typos in problems 11 and 34
September 09, 1998	Expanded solution to problem 34, corrected typo in problem 8
September 19, 1997	Corrected problem 18
September 14, 1997	Corrected problem 20
September 09, 1997	Corrected problem 10 and problem 31, page 1
September 10, 1996	Fixed printing glitches on problems 14 and 15
August 29, 1996	Corrected problem 16 and problem 24, Page 2
November 2, 1995	Corrected problem 29, page 1
October 10, 1995	Corrected step (4) above

Problem 1

With an individual cost method, there are two things to be aware of. One is that the Full Funding Limitation may apply. The other is that you should check for experience gains or losses each year. You are told that there have been no gains or losses. You also have no asset information, so you can't calculate the Full Funding Limitation.

You need to use the §412 equation of balance to derive the credit balance for the 1994 MFSA:
UAL = O/S §412 bases - credit balance - ARA

The main point of this problem is whether you know the amortization periods for the various bases. Using the amortization charges given in the problem, you can derive the amounts of the outstanding bases:

Amortization base	Amort. Charge	Remaining years	Outstanding base
Initial accrued liability	20,000	16 = 30-(94-80)	202,158 = $\ddot{a}_{\overline{16}\|.07}$ * 20,000
Method change	8,500	16 = 25-(94-85)	85,917 = $\ddot{a}_{\overline{16}\|.07}$ * 8,500
Plan amendment	7,000	25 = 30-(94-89)	87,285 = $\ddot{a}_{\overline{25}\|.07}$ * 7,000
Waiver	10,000	2 = 5-(94-91)	19,346 = $\ddot{a}_{\overline{2}\|.07}$ * 10,000
All Total	45,500		394,707

Based on the information given, the ARA is zero.

Credit balance = O/S §412 bases - UAL - 0
= O/S §412 bases - 400,000
= 394,707 - 400,000
= -5,293

1994 Minimum Funding Standard Account

Charges		Credits	
Debit Balance	5,293	Credit Balance	0
Normal Cost	45,000	12/31 contrib	x
Amortizations	45,500		
7% interest	6,706	7% interest	0
Total charges	102,499	Total credits	x

The minimum contribution at 12/31/94 is 102,499.

Answer is D

Problem 2

Section 404(a)(7)(A) of the IRC states the deductible limitation for combinations of DB and DC plans. The limit is the greater of 25% of compensation, or the amount paid to the DB plans, not to exceed the minimum contribution requirement for the DB plan under Section 412. Section 4972 of the IRC imposes a 10% excise tax on contributions exceeding the deductible limitation.

The deduction limitation is 400,000, which is the greater of 25%(800,000) = 200,000, and the 400,000 minimum contribution requirement for the DB plan. If the deductible limit for a year was based on the unfunded current liability, the deduction limitation would be no less than that amount.

The total contribution paid for the year is 705,000, which equals 525,000 for the DB plan plus 180,000 (= 80,000+40,000+60,000) for the 401(k) plan. Note that the employee pre-tax elective contributions are counted as employer contributions.

The non-deductible contribution (subject to excise tax) is the excess of 705,000 over the deduction limitation of 400,000, which equals 305,000.

answer is C

Problem 3 - Page 1

With the Aggregate cost method, market value of assets, and EAN valuation results, you should check that the Full Funding Limitation (FFL) may apply.

1993 Minimum Funding Standard Account

Charges		Credits	
Normal Cost	200,000	Credit Balance	0
Amortizations	0	12/31 contrib	x
7% interest	14,000	7% interest	0
Total charges	214,000	Total credits	x

The main point of this problem is that you must check the 1993 MFSA to see if the FFL applied. In this problem, the FFL produces an OBRA Full Funding credit amortization base that will be amortized over 10 years in 1994.

"ERISA" FFL = (1+i)*(EAN AL + NC - (lesser MVA,AAV - CB))
= 1.07*(160,000+1,000,000-(1,100,000-0))
= 64,200

"OBRA" FFL = 1.50 (12/31 CL) - (1+i)*(lesser MVA,AAV - CB))
= 1.50*800,000 - 1.07*(1,100,000-0)
= 23,000

Based on the 12/82 proposed regulation, the Accumulated Funding Deficiency (AFD) based on no contribution and no credit balance must be calculated. This equals the charges of 214,000. The §412 FFL credit is defined as the excess of the AFD based on zero contribution and zero credit balance over the FFL.

"ERISA" Full Funding Credit = 214,000 - 64,200
= 149,800
"OBRA" Full Funding Credit = 214,000 - 23,000
= 191,000

The last step is that the OBRA Full Funding credit amortization base for the following year is defined as the excess (if any) of the FFC due to the OBRA FFL over the FFC due to the ERISA FFL.

OBRA FFC base = 191,000 - 149,800
= 41,200

Problem 3 - Page 2

This OBRA FFC base will be amortized over 10 years starting in 1994:
$5{,}482 = 41{,}200 \div \ddot{a}_{\overline{10}|.07}$

It is not necessary to finalize the 1993 MFSA. The reason is that you know the minimum contribution was paid for 1993 because the credit balance is zero at 12/31/93. Now you should set up the 1994 MFSA:

1994 Minimum Funding Standard Account

Charges		**Credits**	
Normal Cost	210,000	Credit Balance	0
FFC amortization	5,482	12/31 contrib	x
7% interest	15,084	7% interest	0
Total charges	230,566	Total credits	x

You also must check to see if the FFL applied in 1994:

"ERISA" FFL = 1.07*(170,000+1,300,000-(1,200,000-0))
= 288,900

"OBRA" FFL = 1.50*1,100,000 - 1.07*(1,200,000-0)
= 366,000

Based on the AFD of 230,566, the §412 FFL credit is zero. The minimum contribution at 12/31/94 is 230,566.

Answer is C

Problem 4

I found this to be a confusing problem. There are numerous items vying for your attention:

1. End of year valuation date
2. Plan termination at the valuation date
3. Less than 100 participants, can't use Unfunded Current Liability as alternate deductible limit
4. Entry Age Normal results can be used for Full Funding Limitation calculation under Individual Aggregate method

The "preliminary" minimum and maximum contributions are both equal to the 50,000 normal cost at 12/31/94. The Full Funding Limitation does not apply:

$$\begin{aligned} \text{"ERISA" FFL} &= 560{,}000 + 40{,}000 - 300{,}000 \\ &= 300{,}000 \\ \text{"OBRA" FFL} &= 1.50 * 450{,}000 - 300{,}000 \\ &= 375{,}000 \end{aligned}$$

The point of this question is that an employer may deduct payments made in the year of termination that are used to increase the assets up to the amount of the present value of guaranteed benefits, calculated on a PBGC basis:

Unfunded guaranteed benefits = 400,000 - 300,000 = 100,000

Answer is C

This situation is covered in IRC §404(g):

§404(g)(3)(A) In general, contributions under this section are deductible when paid
§404(g)(3)(B) Contributions under §404(g)(1) for a standard termination which cause the assets to exceed the present value of guaranteed benefits will not be deductible
§404(g)(1) Provides that any of the following payments are covered in this section:

1. §4041(b) Standard termination
2. §4062 Distress termination
3. §4063 Withdrawal liability for multiple employers in a controlled group
4. §4064 Termination liability for multiple employers in a controlled group
5. Part I of Subtitle E of Title IV of ERISA - Multiemployer withdrawal liability

Problem 5 - Page 1

With an aggregate type cost method, market value of assets, and EAN valuation results, you should check that the Full Funding Limitation (FFL) may apply.

You need to determine the Initial Accrued Liability so you can calculate the Limit Adjustments for the maximum deductible limit. You can use the §412 equation of balance to derive the outstanding bases, which will give you the IAL:

UAL = O/S §412 bases - credit balance - ARA

O/S §412 bases = UAL + CB
= 150,000 + 50,000

$(IAL / \ddot{a}_{\overline{30}|.07}) * \ddot{a}_{\overline{24}|.07}$ = 200,000

$IAL / \ddot{a}_{\overline{30}|.07}$ = 200,000 / $\ddot{a}_{\overline{24}|.07}$ = 16,297 (amortization for MFSA)

IAL = 16,297 * $\ddot{a}_{\overline{30}|.07}$ = 216,386

The deductible limit is the normal cost plus limit adjustments brought forward with interest to the earlier of the end of the plan year, or the end of the tax year.

Limit adjustment = 216,386 / $\ddot{a}_{\overline{10}|.07}$ = 28,793

Deductible limit = (25,000 + 28,793)*(1.07)
= 57,559

The second step is to check the Full Funding Limitation under 404. Since you have no Current Liability information, you must ignore the OBRA FFL:

§404 "ERISA" FFL = (1+i)*(EAN AL + NC - (lesser MVA,AAV))
= 1.07*(20,000+260,000-(250,000))
= 32,100

Since the §404 FFL applies, you do not need to check if the §412 minimum would increase the deductible limit. The reason is that the deductible limit equals the lesser of the §404 FFL and the greater of [§404 NC plus LA, or the §412 minimum].

With no current liability information, you can't check the Unfunded current liability as an alternative deductible limit. The final deductible limit is 32,100. Now you must set up the 1994 MFSA to determine the credit balance at 12/31/94.

Problem 5 - Page 2

Now you can set up the 1994 MFSA:

1994 Minimum Funding Standard Account

Charges		Credits	
Normal Cost	25,000	Credit Balance	50,000
IAL amortization	16,297	12/31 contrib	32,100
7% interest	2,891	7% interest	3,500
Total charges	44,188	Total credits	85,600

The credit balance at 12/31/94 is 85,600 - 44,188 = 41,412.

You will want to check the §412 FFL value to see if there is a §412 FFL credit:

§412 "ERISA" FFL = (1+i)*(EAN AL + NC - (lesser MVA,AAV - CB))
= 1.07*(20,000+260,000-(250,000-50,000))
= 85,600

Based on the 12/82 proposed regulation, the Accumulated Funding Deficiency based on no contribution and no credit balance must be calculated. This equals the 1.07 times the normal cost plus amortization charges, or 44,188. The §412 FFL credit is defined as the excess of the accumulated funding deficiency based on zero contribution and zero credit balance over the FFL. As a result, there is no FFL credit.

Answer is B

Problem 6 - Page 1

Since the problem states that the DB plan benefit will be reduced if the §415 limits are exceeded, the maximum DB plan fraction equals one minus the DC fraction, or .63. You can "back into" the projected benefit under the DB plan that will produce the DB fraction of .63.

The §415(e) DB and DC fraction denominators would be affected if the plan was top heavy. If a plan is super top heavy (or it does not provide the top heavy minimums), the dollar limit will be multiplied by 1.00 instead of 1.25.

You should be wary of a calculation that shows a DB fraction that exceeds 80%. For a non-top heavy plan, the largest possible DB fraction under §415(e)(2) is 1/1.25 = .8000. This results from a projected benefit equal to the DB plan dollar maximum. If the 100% FAE3 limit applied, then the DB fraction is 1/1.40 = .7143. For a top heavy plan, the largest possible DB fraction could be 1.00.

At 01/01/94		**At 01/01/2003**	
Age	56	Age	65
Service	1 year	Service	10 years
Participation	0 years	Participation	9 years

The §415 limits have to be reduced for service (or participation) less than ten years. Under §415(b), the reduction on the dollar limit is based on years of participation.

Age 65 FAE4 = (120,000 + 130,000 + 140,000 + 150,000) / 4
= 135,000

Projected plan benefit before limitations = 135,000

Age 65 100% FAE3 §415 limit = (130,000 + 140,000 + 150,000) / 3
= 140,000

Social Security Retirement Age	=	66 since born in 1938
§415 dollar limit during 1994	=	118,800 at age 66
§415 dollar limit at age 65	=	118,800 * .9333 = 110,880
Dollar limit reduction for participation	=	110,880(9/10) = 99,792

Ignoring the effects of §415(e), Smith's benefit would be limited to the lesser of 140,000 or the lesser of 140,000 and 99,792, which equals 99,792.

Problem 6 - Page 2

Under §415(e), the reduction on the dollar limit in the denominator is based on years of service, not years of participation.

Dollar limit reduction for service = 110,880(10/10) = 110,880

$$\text{DB fraction} = 63.0\% = \frac{\text{Final projected benefit}}{[\text{ lesser of } 1.25(110{,}880) \text{ or } 1.40(140{,}000)]}$$

$$\text{Final projected benefit} = 63.0\% [1.25(110{,}880)]$$
$$= 87{,}318$$

This benefit under §415(e) is lower than the previously calculated 99,792. The final maximum benefit is 87,318.

Answer is C

Problem 7

This is a multiemployer PBGC guaranteed benefits question. In general, benefit increases within the 60 months preceding DOPT are not guaranteed. For a multiemployer plan that is "underfunded", the PBGC guarantees a $5 per month benefit accrual rate plus 65% of the next $15 per month of benefit accrual.

Since this plan has always paid the normal cost plus interest on the UAL, by definition it is not underfunded. For a multiemployer plan that is not "underfunded", the PBGC guarantees a $5 per month benefit accrual rate plus 75% of the next $15 per month of benefit accrual.

The guaranteed benefit is based on the plan at 01/01/85, since that was the plan in effect five years before DOPT:

5.00 + 75%(15.00)= 16.25 per month

Age	Number	Service	Guaranteed Benefit	Total Guaranteed Benefits
50	10	20	16.25	3,250
30	20	10	16.25	3,250
				6,500

Answer is B

Problem 8 - Page 1 **Revised 09/09/98**

With an individual type cost method, you should always check if experience gains and losses have occurred, and if the Full Funding Limitation (FFL) applies. For this brand new plan, the FFL will not apply. You do have to calculate the G/L for 1993. You can calculate the experience G/L for 1993 using accrued liabilities instead of the UAL. Since the contribution for 1993 was paid at the end of the year, there is no investment G/L.

experience G/L = ${}_eAL_1 - AL_1$

${}_eAL_1$ = $(1+i)*(NC_0 + AL_0) - (\text{actual BP} + i)$

= $1.08 * (20{,}000 + 80{,}000) - \text{zero}$

= 108,000

G/L = 108,000 - 180,000 = 72,000 loss

You need to determine the Limit Adjustments for the maximum deductible limit. You have to determine the remaining amortization period for the IAL base, and set up new amortization bases for the loss and the change in interest rate.

The regulation at §1.404(a)-14(h) contains rules for maintenance of 10-year amortization bases used to calculate the deductible limit. The limit adjustment on any "old" bases must be recalculated on the 8% interest rate. The regulation specifies these steps:

1. Calculate the outstanding amount of each §404 base
2. Calculate the limit adjustment on the old interest rate for each base
3. Divide (2) into (1), which produces $\ddot{a}_{\overline{n}|.08}$
4. Solve for "n", can be left exact, or rounded to integer value
5. Calculate $\ddot{a}_{\overline{n}|.07}$
6. Divide (5) into (1), giving the limit adjustment on the new interest rate for each base

In this problem, you have a single §404 base of 80,000 at 01/01/93. The experience loss produces a new base of 72,000 at 01/01/94. The change in interest rate produces a new §404 base of 30,000 at 01/01/94. You must calculate the number of years of amortization remaining in the original §404 base at the old 7% interest rate. The first step is to calculate the outstanding §404 base at 12/31/93:

${}_eUAL_1$ = $(1+i)*(NC_0 + UAL_0) - (\text{contrib} + i)$

= $1.08 * (20{,}000 + 80{,}000) - 28{,}000$

= 108,000 - 28,000

= 80,000

Since the outstanding base is equal to the original base of 80,000, it should be clear that the value of "n" will turn out to be 10. All limit adjustments will use $\ddot{a}_{\overline{10}|.07} = 7.5152$.

Problem 8 - Page 2

	IAL	Loss	Interest	All bases
01/01/94 O/S §404 base	80,000	72,000	30,000	182,000
7% limit adjustment	10,645	9,581	3,992	24,217

Normal cost plus Limit adjustments at 7% interest= 1.07 (50,000 + 24,217) = 79,413

If you stop here and say the answer is "A", you've been had! The trick to the problem is that you must think about the minimum funding requirement. One reason is that there is a substantial loss base, and losses are amortized over 5 years for §412. This will tend to produce a minimum contribution that is larger than the maximum contribution. The second reason is that the UAL at 01/01/94 equals the UAL at 01/01/93. This means that the 1993 contribution was equal to the normal cost plus interest on the normal cost plus UAL. In other words, there is a deficiency in the MFSA at 01/01/94.

You can calculate the deficiency by using the equation of balance:
UAL = O/S §412 bases - credit balance - ARA
CB = O/S §412 bases - UAL - zero

O/S §412 bases = (80,000 / $\ddot{a}_{\overline{30}|.08}$) * $\ddot{a}_{\overline{29}|.08}$ = 79,294

Credit balance = 79,294 - 80,000 = -706

	IAL	Loss	Interest
01/01/94 O/S §412 base	79,294	72,000	30,000
7% amortization factor	$\ddot{a}_{\overline{29}|.07}$	$\ddot{a}_{\overline{5}|.07}$	$\ddot{a}_{\overline{10}|.07}$
Amortization charge	6,036	16,411	3,992

1994 Minimum Funding Standard Account

Charges		Credits	
Debit balance	706	Credit Balance	0
Normal Cost	50,000		
IAL amortization	6,036	12/31 contrib	x
Loss amortization	16,411		
Assump. amortization	3,992		
7% interest	5,400	7% interest	0
Total charges	82,545	Total credits	x

The minimum contribution of 82,545 is greater than 79,413, and is the final deductible limit. You have no current liability available to check if the UCL produces a greater deductible limit.

Answer is D

Problem 9

I. FALSE

The ratio percentage is defined under the regulations at §1.410(b)-9 as the percentage of non-highly compensated employees (NHCEs) who benefit under the plan divided by the percentage of highly compensated employees (HCEs) who benefit under the plan. The percentage of NHCEs who benefit under the plan equals the number of NHCEs in the plan divided by the total number of non-excludable NHCEs. The percentage of HCEs who benefit under the plan equals the number of HCEs in the plan divided by the total number of non-excludable HCEs. The ratio percentage for Plan A is 170.45%:

	NHCEs	**HCEs**	**Ratio**
Plan A	75	10	
Total	110	25	
Ratio	68.18%	40.00%	170.45%

II. FALSE

Plan B does not meet the requirements of §401(a)(26), since it does not benefit the lesser of 50 employees, or 40% of the total number of employees (.4 * 135 = 54). Plan C does meet §401(a)(26)due to the exception for plans with no HCEs. See the regulations at §1.401(a)(26)-1(b)(i).

III. FALSE

There is no aggregation allowed under §401(a)(26).

None are true.

Answer is E

Problem 10 **Revised 09/09/97**

To calculate the required quarterly contribution for 1994, you must first calculate the required annual payment (RAP). This is the lesser of last year's minimum required contribution or 90% of this year's. These numbers are both interest adjusted to the first day of this plan year, and they both would not reflect any credit balance.

12/31/93 "minimum requirement" = 100,000 * 1.07 = 107,000
01/01/94 "minimum requirement" = 130,000
Lesser of 1993 or 90% of 1994 = Lesser of (107,000 or .90 * 130,000)
= 107,000

The required quarterly installment is based on the applicable percentage multiplied by the RAP. This equals .25(107,000) = 26,750.

You may use any credit balance at 01/01/94 as if it was a payment toward the required quarterly installment. This is only true if the contribution that creates the credit balance is actually in the trust fund by the quarterly installment due date. Since the minimum contribution was paid for 1993, there is no credit balance at 01/01/94.

Date	Required	Available	Overpayment (Underpayment)
04/15/94	26,750	26,750	0
07/15/94	26,750	26,750	0
10/15/94	26,750	0	(26,750)
01/15/95	26,750	0	(53,500)
03/15/95	0	53,500+x	x

The interest penalty is calculated based on the period of the underpayment, and is applied to the amount of the underpayment. There are two separate underpayments which overlap. One is for 5 months for 26,750, and the other is for 2 months for 26,750.

Using simple interest, the interest penalty is calculated as follows:

26,750 * [(1+(.094)(5/12)) - (1+(.07)(2.5/12))] = 658
26,750 * [(1+(.094)(2/12)) - (1+(.07)(0/12))] = 419
1,077

Note that interest at the valuation rate is only credited to the end of the plan year. The 175% of the F.M.R. continues to accrue to the date of payment.

Answer is B

Compound interest is “harder”, but produces a smaller interest penalty:

26,750 * [$(1.094)^{5/12}$ - $(1.07)^{2.5/12}$] = 640
26,750 * [$(1.094)^{2/12}$ - $(1.07)^{0/12}$] = 404
1,045

Problem 11 **Revised 07/06/00**

This is a typical PBGC guaranteed benefits question. It tests your knowledge of the 30 year phase-in of guaranteed benefits for substantial owners, and the five year phase-in for non-owners. Guaranteed benefits are based on the vested accrued benefits of the plan participants. In calculating the guaranteed benefit, remember that changes in vesting schedule, normal retirement age, and normal form of annuity payment are all considered as changes in benefit amount that are subject to the phase in rules.

If there was a change in normal form of benefits, you would have to normalize the benefits. Normalization is the process of converting benefits available under earlier sets of plan provisions to equivalent benefit amounts based on the plan provisions in effect at date of plan termination (DOPT). This is a necessary step, otherwise you would be comparing apples and oranges.

The change in plan benefits at 01/01/90 is subject to phase-ins at the DOPT of 12/31/93. For Brown, the new benefits have been in effect for four full years at DOPT. Since Smith is a substantial owner (>10%), even the 07/01/85 plan benefit is subject to the 30 year phase-ins. Note that Green is not yet vested, and has no guaranteed benefits.

	Smith: 30 year phase-ins	**Brown: 5 year phase-ins**
Date of birth	01/01/34	05/01/40
01/01/94 age	60.0	53.7
Date of hire	01/01/60	01/01/70
Past service	34.0	24.0
Substantial owner?	YES	NO
Vesting percentage	100%	100%
07/01/85 Base plan benefit	34($20)	24($20)
	= 680	= 480
Years plan has been in effect	8	8
Phase-in	(8/30)*(680)	480
	= 181.33	
01/01/90 Base plan benefit	34($25)	24($25)
	= 850	= 600
Guaranteeable benefit	850 - 680	600 - 480
increase	= 170	= 120
Years plan has been in effect	4	4
Phase-in	(4/30)*(170)	80% or $80
	= 22.67	= 96.00
Total guaranteed benefit	181.33 + 22.67	480 + 96
	= 204.00	= 576

$\sum$ = 780.00

Answer is B

Problem 12 - Page 1

With the Aggregate cost method, market value of assets, and EAN valuation results, you should check that the Full Funding Limitation (FFL) may apply.

The deductible limit is the normal cost plus limit adjustments brought forward with interest to the earlier of the end of the plan year, or the end of the tax year. With a 12/31 valuation date, there is no interest applied. Under the Aggregate method, the limit adjustments equal zero.

The first step is to set up the §404 PVNC, and calculate the §404 normal cost:

§404 PVNC	= PVB - AAV	
	= 2,250,000 - 890,000	= 1,360,000
PVE / E	= 21,300,000 / 1,775,000	= 12.0
§404 NC	= 113,333	

Deductible limit = 113,333

The second step is to check the Full Funding Limitation under 404:

§404 "ERISA" FFL	=	EAN AL + NC - (lesser MVA,AAV)
	=	93,000 + 965,000 - 890,000
	=	168,000

§404 "OBRA" FFL	=	1.50 (12/31 CL) - (lesser MVA,AAV)
	=	1.50 * 680,000 - 890,000
	=	130,000

The §404 FFL of 130,000 does not apply. Now you must check the §412 minimum contribution to see if it is greater. One key reason this may happen is the funding deficiency at 12/31/93.

§412 PVNC	=	PVB - AAV - (O/S §412 bases - CB)
	=	2,250,000 - 890,000 - 1.07 * 21,500
	=	1,336,995
PVE / E	= 21,300,000 / 1,775,000 = 12.0	
§412 NC	=	111,416

Problem 12 - Page 2 **Revised 06/18/02**

1994 Minimum Funding Standard Account

Charges		Credits	
01/01 Debit balance	21,500	Credit Balance	0
12/31 Normal Cost	111,416		
12/31 Amortizations	0	12/31 contrib	x
7% interest	1,505	7% interest	0
Total charges	134,421	Total credits	x

If you stop here and assume the deductible limit is the minimum contribution of 134,421, you'll get the wrong answer. The main point of this problem is that you must check to see if the §412 FFL applies. With a zero credit balance, the §412 FFL is the same as the §404 FFL of 130,000.

Based on the 12/82 proposed regulation, the Accumulated Funding Deficiency based on no contribution and no credit balance must be calculated. This equals the charges of 134,421. The §412 FFL credit is defined as the excess of the accumulated funding deficiency based on zero contribution and zero credit balance over the FFL.

"OBRA" Full Funding Credit = 134,421 - 130,000
= 4,421

The resulting minimum contribution should be the FFL of 130,000. If you want, you can finalize the 1994 MFSA to be sure:

1994 Minimum Funding Standard Account

Charges		Credits	
01/01 Debit balance	21,500	Credit Balance	0
12/31 Normal Cost	111,416	12/31 FFC	4,421
12/31 Amortizations	0	12/31 contrib	x
7% interest	1,505	7% interest	0
Total charges	134,421	Total credits	x + 4,421

The minimum contribution at 12/31/94 is 130,000. Since this exceeds the previously calculated normal cost plus limit adjustments of 113,333, the deductible limit becomes 130,000.

Answer is D

If you had more than 100 participants, and if the 12/31/94 Unfunded current liability (UCL) was greater than 130,000, then the final deductible limit would be the UCL.

Problem 13

I. TRUE

See the instructions for Form PBGC-1. Part H contains general instructions for the Schedule A. Item 6 discusses significant events, and item b states that plans with 500 or more participants filing under the Alternative method are required to reflect any significant event in the value of unfunded vested benefits.

II. TRUE

See line 1, item (c) of the Schedule A. The plan is exempt from the variable rate premium in any of these situations:

1. No vested participants
2. §412(i) plans
3. Fully funded plans with less than 500 participants
4. Standard terminations with pre-1994 DOPT
5. Plans at the Full Funding limit

III. FALSE

See the instructions for Form PBGC-1. Part I contains line-by-line instructions for the Schedule A. Subpart 2 covers the Alternative calculation method. The instructions state "Do not include in line 3(c) any contributions that are for the premium payment year, or any contributions that have not been paid on or before the earlier of the due date ... or the date that premium is paid."

I and II only are true.

Answer is A

Problem 14

IRC §414(l)(2) contains provisions for allocating assets to spun off plans when the assets exceed the present value of accrued benefits on a termination basis, and when the spun off plans are members of the same controlled group. Since the plan sponsor continues to maintain both plans B and C, they remain members of the same controlled group.

You must allocate the "applicable percentage" of the "excess assets" to each spun off plan. The "excess assets" equal the excess of the market value of assets over the present value of accrued benefits on a termination basis. In this problem, the excess assets equal 150,000 - 120,000 = 30,000.

The "applicable percentage" is the ratio for a spun off plan to the total (for the original plan) of the excess, if any, of (I) the lesser of 150% of Current Liability or (normal cost plus accrued liability), over (II) the present value of accrued benefits on a termination basis. This problem gives you values at the end of the plan year, so the Accrued Liability figures include the Normal Cost.

	Description of item	Total Plan A	Plan B	Plan C
(1)	Liability component of FFL, lesser of 150% CL or EAN AL	140,000	90,000	50,000
(2)	PV of AB on termination basis	120,000	80,000	40,000
(3)	Excess of (1) over (2)	20,000	10,000	10,000
(4)	Applicable percentage	100%	50%	50%
(5)	Allocated excess assets	30,000	15,000	15,000
(6)	Total allocated assets (2)+(5)	150,000	95,000	55,000

The assets allocated to Plan C equal 55,000.

Answer is D

Problem 15 **Revised 05/06/02**

This question asks for the amount of nonbasic-type benefits. Nonbasic-type benefits are those benefits which are not guaranteeable.

You must normalize the maximum guaranteeable benefit limit to the plan's normal form:

2,556.82 on life annuity basis = 2,556.82 * 88.2% on 50% J&S unreduced with 3% COLA basis
= 2,255.12

Plan termination date (DOPT) is 12/31/94. Priority Category 3 (PC3) benefits are the lowest amount payable in the three years preceding DOPT, determined based on lowest level of plan benefits in effect for the five years preceding DOPT. Participants in PC3 are those who were in pay status at 12/31/91 (or could have been).

Smith's benefit at 01/01/90 = 2,800.00
Smith's benefit at 01/01/92 = $2,800.00 * (1.03)^2$
= 2,970.52

The benefit in excess of the guaranteed limit = 2,970.52 - 2,255.12 = 715.40.

Answer is D

NOTES:

1. The solution to this problem is not correct. It assumes that nonbasic-type benefits are benefits in excess of the guaranteed limit. But that is the only way to get into the correct answer range.

2. Nonbasic-type benefits are those that do not satisfy the criteria for a benefit to be guaranteeable at all. See the definitions of basic-type benefit and nonbasic-type benefit in the regulations at 4001.2.

3. Non-basic-type benefits are important when assets are insufficient to cover all the liabilities in (PC3). The percentage covered for PC3 is determined based on total figures. "This percentage is then multiplied by each participant's total PC3 liability. The resulting assets are first applied to the participant's basic-type benefits, and then to their non-basic-type benefits."

Problem 16 **Revised 08/29/96**

This is a suspiciously straightforward §415 problem. You normally expect these problems to be much more complicated than this!

01/01/94 Age	55
Service	8 years
Participation	8 years

The §415 limits have to be reduced for service (or participation) less than ten years. Under §415(b), the reduction on the dollar limit is based on years of participation. The reduction on the 3 year compensation limit is based on years of service.

Age 55 NRA benefit prior to limitations = 60,000

§415 3 yr. comp. limit at age 55 = 200,000 (NOT limited by §401(a)(17))
3 yr. comp. limit reduction for service = 200,000 * (8/10) = 160,000

Social Security Retirement Age = 66 since born in 1939

§415 dollar limit during 1994 = 118,800 at age 66
§415 dollar limit at age 62 = 118,800 * .7500 = 89,100
§415 dollar limit at age 55 = 89,100 * ($N^{(12)}_{62}$ / $N^{(12)}_{55}$)
= 89,100 * (1,100 / 2,000)
= 49,005
Dollar limit reduction for participation = 49,005 * (8/10) = 39,204

Smith's benefit is limited to the lesser of 60,000 or the lesser of 160,000 and 39,204, which equals 39,204.

Answer is A

Problem 17

The MFSA charges should be increased by the Unpredictable Contingent Event amount plus the excess, if any, of the DRC over the MFSA charges and credits specified in §412(l). The DRC is defined as the sum of the unfunded old liability amount (UOLA) and the unfunded new liability amount (UNLA). In this problem, you are told there are no unpredictable contingent events.

The UOLA equals the amortization of the remaining portion of the unfunded old liability over a period that was 18 years at 1-1-89:
UOLA = 200,000 / $\ddot{a}_{\overline{13}|.075}$ = 22,896

The UNLA is defined as the unfunded new liability times the applicable percentage, which is 30% - 25% (FCL% - 35%). In this problem, you must calculate this percentage.

FCL% = (AAV - CB) / CL
= (250,000 - 15,000) / 500,000 = 47.0%

APP% = .30 - .25 [.47-.35]
= 27.0%

The unfunded new liability is the excess of the unfunded current liability over the remaining portion of the unfunded old liability. The unfunded current liability is defined as the excess of the current liability over the actuarial asset value, reduced by the credit balance.

UCL = 500,000 - (250,000 - 15,000)
= 265,000
UNL = 265,000 - 200,000 = 65,000
UNLA = 65,000 * 27.0% = 17,550
DRC = 22,896 + 17,550 = 40,446

You must subtract the IAL amortization charge from the DRC to calculate the additional §412(l) charge. This §412(l) charge should not exceed the UCL of 265,000. Then you must bring the §412(l) charge forward to the end of the year with interest at the current liability rate:

12/31/94 §412(l) charge = 1.075 *(40,446 - 20,000) = 21,979

With less than 150 plan participants, you must pro-rate the additional §412(l) charge:

01/01/94 Additional §412(l) charge = 21,979*[1-2% * (150-140)]
= 21,979 * .80 = 17,584

Answer is D

Problem 18 **Revised 09/19/97**

To calculate the required quarterly contribution for 1994, you must first calculate the required annual payment (RAP). This is the lesser of last year's minimum required contribution or 90% of this year's. These numbers are both interest adjusted to the first day of this plan year, and they both would not reflect any credit balance.

12/31/93 "minimum requirement" = 300,000
12/31/93 credit balance = 100,000
01/01/94 "minimum requirement" = 100,000 + (225,000 / 1.07)
= 310,280
Lesser of 1993 or 90% of 1994 = Lesser of (300,000 or .90 * 310,280)
= 279,252

The required quarterly installment is based on the applicable percentage multiplied by the RAP. This equals .25(279,252) = 69,813.

You may use any credit balance at 01/01/94 as if it was a payment toward the required quarterly installment. This is only true if the contribution that creates the credit balance is actually in the trust fund by the quarterly installment due date. Since the 1993 contribution was paid at 03/15/94, the credit balance can only be applied toward required quarterly installments after 03/15/94.

Date	Required	Amount Available	Overpayment (Underpayment)
04/15/94	69,813	100,000 * [1+ (.07)*(3.5/12)] = 102,042	102,042 - 69,813 = 32,229
07/15/94	69,813	32,229 * [1+ (.07)*(3/12)] = 32,793	32,793 - 69,813 = (37,021)

To avoid any additional interest charge in the MFSA, a payment of at least 37,021 must be paid at 07/15/94.

Answer is A

Compound interest is “harder”, and it produces a larger required contribution:

Date	Required	Amount Available	Overpayment (Underpayment)
04/15/94	69,813	100,000 * $(1.07)^{3.5/12}$ = 101,993	101,993 - 69,813 = 32,180
07/15/94	69,813	32,180 * $(1.07)^{3/12}$ = 32,729	32,729 - 69,813 = (37,084)

Problem 19

The MFSA charges should be increased by the Unpredictable Contingent Event amount plus the excess, if any, of the DRC over the MFSA charges and credits specified in §412(l). The DRC is defined as the sum of the unfunded old liability amount (UOLA) and the unfunded new liability amount (UNLA). In this problem, you are told there are no unpredictable contingent events, and the unfunded old liability is zero.

The UNLA is defined as the unfunded new liability times the applicable percentage, which is 30% - 25% (FCL% - 35%). In this problem, you must calculate this percentage.

FCL% = (AAV - CB) / CL
= (1,600,000 - 100,000) / 2,000,000 = 75.0%

APP% = .30 - .25 [.75-.35]
= 20.0%

The unfunded new liability is the excess of the unfunded current liability over the remaining portion of the unfunded old liability. The unfunded current liability is defined as the excess of the current liability over the actuarial asset value, reduced by the credit balance.

UCL = 2,000,000 - (1,600,000 - 100,000)
= 500,000
UNL = 500,000 - 0 = 500,000
UNLA = 500,000 * 20.0% = 100,000
DRC = 100,000 + 0 = 100,000

You must subtract the IAL amortization charge from the DRC to calculate the additional §412(l) charge. This §412(l) charge should not exceed the UCL of 500,000:

01/01/94 Additional §412(l) charge = 100,000 - 25,000 = 75,000

You must bring the §412(l) charge forward to the end of the year with interest at the current liability rate:

12/31/94 §412(l) charge = 1.08 * 75,000 = 81,000

Even though there are less than 150 plan participants, the test is based on total employees covered by pension plans of the employer. Since there are more than 150 employees in total, there is no pro-rata reduction of the §412(l) charge of 81,000.

Answer is D

Problem 20 **Revised 09/09/98**

I. TRUE

The ratio percentage is defined under the regulations at §1.410(b)-9 as the percentage of non-highly compensated employees (NHCEs) who benefit under the plan divided by the percentage of highly compensated employees (HCEs) who benefit under the plan. The percentage of NHCEs who benefit under the plan equals the number of NHCEs in the plan divided by the total number of non-excludable NHCEs. The percentage of HCEs who benefit under the plan equals the number of HCEs in the plan divided by the total number of non-excludable HCEs. The ratio percentage is 68.03%:

	NHCEs	HCEs	Ratio
Total employees	2,157	738	
Excludable employees	127	164	
Non-Excludable ees	2,030	574	
Employees benefiting	1,381	574	
Ratio	1,381/2,030	574/574	
	=68.03%	=100.00%	68.03%

II. TRUE

The average benefit percentage test is defined under the regulations at §1.410(b)-5 as the ratio of the actual benefit percentage (ABP) for non-highly compensated employees (NHCEs) who benefit under the plan divided by the ABP for highly compensated employees (HCEs) who benefit under the plan. The ABP for NHCEs equals the sum of benefit accrual rates for NHCEs in the plan divided by the total number of non-excludable NHCEs. The ABP for HCEs equals the sum of benefit accrual rates for HCEs in the plan divided by the total number of non-excludable HCEs. The average benefit percentage test gives 71.99%:

	NHCEs	HCEs	Ratio
Non-Excludable ees	2,030	574	
Sum of benefit accrual rates	3,045%	1,196%	
Ratio	3,045%/2,030	1,196%/574	
	=1.50%	=2.08%	71.99%

III. TRUE

The non-highly compensated concentration percentage is defined under the regulations at §1.410(b)-4(c)(4)(iii) as the ratio of non-excludable NHCEs to total non-excludable employees, which is 2,030 / 2,604 = 77.96%.

	NHCEs	HCEs	Sum
Non-Excludable ees	2,030	574	2,604

All three are true.

Answer is D

Problem 21 **Revised 12/13/04**

Under the Rolling Five Method, the calculation of withdrawal liability is relatively simple. Employer B's share of the 12/31/93 UVB is based on the ratio of employer B's contributions in the prior five years to the total contributions in the prior five years.

The complicating factor in this problem is that Employer A's withdrawal liability is not collectible. As a result, the total contributions in the denominator must be reduced by the amount of contributions for Employer A.

YEAR:	1993	1992	1991	1990	1989
ER share = 6,000,000 * (	7,500 +	19,000 +	21,000 +	32,000 +	35,000)
	(900,000 +	1,100,000 +	1,200,000 +	1,010,000 +	1,000,000
	- 0 -	5,000 -	10,000 -	25,000 -	40,000)

$$\text{ER share} = 6{,}000{,}000 * \frac{(114{,}500)}{(5{,}210{,}000 - 80{,}000)}$$

$$= 133{,}918$$

After determining Employer B's share of the UVB, the de minimis amount must be calculated. Then a deductible is calculated based on the amount of the de minimis and the employer's share of the UVB. The final withdrawal liability is calculated as the employer's share less the deductible.

The mandatory de minimis is the lesser of 50,000 or 3/4% of the plan's total UVB (.0075 * 6,000,000 = 45,000). The deductible is the de minimis amount reduced by the excess of the allocated UVB over 100,000. The deductible is 45,000 less (133,918 - 100,000), or 11,082. The final employer withdrawal liability is 133,918 - 11,082 = 122,836.

Answer is E

NOTES:

1. ERISA 4211(c)(3)(A) describes the Rolling Five method, and it states that you subtract the UVB for employers whose liabilities are collectible. There is no specific adjustment to the UVB for employers whose liabilities are <u>not</u> collectible. In ERISA 4209, there is NO similar adjustment to the UVB for calculating the de minimis amount.

2. ERISA 4211(c)(3)(B) implies that you subtract the contributions from the denominator of the fraction for any employers who had previously withdrawn. That includes both employers whose liabilities are collectible, and those whose liabilities are <u>not</u> collectible.

Problem 22

This is a typical PBGC guaranteed benefits question. It tests your knowledge of the five year phase-in for non-owners. Guaranteed benefits are based on the vested accrued benefits of the plan participants. In calculating the guaranteed benefit, remember that changes in vesting schedule, normal retirement age, and normal form of annuity payment are all considered as changes in benefit amount that are subject to the phase in rules.

Since there was a change in normal form of benefits from a life annuity to a 10 year certain and life annuity, you must normalize the benefits. Normalization is the process of converting benefits available under earlier sets of plan provisions to equivalent benefit amounts based on the plan provisions in effect at date of plan termination (DOPT). This is a necessary step, otherwise you would be comparing apples and oranges. The maximum monthly guaranteed benefit limit on a life annuity basis is 2,556.82. On a 10 year certain and life annuity basis, the equivalent benefit limit is .925 * 2,556.82 = 2,365.06.

The changes in plan benefits at 01/01/90 and 01/01/93 are subject to the five year phase-ins at the DOPT of 10/31/94 (Smith is not a substantial owner). The 1990 benefits have been in effect for four full years at DOPT, and the 1993 benefits have been in effect for one full year.

	10 year certain and life basis	**Life annuity basis**
Date of birth	01/01/40	
10/31/94 age	54.8	
Date of hire	11/01/74	
Past service	20.0	
Vesting percentage	100%	
01/01/80 Base plan benefit	1,850.00 = 20($92.50)	2,000.00 = 20($100)
Years plan has been in effect	5	
Phase-in	1,850.00	
01/01/90 Base plan benefit	2,312.50 = 20($115.63)	2,500.00 = 20($125)
Guaranteeable benefit increase	462.50 = 2,312.50-1,850.00	
Years plan has been in effect	4	
Phase-in: $80 or 80%	370.00 = 80% * 462.50	
01/01/93 Base plan benefit	2,700.00 = 20($135.00) limited to MGB of 2,365.06	N/A
Guaranteeable benefit increase	52.56 = 2,365.06 - 2,312.50	
Years plan has been in effect	1	
Phase-in: $20 or 20%	20.00	
Total guaranteed benefit	2,240 = 1,850 + 370 + 20	

Answer is A

Problem 23 **Revised 06/18/02**

This is the first problem of its type asked on this exam. The whole point of the problem is the definition of earnings. You are given 84,000 of earned income, prior to the deduction for plan contributions. The net pensionable earnings are actually 84,000 - X, where X is the 12/31/94 minimum required contribution that is the answer to the problem.

Under the Individual Aggregate cost method, each participant's normal cost is calculated using the formulas for the Aggregate method:

PVNC = PVB - AAV - (O/S §412 bases - CB)
NC = PVNC / [PVE / Earnings]

Since this plan was just established, the asset value, §412 bases and credit balance are all zero.

Date of birth		01/01/54
01/01/94 age		40
Projected benefit		100% * (84,000-X)
PV future benefits		$[(84{,}000-X) * 10 * (1.07)^{-25}]$
01/01 normal cost		$\frac{[(84{,}000-X) * 10 * (1.07)^{-25} - 0]}{\ddot{a}_{\overline{25}\vert .07}}$
01/01 normal cost		$\frac{[(84{,}000-X) * 10]}{\ddot{s}_{\overline{25}\vert .07}}$
12/31 normal cost	$X =$	$\frac{[(84{,}000-X) * 10] * 1.07}{\ddot{s}_{\overline{25}\vert .07}}$
12/31 normal cost	$X =$	$\frac{84{,}000 * 10.70 - X * 10.70}{\ddot{s}_{\overline{25}\vert .07}}$
	$X =$	$\frac{84{,}000 * 10.70}{\ddot{s}_{\overline{25}\vert .07} + 10.70}$
	$X =$	11,468

Answer is B

Problem 24 - Page 1

The first thing you should do in this problem is to calculate the §415(b) limit under the DB plan, ignoring the effect of §415(e). In a few prior exam problems, the benefit limit under §415(b) was lower than that produced under §415(e).

01/01/94 Age	65
Service	6 years
Participation	5 years

The §415 limits have to be reduced for service (or participation) less than ten years. Under §415(b), the reduction on the dollar limit is based on years of participation.

Projected plan benefit before limitations = (100,000 + 97,000 + 91,000) / 3
= 96,000

The key point of this problem is that §415 compensation is defined (at §1.415-2(d)) as taxable compensation, and does not include pre-tax §401(k) deferrals (see table on next page). This causes the projected §415(b)(1)(B) 3 year compensation limit to be smaller than the plan benefit:

Age 65 100% FAE3 §415 limit = (91,006 + 88,272 + 82,525) / 3 * (6/10)
= 87,268 * (6/10) = 52,361

Social Security Retirement Age	=	65 since born prior to 1938
§415 dollar limit during 1994	=	118,800 at age 65
Dollar limit reduction for participation	=	118,800 * (5/10) = 59,400

Ignoring the effects of §415(e), Smith's benefit would be limited to the lesser of 96,000 or the lesser of 52,361 and 59,400, which equals 52,361. Since the problem states that the DB plan benefit will be reduced if the Section 415 limits are exceeded, you must calculate the DC fraction under Section 415(e)(3) first. The maximum DB plan fraction would then equal one minus the DC fraction.

The DC fraction represents the ratio of the annual additions to a participant's account to the theoretical maximum annual additions. After the passage of TEFRA, the limit on the sum of the DB and DC fractions was changed from 1.40 to 1.00. This change required applying the 1.25 and 1.40 factors in the calculation of the denominator.

If the participant was hired prior to the effective date of the plan, the computation of the DC fraction would include years of service back to hire date (see IRC Section 415(e)(3)(B)). The numerator includes annual additions for the years the plan was actually in effect up to retirement. With a DC plan effective date of 01/01/88, this participant has both the numerator and the denominator based on years 1988 through 1993.

Problem 24 - Page 2 **Revised 08/29/96**

The calculation of the 415(e) DC fraction denominator is affected by the top heavy status of the plan. Since the plan is super top heavy, the dollar limit will be multiplied by 1.00 instead of 1.25.

Calculation of Theoretical Maximum Additions

Plan year	Gross Earnings	§401(k) deferrals	Net Earnings	1.4*25% *Earnings	1.00 * $30,000	Lesser of 1.40,1.00	10% * Pay	401(k) deferral	Annual Addition
1988	86,000	7,313	78,687	27,540	30,000	27,540	8,600	7,313	15,913
1989	90,000	7,627	82,373	28,831	30,000	28,831	9,000	7,627	16,627
1990	89,000	7,979	81,021	28,357	30,000	28,357	8,900	7,979	16,879
1991	91,000	8,475	82,525	28,884	30,000	28,884	9,100	8,475	17,575
1992	97,000	8,728	88,272	30,895	30,000	30,000	9,700	8,728	18,428
1993	100,000	8,994	91,006	31,852	30,000	30,000	10,000	8,994	18,994
						173,612			104,416

DC fraction = 104,416 / 173,612 = 60.14%

Since the problem states that the DB plan benefit will be reduced if the §415 limits are exceeded, the maximum DB plan fraction equals one minus the DC fraction, or 39.86%. You can "back into" the projected benefit under the DB plan that will produce the DB fraction of 39.86%. The calculation of the 415(e) DB fraction denominator is also affected by the top heavy status of the plan. Since the plan is super top heavy, the dollar limit will be multiplied by 1.00 instead of 1.25.

You should be wary of a calculation that shows a DB fraction that exceeds 80%. For a non-top heavy plan, the largest possible DB fraction under §415(e)(2) is 1/1.25 = .8000. This results from a projected benefit equal to the DB plan dollar maximum. If the 100% FAE3 limit applied, then the DB fraction is 1/1.40 = .7143. For a top heavy plan, the largest possible DB fraction is 1.00.

Under §415(e), the reduction on the dollar limit in the denominator is based on years of service, not years of participation:

Dollar limit reduction for service = 118,800 * (6/10) = 71,280
Age 65 100% FAE3 §415 limit = 87,268 * (6/10) = 52,361

$$\text{DB fraction} = 39.86\% = \frac{\text{Final projected benefit}}{[\text{ lesser of } 1.00(71{,}280) \text{ or } 1.40(52{,}361)]}$$

Final projected benefit = 39.86% [1.00(71,280)]
= 28,410

This benefit under §415(e) is lower than the previously calculated 52,361. The final maximum benefit is 28,410.

Answer is A

Problem 25 - Page 1

To calculate the required quarterly contribution for 1994, you must first calculate the required annual payment (RAP). This is the lesser of last year's minimum required contribution or 90% of this year's. These numbers are both interest adjusted to the first day of this plan year, and they both would not reflect any credit balance.

12/31/93 "minimum requirement" = 50,000 * 1.07 + 10,000 = 63,500
01/01/94 "minimum requirement" = 100,000
Lesser of 1993 or 90% of 1994 = Lesser of (63,500 or .90 * 100,000)
= 63,500

The required quarterly installment is based on the applicable percentage multiplied by the RAP. This equals .25(63,500) = 15,875.

You may use any credit balance at 01/01/94 as if it was a payment toward the required quarterly installment. This is only true if the contribution that creates the credit balance is actually in the trust fund at 01/01/94.

Date	Required	Available	Overpayment (Underpayment)
04/15/94	15,875	0	(15,875)
07/15/94	15,875	0	(31,750)
10/15/94	15,875	0	(47,625)
01/15/95	15,875	0	(63,500)
09/15/95	0	63,500+x	x

The interest penalty is calculated based on the period of the underpayment, and is applied to the amount of the underpayment. There are four separate underpayments of 15,875 which overlap for periods of 17, 14, 11, and 8 months.

Using simple interest, the interest penalty is calculated as follows:

15,875 * [(1+(.094)(17/12)) - (1+(.07)(8.5/12))] = 1,327
15,875 * [(1+(.094)(14/12)) - (1+(.07)(5.5/12))] = 1,231
15,875 * [(1+(.094)(11/12)) - (1+(.07)(2.5/12))] = 1,136
15,875 * [(1+(.094)(8/12)) - (1+(.07)(0/12))] = 995
4,690

Note that interest at the valuation rate is only credited to the end of the plan year. The 175% of the F.M.R. continues to accrue to the date of payment.

Problem 25 - Page 2

1994 Minimum Funding Standard Account

Charges		Credits	
Normal Cost	100,000	Credit Balance	0
Amortizations	0	12/31 contrib	x
7% interest	7,000	7% interest	0
Late penalty	4,690		
Total charges	111,690	Total credits	x

The resulting 09/15/95 minimum contribution is 111,690.

Answer is E

Compound interest is "harder". Since the time period extends beyond one year, it produces a larger interest penalty:

$$15{,}875 * [\,(1.094)^{17/12} - (1.07)^{8.5/12}\,] = 1{,}376$$
$$15{,}875 * [\,(1.094)^{14/12} - (1.07)^{5.5/12}\,] = 1{,}255$$
$$15{,}875 * [\,(1.094)^{11/12} - (1.07)^{2.5/12}\,] = 1{,}137$$
$$15{,}875 * [\,(1.094)^{8/12} - (1.07)^{0/12}\,] = 980$$
$$4{,}748$$

The resulting 09/15/95 minimum contribution would be 111,748, which is in the same range.

Problem 26 - Page 1

With an aggregate type cost method, market value of assets, and EAN valuation results, you should check that the Full Funding Limitation (FFL) may apply.

The credit balance at 12/31/94 is based on the 1994 contribution, which equals the deductible limit. The deductible limit is the normal cost plus limit adjustments brought forward with interest to the earlier of the end of the plan year, or the end of the tax year. You can calculate the Initial Accrued Liability (IAL), and use that to calculate the limit adjustments:

$$\frac{IAL}{\ddot{a}_{\overline{30}|.07}} + \frac{50{,}000}{\ddot{a}_{\overline{10}|.07}} = 20{,}000 \text{ MFSA amortizations}$$

$$\begin{aligned} IAL &= \ddot{a}_{\overline{30}|.07} * [\, 20{,}000 - 50{,}000 / \ddot{a}_{\overline{10}|.07} \,] \\ &= 13.2777 * [\, 20{,}000 - 6{,}653 \,] \\ &= 177{,}215 \end{aligned}$$

$$\begin{aligned} \text{Deductible limit} &= (1+i) * (\, NC + LA \,) \\ &= (1.07) * [\, 24{,}000 + (50{,}000 + 177{,}215) / \ddot{a}_{\overline{10}|.07} \,] \\ &= (1.07) * [\, 24{,}000 + 30{,}234 \,] = 58{,}030 \end{aligned}$$

The second step is to check the Full Funding Limitation under 404:

$$\begin{aligned} \text{§404 "ERISA" FFL} &= (1+i)*(\, \text{EAN AL} + NC - (\, \text{lesser MVA,AAV} \,)) \\ &= 1.07 * (25{,}000+235{,}000-(205{,}000)) \\ &= 58{,}850 \end{aligned}$$

$$\begin{aligned} \text{§404 "OBRA" FFL} &= 1.50\ (12/31\ CL) - (1+i) * (\, \text{lesser MVA,AAV} \,) \\ &= 1.50 * 185{,}000 - 1.07 * 205{,}000 \\ &= 58{,}150 \end{aligned}$$

The §404 FFL of 58,150 does not apply. Now you must check the §412 minimum contribution to see if it is greater.

Problem 26 - Page 2 **Revised 06/18/02**

1994 Minimum Funding Standard Account

Charges		Credits	
Normal Cost	24,000	Credit Balance	1,900
Amortizations	20,000	12/31 contrib	x
7% interest	3,080	7% interest	133
Total charges	47,080	Total credits	2,033 + x

You can safely assume the minimum contribution is 47,080 - 2,033 = 45,047. The §412 FFL will not apply, because the values will be 2,033 greater than those calculated under §404. There would be no FFL credit unless the resulting FFL values were less than the AFD of 47,080.

The final deductible limit is 58,030. If you had more than 100 participants, and if the 12/31/94 Unfunded current liability (UCL) was greater than 58,030, then the final deductible limit would be the UCL.

You should finalize the 1994 MFSA to calculate the resulting credit balance:

1994 Minimum Funding Standard Account

Charges		Credits	
Normal Cost	24,000	Credit Balance	1,900
Amortizations	20,000	12/31 contrib	58,030
7% interest	3,080	7% interest	133
Total charges	47,080	Total credits	60,063

The credit balance at 12/31/94 is 60,063 - 47,080 = 12,983.

Answer is D

Problem 27

In some §404 problems, the hardest thing to get straight is which valuation corresponds to which tax year. Usually you are only given one set of valuation results, which is based on the correct valuation date.

The deductible limit for the taxable year ending 06/30/94 is based on the valuation for the plan year beginning in that tax year. The 01/01/94 valuation should be used to determine the deductible limit needed for the answer to this problem.

The first step should be to calculate the normal cost plus limit adjustments. The only ten year amortization bases are the initial accrued liability and the 1992 and 1993 losses. The deductible limit is the normal cost plus limit adjustments brought forward with interest to the earlier of the end of the plan year, or the end of the tax year, which is 06/30/94:

Limit adjustment = (100,000 + 20,000 + 80,000) / $\ddot{a}_{\overline{10}|.07}$ = 26,613

Deductible limit = (50,000 + 26,613)*(1.035) = 79,294

The second step is usually to check the Full Funding Limitation under §404. Since you have no market value of assets, you can't check the Full Funding Limitation.

If you stop here and say the answer is 100,000 - 79,294, you've been had! The trick to the problem is that you must think about the minimum funding requirement. The reason is that there are substantial loss bases, and losses are amortized over 5 years for §412. This will tend to produce a minimum contribution that is larger than the maximum contribution.

IAL amortization = 100,000 / $\ddot{a}_{\overline{30}|.07}$ = 7,531

Loss amortization = 100,000 / $\ddot{a}_{\overline{5}|.07}$ = 22,794

1994 Minimum Funding Standard Account

Charges		**Credits**	
Normal Cost	50,000	Credit Balance	3,000
IAL amortization	7,531	12/31 contrib	x
Loss amortization	22,794		
7% interest	5,623	7% interest	210
Total charges	85,948	Total credits	3,210 + x

The minimum required contribution is 85,948 - 3,210 = 82,738. This is greater than 79,294, and is the final deductible limit. With no current liability information, you can't check the UCL as an alternative deductible limit. The 1994 non-deductible contribution is 100,000 - 82,738 = 17,262.

Answer is B

Problem 28 - Page 1

Revenue Procedure 85-29 contains the rules for setting up a new amortization base when there is a change in cost method. Section 4.01 of Revenue Procedure 85-29 specifies that certain bases must be maintained regardless of the funding method that is used. These bases include waivers, shortfall gains and losses, switchback from AMFSA, and transition to satisfy the reasonable funding methods regulation. RP 85-29 was extended by RP 92-48 to apply through plan years beginning on or before 12/31/93, which explains why this problem has a 1993 valuation date.

The point of this problem is that you can't simply assume that all the bases will be eliminated at 01/01/94 due to the change in the Aggregate cost method. Your first clue would be that this problem is too simple if you only have to set up the MFSA at 01/01/94. The second clue is that you are given information on the Full Funding Limitation at 01/01/93. You need to set up the MFSA at 01/01/93 to determine the effect of the FFL:

IAL amortization = 500,000 / $\ddot{a}_{\overline{30}|.07}$ = 37,657

Amend. amortization = 70,000 / $\ddot{a}_{\overline{30}|.07}$ = 5,272

Assump. amortization = 40,000 / $\ddot{a}_{\overline{10}|.07}$ = 5,323

1993 Minimum Funding Standard Account

Charges		Credits	
Normal Cost	50,000	Credit Balance	0
		Amend. amortization	5,272
IAL amortization	37,657	Assump. amortization	5,323
		12/31 contrib	x
7% interest	6,136	7% interest	742
Total charges	93,793	Total credits	11,336 + x

Based on the 12/82 proposed regulation, the Accumulated Funding Deficiency (AFD) based on no contribution and no credit balance must be calculated. This equals the charges of 93,793 less the amortization credits and interest of 11,336. This produces an AFD of 82,457. The §412 FFL credit is defined as the excess of the AFD based on zero contribution and zero credit balance over the FFL:

"ERISA" Full Funding Credit = 82,457 - 80,000
= 2,457

"OBRA" Full Funding Credit = 82,457 - 50,000
= 32,457

Problem 28 - Page 2

The last step is that the OBRA Full Funding credit amortization base for the following year is defined as the excess (if any) of the FFC due to the OBRA FFL over the FFC due to the ERISA FFL.

OBRA FFC base = 32,457 - 2,457
= 30,000

This base will be amortized over 10 years starting in 1994: $3{,}992 = 30{,}000 \div \ddot{a}_{\overline{10}|.07}$

It is not necessary to finalize the 1993 MFSA. The reason is that you know the minimum contribution was paid for 1993 because the credit balance is zero at 12/31/93. Now you should set up the 1994 MFSA.

The calculation of the normal cost under the Aggregate method must satisfy the formulas that are applicable to all reasonable funding methods (see the regulations at §1.412(c)(3)-1):

PV Future Normal costs = PV Future Benefits - Actuarial Assets
- O/S §412 amortization bases + credit balance + ARA (excluding AGG)

PVNC = PVFB - AAV - O/S bases + CB
= 1,200,000 - 800,000 - 30,000 + 0
= 370,000
PVE/E = 2,400,000 / 200,000 = 12.0000
NC = 370,000 / 12.00
= 30,833

1994 Minimum Funding Standard Account

Charges		Credits	
Normal Cost	30,833	Credit Balance	0
FFC amortization	3,992	12/31 contrib	x
7% interest	2,438	7% interest	0
Total charges	37,263	Total credits	x

The minimum contribution at 12/31/94 is 37,263.

Answer is D

Problem 29 **Revised 11/02/95**

For plans with employee contributions, you must know the formula for the amount of any asset reversion to the employees upon plan termination. This formula is specified in the PBGC regulations, and OBRA '87 mandates its use:

Employee portion = Residual assets x PC2 / (PC2 + PC3 + PC4 + PC5 + PC6)

Note that amounts are put in the numerator and denominator for employees who received lump sums or irrevocable commitments in the 3 years prior to DOPT. This means you must add Brown's values to those for Jones and Green (ignore Smith - terminated more than 3 years prior to DOPT). You should use the liability values shown as of 12/31/94, which match the assets at 12/31/94.

You must calculate total values for the various priority categories:

	Brown	Green	Jones	Total
PC1	2,000	5,000	0	7,000
PC2	25,000	25,000	20,000	70,000
PC3-PC6	60,000	75,000	100,000	235,000
Total	87,000	105,000	120,000	312,000

Total for PC2 through PC6 = 312,000 - 7,000 = 305,000

The market value must be adjusted to add back Brown's distribution. The new value is 325,750 + 87,000 = 412,750. The value of the reversion based on the adjusted market value of assets is 412,750 - 312,000 = 100,750 .

The total employees' share of the reversion is 100,750 * (70,000 / 305,000), which equals 23,123. The employer share of the reversion is 100,750 - 23,123 = 77,627.

The final trick to the problem is the amount of the excise tax on the reversion. The size of the answer ranges should give you a big clue. Since there is no successor plan, the excise tax is 50% under §4980(d) (1)(A). The resulting excise tax is 50% * 77,627 = 38,814.

Answer is B

Problem 30

This is the first question ever asked on this exam about loan provisions. This is why we all should try to become DC experts as well as DB experts! Seriously, these all make reasonably good sense based on general principles. It is difficult to identify the exact source for these items.

I. TRUE

IRC §4975(a) imposes an initial 5% tax, and §4975(b) imposes an additional 100% tax on any prohibited transaction which is not corrected within "the taxable period". A loan to a plan fiduciary would be subject to this tax, and therefore be prohibited under §4975(c)(1)(B). However, the exemption at §4975(d)(1) specifies the conditions under which the loan may be made.

II. TRUE

IRC §72(p)(1)(A) states as a general rule that

"If during any taxable year a participant or beneficiary receives (directly or indirectly) any amount as a loan from a qualified employer plan, such amount shall be treated as having been received by such individual as a distribution under such plan."

§72(p)(2) states the necessary conditions for a loan to be exempt from the general rule. If a loan is faulty in terms or in operation, it will not be exempt, and it will be treated as a taxable distribution.

III. FALSE

§401(a)(11) requires joint and survivor annuities (or pre-retirement survivor annuities) for all defined benefit plans and all defined contribution plans except those where:

1. The entire nonforfeitable accrued benefit (less any outstanding loan) is payable upon the participant's death to their surviving spouse or beneficiary.

2. The participant does not elect payment of benefits as a life annuity form.

In Q&A 24 of the regulations at §1.401(a)-20, in order for a plan to meet the joint and survivor annuity requirements of §401(a)(11) and §417, spousal consent is required for a participant's accrued benefit to be used as security for a loan.

Only I and II are true.

Answer is A

Problem 31 - Page 1 **Revised 09/09/97**

With an individual type cost method and market value of assets, you should check that the Full Funding Limitation (FFL) may apply.

The deductible limit is the normal cost plus limit adjustments brought forward with interest to the earlier of the end of the plan year, or the end of the tax year. You can use the given information to calculate the normal cost at 01/01/94. IA is the participant's age at plan inception (or hire, if later). Age 62 is the normal retirement age under the plan. Under the ILP cost method, each participant's new layer of normal cost is calculated using this formula:

$$01/01/90 \text{ ILP NC} = \frac{PVNC_{IA}}{\ddot{a}_{IA:\overline{62 - IA}|.08}}$$

With no pre-retirement decrements and no salary scale, the participant's normal cost should remain constant each year. CA is the participant's current age:

$$01/01/94 \text{ ILP NC} = \frac{PVNC_{CA}}{\ddot{a}_{CA:\overline{62 - CA}|.08}}$$

Date of birth = 01/01/50 01/01/94 age = 44

$$01/01/94 \text{ ILP NC} = \frac{PVB_{44} - AL_{44}}{\ddot{a}_{\overline{18}|.08}}$$

$$= (120{,}000 - 32{,}000) / 10.1216$$

$$= 8{,}694$$

Under the ILP method, the IAL is zero. In general, there will be no amortization bases under 404 or 412 unless experience gains and losses have occurred. The only source of limit adjustments under 404 is the G/L for 1993.

G/L = ${}_eUAL_1 - UAL_1$
${}_eUAL_1$ = O/S 412 bases - credit balance
= 0 - 0 = zero
UAL_1 = 32,000 - 29,500 = 2,500
Gain = zero - 2,500
Loss = 2,500

Deductible limit = (1+i) * (NC + LA)

$$= (1.08) * [8{,}694 + (2{,}500 / \ddot{a}_{\overline{10}|.08})]$$

$$= (1.08) * [8{,}694 + 345] = 9{,}762$$

Problem 31 - Page 2 **Revised 06/18/02**

The second step is to check the Full Funding Limitation under 404:

$$\begin{aligned} \text{§404 "ERISA" FFL} &= (1+i)*(\text{ ILP NC + AL - (lesser MVA,AAV)}) \\ &= 1.08 * (8{,}694 + 32{,}000-(28{,}000)) \\ &= 13{,}710 \end{aligned}$$

$$\begin{aligned} \text{§404 "OBRA" FFL} &= 1.50\ (12/31\ \text{CL}) - (1+i) * (\text{ lesser MVA,AAV }) \\ &= 1.50 * 27{,}000 - 1.08 * 28{,}000 \\ &= 10{,}260 \end{aligned}$$

The §404 FFL of 10,260 does not apply. Now you must check the §412 minimum contribution to see if it is greater. This is necessary because there is no credit balance, and there was an experience loss. Since the loss is amortized over 5 years (instead of 10), this could produce a larger deductible limit.

$$\begin{aligned} \text{Loss amortization} &= 2{,}500 / \ddot{a}_{\overline{5}|.08} \\ &= 580 \end{aligned}$$

1994 Minimum Funding Standard Account

Charges		**Credits**	
Normal Cost	8,694	Credit Balance	0
Loss amortization	580	12/31 contrib	x
8% interest	742	8% interest	0
Total charges	10,016	Total credits	x

You can safely assume the minimum contribution is 10,016. The §412 FFL will not apply, because the values will be identical to those calculated under §404. There would be no FFL credit unless the resulting FFL values were less than the AFD of 10,016.

The final deductible limit is the required §412 minimum contribution of 10,016. If you had more than 100 participants, and if the 12/31/94 Unfunded current liability (UCL) was greater than 10,016, then the final deductible limit would be the UCL.

Answer is B

Problem 32 - Page 1

With the Entry Age Normal cost method, you should check two items: (1) the Full Funding Limitation (FFL) may apply, and (2) experience gains and losses may occur. Since you have no market value of assets, you can not check the FFL. You are given the amount of the gain during 1993, so you don't need to calculate it.

The problem asks for the amount of the credit balance (CB) at 12/31/94. To calculate the CB, you must determine the amount of the deductible limit for 1994.

The deductible limit is the normal cost plus limit adjustments brought forward with interest to the earlier of the end of the plan year, or the end of the tax year. You are given the normal cost at 01/01/94. The only limit adjustments correspond to the 1993 IAL and the 1993 gain:

$$\begin{aligned}\text{Deductible limit} &= (1+i) * (NC + LA) \\ &= (1.08) * [\ 90{,}000 + (1{,}000{,}000 - 25{,}000) / \ddot{a}_{\overline{10}|.08}\ ] \\ &= (1.08) * [\ 90{,}000 + 134{,}541\ ] \\ &= 242{,}504\end{aligned}$$

There is no need to check the §412 minimum contribution to see if it is greater. This is because the IAL is so large, plus there was an experience gain. Under §412 the IAL is amortized over 30 years, and the gain is amortized over 5 years. Under §404 the IAL is amortized over 10 years, and the gain is amortized over 10 years, which will always produce a larger deductible limit.

The whole point of the question is that you must look at the unfunded current liability as an alternative calculation of the deductible limit. Since there are more than 100 participants covered by defined benefit plans by this employer, the unfunded current liability can be contributed and deducted. The final deductible limit is the UCL of 250,000.

Problem 32 - Page 2

The last step is to set up the MFSA and calculate the 12/31/94 credit balance:

IAL amortization = 1,000,000 / $\ddot{a}_{\overline{30}|.08}$ = 82,248

Gain amortization = 25,000 / $\ddot{a}_{\overline{5}|.08}$ = 5,798

1994 Minimum Funding Standard Account

Charges		Credits	
Normal Cost	90,000	Credit Balance	50,000
IAL amortization	82,248	Gain amortization	5,798
		07/01 contrib	250,000
8% interest	13,780	8% interest	14,464
Total charges	186,027	Total credits	320,261

The credit balance is 320,261 - 186,027 = 134,234.

Answer is D

Problem 33

Revenue Procedure 85-29 contains the rules for setting up a new amortization base when there is a change in cost method. Section 4.01 of Revenue Procedure 85-29 specifies that certain bases must be maintained regardless of the funding method that is used. These bases include waivers, shortfall gains and losses, switchback from AMFSA, and transition to satisfy the reasonable funding methods regulation. RP 85-29 was extended by RP 92-48 to apply through plan years beginning on or before 12/31/93, which explains why this problem has a 1993 valuation date.

The calculation of the normal cost must satisfy the formulas that are applicable to all reasonable funding methods (§1.412(c)(3)-1):

PV Future Normal costs = PV Future Benefits - Actuarial Assets
- O/S §412 amortization bases + credit balance + ARA

For cost methods with Unfunded Actuarial Liabilities, this can be restated as UAL = O/S 412 bases - credit balance - ARA. You must determine the new base such that the equation of balance is satisfied. You are told that an experience G/L occurred in 1992. Since Entry Age Normal is an individual cost method, you would always make this assumption unless told that there were no gains or losses.

Amortization base	Amort. Charge	Remaining years	Outstanding base
Initial accrued liability	30,000	28 = 30-(93-91)	389,601 = $\ddot{a}_{\overline{28}\|.07}$ * 30,000
Plan amendment	5,000	29 = 30-(93-92)	65,686 = $\ddot{a}_{\overline{29}\|.07}$ * 5,000
Experience loss	3,500	4 = 25-(93-92)	12,685 = $\ddot{a}_{\overline{4}\|.07}$ * 3,500
All Total	38,500		467,972

Expected UAL = O/S bases - CB + ARA
= 467,972 - 4,000 + 0
= 463,972

Method change base = Unit credit UAL - $_eUAL$
= 430,000 - 463,972
= -33,972

The amortization period for cost method change credit bases specified in Revenue Procedure 85-29 is 30 years:

Method amortization = 33,972 / $\ddot{a}_{\overline{30}\|.07}$ = 2,559

Answer is A

Problem 34 **Revised 07/06/00**

Section 404(a)(7)(A) of the IRC states the deductible limitation for combinations of DB and DC plans. The limit is the greatest of 25% of compensation, or the amount paid to the DB plans, not to exceed the minimum contribution requirement for the DB plan under Section 412. Section 4972 of the IRC imposes a 10% excise tax on contributions exceeding the deductible limitation.

If there were no overriding limit under Section 404(a)(7)(A), the DC plan deductible limit would be 15% of taxable compensation. The taxable compensation for the year is 2,318,000 less 118,000 in §401(k) deferrals, or 2,200,000. The DC plan deductible limit would be 330,000, which is 15% of 2,200,000.

If there were no overriding limit under Section 404(a)(7)(A), the DB plan deductible limit would be the normal cost plus a ten year amortization of the initial accrued liability:

Initial accrued liability = $50{,}000 * \ddot{a}_{\overline{30}|.07}$ = 663,884

01/01 Limit adjustment = $663{,}884 / \ddot{a}_{\overline{10}|.07}$ = 88,338

"12/31 DB plan limit" = 1.07 * (400,000 + 88,338) = 522,522

The Section 404(a)(7)(A) deduction limitation is the greater of 25%(2,200,000) = 550,000, and the minimum contribution requirement for the DB plan. If the deductible limit for a year were based on the unfunded current liability, the deduction limitation would be no less than that amount. Since the 550,000 deduction limitation exceeds the "12/31 DB plan limit", it also clearly exceeds the DB plan minimum contribution. There is no need to calculate the DB plan minimum.

You are told that the total contributions paid each 12/31 equal the deductible limit. This means that the 1994 total contribution is 550,000, as calculated previously. This total includes 130,000 for the 401(k) plan (calculated as 118,000+12,000). Note that the employee pre-tax elective contributions are counted as employer contributions.

The amount that was paid on behalf of the DB plan is the difference, 550,000 - 130,000 which equals 420,000.

Answer is C

Problem 35

A 70% contribution decline occurs when 30% of units in "high base year" exceeds the units in each year of the "three year testing period". The "three year testing period" includes the year that 70% decline occurs. The "units in high base year" is average of two highest years in preceding five years.

You must calculate the various items to see when a 70% decline has occurred:

Assumed year	**1989**	**1990**
3 year testing period	1987-1989	1988-1990
Highest units in 3 year testing period	125,000	56,000
Base years	1982-1986	1983-1987
High base years	1982, 1983	1983, 1985
Units in high base year	.5(220,000 + 200,000) = 210,000	.5(200,000 + 180,000) = 190,000
30% of units in high base year	63,000	57,000
70% decline occurred?	NO	YES

Answer is B

If you had to calculate the partial withdrawal liability due to a 70% contribution decline, then

(1) Initial year of the three year testing period is considered as the year of withdrawal for calculation of employer share of UVB

(2) The modified fraction is

$$1.0 - \frac{\text{Base units for plan year following plan year of partial withdrawal}}{\text{Average base units during 5 yr. period preceding three year testing period}}$$