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2010 EA-2B EXAM SOLUTIONS

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2010 EA-2B Exam Solutions

These solutions were prepared based on the law as in effect at December 31, 2009.

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!

Revision History:

May 14, 2019	Revised solution for problem 24
April 2, 2017	Revised solution for problem 31
March 10, 2017	Revised solution for problem 25
February 16, 2016	Revised solution for problem 3
February 26, 2015	Revised solution for problem 38
February 28, 2014	Added note at end of solution for problem 27
January 14, 2014	Added note at end of solution for problem 40
March 19, 2013	Revised solution for problem 35
April 27, 2012	Revised solutions for problems 8 and 26
April 7, 2012	Revised solutions for problems 24 and 29, added note to solution for problem 38
March 8, 2012	Revised solution for problem 27
April 23, 2011	Revised solutions for problems 16, 19 and 30
February 13, 2011	Original solutions

NOTES on 2010 exam

The 2010 was a typical exam in terms of difficulty. Note that the 2009 exam was much easier than earlier years' exams.

Exam Year	Pass Mark	Percentage Who passed	
2010	69	43.7	
2009	68	59.1	(not a typo!)
2008	63	37.2	
2007	59	39.2	
2006	54	37.6	
2005	61	35.5	
2004	56	34.0	
2003	55	36.2	
2002	47	32.6	

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Problem 1

Similar to 2009 #17

FALSE

This is similar to earlier exam questions on the regulations governing standards of performance of Enrolled Actuaries. At 901.20(c), the regulation states

"(c) Advice or explanations.

An enrolled actuary shall provide to the plan administrator upon appropriate request, supplemental advice or explanation relative to any report signed or certified by such enrolled actuary."

Since the request did not come from the plan administrator, the actuary does not have to comply with the request.

Answer is B

Problem 2

TRUE

This is a tiny detail in ERISA Section 4211, which allows for use of alternate methods to allocate unfunded vested benefits for multiemployer withdrawal liability calculations:

"4211(c)(5)(B)

The corporation may prescribe by regulation standard approaches for alternative methods, other than those set forth in the preceding paragraphs of this subsection, which a plan may adopt under subparagraph (A), for which the corporation may waive or modify the approval requirements of subparagraph (A). Any alternative method shall provide for the allocation of substantially all of a plan's unfunded vested benefits among employers who have an obligation to contribute under the plan."

Answer is A

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Problem 3

Similar to 2008 #37

Revised 02/16/16

TRUE

§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 the 60 days ending on the date of plan termination.

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

- Present value \geq 20% of the reversion (prior to the benefit changes)
- Uniform for all participants
- Benefit increases for non-active participants can not exceed 40% times [20% of the reversion (prior to the benefit changes)]

This problem states that the employer has elected not to establish a qualified replacement plan. Instead, they increase benefits at plan termination. The amount of the taxable reversion to the employer will be reduced 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. Let X represent the initial plan termination liability:

$$\begin{aligned}\text{Asset value} &= 1.50X \\ \text{Initial Reversion} &= 1.50X - X \\ &= .50X\end{aligned}$$

The increase in benefits at plan termination is 15% of X. As a percentage of the initial asset reversion, this is $30\% = .15X/.50X$. This is sufficient to reduce the excise tax to 20%.

Answer is A

Problem 4

FALSE

Since this is a collectively bargained plan, the annual funding notice must also be given to labor representatives.

Answer is B

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Problem 5

FALSE

IRC 436(d)(5) has an exception for de minimis payments that are below the 411(a)(11) involuntary cash out threshold. But a lump sum that returns employee contributions can exceed that threshold.

Answer is B

Problem 6

FALSE

There are several safe harbor plan designs under 401(a)(4) for defined benefit plans. Under the safe harbor for fractional accrual rule plans, the accrued benefit must satisfy the fractional rule under 411(b)(1)(C). The safe harbor has two additional requirements.

1. One requirement states that the employee's accrued benefit for any plan year before NRA must equal the product of the employee's fractional rule benefit (under 1.411(b)-(b)(3)(ii)(A)) and the ratio:
("years of service" / total projected "years of service").
2. In addition, the plan must meet one of three requirements at 1.401(a)(4)-3(b)(4)(i)(C)

Since the plan has a participation requirement, and the benefit formula is prorated using participation service, it does not meet the first requirement above.

Answer is B

NOTE

Here is the detailed description of the requirements at 1.401(a)(4)-3(b)(4)(i)(C):

1. It must be impossible for any employee to accrue a benefit for a year of service that is more than 33 1/3% greater than that accrued in any year by any other employee. This is based on actual and potential employees, but none with more than 33 years at NRA.
2. The benefit at NRA must be defined under the plan as a flat benefit. The participant's accrued benefit must be reduced on a pro-rata basis with less than 25 years of service.
3. Average Normal accrual rate (NAR) for non-excludable non-HCEs is $\geq 70\%$ * (Average NAR for non-excludable HCEs). This test is based on all non-excludable employees, even if NOT benefiting under the plan. All other plans are excluded for this test.

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Problem 7

FALSE

This is the second problem on the new vesting requirements for applicable defined benefit plans (a.k.a. cash balance plans) under IRC 411(a)(13). These plans must provide for 100% vesting after 3 years of service.

Answer is B

Problem 8

Revised 04/27/12

FALSE

The PBGC Form 10 lists numerous reportable events. In the general instructions, it states that the reportable events rules only apply to single employer plans. In the regulation at 4043.4(b), there is a waiver from reporting for multiemployer plans.

Answer is B

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Problem 9

Similar to 2009 #31

FALSE

The general rule is that the 204(h) notice must be provided at least 45 days before the effective date of any 204(h) amendment. For this plan, the notice is required 11/16/2010.

Answer is B

NOTE

There is a 15 day advance notice required for

- "business transactions", which includes acquisitions or dispositions
- Small plans (less than 100 participants)
- Multiemployer plans

Problem 10

FALSE

This question tests a detail from the 1.401(a)-1 regulation on retirement age. This plan can not use its own experience to set the normal retirement age lower than the industry norm.

In general, the normal retirement age (NRA) under a plan must be an age that is not earlier than the earliest age that is reasonably representative of the typical retirement age for the industry in which the covered workforce is employed.

See 1.401(a)-1(b)(2).

Answer is B

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Problem 11

TRUE

This question tests a small detail in the 1.417(e)-1 regulation. The regulation states that

- A plan can not distribute in a payment form other than a QJSA unless the QJSA is waived by participant and consented by spouse.
- A QJSA is an annuity that commences immediately. A plan can not satisfy the consent requirement by offering participant a choice between a lump sum and a deferred annuity payable at age 65

Answer is A

Problem 12

FALSE

Liability for any missing participants is part of the total plan termination liability, and the PBGC becomes responsible for providing benefits to them after termination. The 4050 PBGC Missing Participants regulation defines the amount of liability that must be calculated for the missing participants.

Answer is B

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Problem 13

TRUE

The termination premium applies to “DRA 2005” terminations as defined in 4007.13(a)(1). The termination date must be after 2005, and

- Involuntary termination under ERISA Section 4042, or
- Distress termination under ERISA Section 4041(c), where at least one contributing sponsor or member of the contributing sponsor’s controlled group meets the requirements in
 - ERISA Section 4041(c)(2)(B)(ii)
Reorganization in bankruptcy or insolvency proceedings, or
 - ERISA Section 4041(c)(2)(B)(iii)
Termination required to enable payment of debts while staying in business or to avoid unreasonably burdensome pension costs caused by declining workforce

Answer is A

Problem 14

TRUE

In Q&A-7 of the DOL field assistance bulletin NO. 2009-01, it describes the asset value for the annual funding notice:

“Plan administrators should report the fair market value of assets as of the last day of the plan year. For this purpose, the value may include contributions made after the end of the plan year to which the notice relates and before the date the notice is timely furnished but only if such contributions are attributable to such plan year for funding purposes.”

Answer is A

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Problem 15

FALSE

The key idea in this problem is the level of the presumed AFTAP for 2010. Since the AFTAP was not certified until July 1, 2010, the presumed AFTAP must be determined starting at January 1, 2010.

In the regulation at 1.436-1(h)(1)(ii), it defines the presumed AFTAP at January 1 as equal to the prior year's certified AFTAP. The January 1, 2010 presumed AFTAP is equal to 85%.

If the AFTAP is not certified by April 1, 2010, the value of the presumed AFTAP can change at that date. In the regulation at 1.436-1(h)(2)(iii)(A), it defines the April 1 presumed AFTAP as the prior year's AFTAP reduced by 10 percentage points. The reduction applies if the prior year's AFTAP is

- between 60% and 70%, or
- between 80% and 90%.

The April 1, 2010 presumed AFTAP is $75\% = 85\% - 10\%$. The plan then becomes subject to the restriction in IRC 436(d)(3). Starting on that date, the plan could no longer pay Smith their full lump sum.

Answer is B

Problem 16

Revised 04/22/11

TRUE

A money purchase plan is a defined contribution plan. This benefit definition violates IRC 411. Under 411(b)(2)(A), the allocation rate can not decrease due to advancing age.

Answer is A

Problem 17

TRUE

Since the controlled group includes one plan with a 2010 FTAP less than 80%, they are required to file under ERISA Section 4010. In the regulation at 4010.11, the reporting requirement is waived if the aggregate 4010 funding shortfall (for all plans maintained by controlled group members) does not exceed \$15 million. This calculation includes any exempt plans in the controlled group, but it ignores plans with no 4010 funding shortfall.

Answer is A

NOTE

The waiver under 4010.11 is not available if reporting is required by 4010.4(a)(2) or (a)(3):

“(2) Any member of the controlled group fails to make a required installment or other required payment to a plan and, as a result, the conditions for imposition of a lien described in ERISA section 303(k) and Code section 430(k) have been met during the information year, and the required installment or other required payment is not made within ten days after its due date; or

(3) Any plan maintained by a member of the controlled group has been granted one or more minimum funding waivers under ERISA section 302(c) and Code section 412(c) totaling in excess of \$1 million, and as of the end of the plan year ending within the information year, any portion thereof is still outstanding.”

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Problem 18

NOTE – Problems 18, 33 and 45 cover IRC 432, which is material from the EA-2A syllabus. In August of 2010, all three IRC 432 questions were removed from the EA-2B exam on the JBEA web site. All students were given credit for these three problems.

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Problem 19

Similar to 2008 #17

Revised 04/22/11

TRUE

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

Let X represent the participant count during 2010. If X satisfies either of these equations, then there is a reportable event:

$$75\%(1,000) > X \quad \rightarrow X < 750.00$$

$$80\%(801) > X \quad \rightarrow X < 640.80$$

To avoid having a reportable event, the participant count must be at least 750 during the 2010 plan year. A reportable event occurred when the participant count dropped to 720 at 07/01/2010.

Answer is A

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Problem 20

FALSE

According to ERISA, a fiduciary is any person so named in the plan document or any person who exercises any discretionary authority or control with respect to the management or administration of the plan or its assets. See IRC Section 4975(e)(3).

Based on this description, Smith is not a fiduciary.

Answer is B

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Problem 21

FALSE

The situation described in the problem matches IRC 410(b)(6)(C). The merged plan gets a free pass on nondiscrimination testing for the 2010 plan year.

Answer is B

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Problem 22

Similar to 2009 #23

This is a very simple problem on calculating the variable rate premium (VRP). The key point is knowing the definition of the variable rate premium cap.

The unfunded vested benefits liability (UVB) is calculated as the excess of the premium funding target over the market value of assets. The market value includes the present value of any prior year contributions that are received by the date the premium filing. The contributions are discounted using the prior year's effective interest rate.

Ignoring the cap, you calculate the variable rate premium as .009 times the UVB. The UVB must be rounded up to the next higher multiple of 1,000:

$$\begin{aligned}\text{UVB} &= 1,830,000 - 1,200,000 \\ &= 630,000\end{aligned}$$

$$\begin{aligned}\text{VRP} &= 630,000 * .009 \\ &= 5,670\end{aligned}$$

The plan is eligible for the cap if there are 25 employees or less on the first day of the plan year. On 12/31/2009, you are told there are 24 active participants, plus 8 employees who are participants (apparently no longer actively employed). Since the total employee count is less than 25, the plan is eligible for the VRP cap.

The variable rate premium cap is calculated based on the number of plan participants, and it is equal to $\$5 * (\text{participant count})^2$. Based on the 12/31/2009 data, the total participant count is 32, which is $24 + 8$:

$$\begin{aligned}\text{VRP cap} &= 5(32)^2 \\ &= 5,120\end{aligned}$$

The VRP cap of 5,120 is less than the previously calculated value of 5,670. The problem asks for the total PBGC premium, which is the sum of the flat rate premium (FRP) and the VRP. The problem states that the 2010 flat rate premium is \$35 per participant:

$$\begin{aligned}\text{FRP} &= 35(32) \\ &= 1,120\end{aligned}$$

$$\begin{aligned}\text{FRP+VRP} &= 1,120 + 5,120 \\ &= 6,240\end{aligned}$$

Answer is D

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Problem 23 - Page 1

Similar to 1988 #11

This is the first problem on the Presumptive method in more than 20 years. Under the Presumptive Method, you must set up numerous pools of unfunded vested liability. The first pool is set up at the end of the plan year preceding enactment of MEPPAA in 1980.

In this problem you have no unfunded vested liability values prior to 12/31/2008. This appears to be an intentional simplification which significantly reduces the number of calculations required in the solution.

Under the Presumptive method, the pools of liability are assumed to decrease on a straight line basis, at 5% of the original amount per year. The difference between the actual UVB at any date and the expected amount for all prior pools of UVB creates a new pool of UVB.

At 12/31/2009, the expected amount for the first pool is 95% of 29,900,000 or 28,405,000. The amount of the second UVB pool is the difference between 28,405,000 and the actual UVB at 12/31/2009:

$$\begin{aligned} 12/31/2008 \text{ UVB pool: } 28,405,000 &= 29,900,000 * 95\% \\ 12/31/2009 \text{ UVB pool: } 7,495,000 &= 35,900,000 - 28,405,000 \end{aligned}$$

Employer A withdraws at 12/31/2010. The employer share of the withdrawal liability is based on the UVB value at the end of the plan year preceding the year of withdrawal. The 12/31/2009 UVB is separated into two pools: $35,900,000 = 7,495,000 + 28,405,000$.

Employer A's share of these pools of UVB is based on the ratio of employer A's contributions to the total contributions in the five years preceding the date of establishment of each pool:

$$\begin{aligned} \text{Share of 12/31/2008 pool: } & \begin{array}{ccccc} & 2004 & 2005 & 2006 & 2007 & 2008 \\ 28,405,000 * (& \frac{920,000}{11,500,000 + 13,600,000 + 14,800,000 + 12,700,000 + 11,200,000} + \end{array} \end{aligned}$$

$$\begin{aligned} \text{Share of 12/31/2009 pool: } & \begin{array}{ccccc} & 2005 & 2006 & 2007 & 2008 & 2009 \\ 7,495,000 * (& \frac{760,000}{13,600,000 + 14,800,000 + 12,700,000 + 11,200,000 + 14,000,000} + \end{array} \end{aligned}$$

Total employer share:

$$2,278,682 = 28,405,000 * (.064342) + 7,495,000 * (.060181)$$

Since the employer share exceeds 150,000, you do not need to calculate the de minimis amount or the deductible. The final employer withdrawal liability is 2,278,682.

Answer is D

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Problem 23 - Page 2

NOTE

In case you are not clear on why you can skip the deductible, here are the details:

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

The mandatory de minimis is the lesser of 50,000 or 3/4% of the plan's total UVB:

$$\begin{aligned}\text{De minimis} &= \text{Lesser of } 50,000 \text{ and } .0075 * 35,900,000 \\ &= 50,000\end{aligned}$$

The deductible is the de minimis amount reduced by the excess of the employer share of the UVB over 100,000:

$$\begin{aligned}\text{Deductible} &= 50,000 - (2,278,682 - 100,000) \\ &= \text{zero}\end{aligned}$$

The final employer withdrawal liability is 2,278,682.

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Problem 24 - Page 1

Revised 05/14/19

The majority of this problem is based on EA-2A material. But the key point of the problem is knowing how the IRC 436 restrictions affect the lump sum payable to Smith.

This is a basic question on your understanding of segment interest rates. Under PPA 2006, you would calculate the present value of a stream of annual benefit payments for a life annuity payable to a person age x (currently in pay status) as follows:

$$\begin{aligned}\text{Present value} &= \sum_{t=0}^4 (1+i)^{-t} {}_t p_x^{(T)} (\text{Benefit Payment}_{x+t}) \\ &+ \sum_{t=5}^{19} (1+j)^{-t} {}_t p_x^{(T)} (\text{Benefit Payment}_{x+t}) \\ &+ \sum_{t=20}^{\omega-x} (1+k)^{-t} {}_t p_x^{(T)} (\text{Benefit Payment}_{x+t})\end{aligned}$$

In this problem, you need to calculate the lump sum distribution. In general, you must do two lump sum calculations. One uses the plan assumptions, and the other uses the mandated assumptions in 417(e)(3). The final lump sum can't be less than the value under the mandated assumptions. In this problem, the plan assumptions are the same as the mandated assumptions in 417(e)(3).

	12/31/2013	11/01/2014
Date	Termination	Retirement
Age	64.17	65
Benefit service	5.0	5.0

Accrued benefit $30,000 = 5.0(500)(12)$

One key point of the problem is that the benefit service does not go back to the date of hire. The definition of the benefit states "No prior service credit is granted." This means there is no benefit accrual service prior to the effective date of the plan.

The AFTAP is certified as below 60% for several years prior to 2014. In general, the benefit accruals are restricted under IRC 436(e) when the AFTAP is less than 60%. But IRC 436(g) exempts a plan from restrictions under IRC 436(b), 436(c) and 436(e) for the first 5 years of the plan. So those restrictions could not apply before January 1, 2014.

The AFTAP is certified as 65% at March 31, 2014. The plan is subject to a restriction under IRC 436(d)(3) on the amount of distribution that can be paid in 2014.

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Problem 24 - Page 2

Revised 04/07/12

If the AFTAP is above 60%, but less than 80%, then the plan can make one prohibited payment for a participant while the restriction is in effect. The payment can not exceed the lesser of

- 50% of payment that could otherwise be paid, or
- 417(e) present value of PBGC maximum guaranteed benefit (ERISA 4022)

The problem does not give the present value of the maximum guaranteed benefit for 2014. You have no alternative, so you must ignore that part of the benefit restriction. The result is that the lump sum for 2014 can only reflect 50% of the participant's benefit.

The problem asks for Smith's lump sum when they retire at 11/01/2014. At that date, Smith is age 65. Their benefit payments will be valued using all three segment rates. Based on the default exam conditions, benefits are payable monthly:

	Segment 1 <=====		Segment 2 =====>				Segment 3 =====>		
	B B		B B B B B B				B B B B B B		
Age	65	70	75	80	85		90	95	100

$$\begin{aligned}
 436 \text{ Lump sum} &= 50\% * 30,000 * \left[\left(N_{65}^{(12)} - N_{70}^{(12)} \right) / D_{65} \quad \text{at segment rate 1} \right. \\
 &\quad \left. + \left(N_{70}^{(12)} - N_{85}^{(12)} \right) / D_{65} \quad \text{at segment rate 2} \right. \\
 &\quad \left. + \left(N_{85}^{(12)} \right) / D_{65} \quad \text{at segment rate 3} \right] \\
 &= 15,000 \left[\frac{(9,746,716 - 6,234,830)}{810,248} + \frac{(3,446,481 - 418,611)}{504,417} + \frac{(209,070)}{315,423} \right] \\
 &= 15,000 [4.3343 + 6.0027 + .6628]
 \end{aligned}$$

$$436 \text{ Lump sum} = 164,998$$

Answer is C

NOTE

The participant terminates at the end of 2013. This avoids the complications of the 417(e)(3) transition rule, which expires at the end of 2011.

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Problem 25 - Page 1

Revised 03/10/17

The problem states that you are testing non-discrimination for 2010. In general, you should assume the testing date is the last day of the plan year.

The problem asks which of the employees 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>Employee</u>	<u>Collectively Bargained</u>	<u>Date of Birth</u>	<u>Date of Hire</u>	<u>Date of Termination</u>	<u>2010 Hours</u>
I	Yes	1/1/1960	8/1/1995		2,000
II	No	1/1/1960	8/1/2009		2,000
III	No	1/1/1960	8/1/1995	9/1/2010	700

Employee I

This employee is excludable, since they are part of the collectively bargained group. The question asks who is excludable "with respect to the non-collectively bargained portion of the plan".

Employee II

This employee is excludable, since they are not yet a participant at 12/31/10. They satisfy the eligibility requirement at 01/01/11.

(next page)

Problem 25 - Page 2

Employee III

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

Employee III is not excludable, because they worked too many hours in 2010. They do not satisfy the fifth criteria.

Employees I and II are excludable.

Answer is A

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Problem 26 - Page 1

Similar to 2001 #21

Revised 04/27/12

The idea in this question is so old that it is almost a trick question. Under PPA 2006, there are benefit restrictions in IRC 436 that apply to plans with an AFTAP less than 80%. But the pre-termination restrictions in the old non-discrimination regulation still apply as well.

In event of termination, a defined benefit plan must limit benefits 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. The only employees subject to this restriction are the 25 highest paid (historical) HCEs or former HCEs.

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)

The plan's current liability is given as 4,850,000. None of the participants meet the second or third exception above. You need to perform multiple calculations to determine which (if any) of the four participants satisfies the first exception.

	Smith	Jones	Brown	Green
Total MVA	5,350,000	5,350,000	5,350,000	5,350,000
Lump Sum	200,000	290,000	230,000	250,000
Remaining MVA	5,150,000	5,060,000	5,120,000	5,100,000
Total Current Liab	4,850,000	4,850,000	4,850,000	4,850,000
Current Liability	180,000	260,000	180,000	200,000
Remaining Current Liab	4,670,000	4,590,000	4,670,000	4,650,000
MVA / (Current Liability)	110.28%	110.24%	109.64%	109.68%
Pay distribution?	YES	YES	NO	NO

The problem states that the plan may be able to pay distributions to a pair of participants, regardless of who gets paid first. The plan can not pay Brown or Green, so the only possible pair is Smith and Jones:

	Smith	Smith, then Jones
Original MVA	5,350,000	
Lump Sum	200,000	290,000
Remaining MVA	5,150,000	4,860,000
Original Current Liab	4,850,000	
Current Liability	180,000	260,000
Remaining Current Liab	4,670,000	4,410,000

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Problem 26 - Page 2

Revised 04/27/12

	Smith	Smith, then Jones
MVA / (Current Liability)	110.28%	110.20%
Pay distribution?	YES	YES

The plan can pay both Smith and Jones their distributions, and meet the first exception under the non-discrimination regulation.

Answer is C

NOTE

The problem does not specify whether the assets are market value or actuarial value. Based on Revenue Ruling 92-76 (not on the EA-2B reading list), you must use market value of assets for these calculations.

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Problem 27 - Page 1

Similar to 2007 #18

You are told that the plans are aggregated for testing. The problem also states that the aggregated plans use the minimum aggregate allocation gateway to test on a benefits basis. 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 gateway is based on 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, if the HCE aggregate normal allocation rate is 15% or less, the NHCEs must have an aggregate normal allocation rate equal to at least 1/3 of the highest aggregate normal allocation rate for any HCE in the plan. If the HCE rate is above 15%, but less than or equal to 25%, then the minimum aggregate normal allocation rate for the NHCEs is 5%.

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

This problem gives you no information for the HCEs, so it avoids some of the complications of earlier exam problems. You can not calculate the size of the final profit sharing allocation to meet the gateway.

You need to do calculations for both NHCEs. One point of the problem is that the catch up contribution is never included.

Another point of the problem is that the 401(k) deferral is not included. The 401(k) plan must be disaggregated when testing benefit amounts for non-discrimination under 401(a)(4). The 401(k) deferrals must satisfy the ADP and ACP tests instead of being tested under 401(a)(4).

	NHCE1	NHCE2
DC allocation	1,000	500
DC allocation rate	$1,000 / 50,000$	$500 / 50,000$
	= 2.00%	= 1.00%

Now you can calculate the value of the aggregate normal allocation rate. You must cross test the DB benefit accrual on a contributions basis. You need to calculate the present value of the benefit at testing age 65, then discount the lump sum value back to current age.

The value of the benefit at testing age should be based on a straight life annuity. The wording in the problem is confusing, since it sounds like the present value factor given may be the Joint and 50% survivor annuity. But you have no choice - you must use the given annuity.

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Problem 27 - Page 2

Revised 03/08/12

	NHCE1	NHCE2
12/31/2010 age	50	35
DB Annual accrual	1,000	2,000
Lump sum value at 65	$1,000(9.77)$ $= 9,770$	$2,000(9.77)$ $= 19,540$
Discounted value at 8.5%	$9,770(1.085)^{-15}$ $= 2,874$	$19,540(1.085)^{-30}$ $= 1,691$
Pay limited by 401(a)(17)	50,000	50,000
Allocation rate	$\frac{2,874}{50,000}$ $= 5.75\%$	$\frac{1,691}{50,000}$ $= 3.38\%$

You have a more favorable alternative than requiring every NHCE to receive the minimum aggregate allocation. The problem states "the equivalent defined benefit allocations are averaged" - but you actually average the allocation rates. Instead of using each participant's equivalent normal allocation rate under the DB plan, you can use the average equivalent normal allocation rate under the DB plan for all NHCEs benefiting under the plan.

The average equivalent DB allocation rate is $4.56\% = 50\%(5.75\% + 3.38\%)$. This amount is then added to the DC allocation rates to produce the aggregate DB/DC allocation rate.

	NHCE1	NHCE2
Equivalent DB alloc rate	4.56%	4.56%
DC allocation rate	2.00%	1.00%
Aggregate DB/DC allocation rate	6.56%	5.56%

Answer is A

NOTES:

1. This problem is much easier than 2007 exam problem 18. That problem required you to do calculations for the HCEs, as well as additional work for the NHCEs.
2. There is a bit more to the minimum aggregate allocation gateway, which we could ignore for the problem solution.

NOTE 2 (continued)

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.

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.

3. There was a potentially confusing statement in the data for this problem. You are given the “Immediate annuity factor for normal form at age 65.” I did not interpret this to be an annuity immediate factor. If you did so, then you need to add 1/12 to convert it into a monthly annuity due factor.

The resulting annuity is $9.85 = 9.77 + 1/12$. This produces allocation rates of 5.79% for NHCE1 and 3.41% for NHCE2, with an average of 4.60%. The final DB/DC allocation rate for NHCE1 is $6.60\% = 4.60\% + 2.00\%$. This result also falls in answer range A.

2010 EA-2B Exam Solutions

Problem 28

This is a bit of a trick problem. You are given lots of information about federal mid-term rates, but you don't use that for the solution. The reason is that the plan has voluntary employee contributions - not mandatory employee contributions.

Voluntary contributions are typically held in a separate account. You simply accumulate the trust earnings for 2009 and 2010 on the contribution:

$$1081.60 = 1,000(1.04)(1.04)$$

Answer is B

2010 EA-2B Exam Solutions

Problem 29 - Page 1

Similar to 2009 #27

Revised 04/07/12

This is a typical PBGC guaranteed benefits question. This question tests your knowledge of the five year phase-in calculations.

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.

In this problem, you use the 2010 MGB value, since the termination date is 12/31/10. The benefits are so small that the MGB has no impact in this problem.

You would reduce the MGB for benefit commencement ages before 65. The MGB should be adjusted based on the later of the age at date of plan termination (DOPT), or the age at benefit commencement. Based on the PBGC study note, it is correct to age adjust the MGB, even when it is based on the highest five year compensation.

The key point of the problem is that there was no plan in effect five years before DOPT. The phase-in calculations use a zero benefit for the five year old plan. The 09/01/06 plan has been in effect for four full years at DOPT.

	Smith: 5 year phase-ins	Jones: 5 year phase-ins
Division	1	2
Benefit accrual rate	2.0%	.5%
Date of hire	01/01/2007	01/01/2008
Date of participation	01/01/2007	01/01/2008
Participation service	4.0	3.0
Majority owner?	NO	NO
Vesting percentage	100%	100%

This problem would have been tricky if the date of participation was different than the date of hire. The benefit is based on participation service, but you got lucky if you overlooked it.

Average compensation	22,000.00	70,000.00
Five year old plan benefit	zero	zero
09/01/06 plan benefit	$22,000 * 4 * 2.0\%$ = 1,760.00 per year	$70,000 * 3 * .5\%$ = 1,050.00 per year
Monthly vested benefit	146.67 / mo	87.50 / mo

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Problem 29 - Page 2

The problem states that all plan participants are 100% vested.

	Smith: 5 year phase-ins	Jones: 5 year phase-ins
Guaranteeable benefit increase	146.67	87.50
Years plan has been in effect	4	4
Phase-in: Greater of \$80 or 80%(GBI)	$80\% * 146.67$ $= 117.33$	$80\% * 87.50$ $= 70.00$ 80.00
Total guaranteed benefit	117.33	80.00

The total monthly guaranteed benefit is $197.33 = 117.33 + 80.00$.

Answer is C

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. 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.

2010 EA-2B Exam Solutions

Problem 30

Similar to 2007 #19

Revised 04/22/11

This is a fairly simple question on 411(d)(6) protected benefits. In the 1.411(d)-4 regulation, it states that 411(d)(6) protected benefits can't be reduced, eliminated or made subject to employer discretion, except as provided by regulation.

The 411(d)(6) protected benefits include benefits in these categories:

- §411(d)(6)(A) accrued benefits
- §411(d)(6)(B)(i) early retirement benefits and retirement type subsidies
- §411(d)(6)(B)(ii) optional forms of benefit

The key point of the problem is that the participant's accrued benefit at 01/01/07 provides a minimum "floor" early retirement benefit. At each subsequent age, you must compare the early retirement benefit based on the new 4% per year reduction factors against the unreduced early retirement benefit using the 01/01/07 accrued benefit.

Date	01/01/07	01/01/08	01/01/09
Age	58	59	60
Service	27	28	29
Monthly accrued benefit	1,650	$1,750.00 = 28(1.5\%)(50,000)/12$	$1,812.50 = 29(1.5\%)(50,000)/12$
Early retirement factor	100%	N/A	$.80 = 1 - .04(65-60)$
Early retirement benefit	1,650	N/A	$1,450 = .80(1,812.50)$

The monthly early retirement benefit based on the frozen accrued benefit exceeds the benefit under the new plan formula. The early retirement benefit is 1,650.

Answer is C

NOTE:

The regulation uses a "wear away" concept, where future benefit accruals eventually produce a larger benefit than the one based on the frozen accrued benefit at 01/01/2007. Assuming future earnings of 50,000 each year, the new benefit formula exceeds the frozen benefit at age 62:

Year	2007	2008	2009	2010	2011	2012
Age	58	59	60	61	62	63
Accrued benefit	1,650	1,750.00	1,812.50	1,875.00	1,937.50	2,000.00
Early retirement benefit using 4%	1,650	1,330.00	1,450.00	1,575.00	1,705.00	1,840.00

There is a much more complicated procedure that some pension plans use in the situation described by this problem. The technique is sometimes called "bifurcating the benefit", and it goes well beyond the requirements of the 1.411(d)-4 regulation. Unfortunately, it results in the wrong answer range.

Problem 31

Revised 04/02/17

This questions test some details of the PBGC regulations governing plan termination.

I. TRUE

4041.8(a) allows amendments adopted after the plan termination date to be taken into effect if

- The amendment does not decrease the value of benefits under the plan provisions at the termination date, and
- The amendment does not eliminate or restrict any form of benefit available at the termination date

II. TRUE

4041.42(c) requires the plan administrator of a distress termination to limit benefit payments on or after the plan termination date. There are "special" guaranteed benefit limits for distress terminations in the 4022 regulation (subpart D). The details of the calculations have never been tested on the exam.

III.FALSE

4041.42(b) requires the plan administrator of a distress termination to not make benefit payments in any form other than an annuity. This prohibition applies on or after the date they issue a notice of intent to terminate (not the date of plan termination).

Only items I and II are true.

Answer is B

2010 EA-2B Exam Solutions

Problem 32

Similar to 2009 #43

§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.

This problem states that the company will establish a qualified replacement plan, and implies that they will not increase benefits at plan termination. The excise tax given in the problem of 46,000 is based on the 20% excise tax rate.

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. The initial amount of the asset transfer must be at least 25% of the initial reversion.

Let MVA be the initial market value of assets prior to the asset transfer and the reversion. The asset transfer is 25% of the excess assets, and the excise tax is 20% of the final reversion, after reflecting the asset transfer:

$$\text{Initial Reversion} = \text{MVA} - 750,000$$

$$\text{Asset transfer} = 25\%(\text{MVA} - 750,000)$$

$$\begin{aligned}\text{Final Reversion} &= \text{MVA} - 750,000 - \text{asset transfer} \\ &= \text{MVA} - 750,000 - 25\%(\text{MVA} - 750,000) \\ &= .75(\text{MVA} - 750,000)\end{aligned}$$

$$\begin{aligned}\text{Tax on reversion} &= 20\%(\text{Final reversion}) \\ 46,000 &= 20\%[.75(\text{MVA} - 750,000)]\end{aligned}$$

$$\begin{aligned}\text{MVA} &= 750,000 + 46,000/.15 \\ &= 1,056,667\end{aligned}$$

Answer is D

NOTE

You can reduce the 25% asset transfer by the value of benefit improvements made within the 60 days ending on the date of plan termination. This concept was tested on 2008 exam question #37.

2010 EA-2B Exam Solutions

Problem 33

NOTE – Problems 18, 33 and 45 cover IRC 432, which is material from the EA-2A syllabus. In August of 2010, all three IRC 432 questions were removed from the EA-2B exam on the JBEA web site. All students were given credit for these three problems.

2010 EA-2B Exam Solutions

Problem 34

This is a very simple question on IRC 436. The main point of this problem is whether you know the definition of the IRC 436(d) limitation regarding prohibited payments.

If a plan's adjusted funding target attainment percentage (AFTAP) is 60% or less, then the plan can not pay any prohibited payments. These include lump sums, annuity purchases or any payment in excess of the benefit on a straight life annuity form.

If the AFTAP is above 60%, but less than 80%, then the plan can make one prohibited payment for a participant while the restriction is in effect. The payment can not exceed the lesser of

- 50% of the unrestricted benefit, or
- The 417(e) present value of the PBGC maximum guaranteed benefit limit

50% of the participant's benefit is $3,750 = .5(7,500)$. The problem does not give the 417(e) present value of the PBGC maximum guaranteed benefit limit of 4,500 per month for 2010. Since the participant is age 65, the present value based on 4,500 per month would be larger, and does not affect the allowable payment under 436(d).

You should calculate 50% of the otherwise allowable lump sum:

$$\begin{aligned}\text{Payment} &= (3,750)(12)(11.67) \\ &= 525,150\end{aligned}$$

Answer is C

NOTE

IRC 436(d)(5) has an exception for de minimis payments that are below the 411(a)(11) involuntary cash out threshold. The definition of "prohibited payment" specifically excludes such payments.

2010 EA-2B Exam Solutions

Problem 35

Revised 03/19/13

This problem tests the 2008 changes (due to PPA 2006) in the method for calculating the Variable Rate Premium (VRP) on the PBGC-1 Form, Schedule A. This calculation is similar to the old General rule calculation of the variable rate premium.

In this problem, you are given values of the Standard and Alternative Premium Funding Target at 01/01/2010. The problem states that an election was not made to use the Alternative Premium Funding Target.

The variable rate premium is calculated based on the unfunded vested benefits liability. This is defined as the excess of the premium funding target over the adjusted market value of assets.

You must use the market value of assets at 01/01/2010. Since the market value excludes receivable contributions, you must add the discounted value of contributions paid for plan years prior to the premium payment year. You only include the receivable if it has been deposited on or before the date the variable rate premium is paid. There is a potential trick to this problem, since it does not tell you the actual filing date.

The filing deadline for this plan varies depending on the plan size. It is either 10/15/2010 or 04/30/2011. Since both contributions are paid prior to these dates, they both should be included in the asset value.

The interest rate used for discounting the receivable contribution is the Effective Interest Rate for the plan year that corresponds to the contribution. In this problem, that is the 2009 plan year. The interest rate used for discounting is 6.50%:

$$\begin{aligned}\text{Unadjusted Market value} &= 50,000,000 \\ \text{Adjusted market value} &= 50,000,000 + 1,500,000(1.065)^{-5/12} \\ &\quad + 10,000,000(1.065)^{-8.5/12} \\ &= 61,059,800 \\ \text{Premium funding target} &= 79,000,000 \\ \text{Unfunded vested liability} &= 79,000,000 - 61,059,800 \\ &= 17,940,200\end{aligned}$$

The unfunded vested liability must be rounded up to the next multiple of 1,000. The last step is to multiply the adjusted value of the unfunded vested liability by .009:

$$\begin{aligned}\text{Variable rate premium} &= 17,941,000 * .009 \\ &= 161,469\end{aligned}$$

Answer is C

2010 EA-2B Exam Solutions

Problem 36 - Page 1

Similar to 2008 #21

The key to working this question is understanding the cross testing rules. You are told that the plans are permissively aggregated for testing under 401(a)(4). The problem states that the testing method is "benefits basis".

This problem asks about the average benefit percentage test (ABPT) result, which requires you to aggregate the DB and DC plans. Since you have no choice about aggregating the plans for the ABPT, you do not have to satisfy the DB/DC gateways.

You need to cross test the DC plan on a benefits basis and determine the equivalent accrual rate. When you add the DB plan accrual rate to the DC plan equivalent accrual rate, you have the aggregate accrual rate for the ABPT.

The problem states that the 401(k) plan uses ADP testing. The 401(k) deferrals would be disaggregated for testing under 401(a)(4). For purposes of the ABPT, the 410(b) regulation requires that you ignore the mandatory disaggregation rule. You include the 401(k) deferrals with the profit sharing allocation to calculate the ABPT result.

This problem states the testing age is age 65. You need to perform cross-testing calculations for all employees to determine the aggregate benefit accrual percentage. Then you can use those percentages to calculate the ABPT result.

First, do the calculation for the two HCEs:

	HCE1	HCE2
12/31/2009 age	60	65
401(k) deferral	16,500	16,500
Profit sharing allocation	32,500	32,500
Lump sum value at testing age 65	$49,000(1.085)^5$ = 73,679	$49,000(1.085)^0$ = 49,000
Equivalent benefit accrual at testing age 65	$73,679/9.0$ = 8,187	$49,000/9.0$ = 5,444
DB Annual accrual	20,000	20,000
Total Annual accrual at testing age 65	28,187	25,444
Pay limited by 401(a)(17)	245,000	245,000
Aggregate equivalent accrual rate	$28,187 / 245,000$ = 11.50%	$25,444 / 245,000$ = 10.39%

(next page)

2010 EA-2B Exam Solutions

Problem 36 - Page 2

Now, do the calculation for the three NHCEs. There is LOTS of arithmetic in this 5 point question:

	NHCE1	NHCE2	NHCE3
12/31/2009 age	25	45	40
401(k) deferral	0	1,000	300
Profit sharing allocation	800	750	0
Lump sum value at testing age 65	$800(1.085)^{40}$ = 20,906	$1,750(1.085)^{20}$ = 8,946	$300(1.085)^{25}$ = 2,306
Equivalent benefit accrual at testing age 65	$20,906/9.0$ = 2,323	$8,946/9.0$ = 994	$2,306/9.0$ = 256
DB Annual accrual	300	0	2,000
Total Annual accrual at testing age 65	2,623	994	2,256
Pay limited by 401(a)(17)	20,000	15,000	55,000
Aggregate equivalent accrual rate	$2,623 / 20,000$ = 13.11%	$994 / 15,000$ = 6.63%	$2,256 / 55,000$ = 4.10%

The average benefit percentage test result is the ratio of the average benefit percentage for the NHCEs divided by the average benefit percentage for the HCEs:

$$\text{ABPT} = \frac{(13.11\% + 6.63\% + 4.10\%) / 3}{(11.50\% + 10.39\%) / 2}$$

$$72.6\% = 7.95\% / 10.95\%$$

Answer is B

NOTE

At first glance, it appears this problem involves the DB / DC cross testing gateway rules. But that is not correct. My understanding is that you are not subject to the cross testing gateway rules, since the only reason you are cross testing is due to the requirement to do so for the ABPT calculation.

2010 EA-2B Exam Solutions

Problem 37

Similar to 2009 #24

This question tests a tiny detail in the 4062 regulation. At 4062.8(a), it defines the amount of the employer liability due to a cessation of operations. This rule applies if more than 20% of the employer's total employees (who are also participants) separate from employment due to the cessation of operations.

The employer liability due to cessation of operations is equal to the total unfunded plan termination liability multiplied by a fraction. The numerator is the number of participating employees who separate from employment due to the cessation of operations. The denominator is the total number of participating employees determined immediately prior to the cessation of operations.

The problem tells you the plan is underfunded by 25 million on a PBGC basis (90 million minus 65 million). 3,000 participants terminate due to the cessation of operations. Prior to the cessation of operations, there are 8,000 active participants.

Since the ratio of 3,000 to 8,000 exceeds 20%, the employer is subject to the rule in 4062.8(a). The employer liability is calculated as

$$\begin{aligned}\text{ER liability} &= 25,000,000 * (3,000 / 8,000) \\ &= 9,375,000\end{aligned}$$

Answer is B

2010 EA-2B Exam Solutions

Problem 38

Revised 02/26/15

This question tests a few details in the IRC 436 regulation. At 07/01/2010, the 2010 AFTAP has not been certified. The value of the presumed AFTAP is 72%, which is the same as the 2009 AFTAP.

There is no “10% haircut” – that reduction only applies if the prior year’s AFTAP is

- between 60% and 70%, or
- between 80% and 90%.

The plan sponsor will make an additional IRC 436 contribution to allow the plan amendment to take effect. Since the AFTAP prior to the amendment is less than 80%, the IRC 436 contribution paid at the valuation date is equal to the increase in the funding target due to the plan amendment. One point of the problem is that the required contribution is larger than the increase in the funding target, since it is not paid at the valuation date. The IRC 436 contribution is discounted to reflect the later date of payment.

Another point of the problem is that the contribution is discounted using the 2010 effective interest rate. But the 2010 valuation has not been completed, so the 2010 effective interest rate has not been determined yet. Based on 1.436-1(f) example 3, you must use the highest of the three segment rates for 2010 to discount the contribution back to the valuation date. This value is 7.20%.

The final minor point of the question is the calculation of the change in the funding target due to the plan amendment. This is an at-risk plan, so you should use the change in the funding target on the at-risk basis.

If the IRC 436 contribution was paid at 01/01/2010, it would be 1,200,000. You need to reflect the actual payment date of 07/01/2010.

Let X represent the IRC 436 contribution paid at 07/01/2010:

$$\begin{aligned}\Delta \text{ FT at-risk} &= 1,200,000 = X(1.072)^{-6/12} \\ X &= 1,200,000(1.072)^{6/12} \\ &= 1,242,449\end{aligned}$$

Answer is C

NOTE

There is potential confusion regarding the meaning of “At-Risk funding target”. There is an exam condition (#43) for EA-2A that defines that term. This is necessary to work problems on the At-Risk transition rule in IRC 430(i)(5) and deductible limits under 404(o)(2)(B).

But there is no similar exam condition for EA-2B. Under IRC 430, any reference to “funding target” is by definition a reference to the Non-At-Risk funding target. That is why I assumed the 1.1 million is NOT the correct value to use in the problem.

2010 EA-2B Exam Solutions

Problem 39

Similar to 2005 #13

This question tests some details from the PBGC premium payment package instructions. You should select the check box in item 3(b)(3) of the filing form if a plan is eligible to pay a pro-rated premium. In the instructions, it states that a plan qualifies to pay a prorated premium only if the Premium Payment Year is:

- a short first year of a New or Newly-covered Plan;
- a short year created by an amendment that changes the plan year;
- a short year created by distribution of plan assets pursuant to plan termination; or
- a short year created by the appointment of a trustee for a Single-employer Plan under ERISA section 4042.

The plan year that begins on January 1, 2010 is exactly seven months long. The variable rate premium can be pro-rated as a result. The rest of this problem is the calculation of the variable rate premium (VRP). You have no information on participant counts, so you can't calculate the variable rate premium cap.

The unfunded vested benefits liability (UVB) is calculated as the excess of the premium funding target over the market value of assets. The market value includes the present value of any prior year contributions that are received by the date the premium filing. The contributions are discounted using the prior year's effective interest rate.

Ignoring the cap, you calculate the variable rate premium as .009 times the UVB. The UVB must be rounded up to the next higher multiple of 1,000.

The problem states that the sponsor elected to use the Alternative Premium Funding Target:

$$\begin{aligned}\text{UVB} &= 2,690,000 - 2,160,000 \\ &= 530,000\end{aligned}$$

$$\begin{aligned}\text{VRP} &= 530,000 * .009 \\ &= 4,770\end{aligned}$$

The pro-rated VRP is $2,783 = (7/12) * 4,770$.

Answer is C

NOTES

1. An amendment is not considered to change the plan year if the plan merges into or consolidates with another plan or otherwise ceases its independent existence either during the short plan year or at the beginning of the full plan year following the short plan year.
2. There is no premium proration where a plan ceases to be a covered plan before the end of the plan year.

2010 EA-2B Exam Solutions

Problem 40 - Page 1

Similar to 2009 #21

This problem does not clarify the type or the date of the partial withdrawal. It is either a regular partial withdrawal, or one due to a 70% decline in contributions. Based on the data given, you can only determine the date when a partial withdrawal occurred due to a 70% decline in contributions.

Partial Withdrawal Calculations

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

You must calculate the various items to see when a 70% decline has occurred. If you have worked these problems before, you know that the units during the three year testing period have to be much lower than the prior five years.

If you did not know this, you would use 2003-2005 as your first guess for the three year testing period. When you calculate the threshold for the high base year, it is 1,433,333. By looking at the data given, there are no prior years with base units that high. You must look at later years instead.

Assumed year - 70% decline	2005	2006
3 year testing period	2003-2005	2004-2006
Highest units in 3 year testing period	430,000	350,000
Highest in testing period / .30	1,433,333	1,166,667
Five base years	1998-2002	1999-2003
Any base years exceed the Highest testing/.30?	NO	YES

At this point, it looks like 2006 could be the year of partial withdrawal due to the 70% contribution decline. You need to do a more detailed calculation to confirm this:

Verification of 70% decline	2006
High base years	2000, 2001
Units in high base year	$.5 \times (1,350,000 + 1,425,000)$ $= 1,375,000$
30% of units in high base year	412,500
70% decline occurred?	YES

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Problem 40 - Page 2

Revised 01/14/14

To calculate the partial withdrawal liability due to a 70% contribution decline,

- (1) The initial year of the three year testing period (2004) is considered as the year of withdrawal for calculation of employer share of UVB
- (2) The fraction to multiply the “complete withdrawal” liability by is

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

In this problem, you are not given values for Employer A's withdrawal liability at the end of each year.

$$\begin{aligned}\text{Fraction} &= 1.0 - \frac{2007 \text{ units}}{(\text{Sum of 1999 through 2003 units}) / 5} \\ &= 1.0 - \frac{200,000}{(1,300,000 + 1,400,000 + 1,350,000 + 1,000,000 + 430,000) / 5} \\ &= 1.0 - (200 / 1,096) \\ &= 81.75\%\end{aligned}$$

The partial withdrawal liability equals the complete withdrawal liability multiplied by the fraction calculated above. In some prior exam problems, you were given more information, and had to calculate the amount of partial withdrawal liability.

Answer is D

NOTE

There are multiple years with partial withdrawals in this problem:

Assumed year - 70% decline

3 year testing period
Highest units in 3 year testing period
Highest in testing period / .30
Five base years
Any base years exceed the Highest testing/.30?

2006	2007	2008
2004-2006	2005-2007	2006-2008
350,000	300,000	300,000
1,166,667	1,000,000	1,000,000
1999-2003	2000-2004	2001-2005
YES	YES	YES

When this happens, the problem must give additional information to specify which year to use. In this problem, it asks for the “initial partial withdrawal liability”, which means you should use 2006.

2010 EA-2B Exam Solutions

Problem 41 - Page 1

There are several safe harbor plan designs under 401(a)(4) for defined benefit plans. The very complex safe harbor for 401(l) plans using permitted disparity requires an entire regulation to describe it. There have been no detailed 401(l) exam questions since 2005.

There are other less complicated alternatives described at 1.401(a)(4)-3. A defined benefit plan must meet the uniformity requirements at 1.401(a)(4)-3(b)(2), as well as one of three alternative plan designs:

- The safe harbor for unit credit plans at 1.401(a)(4)-3(b)(3)
- The safe harbor for fractional accrual rule plans at 1.401(a)(4)-3(b)(4)
- The safe harbor for insurance contract plans at 1.401(a)(4)-3(b)(5)

Safe harbor for unit credit plans

This requires the plan to meet the 133 1/3% benefit accrual rule of §411(b)(1)(B). This requires that the rate of benefit accrual for any year can be no greater than 4/3 of any earlier year's rate of benefit accrual.

Safe harbor for fractional accrual rule plans

The accrued benefit must satisfy the fractional rule under 411(b)(1)(C). The safe harbor has two additional requirements.

1. One requirement states that the employee's accrued benefit for any plan year before NRA must equal the product of the employee's fractional rule benefit (under 1.411(b)-(b)(3)(ii)(A)) and the ratio:
("years of service" / total projected "years of service").
2. In addition, the plan must meet one of three requirements at 1.401(a)(4)-3(b)(4)(i)(C)

PLAN X

This benefit accrual formula fails both the 133 1/3% benefit accrual rule and the fractional accrual rule. The reason it fails the fractional rule is that the accrued benefit is not defined as a (service / service) ratio times a projected benefit. The reason it fails the 133 1/3% rule is that 2.25% / 1.50% is equal to 150%, which is too large.

PLAN Y

This benefit accrual formula passes the 133 1/3% benefit accrual rule. But it does not satisfy the 401(a)(4) safe harbors due to one of the uniformity requirements. A plan is not allowed to have employee contributions.

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PLAN Z

This benefit appears to satisfy the requirements of 401(l). Based on the default exam conditions, there are no early retirement benefits, and the normal retirement age is 65.

The excess benefit percentage of .65% is equal to the limit for excess plans in the regulation for retirements at age 65. Since service is limited to 30 years, the plan satisfies the overall permitted disparity limit.

Only Plan Z satisfies the 401(a)(4) safe harbor rules.

Answer is D

NOTE

Here is the detailed description of the requirements at 1.401(a)(4)-3(b)(4)(i)(C):

1. It must be impossible for any employee to accrue a benefit for a year of service that is more than 33 1/3% greater than that accrued in any year by any other employee. This is based on actual and potential employees, but none with more than 33 years at NRA.
2. The benefit at NRA must be defined under the plan as a flat benefit. The participant's accrued benefit must be reduced on a pro-rata basis with less than 25 years of service.
3. Average Normal accrual rate (NAR) for non-excludable non-HCEs is $\geq 70\%$ * (Average NAR for non-excludable HCEs). This test is based on all non-excludable employees, even if NOT benefiting under the plan. All other plans are excluded for this test.

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Problem 42

Similar to 2009 #33

The key to this problem is knowing what "the minimum qualified pre-retirement death annuity" means. This refers to the qualified pre-retirement spouse annuity (QPSA). This is an annuity type similar to a qualified joint and survivor annuity, which is defined in 417(b)(1) as a joint and survivor annuity of at least 50%. The problem asks for the minimum QPSA, which matches the 50% qualified joint and survivor annuity factors given in the problem.

In 417(c)(1)(A)(ii), if the participant dies prior to their earliest retirement age, the annuity should commence at that earliest retirement age. Based on the plan provisions, Smith's earliest retirement age is 60. The calculations below are based on benefit commencement at age 60.

You are told the participant has been married for more than one year, so it is necessary to provide the QPSA (see 417(d)). The majority of the problem solution is a benefit calculation.

As of 01/01/2010

Age	56
Service	18
Earliest Retirement Age	60

Accrued Benefit	27,000
	= 18*1,500
Vesting percentage	100%
Vested benefit	27,000

Early Retirement reduction	.80
	= 1 - 4.0% * (65 - 60)
Actuarially reduced benefit,	21,600
payable at age 60	= .80 * 27,000

50% J&S Reduction	86%
50% J&S Benefit	18,576
50% Death benefit	9,288

Answer is B

NOTE

One potential area for confusion is that you should consider both the vesting percentage and the early retirement reduction. Based on IRC 411, the participant becomes 100% vested when they reach normal retirement age. Depending on the plan design, they may not become 100% vested at early retirement age.

It makes no difference in this problem – the participant must be 100% vested after 18 years.

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Problem 43

This question tests various details of how benefits should accrue and be paid.

I. TRUE

This is the requirement in IRC 401(a)(14) combined with IRC 401(a)(9).

II. FALSE

This was trying to confuse you regarding the requirements in 401(a)(9). Under 401(a)(9), you must provide actuarial adjustments beyond age 70 ½.

III. TRUE

Under 411(b)(1)(H), you must continue benefit accruals beyond normal retirement age.

Only items I and III are true.

Answer is E

NOTE

There is another option available under the 411 regulations for item III. A plan which provides the suspension of benefits notice can provide the greater of the benefit based on continuing benefit accruals, or the actuarial equivalent of the benefit at NRA.

See 1.411(b)-2(b)(4)(iii)(B).

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Problem 44

This question tests various details of fiduciary duty.

I. TRUE

In ERISA Section 409(a), it states that a fiduciary will be personally liable for a breach of fiduciary responsibility.

II. FALSE

In ERISA Section 405(a)(3), it states that a fiduciary will be liable for a breach of fiduciary responsibility if they have knowledge of such breach. However, a fiduciary will not be liable if they make reasonable efforts to remedy the breach.

III. FALSE

There is no specific exception for a breach of fiduciary responsibility for fully-insured plans.

Only item I is true.

Answer is E

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Problem 45

NOTE – Problems 18, 33 and 45 cover IRC 432, which is material from the EA-2A syllabus. In August of 2010, all three IRC 432 questions were removed from the EA-2B exam on the JBEA web site. All students were given credit for these three problems.

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Problem 46

The main point of this problem is whether you know the definition of the IRC 436(d) limitation regarding prohibited payments. If a plan's adjusted funding target attainment percentage (AFTAP) is 60% or less, then the plan can not pay any "prohibited payments".

These prohibited payments include lump sums, annuity purchases or any payment in excess of the benefit on a straight life annuity form. If the AFTAP is above 60%, but less than 80%, then the plan can make one prohibited payment for a participant while the restriction is in effect. The payment can not exceed the lesser of

- 50% of the unrestricted benefit, or
- The 417(e) present value of the PBGC maximum guaranteed benefit limit

IRC 436(d)(5) has an exception for de minimis payments that are below the 411(a)(11) involuntary cash out threshold. The definition of "prohibited payment" specifically excludes such payments.

Participant	50% of Lump sum	Present value of PBGC max	Allowable payment Lesser of two
NHCE1	.50(4,957)	100,000	4,957
NHCE2	.50(549,620)	220,000	220,000
NHCE3	.50(650,602)	640,000	325,301
Total			550,258

Note that the full amount can be paid for NHCE1, since the plan's lump sum threshold is 5,000. The total lump sums that can be paid equal 550,258.

Answer is D

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Problem 47

This is a trivial question on the definition of a rate group under 401(a)(4). The key point of the problem is knowing the definition of a rate group. It consists of all employees with both a normal accrual rate (NAR) and a most valuable accrual rate (MVAR) greater than or equal to those rates for a given HCE.

The problem gives values of both the NAR and MVAR for four rate groups. The values for Smith are greater than both values for each rate group, with the exception of rate group 3. Smith is in three of the four rate groups.

Answer is D

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