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2006 EA-2B EXAM SOLUTIONS

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2006 EA-2B Exam Solutions

These solutions were prepared based on the law as in effect at December 31, 2005.

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!

This exam was similar to 2004 and 2005, with far fewer calculation type problems than prior years. There were more 2 and 3 point problems that tested general pension knowledge than in earlier years.

Revision History:

April 29, 2019	Corrected solution for problem 34
June 13, 2016	Corrected solution for problem 39
February 28, 2014	Corrected solution for problem 22
May 20, 2011	Corrected solution for problem 25
May 7, 2010	Corrected solution for problem 36
April 5, 2010	Clarified solutions for problems 19, 22 and 24
April 26, 2009	Clarified solution for problem 38
April 22, 2009	Corrected solution for problem 41
March 20, 2009	Clarified solution for problem 17
May 7, 2008	Corrected note at end of problem 33
April 28, 2008	Corrected solution for problem 15
April 27, 2008	Corrected solution for problem 13
April 24, 2008	Corrected solutions for problems 19, 25, 35, 36, 38 and 39
April 25, 2007	Corrected solutions for problems 30, 34 and 36
April 20, 2007	Corrected solutions for problems 19, 39 and 40
February 27, 2007	Original solutions

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Problem 1

TRUE

In general, the 415 dollar limit is adjusted for payment forms other than a life annuity. There is a specific exception in the code for the qualified joint and survivor annuity.

See IRC Section 415(b)(2)(B)

Answer is A

Problem 2

TRUE

The regulations contain a data maintenance alternative, which allows you to maintain the data for a period of five years. You do not have to construct the special schedule unless a subsequent merger or spinoff occurs within the five year period.

See the regulation at 1.414(l)-1(i)

Answer is A

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Problem 3

Similar to 2005 #14

FALSE

Section 7 of the PBGC-1 Form instructions discusses underpayments and overpayments. Sub-section (v) discusses minimizing late payment charges associated with the first filing due date.

Since the final participant count was greater than the initial count, there will be a premium underpayment. In sub-section (v) of the instructions, it states that there is no way to avoid the late payment interest charge.

Answer is B

NOTE:

You won't have a late payment penalty charge if the premium payment with Form ES-1 is at least the lesser of:

- (a) 90% of the per-participant flat rate premium amount due at the final filing due date or
- (b) The per-participant flat rate premium amount based on the prior year's participant count

The final flat rate premium is $2,600(19) = 49,400$. The initial payment with the ES-1 was $2,500(19) = 47,500$. This did exceed $44,460 = 90\%(49,400)$, so there is no late payment penalty charge.

Problem 4

TRUE

In the regulation at 901.20(h), it requires the actuary to report any non-filing of actuarial documents they have signed.

Answer is A

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Problem 5

TRUE

Without the PBGC to make up the difference, it should be clear that the participants would receive less than the present value of their accrued benefits. Even if the plan was covered by the PBGC, it is still possible that the participants would receive less than the present value of their accrued benefits.

The only way the participants would be certain to receive their full accrued benefits is if

- Everyone in the plan is vested, and
- The plan has not been amended in the five years prior to plan termination date, and
- There are no substantial owners

In that situation, the accrued benefit would equal the guaranteed benefit. If covered by the PBGC, then at plan termination, each participant would receive not less than their guaranteed benefit.

Answer is A

Problem 6

FALSE

Based on the instructions to the Form 5330, the form should be filed by the “disqualified person” who is liable for the tax under IRC Section 4975. The definition of “disqualified person” includes

- A fiduciary
- A person providing services to the plan
- An employer, any of whose employees are covered by the plan
- An employee organization, any of whose members are covered by the plan
- And several other definitions

It appears that the multiemployer plan itself does not pay the tax, since it is not defined as a “disqualified person”.

Answer is B

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Problem 7

FALSE

Code section 401(a)(26) contains additional participation requirements beyond those in 410(b). In general, a trust is not qualified unless the plan, on each day of the plan year, benefits the lesser of 50 employees, or 40% or more of the employees of the employer. SBJPA added a floor to the 40%, which is 2 employees - unless there is only one employee, in which case the one employee must be covered.

The statement in the problem is false, since it refers to non-highly compensated employees. It should refer to all employees.

Answer is B

Problem 8

TRUE

Under elapsed time method, the hours worked is not relevant.

Answer is A

NOTE:

It appears that the definitions for calculations under the elapsed time method are in the 1.410(a) regulation. That regulation is not part of the reading list for the EA-2 exams.

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Problem 9

FALSE

The cost of living increases are effective January 1 of a given calendar year and apply with respect to limitation years ending within that calendar year.

See the regulation at 1.415-3(a)(2).

Answer is B

Problem 10

TRUE

There is no requirement that the benefit amounts are the same for the QJSA and the QPSA. But the amount under the QPSA must not be less than the amount under the QJSA.

See IRC 417(c)(1)(A).

Answer is A

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Problem 11

TRUE

Compare the given vesting schedule to the Top heavy vesting schedule:

<u>Years of service</u>	<u>Vested percentage</u>	<u>Top Heavy Vesting</u>
1	17%	0%
2	33%	20%
3	50%	40%
4	67%	60%
5	83%	80%
6	100%	100%

The given vesting schedule is better than the Top heavy vesting schedule for all years of service.

Answer is A

Problem 12

FALSE

This question is based on IRC Section 415(b)(4)(B), which says the 10,000 floor only applies if "the employer has not at any time maintained a defined contribution plan in which the participant participated."

If the plan participants were eligible for the 415 "10,000 floor", then this would be true. But they are not eligible, since they were covered under a defined contribution plan.

For an employee paid less than 10,000, the 415 compensation limit could be less than 10,000. They would not be able to receive the full plan benefit of 10,000 at age 60.

Answer is B

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Problem 13

Revised 04/27/08

FALSE

The 2006 premium is based on the participant count at the 12/31/05 snapshot date. The PBGC definition of participant includes both employees, even though one has terminated.

The fact that the lump sum is paid in January is irrelevant. The PBGC will not refund any part of the premium.

Answer is B

Problem 14

TRUE

This is the first question asked on reduction of partial withdrawal liability. The “high base year” used for the partial withdrawal liability calculation is 325,000. There are two consecutive years (2004 and 2005) where the contribution base units exceed 90% of those in the high base year:

$$292,500 = 90\%(325,000)$$

As a result, the employer’s partial withdrawal liability is eliminated, and there are no more partial withdrawal liability payments. Their only obligation is delinquent payments, if any.

See ERISA Section 4208(a)(1)

Answer is A

NOTE:

There are many other more obscure cases for reduction or elimination of partial withdrawal liability in ERISA 4208.

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Problem 15

Revised 04/28/08

FALSE

The due date for payment of the excise tax under IRC Section 4980(c)(4) is the month after the reversion occurs.

Answer is B

NOTE:

In the instructions for the Form 5330, the due date for payment of the excise tax under IRC Section 4980 is the month after the reversion occurs. You can file Form 5558 to request an extension of up to 6 months for filing the Form 5330. But that does not extend the date for payment of the excise tax.

Problem 16

FALSE

In the regulation at 901.20(h), it requires the actuary to report any non-filing of actuarial documents they have signed.

The key item is that multiemployer plans are not subject to the variable rate premium requirement. Since there was no certification for the variable rate premium, the actuary did not sign the PBGC-1 forms. Therefore, they do not need to notify the PBGC of the non-filing.

Answer is B

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Problem 17

Revised 03/20/09

There is a reportable event when the active participant count is less than 80% of the prior year's count, or less than 75% of the value two years ago.

Let X represent the active participant count at 12/31/06. If X satisfies either of these equations, then there is a reportable event:

$$80\%(650) > X \quad \rightarrow X < 520$$

$$75\%(800) > X \quad \rightarrow X < 600$$

To avoid having a reportable event, X must be at least 600.

Answer is C

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Problem 18

This is the first question asked on calculating the 415 limit for a participant covered by multiple DB plans.

The key point to the question is that you only aggregate a multiemployer plan with non-multiemployer plans when determining the dollar limit. So you don't aggregate the 2 multiemployer plans for this purpose.

The resulting dollar limit for plans "A+C" is 175,000, which is the Section 415 dollar limit for 2006. The accrued benefit under plan A is 148,000 = 175,000 (415 limit) less 27,000 (Plan C). The dollar limit for plans "B+C" is also 175,000 but that doesn't change the accrued benefit in Plan A.

Answer is D

NOTE:

The 415 compensation limit is 155,000 for plan C. Multiemployer plans are exempt from the 415 compensation limit.

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Problem 19 - Page 1

Similar to 2005 #29

Revised 04/24/08

In event of termination, a defined benefit plan must limit benefits of the top paid 25 HCEs (or former HCEs) to an amount that is not discriminatory under 401(a)(4). The regulation at 1.401(a)(4)-5(b)(3) contains the rules regarding restricted distributions.

In general, it says the employee can't receive more than one year's life annuity payments in a year. There are several exceptions to this distribution restriction at 1.401(a)(4)-5(b)(3)(iv)(A):

- After payment, plan assets \geq 110% of current liability under 412(l)(7)
- Value of benefits payable $<$ 1% of current liability
- Value of benefits payable $<$ 411(a)(11)(A) mandatory L.S. amount (5,000)

To satisfy the requirements of the regulation, the market value of assets after Smith's distribution need to be at least 110% of the remaining current liability.

$$\frac{1,375,000 - 950,000}{1,350,000 - 925,000} = 100.0\%$$

Based on the answer ranges, it is clear that you can't pay Smith the full lump sum amount. The key to the problem is that, if a partial lump sum is paid, then Smith still has part of their current liability remaining. Consider the extreme case, where you pay Smith a zero lump sum:

$$\frac{1,375,000 - 0}{1,350,000 - 0} = 101.9\%$$

If you pay Smith a partial lump sum, the "funded ratio" will be somewhere between 100% (based on payment of 100% of the lump sum), and 101.9% (based on payment of 0% of the lump sum).

What this result means is that it is impossible to pay any amount to Smith, and still have the assets be at least 110% of the current liability. The only amount that can be paid is Smith's annual benefit of $84,000 = 12 \times 7,000$.

Answer is A

(see notes on next page)

NOTES:

1. The longer way to work the problem is to solve for the partial lump sum. Let LS be the partial lump sum paid to Smith. The reduced current liability based on the partial payment is $LS \cdot (925/950)$. Now you can solve for the value of LS:

$$\frac{1,375,000 - LS}{1,350,000 - LS \cdot (925/950)} \geq 110\%$$

$$\begin{aligned} 1,375,000 - LS &\geq 1.1(1,350,000 - LS \cdot (.97368)) \\ &\geq 1,485,000 - LS \cdot (1.07105) \end{aligned}$$

$$\begin{aligned} LS \cdot (.07105) &\geq 110,000 \\ LS &\geq 1,548,148 \end{aligned}$$

What this result means is that it is impossible to pay any amount to Smith, and still have the assets be at least 110% of the current liability.

2. This is the first problem on the exam where they gave both the market value of assets and the actuarial value of assets. The 1.401(a)(4) regulation is quite vague about what value of assets should be used. Based on Revenue Ruling 92-76 (not on the EA-2B reading list), the calculations should be based on market value of assets.
3. The original solution to this problem showed values based on using the actuarial value of assets (instead of market value). The resulting answer is still A, as it must be:

$$\frac{1,400,000 - 950,000}{1,350,000 - 925,000} = 105.9\%$$

$$\frac{1,400,000 - 0}{1,350,000 - 0} = 103.7\%$$

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Problem 20

Similar to 2005 #32

The key to this problem is reading the problem carefully.

This is a straightforward calculation problem, but it is really only worth one point. Since the participant has not been married for a year, the minimum qualified pre-retirement spouse annuity under IRC section 417 is zero.

Answer is A

NOTE:

Just in case you want to know, here is the benefit calculation that would be required if the spouse and participant had been married for at least one year:

As of 12/31/2005

Age	48
Service	10
Earliest Retirement Age	55

Accrued Benefit	4,250
Vesting percentage	100%
Vested benefit	4,250
Early Retirement reduction	0.70
	$= 1 - 3\% \times (65 - 55)$
Benefit payable at age 55	2,975

50% J&S Reduction	85%
50% J&S Benefit	2,529
50% Death benefit	1,264
	105.36/mo

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Problem 21 – Page 1

Similar to 2004 #39

This is a simplified version of similar problems on earlier exams. You must calculate the ratio percentage based on participants who can retire under the early retirement window.

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:

$$\text{Ratio \% test: } \frac{\left(\frac{\text{NHCEs who benefit}}{\text{Total Non-excludable NHCEs}} \right)}{\left(\frac{\text{HCEs who benefit}}{\text{Total Non-excludable HCEs}} \right)}$$

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.

In prior exam problems, you had to know the definition of "current availability". You also had to know the special exception for handling a time-limited eligibility.

The regulation at 1.401(a)(4)-4 contains definitions and rules for nondiscriminatory availability of benefits rights and features. 1.401(a)(4)-4(b)(2)(i) states the general rule is that any determination is "based on the current facts and circumstances with respect to the employee." 1.401(a)(4)-4(b)(2)(ii)(A)(1) states that "any specified age and service condition with respect to an optional form of benefit or a social security supplement is disregarded in determining whether the optional form of benefit or social security supplement is currently available."

The early retirement window lasts from December 31, 2005 to December 31, 2006. This is a time-limited eligibility. The special exception in the regulation states that you do not ignore "any specified age and service condition with respect to" a time-limited eligibility.

You need to calculate the ratio percentage based on employees who have either

- Attained age 55 and 20 years of service at 12/31/05, or
- Will attain age 55 and 20 years of service at 12/31/06

You need to summarize the data given in the problem, and identify who will become eligible for the early retirement window. The data has already isolated the employees who are not eligible at 12/31/05, but who will be eligible by 12/31/06. Those are the employees who are age 54 with 19 years of service at 12/31/05.

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Problem 21 – Page 2

<u>Age</u>	<u>Service</u>	Number of:	
		<u>HCEs</u>	<u>NHCEs</u>
25	5	25	200
35	12	25	200
54	18	25	125
54	19	50	100
55	20	50	25
56	18	<u>25</u>	<u>150</u>
All total		200	800

Employees who will be eligible for the window benefit:

54	19	50	100
55	20	<u>50</u>	<u>25</u>
All total		100	125

$$\begin{aligned}\text{Window Ratio} &= [125 / 800] / [100 / 200] \\ &= 15.63\% / 50\% \\ &= 31.25\%\end{aligned}$$

Answer is C

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Problem 22

Similar to 2002 #02

Revised 02/28/14

The key point of the problem is that Plan B is a predecessor employer. Under IRC 414(a)(2), you must treat the service with Employer B in the same way as service with Employer A. You can not exclude the period of time that the employee worked for Employer B.

Smith has six years of vesting service. They get full credit for 2002, since they worked a total of 1,250 hours for both Employer A and Employer B.

Answer is E

NOTE

In IRC Section 411(a)(4), certain periods can be disregarded in determining vesting service. IRC Section 411(a)(4)(C) allows you to ignore years of service when the employer did not maintain the plan, or a predecessor plan.

See problem 24 for a similar question involving a predecessor plan.

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Problem 23

Similar to 2002 #10

This question is based on IRC Section 415(b)(4)(B), which says the 10,000 floor only applies if "the employer has not at any time maintained a defined contribution plan in which the participant participated."

At 01/01/06

Age	65
Service	4 years
Participation	3 years

PLAN BENEFIT

$$\begin{aligned}\text{Accrued benefit at age 65} &= 8,000 * 100\% \\ &= 8,000\end{aligned}$$

415 COMP LIMIT

The §415(b)(1)(B) compensation limit is reduced when service is less than ten years.

$$\begin{aligned}\text{415 COMP3 limit} &= 8,000 * (4/10) \\ &= 3,200\end{aligned}$$

415 DOLLAR LIMIT

Under §415(b)(1)(A), the dollar limit is reduced when participation is less than ten years.

$$\begin{aligned}\text{\$415 dollar limit during 2006} &= 175,000 \text{ at age 65} * (3/10) \\ &= 52,500\end{aligned}$$

The final 415 limit is 3,200. Since the participant is covered under a profit sharing plan, there is no 10,000 floor on the 415 limit.

The final benefit under the plan is also 3,200.

Answer is C

NOTE:

This problem is intentionally confusing, since it says "the plan incorporates the 10,000 minimum benefit ..." It really does not matter what the plan document says, since it can't override the effect of IRC Section 415.

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Problem 24

Similar to 2002 #02

Revised 04/05/10

In IRC Section 411(a)(4), certain periods can be disregarded in determining vesting service. IRC Section 411(a)(4)(C) allows you to ignore years of service when the employer did not maintain the plan, or a predecessor plan.

The key point of the problem is that the profit sharing plan is a predecessor plan. You can not exclude the period of time that the employee was covered under that plan.

Smith has three years of vesting service. They get full credit for 2000 and 2001, since they earned 1,000 hours under the profit sharing plan. They also get full credit for 2006 since they earned 1,000 hours under the defined benefit plan.

Answer is B

NOTES:

1. One way to miss the problem is to include the years from 1998 through 1999. Since the problem asks for the minimum number of years of vesting service, you should exclude those years. IRC Section 411(a)(4)(C) allows you to ignore years of service when the employer did not maintain the plan, or a predecessor plan.
2. The definition of a predecessor plan is in the 1.411(a) regulation, which is NOT on the EA-2B reading list:

“1.411(a)-5(b)(3)(v)(B) Definition of predecessor plan. --For purposes of this section, if --

(1) An employer establishes a retirement plan (within the meaning of section 7476(d)) qualified under subchapter D of chapter 1 of the Code within the 5-year period immediately preceding or following the date another such plan terminates, and

(2) The other plan is terminated during a plan year to which this section applies, the terminated plan is a predecessor plan with respect to such other plan.”

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Problem 25 - Page 1

Similar to 2001 #27

Revised 05/20/11

Most PBGC problems are strictly concerned with benefits in priority categories for asset allocation purposes, or with the definition of guaranteed benefits. In this problem, the participant has benefits in both Priority Category 3 and in Priority Category 4, which is unusual for exam questions. Priority Category 4 is defined based on the five year phase-in for non-owners. After you subtract the benefit in Priority Category 3, you will have the remaining benefit allocated to Priority Category 4.

The first part of the problem is calculation of the Priority Category 3 (PC3) benefit. Plan termination date (DOPT) is 01/01/06. Participants in PC3 are those who were (or could have been) in pay status at DOPT-3, or 01/01/03. The early retirement eligibility that is used is based on the plan provisions in effect at DOPT-3, which is the 01/01/02 plan.

Priority Category 3 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. There are no maximum benefit limits on PC3 benefits. For participants who were not in pay status at DOPT-3, the PC3 benefit is calculated as if they retired at DOPT-3:

	Smith: PC3 benefit
Date of birth	01/01/47
Date of hire	01/01/80
01/01/03 age	56
01/01/03 service	23
01/01/03 three year average compensation	50,000 = $1/3(45,000+50,000+55,000)$
01/01/01 plan Early retirement factor	46% = $1 - 6\%(65-56)$
01/01/01 plan accrual rate	2%
01/01/01 plan accrued benefit at 01/01/03	23,000.00 = $(23)(2\%)(50,000)$
01/01/01 plan retirement benefit at 01/01/03	881.67 = $46\%(23,000)/12$

This problem 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, early retirement reductions, and normal form of annuity payment are all considered as changes in benefit amount that are subject to the phase in rules.

If there were 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.

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Problem 25 - Page 2

Revised 04/24/08

The change in plan benefits at 01/01/02 is subject to phase-ins at the DOPT of 01/01/06. Based on item nine on page 84 of the PBGC study note, use the later of the adoption date and the effective date of the increase for phase-in purposes.

The PBGC maximum monthly guaranteed benefit (MGB) is defined as the lesser of the adjusted ERISA §4022(b) value, or the highest five year consecutive compensation. The MGB should be adjusted based on a benefit commencement age at DOPT different from age 65.

Here it is adjusted to the early retirement age of 59. For 2006, the MGB at 65 equals 3,971.59 per month. The reduction factor for age 59 is .61, which produces 2,422.67.

The calculation of the guaranteed benefit for the five year phase-in also assumes the benefit commencement age is 59.

Smith: PC3+PC4 benefit - 5 year phase-ins	
Date of birth	01/01/47
01/01/06 age	59
Date of hire	01/01/80
01/01/06 service	26
01/01/06 three year average compensation	70,000 = $1/3(65,000+70,000+75,000)$
Vesting percentage	100% (any vesting schedule)
Pre-2002 plan ERF, age 59	64% = $1 - 6\%(65-59)$
Pre-2002 plan vested accrued benefit, retirement at 59	1,941.33 = $(64\%)(26)(2\%)(70,000) / 12$
Full years plan has been in effect	5
Phase-in	1,941.33
01/01/02 plan ERF, age 59	88% = $1 - 2\%(65-59)$
01/01/02 plan vested accrued benefit, retirement at 59	2,669.33 = $(88\%)(26)(2\%)(70,000) / 12$ 2,422.67 (MGB applies)
Guaranteeable benefit increase	481.34 = $2,422.67 - 1,941.33$
Full years plan has been in effect	4
4 year phase-in	$80\%(481.34)$ or 80/mo. = 385.07
Total PC3+PC4 benefit	2,326.40 = $1,941.33 + 385.07$

The monthly benefit assigned to PC4 equals 2,326.40 minus the PC3 benefit of 881.67, or 1,444.74. The annual amount is 17,336.83.

Answer is B

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Problem 26 - Page 1

Similar to 2003 #17

This is one of the few questions on the DB / DC cross testing gateway rules. The key to this question is that you are not allowed to use restructured plans to meet the gateway.

You are told that the plans are permissively aggregated for testing. In addition, the plans don't satisfy either of these DB / DC cross testing gateway rules:

- Broadly available separate plans
- Primarily defined benefit in character

Since you can't use the restructured plans, you must aggregate all the plans. In order to do the nondiscrimination testing on a benefits basis for all plans, you must satisfy one of the DB / DC cross testing gateway rules. The only one left that you can satisfy is the minimum aggregate allocation gateway.

The minimum aggregate allocation gateway consists of two different rules. The plan only has to satisfy one of the two rules.

This gateway test requires you to calculate an equivalent normal allocation rate under the DB plans. The test uses the aggregate allocation rate for the aggregated DB/DC plan. You are not allowed to impute permitted disparity in determining the allocation rates.

To satisfy this gateway test, the NHCEs must have an allocation rate equal to at least 1/3 of the highest allocation rate for any HCE in the plan, if the HCE rate is 15% or less. If the HCE rate is above 15%, but less than or equal to 25%, then the minimum allocation rate for the NHCEs is 5%.

If the HCE rate is above 25%, but less than or equal to 30%, then the minimum allocation rate for the NHCEs is 6%. For each higher range of 5% for the HCE rate, the NHCE minimum allocation rate is 1/5 of the top end of the range.

The first step is to calculate the equivalent allocation rates for the HCEs. In this problem, you are given the result for Plan X (which is a subset of the employees in Plan C) as 22%. You are given the result for Plan Y (which includes Plan A, Plan B, and the remaining employees in Plan C) as 27%.

The highest HCE rate is 27%, which means that the lowest allowable NHCE rate is 6%. Based on that rate, the aggregated DB / DC plan does pass this cross testing gateway.

Answer is D

This is a very short 4 point problem.

(see notes on next page)

Problem 26 - Page 2

NOTES:

There is a lot more to this minimum aggregate allocation gateway, which we could ignore for the problem solution:

- A second alternative rule is that each NHCE has an allocation rate of 7.5% or more. This calculation must use a 415(c) definition of compensation, which is essentially total compensation. Total compensation is used so the dollar allocation based on the 7.5% rate is as large as possible.
- One thing to realize is that not all NHCEs would get this minimum allocation. The only ones who must receive the minimum allocation are those participants that also benefit under the profit sharing plan.
- One final wrinkle in this gateway is that you have a more favorable alternative than requiring every NHCE to receive the minimum aggregate allocation. Instead of using each participant's equivalent normal allocation rate under the DB plan, you can use the average of the equivalent normal allocation rate under the DB plan for all NHCEs benefiting under the plan.

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Problem 27 - Page 1

The problem says that Company A makes the smallest possible contribution to avoid the 4010 filing. That means the total Unfunded Vested Benefits (UVB) must be 50,000,000 or less.

Under PBGC Technical Update 96-3, there are several options for the calculation of the UVB:

Unfunded Vested Benefit Calculation Method	Interest Rate	Asset Value
General Method	85% of 30-year Treasury rate	Actuarial Value
Alternative Calculation Method:		
Valuation as of the first day of the plan year	85% of 30-year Treasury rate	Actuarial Value
Other valuation dates	85% of 30-year Treasury rate	Market Value

The problem asks for the smallest “possible contribution”. That means you should think about BOTH the General Rule and the Alternative Calculation Method (ACM) to see which gives the better result.

The problem gives you valuation results at 12/31/05, which appears to be the valuation date. One key to the problem is that you must use the General Rule to calculate the UVB.

The reason is that the ACM requires you to adjust values at the first day of plan year prior to snapshot date. You can’t do that, since you don’t have any values given at 01/01/05.

Here is a summary of the calculations under the General Rule:

- Value vested current liability (VCL) and assets at snapshot date (12/31/05)
- In general, use the required interest rate (RIR) to value the VCL. You can use the current liability rate, if it is less than the RIR (because the VCL is greater using the current liability rate).
- Reduce the AAV by any receivables, and add back the discounted value of the receivables using the valuation interest rate.

Plan B

Under the General Rule, Plan B's unfunded vested CL is zero = 50,000,000 - 53,000,000.

You can not use the excess of assets over the VCL to reduce the UVB for other plans. In general, you must ignore any plans with a zero UVB.

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Problem 27 - Page 2

Plan A

Under the General Rule, Plan A's unfunded vested CL is $60,000,000 = 300,000,000 - 240,000,000$.

So we need to contribute enough to reduce this to 50,000,000 at 12/31/05. The contribution is worth 10,000,000 at 12/31/05.

Since this is a receivable contribution, it will be discounted from 04/15/2006 at the valuation interest rate:

$$\begin{aligned} 10,000,000 &= X * (1.08)^{-(3.5/12)} \\ X &= 10,227,008 \end{aligned}$$

Answer is C

NOTES:

1. It isn't really clear that the valuation date is 12/31/05. If you assume that the valuation date is 01/01/05, then you still end up using the General Method.
2. Here is the definition of the assets to use for the VRP calculation from the PBGC-1 instructions:
"General Rule filers: Enter the actuarial value of the plan's assets determined in accordance with ERISA section 302(c)(2) without a reduction for any credit balance in the funding standard account.

ACM filers: Enter the value of assets as reported on the XXXX Schedule B, item 1b(2), if the date reported on the XXXX Schedule B, item 1a, is the first day of the XXXX plan year. But, if that date is not the first day of the XXXX plan year, enter the value of assets as of the first day of the XXXX plan year, as reported in item 2a of the same Schedule B."

Item 1b(2) refers to the actuarial value of assets, and item 2a refers to the market value of assets.
3. The Alternative Calculation Method (ACM) normally uses current liability values from the prior year's Schedule B. The adjusted liability values allow for the difference between the current liability interest rate and the required interest rate.

(notes continued on next page)

Problem 27 - Page 3

4. Here is a summary of the differences between the General Rule and the Alternative Calculation Method:

General Rule

=====

- Value vested CL and assets at snapshot date
- In general, use RIR to value vested CL. Can use current liability rate, if rate is less than the RIR (VCL is greater using current liability rate).
- Reduce AAV by receivables, add back discounted value using valuation interest rate.

Alternative Calculation Method

=====

- Value vested CL and assets at first day of plan year prior to snapshot date
- In general, use current liability rate to value vested CL. Must use complex formula to adjust the vested CL to allow for difference between current liability rate and the RIR.
- Can use RIR, if greater than the current liability rate (VCL is greater using current liability rate). If using RIR, then you do NOT need to adjust the vested CL.
- Reduce AAV by receivables, add back discounted value using RIR.
- Use AAV if valuation date is 1st day of plan year. Otherwise, use MVA on 1st day of plan year.
- Must use RIR to roll forward the unfunded vested CL to snapshot date.

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Problem 28 – Page 1

Similar to 2005 #24

This is a typical §415 problem. The key point of the problem is the calculation of the actuarial reduction to the §415 dollar limit prior to age 62.

Starting in 1997, earnings under §415 is defined as total compensation (not taxable). Earnings under §415 is not subject to the §401(a)(17) limit.

At 01/01/05

Age	54
Service	27 years
Participation	1 year

PLAN BENEFIT

Accrued benefit at age 65 = 40,400 * 25% = 10,100

Early retirement benefit at age 54 = 10,100 (unreduced)

415 COMP LIMIT

The §415(b)(1)(B) compensation limit is reduced when service is less than ten years.

§415 compensation limit = 40,400 * (10/10)
= 40,400

415 DOLLAR LIMIT

Under §415(b)(1)(A), the dollar limit is reduced when participation is less than ten years.

§415 dollar limit during 2006 = 175,000 at age 62 * (1/10)
= 17,500

§415(b)(2)(E)(i) says to use the greater of 5% and the interest rate specified in the plan to reduce the §415 dollar limit prior to age 62. The examples in Revenue Ruling 98-1 clarify that the §415 dollar limit is reduced using the lower of the factors calculated based on the mandated mortality and interest rate, and plan basis for optional forms.

In this problem, you are given the factors for $\ddot{a}_{54}^{(12)}$ and $\ddot{a}_{62}^{(12)}$ on several bases. You are not given any factors for the probability of survival. This is consistent with the definition of the death benefit under the plan.

With a death benefit that is equal to 100% of the present value of the accrued benefit, there is no risk of forfeiting the benefit. Since there is no mortality risk involved, the actuarial reduction prior to age 62 is calculated using the ratio of the annuity values, discounted with interest.

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Problem 28 - Page 2

$$\text{Actuarial reduction from 62 to 54} = v^8(\ddot{a}_{62}^{(12)} / \ddot{a}_{54}^{(12)})$$

$$\begin{aligned}\text{Actuarial reduction from 62 to 54} \\ \text{(Mandated basis 5\% app. mortality)} &= (1.05)^{-8}(12.68/14.82) \\ &= .5791\end{aligned}$$

One detail in this problem is the definition of the reduction from age 62 to age 54 on the plan's optional form basis. In this problem, no basis is specified for the factors. You are told that there is no early retirement reduction for this participant before age 65.

The example in Q-7 of Revenue Ruling 98-1 calculates the actuarial reduction on the plan basis as the ratio of the plan's "tabular" reduction factor at the early retirement age to the factor at age 62.

$$\begin{aligned}\text{Actuarial reduction from 62 to 54} &= \text{ERF}_{54} / \text{ERF}_{62} \\ \text{(plan "tabular" basis)} &= 1.00\end{aligned}$$

$$\begin{aligned}\$415 \text{ dollar limit at age 54} &= 17,500 * \text{lesser of } [.5791 \text{ or } 1.00] \\ &= 10,134\end{aligned}$$

The 415 limit on a life annuity basis is the lesser of the compensation limit of 40,400 and the dollar limit of 10,134.

FORM OF PAYMENT

You need to calculate the adjustment factors to allow for payment on the normal form of 20 year certain and life. IRC §415(b)(2)(E)(i) says to use the lesser of 5% and the interest rate specified in the plan to adjust the \$415 dollar limit for form of payment. But you actually calculate two separate factors, and use the lesser of the two results.

The 415 limit must be adjusted to the 20 year certain and life normal form using this factor:

$$\ddot{a}_{54}^{(12)} / \ddot{a}_{54:\overline{20}|}^{(12)}$$

$$\begin{aligned}\text{20 year certain and life adjustment} &= 14.82 / 15.50 && \text{(at 5.0\%)} \\ \text{(Mandated basis 5\% app. mortality)} &= .9561\end{aligned}$$

There is a defect in this problem, which is that you don't have factors on the plan basis to calculate the adjustment from a life annuity to the 20 year certain and life normal form. As a result, this problem was identified as defective, and everyone was given credit for it.

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Problem 28 - Page 3

Based on the mandated factor, the 415 limit on the 20 year certain and life normal form is $9,689.72 = .9561(10,134)$.

The final trick to the problem is the 415(b)(4) floor of 10,000. This value would be reduced if the participant had service less than 10 years.

There is no form of payment adjustment on the 10,000 floor. The final 415 limit is 10,000.

Answer is C

NOTES:

1. The plan basis form adjustment factor for the 20 year certain and life normal form is immaterial. If the plan basis factor produced a lower result than .9561, the final 415 limit is still the 415 floor of 10,000. If the plan basis factor produced a higher result than .9561, the 415 limit is still reduced to 9,689.72, since it is based on the lesser of the two factors.
2. The 415 limit does not have to be reduced if the payment form is a qualified joint and survivor annuity.
3. In general, the adjustment of the 415 limit for form of payment on the mandated basis uses the 5% interest rate. When the form of payment is subject to 417(e)(3), such as a certain only annuity, or a lump sum, the mandated basis uses the applicable interest rate instead of the 5% interest.

2006 EA-2B Exam Solutions

Problem 29 - Page 1

Similar to <i>EA-2A</i> 2001 #33

The problem asks for the outstanding balance of the funding standard account bases for Plan C after the spinoff. You know what the total amount is for Plan A prior to the spinoff:

$$\text{UAL} = \text{O/S 412 bases} - \text{CB} - \text{ARA}$$

$$\begin{aligned}\text{O/S 412 bases} &= \text{UAL} + \text{CB} + \text{ARA} \\ &= \text{AL} - \text{AAV} + \text{CB} + \text{ARA} \\ &= 5,000,000 - 3,700,000 + 1,000,000 + \text{zero} \\ &= 2,300,000\end{aligned}$$

In order to determine the value for Plan C, you need to allocate the AAV and the CB to each plan. The rules for doing this are contained in Revenue Ruling 81-212 and Revenue Ruling 86-47.

Credit balance allocation

Revenue Ruling 81-212 contains acceptable methods used to allocate Minimum Funding Standard Account items when a plan is spun off into two or more plans. Revenue Ruling 86-47 contains different rules which must be used when the market value of assets exceeds the present value of benefits on a termination basis (before the plan is spun off), or when one of the spun off plans has a zero UAL.

RR 86-47 requires the allocation of the credit balance in a specific manner:

1. Determine the lesser of (MVA - CB) or PV of accrued benefits for the single plan.
2. Allocate the lesser amount between the spun-off plans on a termination basis.
3. Calculate the excess of the market value of assets allocated to each plan over the amount allocated in step 2
4. The credit balance is allocated based on the excess calculated in step 3

For Plan A, the MVA minus the CB is 4,000,000 - 1,000,000, or 3,000,000. The PV of accrued benefits is 6,300,000, which is greater. You already have the values for PVAB allocated on a plan termination basis. What you need to complete the allocation of the credit balance is the allocated market value of assets.

Market value allocation

You can allocate the net amount of 3,000,000 to each spun off plan using this allocation rule: 100% PC3 + 47.5% PC4. The value of 47.5% is calculated as follows:

$$\begin{aligned}47.5\% &= (\text{MVA} - \text{CB} - \text{PC3}) / \text{PC4} \\ &= (4,000,000 - 1,000,000 - 1,100,000) / 4,000,000\end{aligned}$$

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Problem 29 - Page 2

You can allocate the market value of 4,000,000 to each spun off plan using this allocation rule: 100% PC3 + 72.5% PC4. The value of 72.5% is calculated as follows:

$$\begin{aligned} 72.5\% &= (\text{MVA} - \text{PC3}) / \text{PC4} \\ &= (4,000,000 - 1,100,000) / 4,000,000 \end{aligned}$$

	Total Plan A	Plan B	Plan C
(1) Lesser of MVA-CB and PVAB on PBGC basis	3,000,000		
(2) Step "A": Allocate (1) on PBGC basis	3,000,000	2,425,000	575,000
(3) Allocate market value on PBGC basis	4,000,000	3,175,000	825,000
(4) Market value less Step "A": (3) - (2)	1,000,000	750,000	250,000
(5) Allocate credit balance: 100% * (4)	1,000,000	750,000	250,000

Outstanding bases allocation

Revenue Ruling 81-212 contains acceptable methods used to allocate Minimum Funding Standard Account items when a plan is spun off into two or more plans. It has a fairly complicated rule that is used to allocate the outstanding 412 bases for aggregate type cost methods.

In this problem, you can directly write down the UAL for each spun off plan. The only allocation that you have to make is for the AAV. In Revenue Ruling 81-212, it states that you should allocate the AAV using the market value of assets:

$$\begin{aligned} \text{AAV} / \text{MVA} &= 3,700,000 / 4,000,000 \\ &= 92.5\% \end{aligned}$$

	Total Plan A	Plan B	Plan C
(1) Allocate market value on PBGC basis	4,000,000	3,175,000	825,000
(2) Allocate AAV on market value	3,700,000	2,936,875	763,125
(3) Accrued liability (given)	5,000,000	3,000,000	2,000,000
(4) UAL = AL - AAV = (3) - (2)	1,300,000	63,125	1,236,875
(5) Allocated credit balance	1,000,000	750,000	250,000
(6) O/S bases = UAL + CB = (4) + (5)	2,300,000	813,125	1,486,875

Answer is C

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Problem 30 - Page 1

Similar to 2001 #19

Revised 04/25/07

Based on the measurement period, the method to calculate accrual rates is the "Annual method". You should use the given increase in the accrued benefit for 2006. You must determine the most valuable form of payment at each benefit commencement age up to testing age (65). The Qualified J&S form is always the most valuable form of benefit payment (as defined in the 1.401(a)(4) regulation).

You calculate the most valuable accrual rate (MVAR) by dividing the greatest normalized Δ accrued benefit by average annual compensation. In this problem, you are not given any detailed compensation data, so you should use the "average compensation" instead.

The problem gives you the snapshot testing date as 01/01/2006. Most prior exam problems had an end of the year testing date.

Smith

Smith is age 64 at 1/1/2006, and is eligible for early retirement. To calculate the most valuable accrual rate, you need to allow for payment at ages 64 to 65, converted to a QJ&S form. The normalized benefit reflects a life annuity payment form at testing age 65:

Δ							
Accrued		Early ret			50% J&S		Normalized
Age	Benefit	ERF	J&S	J&S benefit	Annuity	Interest	Δ Benefit
	(1)	(2)	(3)	(4)=(1)(2)(3)	(5)	(6)	(4)(5)(6) / 7.95
64	10,500	1.00	1.0	10,500	8.89	(1.085) ¹	12,740
65	10,500	1.00	1.0	10,500	8.72	1.0000	N/A

It should be clear that you don't need to do calculations after age 64, since the factors for annuity form and interest accumulation are lower than at age 64. Now use the greatest normalized benefit, and divide by the given testing compensation to determine the accrual rate:

$$\text{MVAR} = 15.92\% = 12,740 / 80,000$$

Jones

Jones is age 34 at 1/1/2006, and will be eligible for early retirement at age 63.

Δ							
Accrued		Early ret			50% J&S		Normalized
Age	Benefit	ERF	J&S	J&S benefit	Annuity	Interest	Δ Benefit
	(1)	(2)	(3)	(4)=(1)(2)(3)	(5)	(6)	(4)(5)(6) / 7.95
63	4,500	1.00	1.0	4,500	9.06	(1.085) ²	6,037
64	4,500	1.00	1.0	4,500	8.89	(1.085) ¹	N/A
65	4,500	1.00	1.0	4,500	8.72	1.0000	N/A

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Problem 30 - Page 2

It should be clear that you don't need to do calculations for Jones after age 63, since the factors for annuity form and interest accumulation are lower than at age 63. Now use the greatest normalized benefit, and divide by the given testing compensation to determine the accrual rate:

$$\text{MVAR} = 12.07\% = 6,037 / 50,000$$

The sum of the MVAR is $28.0\% = 15.92\% + 12.07\%$

Answer is D

2006 EA-2B Exam Solutions

Problem 31

I. FALSE

All participants receive the notice. See IRC 417(a)(3).

II. FALSE

See Q&A-1 of the 54.4980F regulation.

III. FALSE

You are exempt from the PBGC notice requirement if you would be exempt from the 412(l) additional funding charge solely based on the funded current liability percentage (FCL%), regardless of the number of participants. You are exempt if (i) the FCL% is 90% or more, or (ii) it is 80% or more this year, and the FCL% is greater than or equal to 90% for two consecutive years of the prior three.

The plan is not exempt from the PBGC notice requirement solely based on the number of plan participants.

None of these items are True.

Answer is E

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Problem 32

Similar to 2005 #20

The PBGC-1 form has an exemption from the Variable Rate Premium for plans whose contributions in the prior year are greater than or equal to the Full Funding Limitation.

In PBGC Technical Update 00-4, it states:

“ ... a plan qualifies for the PBGC FFL Exemption for a plan year if the sum of contributions to the plan for the prior year (including any interest credited under the funding standard account) and any credit balance in the funding standard account (including interest to the end of the plan year) is not less than the full funding limitation under Code section 412(c)(7). “

Based on this guidance, the calculation of the Full Funding Limitation should be the same as that used for minimum funding under IRC 412. The amount of the contribution is NOT compared directly to the amount of the Full Funding Limitation, since allowance is made for the amount of the credit balance.

$$\begin{aligned} 412 \text{ "ERISA" FFL} &= (1+i)[AL + NC - (\text{Lesser}(MV, AAV) - CB)] \\ &= 1.075[(5,100,000 + 450,000) - (5,100,000 - 250,000)] \\ &= 752,500 \end{aligned}$$

$$\begin{aligned} 412 \text{ "RPA" FFL} &= 90\%(12/31 \text{ RPA CL} + NC - [{}_eBP+i]) - \{(1+i)*AAV - [{}_eBP+i]\} \\ &= 90\%*1.061*(6,100,000 + 550,000 - 450,000) - 1.075*(5,100,000 - 450,000) \\ &= 921,630 \end{aligned}$$

$$\begin{aligned} 412 \text{ final FFL} &= \text{Greater of RPA FFL and ERISA FFL} \\ &= 921,630 \end{aligned}$$

The amount of the 12/31 contribution that would need to be made is the difference between the 412 Full Funding Limitation (always at EOY) and the credit balance at 12/31/05. The result is $652,880 = 921,630 \text{ FFL} - 1.075*(250,000 \text{ CB at } 12/31/05)$.

The sponsor already paid a 2005 contribution of 315,000 at 12/31/05. The remaining contribution they need to pay is $337,880 = 652,880 - 315,000$. The plan would then be exempt from the Variable Rate Premium for 2006.

Answer is B

NOTES

1. If you forgot the interest adjustment on the credit balance, you got lucky. The result of 356,630 is also in answer range B.
2. It is not 100% clear how much interest should be credited on the expected benefit payments. The simplest approach uses a full year. If you decide to use $\frac{1}{2}$ year of interest, the resulting contribution is 333,358 (simple interest). This is also in answer range B.

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Problem 33 – Page 1

Similar to 2005 #21

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.

1.410(b)-7(e) states that "all plans in the testing group" must be taken into account for the average benefit percentage test. It goes on to define "all plans in the testing group" as the plan being tested, plus all plans that could be permissively aggregated under 1.410(b)-7(d). This permissive aggregation for ABPT ignores

- 1.410(b)-7(d)(4) QSLOB rule
- 1.410(b)-7(d)(5) requirement re: same plan years
- Mandatory disaggregation rules for 401(k) / 401(m), and ESOP / non ESOP

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.

You are doing the 410(b) average benefit percentage test (ABPT) for 2006. You need to aggregate all the benefit percentages of the employer's plans to do the ABPT calculations.

You are aggregating a DB plan (Plan A) with a DC plan (Plan B). Since the data given in the problem for Plan A is the "equivalent normal allocation rate", both plans are tested on a contributions basis.

The key point of the problem is identifying the excludable employees. Since NHCE5 terminated with more than 500 hours, they are not excludable.

	Equivalent normal allocation rate Plan A	Initial Allocation rate Plan B	Total
HCE	8.40%	0.00%	8.40%
NHCE 1	2.10%	3.85%	5.95%
NHCE 2	9.10%	1.65%	10.75%
NHCE 3	0.00%	1.30%	1.30%
NHCE 4	8.40%	1.65%	10.05%
NHCE 5	0.00%	0.00%	0.00%
Total			28.05%

The average benefit percentage test result is the ratio of the NHCE result divided by the HCE result:

$$66.79\% = (28.05\% / 5) / 8.40\%$$

Problem 33 – Page 2

Revised 05/07/08

You are told that the plan is amended to make an additional contribution of X for NHCE3. You need to solve for the value of X so the plan passes the ABPT:

$$\begin{aligned} 70.00\% &= ([28.05\% + X]/5) / 8.40\% \\ X &= 70\%(8.40\%)(5) - 28.05\% \\ &= 1.35\% \end{aligned}$$

The answer ranges are expressed in terms of the dollar value of X:

$$675 = 1.35\%(50,000)$$

Answer is C

NOTES:

1. You don't have to satisfy a cross testing gateway to test a DB plan on a contributions basis. The reason is that this approach generally makes it harder to pass the non-discrimination test.
2. This problem did not test the concept of different eligibility conditions for the two plans. Assume the plans did have different eligibilities. When Plan A is tested alone, you would use its eligibility requirement to identify who is excludable for the ratio percentage test (and similarly for Plan B). When the plans are aggregated, you would treat as excludable all employees who don't satisfy either plan's eligibility condition.

For the ABPT calculation, you must aggregate both plans. You would treat as excludable all employees who don't satisfy either plan's eligibility condition.

2006 EA-2B Exam Solutions

Problem 34

Similar to 2001 #36

Revised 04/29/19

In general, the Top Heavy (T-H) determination date is the last day of the preceding plan year. An exception to this is the first plan year, when the determination date is the last day of the first plan year. To determine if Plan A is T-H for the plan year ending December 31, 2006 the determination date would be December 31, 2005.

There are key employees in both Plan A and Plan C. These two plans are a required aggregation group, so you must combine the two plans to determine the T-H status.

One key point of the problem is that you can ignore Plan B, since it does not contain any key employees. If it did contain a key employee, it must be part of the required aggregation group (see 1.416-1 Q&A T-3). But Plan B would never be Top Heavy, since a plan whose benefits are subject to collective bargaining is not subject to the Top Heavy provisions (required minimum benefits and accelerated vesting).

If the entire aggregation group is T-H, then each of the plans would also be T-H for the year. Question T-23 of the 1.416-1 regulation requires you to use determination dates that fall within the same calendar year. The 2005 determination date for Plan C would be September 30, 2005.

Based on questions T-24 and T-25, the present value of accrued benefits for the DB plan (or account balance for the DC plan) is calculated as of the valuation date in the 12 month period ending on the determination date. Once you have identified the valuation dates for Plan A and Plan C, you can do the T-H determination.

There is one last step required. You need to think about key employee Smith, and how to handle the distributions that were paid to them. Since Smith terminated in 2004, they are not included in the valuation results for Plan A.

You should include any in-service distributions to key employees for the 5 years ending on the determination date. But you should exclude any employees who terminated more than one year prior to the determination date. Smith falls into both of these cases, so I think it is correct to exclude them entirely:

	Plan A	Plan C	Sum
2005 Determination date	12/31/05	09/30/05	
Valuation date within prior 12 months	12/31/05	10/01/04	
Key employees	900,000	500,000	1,400,000
Non-key employees	400,000	400,000	800,000

The Top heavy ratio is $63.64\% = 1,400,000 / (1,400,000 + 800,000)$

Answer is B

NOTE:

Some actuaries disagree that Smith should be excluded from the Top Heavy ratio. This would produce a result of $64.84\% = 1,475 / 2,275$. This matches the answer key, which shows range C. This problem was identified as defective, and everyone was given credit.

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Problem 35 – Page 1

Revised 04/24/08

This is a simplified §415 problem. The key point of the problem is the calculation of the reductions in the §415 compensation limit and dollar limit based on less than 10 years of service or participation service.

	<u>Smith</u>	<u>Jones</u>	<u>Brown</u>
Date of hire	01/01/91	01/01/91	01/01/05
Date of entry	01/01/04	01/01/04	01/01/06
01/01/06 service	15.0	15.0	1.0
01/01/06 participation	2.0	2.0	0.0
Accrued benefit	$2,400 * 15$ $= 36,000$	$2,400 * 15$ $= 36,000$	$2,400 * 1$ $= 2,400$

Both Smith and Jones' entry dates are at the plan effective date. Brown entered the plan based on the plan entry condition given in the problem.

The §415(b)(1)(B) compensation limit is reduced when service is less than ten years. Under §415(b)(1)(A), the dollar limit is reduced when participation is less than ten years.

The §415 dollar limit during 2006 is 175,000 at ages 62 to 65. The problem asks for the accrued benefit, which is (by definition) assumed payable at normal retirement age (NRA). Based on the exam condition 6, you should assume NRA is 65.

	<u>Smith</u>	<u>Jones</u>	<u>Brown</u>
Compensation	30,000	195,000	7,500
415 Compensation limit	$30,000 * 10/10$ $= 30,000$	$195,000 * 10/10$ $= 195,000$	$7,500 * 1/10$ $= 750$
415 Dollar limit	$175,000 * 2/10$ $= 35,000$	$175,000 * 2/10$ $= 35,000$	$175,000 * 1/10$ $= 17,500$

Even though Brown has zero participation service, their dollar limit is not zero. In §415(b)(5)(C), it states that the pro-rata reduction would never be less than 1/10.

The real point of this problem is that you must allow for the §415(b)(4) "10,000 floor", based on exam condition 30. The 10,000 floor is not adjusted for benefit commencement age, or form of payment. The 10,000 floor is reduced when service is less than ten years.

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Problem 35 – Page 2

	<u>Smith</u>	<u>Jones</u>	<u>Brown</u>
415 floor	$10,000 * 10/10$ $= 10,000$	$10,000 * 10/10$ $= 10,000$	$10,000 * 1/10$ $= 1,000$
Final 415 limit, lesser of comp and dollar limits, but not less than floor	30,000	35,000	1,000
Final accrued benefit	30,000	35,000	1,000

The sum of the accrued benefits is $66,000 = 30,000 + 35,000 + 1,000$.

Answer is B

2006 EA-2B Exam Solutions

Problem 36 – Page 1

Revised 05/07/10

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.

1.410(b)-7(e) states that "all plans in the testing group" must be taken into account for the average benefit percentage test. It goes on to define "all plans in the testing group" as the plan being tested, plus all plans that could be permissively aggregated under 1.410(b)-7(d). This permissive aggregation for ABPT ignores

- 1.410(b)-7(d)(4) QSLOB rule
- 1.410(b)-7(d)(5) requirement re: same plan years
- Mandatory disaggregation rules for 401(k) / 401(m), and ESOP / non ESOP

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.

In general, the benefit accrual rate is defined as the normal accrual rate. The key point of the problem is that plan A has a very small reduction in benefits for early retirement.

In the regulation at 1.410(b)-5(d)(7), it requires you to use the most valuable accrual rate when the average early retirement reduction for any age (within 5 years of normal retirement age) is less than 4% per year. If this is true for any plan, then you must use the most valuable accrual rate for the average benefit percentage test for ALL plans.

There is an exception where the subsidized early retirement reductions are "currently available" [under 1.401(a)(4)-4] and the resulting ratio percentage is at least 70%. First, you should check to see if the plans satisfy the exception.

The determination of whether a benefit is "currently available" ignores whether or not a participant could ever become eligible for that benefit (unless you are testing an early retirement window). You need to calculate the ratio percentage test result for the entire testing group. The numerators of the fractions will only include participants from Plan A. The denominators include participants in both plans:

	Number	Number	
<u>Group</u>	<u>Plan A</u>	<u>Plan B</u>	<u>Total</u>
HCE	10	10	20
NHCE	10	90	100

$$\begin{aligned}\text{Ratio\%} &= (10 / 100) / (10 / 20) \\ &= 20\%\end{aligned}$$

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Problem 36 – Page 2

Revised 04/24/08

Based on the prior calculation, the subsidized retirement factors are not currently available. You should use the most valuable accrual rates for all plans to determine the average benefit percentage test result:

<u>Group</u>	<u>Number</u> <u>Plan A</u>	<u>Most valuable</u> <u>accrual rate</u> <u>Plan A</u>	<u>Number</u> <u>Plan B</u>	<u>Most valuable</u> <u>accrual rate</u> <u>Plan B</u>	<u>Total</u>
HCE	10	3.4%	10	2.4%	34%+24% = 58%
NHCE	10	2.5%	90	2.0%	25%+180% = 205%

The average benefit percentage test result is the ratio of the NHCE result divided by the HCE result:

$$70.69\% = (205\% / 100) / (58\% / 20)$$

Answer is B

NOTE:

If you incorrectly use the normal accrual rates, you will get the wrong answer range:

$$\begin{aligned} \text{ABPT} &= ([10 \times 1.5\% + 90 \times 1.5\%] / 100) / ([10 \times 2.0\% + 10 \times 1.8\%] / 20) \\ 78.95\% &= (150\% / 100) / (38\% / 20) \end{aligned}$$

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Problem 37

Similar to 2004 #40

This is the first time they asked a question on this somewhat unusual situation. The simplest assumption is that Employer A must pay the withdrawal liability, since Employer B can't pay.

ERISA Section 4204(a)(1) implies that there normally would be a withdrawal liability (for the seller) when a sale occurs. But there is no withdrawal liability if three conditions are met. Since Employer B stopped contributing within 5 years of the sale, ERISA Section 4204(a)(2) states that there would be a withdrawal liability for Employer A:

“(2) If the purchaser—
(A) withdraws before the last day of the fifth plan year beginning after the sale, and
(B) fails to make any withdrawal liability payment when due, then the seller shall pay to the plan an amount equal to the payment that would have been due from the seller but for this section.”

Under the Rolling Five Method, the calculation of withdrawal liability is relatively simple. Assuming the withdrawal occurred in 2004, you should use the UVB at 12/31/2003. Employer A's share of the 12/31/2003 UVB is based on the ratio of employer A's contributions to the total contributions in the prior five years.

YEAR:	1999	2000	2001	2002	2003
ER share=	$3,000,000 * \left(\frac{30,000 + 35,000 + 35,000 + 40,000 + 45,000}{350,000 + 350,000 + 400,000 + 450,000 + 450,000} \right)$				
ER share=	$3,000,000 * \frac{185,000}{2,000,000}$				
	$= 277,500$				

After determining Employer A'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.

Since the employer's share exceeds 150,000, the deductible is zero. The final withdrawal liability equals 277,500.

Answer is B

NOTE:

The mandatory de minimis is the lesser of 50,000 or 3/4% of the plan's total UVB (.0075 * 3,000,000 = 22,500). The deductible is the de minimis amount reduced by the excess of the allocated UVB over 100,000. The deductible is 22,500 minus 177,500, which is zero.

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Problem 38

Similar to 2002 #21

Revised 04/26/09

§4980(a) of the Internal Revenue Code states that the excise tax upon reversion is 20%.

§4980(d) states that the excise tax increases to 50% unless either

- The employer establishes a “qualified replacement plan”, or
- The employer grants certain benefit increases prior to plan termination.

The general definition of a qualified replacement plan includes 95% participation by continuing employees from the terminating plan, plus an asset transfer of at least 25% of the excess assets. You can reduce the 25% asset transfer by the value of benefit improvements made within 60 days of the plan termination.

Instead of establishing a “qualified replacement plan”, the plan can grant benefit increases at plan termination. The benefit improvements must meet two criteria:

- Present value \geq 20% of the reversion (prior to the benefit changes)
- Uniform for all participants

In this problem, the employer has elected to establish a qualified replacement plan, and also to increase benefits at plan termination. The amount of the taxable reversion to the employer will be reduced by both the asset transfer to the qualified replacement plan, and the value of the benefit improvements.

Calculate the initial reversion amount as the difference between the market value of assets and the plan termination liability:

$$\text{Initial Reversion} = 400,000 = 4,400,000 - 4,000,000$$

The present value of the benefit improvements must be at least $80,000 = 20\%(400,000)$. This condition is satisfied, since the total increase in liabilities is $124,000 = 70,000 + 54,000$.

$$\text{Actual Reversion} = 196,000 = 400,000 - (124,000 \text{ ben. increase} + 80,000 \text{ transfer})$$

$$\text{Tax on reversion} = 39,200 = 20\%(196,000)$$

Answer is A

NOTE:

IRC 4980(d)(3)(b)(2) says the increases to non-active participants can not exceed 40% times [20% of the reversion (prior to the benefit changes)]. This limitation applies when the plan sponsor increases benefits at plan termination (instead of using a qualified replacement plan).

This limitation does not apply when the plan sponsor uses a qualified replacement plan under IRC 4980(d)(2).

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Problem 39 – Page 1

Similar to 2005 #30

Revised 06/13/06

This is a very messy PBGC guaranteed benefits question. This is one of the more complicated questions asked in recent years, because there are SO many tiny details.

This question tests your knowledge of the five year phase-in of guaranteed benefits. 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.

The PBGC maximum monthly guaranteed benefit (MGB) is defined as the lesser of the adjusted ERISA §4022(b) value, or the highest five year consecutive compensation. The MGB is defined assuming payment on a life annuity basis at age 65.

One key point of the problem is that, due to the change in normal form of benefits, you must normalize the prior plan 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.

Another key point of the problem is that you must reduce the MGB for benefit commencement ages before 65. The MGB should be adjusted based on the later of the age at DOPT, or the age at benefit commencement. Based on page 72 of the PBGC study note, it is correct to age adjust the MGB, even when it is based on the highest five year compensation. The MGB also must be reduced for the 100% Joint and Survivor normal form.

Both Smith and Jones are subject to the five year phase-in rules. The 01/01/90 plan has been in effect for five full years at DOPT. The 01/01/03 plan has been in effect for three full years at DOPT, from 01/01/03 to 01/01/06.

The five year phase-in of guaranteed benefits is based on the vested accrued benefit. Smith is less than 100% vested, since they only have 5 years of service.

	Smith: 5 year phase-ins	Jones: 5 year phase-ins
01/01/06 Age	45	58
01/01/06 Spouse Age	42	60
01/01/06 Past service	5	25
Substantial owner?	NO	NO
Vesting percentage	80%	100%
MGB at 65 (life annuity)	3,971.59	3,971.59
MGB at 65 (100% J&S)	$3,177.27 = .80 * 3,971.59$	$3,177.27 = .80 * 3,971.59$
MGB at 62 (100% J&S)	$2,510.04 = .79 * 3,177.27$	$2,510.04 = .79 * 3,177.27$

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Revised 06/13/06

	Smith: 5 year phase-ins	Jones: 5 year phase-ins
01/01/06 Age	45	58
01/01/06 Spouse Age	42	60
01/01/06 Past service	5	25
Substantial owner?	NO	NO
Vesting percentage	80%	100%

MGB at 62 (100% J&S)	2,510.04	2,510.04
Spouse age when partic is 62	59	64
MGB adjusted for age difference	$2,434.74 = .97 * 2,510.04$	$2,535.15 = 1.01 * 2,510.04$

01/01/90 Base plan benefit	100	100
01/01/90 Base plan benefit, 100% J&S form	$100(.80)(.97)$ $= 77.60$	$100(.80)(1.01)$ $= 80.80$
01/01/90 vested accrued benefit, 100% J&S form	$77.60(80\%)(5)$ $= 310.40$	$80.80(100\%)(25)$ $= 2,020.00$
Guaranteeable benefit increase	310.40	2,020.00
Years plan has been in effect	5	5
Phase-in	310.40	2,020.00

01/01/03 Base plan benefit	$110(80\%)(5)$ $= 440.00$	$110*(25)$ $= 2,750.00$ $= 2,535.15$ (hit MGB)
Guaranteeable benefit increase	$440.00 - 310.40$ $= 129.60$	$2,535.15 - 2,020.00$ $= 515.14$
Years plan has been in effect	3	3
3 year phase-in	$129.60(60\%)$ or \$60 $= 77.76$	$515.14(60\%)$ or \$60 $= 309.09$
Total guaranteed benefit	$310.40 + 77.76$ $= 388.16$	$2,020.00 + 309.09$ $= 2,329.09$

The sum of the guaranteed benefits is 2,717.25.

Answer is C

(See next page for notes)

Problem 39 – Page 3

Notes re: Guaranteed benefit calculations

1. The MGB does not increase beyond the year of plan termination. See Example 13 in Appendix A of the PBGC study note.
2. You should use the later of age at DOPT and age at benefit commencement for purposes of adjusting the MGB for age. See Example 16 in Appendix A of the PBGC study note.
3. You should use the form of payment in effect at the later of age at DOPT and age at benefit commencement for purposes of adjusting the MGB for form of payment. See Example 18 in Appendix A of the PBGC study note.
4. For retirements after DOPT, all benefit service accruals ceased at DOPT.
5. When calculating the phase-ins, the percent is more valuable when the amount of the Guaranteeable benefit increase exceeds 100. If it is less than 100, then the fixed dollar amount is more valuable. At 100, they both produce the same result.
6. In some problems, plan changes have different effective dates and adoption dates. For purposes of measuring the years that each plan was effective, you use the later of the effective date and the adoption date.

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Problem 40 – Page 1

The wording of the question implies that you are testing non-discrimination for 2006. In general, you should assume the testing date is the last day of the plan year.

The problem asks for the number of non-excludable employees. This is the total number of employees, less those who are excludable. There are many definitions of an excludable employee in the code and regulations:

- Do not satisfy plan's eligibility (age / service)
- Nonresident aliens
- Collectively bargained employees
- Qualified Separate Lines of Business (QSLOB)
- Terminating employees
- Governmental / tax exempt
- Former employees
- Former employees treated as employees

For this problem, you need to determine who is eligible to participate. In general, you can ignore the option to separately test the "Otherwise excludable employees", unless it is mentioned in the problem.

	<u>Date of hire</u>	<u>Date of termination</u>	<u>Date of rehire</u>	<u>2006 hours worked</u>
Employee 1	1/1/2005	9/15/2006		750
Employee 2	1/1/2005			750
Employee 3	1/1/2005			1,200
Employee 4	1/1/2005	3/1/2006		250
Employee 5	1/1/2005	5/1/2006	11/1/2006	1,050
Employee 6	1/1/2005	2/1/2006	12/1/2006	200

The handling of terminated employees is tricky. The rules in 1.410(b)-6(f)(1) specify that a terminating employee may be excludable if they satisfy six criteria:

1. Employee does not benefit under the plan for the year
2. Employee is eligible to participate
3. The plan has a minimum period of service, or a requirement of being employed on the last day to receive an allocation
4. Employee fails to receive an allocation due to failure to satisfy item 3
5. Employee terminates with no more than 500 hours, and is not an employee on last day of the plan year
6. If this paragraph is applied to any employee, it is applied to all employees for the year

Of the four terminated employees, only employee #4 satisfies the fifth criteria. Since they also satisfy the other five criteria, they are excludable.

Problem 40 – Page 2

Revised 04/25/07

You need to check the other two employees to see if they satisfied the plan's eligibility conditions. Employee 3 does not enter the plan until 2007, so they are excludable.

There are four non-excludable employees: 1, 2, 5 and 6.

Answer is D

NOTES:

1. Some problems have employees who are not covered under any plan. These employees should be counted in the denominator as non-excludable when determining the average benefit percentage for all the NHCEs. This is specified in the last sentence of 1.410(b)-5(c).
2. If a terminating employee is eligible for a 401(k) deferral, they do not satisfy the first criteria, and therefore must be treated as non-excludable (see 1.410(b)-3(a)(2)). They will not receive an allocation for the year, and their benefit percentage of zero will be used in the average benefit percentage test.

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Problem 41

Revised 04/22/09

This is the first question ever asked on professional service employers and PBGC coverage. Eventually, the sum total of all prior exam questions may actually test more than 5% of ERISA.

The key ideas are contained in ERISA Section 4021, which identifies plans covered by the PBGC.

“Act Sec. 4021

(b) This section does not apply to any plan--

(1) which is an individual account plan, as defined in paragraph (34) of section 3 of this Act

....

(13) established and maintained by a professional service employer which does not at any time after the date of enactment of this Act have more than 25 active participants in the plan.”

I. FALSE

This plan is not covered, and does not have to pay a PBGC premium. The plan was established at 01/01/2005. The number of participants (not employees) has never been more than 25.

II. TRUE

This plan is covered, and does have to pay a PBGC premium. The plan was established at 01/01/2005. The number of participants (not employees) was more than 25 at 07/01/05.

III. FALSE

Each of the eight partners owns 12.5% of the partnership, so they are all substantial owners. Based on ERISA Section 4021(b)(9), a plan maintained exclusively for substantial owners is not covered, and does not have to pay a PBGC premium.

Only item II is True.

Answer is C

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