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2014 EA-2L EXAM SOLUTIONS

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2014 EA-2L Exam Solutions

These solutions were prepared based on the law as in effect at November 30, 2013.

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:

June 11, 2019	Corrected solution for problem 3
April 29, 2019	Corrected solution for problem 41
March 5, 2018	Added note to solution for problem 36
April 14, 2017	Corrected solution for problem 29
April 2, 2017	Corrected solution for problem 29
April 26, 2016	Added note to solution for problem 20
March 18, 2016	Corrected solution for problems 6, 7 and 13
February 16, 2016	Corrected solution for problems 7, 9 and 31
January 11, 2016	Corrected prior exam problem reference for problem 29
January 27, 2015	Original solutions

NOTES on 2014 exam

Based on the percentage of students who passed, the 2014 exam was somewhat easier than normal. Both the 2011 and 2012 exams were more difficult than other years' exams. I think the 2011 exam was much trickier than earlier years' exams.

<u>Exam Year</u>	<u>Pass Mark</u>	<u>Percentage Who passed</u>	
2014	70	47.2	
2013	72	58.7	(not a typo!)
2012	65	40.0	
2011	63	39.2	
2010	69	43.7	
2009	68	59.1	(not a typo!)
2008	63	37.2	

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Problem 1

Similar to 2012 #09

FALSE

The Qualified Optional Survivor Annuity (QOSA) was added to IRC 417(g) by PPA 2006. If the QJSA percentage is less than 75%, the plan needs to add a 75% QOSA starting in 2008. If the QJSA percentage is 75% or more, the plan needs to add a 50% QOSA starting in 2008.

The plan's QJSA percentage is 50%, but the plan does not offer a payment form with a 75% continuation. As a result, the plan does not satisfy IRC 417(g).

Answer is B

Problem 2

Similar to 2011 #16

FALSE

The regulation has a detailed description of the reportable event. Since the distributions within a 12 month period do not exceed 10,000, a reportable event has not occurred:

“4043.27(a) **Reportable event.** A reportable event occurs for a plan when --

- (1) There is a distribution to a substantial owner of a contributing sponsor of the plan;
- (2) The total of all distributions made to the substantial owner within the one-year period ending with the date of such distribution exceeds \$10,000;
- (3) The distribution is not made by reason of the substantial owner's death; and
- (4) Immediately after the distribution, the plan has nonforfeitable benefits (as provided in § 4022.5) that are not funded.”

Answer is B

Note that there are also several waivers for this reportable event at 4043.27(c).

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Problem 3 – Page 1

Similar to 2008 #22

This problem gives you information about two plans. The first plan covers salaried employees, and has an eligibility requirement of age 21 and 6 months of service. The second plan covers hourly employees, and has an eligibility requirement of age 18 and 1 year of service.

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:

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

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.

If the employer elects not to aggregate plans, you would use only the employees benefiting under a single plan for the numerator in the ratio percentage test. There are some complicated rules in the 1.410(b)-7 regulation that govern when you can voluntarily aggregate plans, as well as when it is mandatory that you disaggregate plans.

The ratio denominators should be based on counts for the entire controlled group, not just for the single plan being tested. In general, the excludable employees include:

- those who do not meet the minimum participation requirements
- collectively bargained employees
- nonresident aliens

In this problem, you are told that the plan sponsor elects to aggregate the two plans for nondiscrimination testing. There are several key points to this problem:

- (1) The number of employees benefiting in each plan is based on each plan's eligibility requirements
- (2) The number of employees who are excludable based on age and service is based on those employees who do not satisfy either plan's eligibility requirements
- (3) Any employees who are excluded based on classification do not satisfy one of the definitions of "excludable employee" in the regulation. Those employees are treated as non-excludable for the ratio test.

Problem 3 – Page 2**Revised 06/11/19**

The non-excludable NHCEs are the employees who satisfy the eligibility requirements for either plan:

	Salaried	Hourly
Total employees	42	124
Less excludables:		
Under age 18	- 4	- 9
Age 18 to 21, less than 1 year	- 3	- 25
Over age 21, less than 6 months	- 5	- 25
Non-excludable	30	65

There are 95 total non-excludable NHCEs.

Answer is D

The two plans reversed the service eligibility conditions in 2008-22. As a result, it was much easier to identify the excludable employees in the earlier problem.

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Problem 4

TRUE

901.20(f) describes the due diligence required for enrolled actuaries:

"(2) An enrolled actuary advising a client ... generally may rely in good faith without verification upon information furnished by the client."

Answer is A

Problem 5

TRUE

IRC 416(g)(4)(B) states that, for a former key employee, their accrued benefit should not be taken into account for T-H testing.

Answer is A

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Problem 6 – Page 1

Similar to 2012 #27

Revised 03/18/16

The key to working this question is understanding the cross testing rules. The problem asks for the benefit percentage on an equivalent allocation basis for the 410(b) average benefits test. This calculation requires you to aggregate the results for both plans.

The problem does not state the testing method. Since the problem asks for the benefit percentage determined on an "equivalent allocation basis", you must test the DB plan on a contributions basis. The only method you can use is the annual method.

This problem asks for the sum of Smith's and Jones' benefit percentage values for the average benefit percentage test (ABPT). The ABPT calculations require you to aggregate the DB and DC plans. Since you are testing the DB plan on a contributions basis, you do not have to satisfy the DB/DC gateways.

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

	Smith	Jones
Birth date	01/01/1954	01/01/1984
12/31/2013 age	60	30
Pay limited by 401(a)(17)	255,000	65,000
DB Annual accrual	10,000	2,500
Lump sum value at 65	$10,000(9.88) = 98,800$	$2,500(9.88) = 24,700$
Discounted value at 7.5%	$98,800(1.075)^{-5}$ $= 68,820$	$24,700(1.075)^{-35}$ $= 1,965$
401(k) salary deferral	15,000	2,000
401(m) employer match	5,000	1,000
Profit sharing allocation	4,000	0
Total allocation	92,820	4,965
Allocation rate	$92,820 / 255,000$ $= 36.40\%$	$4,965 / 65,000$ $= 7.64\%$

The sum of the equivalent allocation rates is 44.04%.

Answer is D

(see note on next page)

Problem 6 – Page 2

NOTE

One minor point of the problem is that you must include the 401(k) deferrals in the 410(b) ABPT calculations. 401(m) and 401(k) plans are usually disaggregated for nondiscrimination testing, but there is a special rule for the 410(b) ABPT that requires you to aggregate these plans with all the rest.

If the problem had asked for the equivalent allocation rate for testing under 401(a)(4), then you would exclude the 401(k) deferrals from the calculations. The reason is that 401(k) deferrals are subject to a separate test under 401(a)(4).

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Problem 7

Similar to 2013 #20

Revised 03/18/16

The problem defines the QJSA with a 100% benefit to the spouse. Under IRC 417(g), the qualified optional survivor annuity (QOSA) must have a continuation percentage of 50%.

Based on the plan provisions, Smith's earliest retirement age is when they have completed five years of service and attained age 55. The calculations below are based on benefit commencement at their current age, which is age 58.

The participant has been married for more than one year. The problem states that the survivor will receive the QOSA upon death after early retirement. The majority of the problem solution is a benefit calculation.

As of 01/01/2014

Age	58
Service	5
Earliest Retirement Age	58

Annual accrued Benefit	30,000	(assumed)
Vesting percentage	100%	
Vested benefit	30,000	

Early Retirement reduction	.79
	$= 1 - 3.0\% * (65 - 58)$
Early Retirement benefit payable at age 58	$23,700$ $= .79 * 30,000$

50% J&S Reduction	94%
50% J&S Benefit	22,278
50% J&S Death benefit	11,139

Answer is A

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 seems strange to me that this problem said nothing about the plan's vesting schedule – almost like they were trying to avoid the issue entirely.

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Problem 8 – Page 1

Similar to 2013 #41

This is a typical PBGC guaranteed benefits question. It tests your knowledge of the 5 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.

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

The 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.

Another key point of the problem is that the maximum guaranteed benefit limit (MGB) must be reduced for benefit commencement ages before 65. The 2013 MGB at 65 is 4,789.77 (from the tables given with the exam).

A key point to this problem is that you should use the later of age at DOPT and age at benefit commencement for purposes of adjusting the MGB. The MGB should be adjusted based on the retirement age of 58. You have to read the problem very carefully - this is only stated in the definition of "X the unknown".

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.

01/01/13 Age	55
Average monthly compensation	N/A
2013 MGB at 65 on life annuity	Lesser of 4,789.77 or 100% of 5 yr comp
Age 58 MGB factor	.57
2013 MGB at 58 on life annuity	$2,730.17 = .57(4,789.77)$

Technically speaking, you don't know the value of the MGB limit. The reason is that it could be limited to 100% of the participant's 5 year compensation. But the MGB limit does not apply in this problem, since the rate of benefit is fairly low (typical in prior exam questions).

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Problem 8 – Page 2

The change in plan benefits at 01/01/2009 is subject to the 5 year phase-in rules at the DOPT of 01/01/2013. 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.

01/01/2008 Base plan benefit	$200.00 = \$10(20)$
Early retirement factor at 58	$.65 = 1 - 5\%(65-58)$
Early retirement benefit	$130.00 = .65(200.00)$
Guaranteeable benefit increase	130.00
Years plan has been in effect	5
Phase-in	130.00
01/01/2009 Base plan benefit	$300.00 = 15(20)$
Early retirement factor at 58	$.65 = 1 - 5\%(65-58)$
Early retirement benefit	$195.00 = .65(300.00)$
Guaranteeable benefit increase	$65.00 = 195.00 - 130.00$
Years plan has been in effect	4
Phase-in: Greater of \$80 or 80%(GBI)	$\$80 \text{ or } 65.00(80\%)$ $= 65.00 \quad (\text{can't exceed total GBI})$
01/01/2011 Base plan benefit	$360.00 = 18(20)$
Early retirement factor at 58	$.65 = 1 - 5\%(65-58)$
Early retirement benefit	$234.00 = .65(360.00)$
Guaranteeable benefit increase	$39.00 = 234.00 - 195.00$
Years plan has been in effect	2
Phase-in: Greater of \$40 or 40%(GBI)	$\$40 \text{ or } 39.00(40\%)$ $= 39.00 \quad (\text{can't exceed total GBI})$
Total guaranteed benefit	$234.00 = 130.00 + 65.00 + 39.00$

The 01/01/2013 benefit increase has not been in effect for a full year, so it is not phased in.

Answer is B

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.

Problem 8 – Page 3

Notes re: Guaranteed benefit calculations (continued)

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 is a change in normal form of benefits, you should 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 9

Similar to 2012 #41

Revised 02/16/16

This question tests your knowledge of the requirements regarding 204(h) notices. In general, notice is required for an amendment that either

1. Significantly reduces the rate of future benefit accrual, or
2. Eliminates or significantly reduces early retirement benefits, or a retirement type subsidy

I. TRUE

In IRC 4980F(e)(1)(iii), there is a 204(h) notice required for “applicable individuals”. These are participants who are adversely affected by the plan amendment. Since Smith is a salaried employee, their future benefit accruals are reduced due to the plan amendment.

II. FALSE

When Smith's employment status changes, their future benefit accruals will decrease. But that is not due to a plan amendment, so no 204(h) notice is required.

III. TRUE

This change is subject to a 204(h) notice.

Only items I and III are true.

Answer is B

NOTE

Prior exam questions 2004 #21, 2005 #35 and 2013 #40 tested the calculation of the amount of the excise tax.

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Problem 10

Similar to 2010 #31

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).

Answer is B

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Problem 11 – Page 1

Similar to 2010 #40

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 2008-2010 as your first guess for the three year testing period. When you calculate the threshold for the high base year, it is 200,000. By looking at the data given, there are very few prior years with base units that high. You must look at later years instead.

Assumed year - 70% decline	2010	2011
3 year testing period	2008-2010	2009-2011
Highest units in 3 year testing period	60,000	42,000
Highest in testing period / .30	200,000	140,000
Five base years	2003-2007	2004-2008
Any base years exceed the Highest testing/.30?	NO	YES

At this point, it looks like 2011 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	2011
High base years	2004, 2007
Units in high base year	$.5 \times (150,000 + 170,000)$ = 160,000
30% of units in high base year	48,000
70% decline occurred?	YES

Answer is B

(see note on next page)

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Problem 11 – Page 2

NOTE

There are multiple years with partial withdrawals in this problem:

Assumed year - 70% decline	2011	2012	2013
3 year testing period	2009-2011	2010-2012	2011-2013
Highest units in 3 year testing period	42,000	42,000	35,000
Highest in testing period / .30	140,000	140,000	116,667
Five base years	2004-2008	2005-2009	2006-2010
Any base years exceed the Highest testing/.30?	YES	NO	YES

When this happens, the problem must give additional information to specify which year to use. In this problem, it asks for the “first partial withdrawal”, which means you should use 2011.

Unlike prior similar problems, you did not have to calculate the partial withdrawal liability in this solution.

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Problem 12

Similar to 2013 #13

TRUE

IRC Section 411(a)(8) defines normal retirement age as the earlier of

1. Attainment of "normal retirement age" as defined under the plan, or
2. The later of
 - Attainment of age 65 or
 - 5th anniversary of participation date

This definition requires that the participant's normal retirement age can be no later than attainment of age 65 and the 5th anniversary of participation.

Smith is age 61 when they commence participation at 01/01/2010. Their fifth anniversary of participation is 01/01/2015, when they attain age 66.

The normal retirement date of 01/01/2015 satisfies the IRC 411 definition above.

Answer is A

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Problem 13 – Page 1

Similar to 2012 #20

This is not a typical §415 problem. It is unusual to have late retirement problems with §415 limits. One key point of the problem is the calculation of the actuarial increase in the §415 dollar limit after age 65. Another key point is that the §415 limits are reduced for service (and participation) less than 10 years.

At 01/01/2014

Age	66
Service	10 years
Participation	9 years

One simplifying factor in this problem is that you do not calculate the plan benefit. The problem only asks for the 415 limit.

415 COMP LIMIT

The §415(b)(1)(B) compensation limit is reduced when service is less than ten years. This limit is based on the highest three consecutive years of pay. Based on the regulation that became final in 2007, earnings under §415 are subject to the §401(a)(17) limit. In this problem, the pay never exceeds the 401(a)(17) limit.

Year	2010	2011	2012	2013
Pay	205,000	208,000	210,000	165,000
401(a)(17) limit	245,000	245,000	250,000	250,000
Limited pay	205,000	208,000	210,000	165,000

$$\begin{aligned}\text{Highest 3 year average pay} &= (205,000 + 208,000 + 210,000) / 3 \\ &= 207,667\end{aligned}$$

$$\begin{aligned}\text{\$415 compensation limit} &= 207,667 * (10/10) \\ &= 207,667\end{aligned}$$

415 DOLLAR LIMIT

Under §415(b)(1)(A), the dollar limit is reduced when participation is less than ten years. In §415(b)(5)(C), it states that the pro-rata reduction would never be less than 1/10:

$$\begin{aligned}\text{\$415 dollar limit during 2014} &= 210,000 * (9/10) && \text{for ages 62-65} \\ &= 189,000\end{aligned}$$

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Problem 13 – Page 2

Revised 03/18/16

§415(b)(2)(E)(i) says to use the lesser of 5% and the interest rate specified in the plan to increase the §415 dollar limit after age 65, but here the code is misleading. The examples in the 1.415 regulation clarify the increases in the §415 dollar limit.

Mandated basis - Actuarial increase factor

Here is the short version of what you need to know. If you want to see the long version, check out the notes at the end of this solution.

Actuarial increase factor for 415 dollar limit, based on mandated 5%, applicable mortality:

Death benefit definition	Factor
Waived QPSA, or NO death benefit (complete forfeiture on death)	$N_{65}^{(12)} / N_X^{(12)}$
QPSA death benefit, and plan charges participants for cost of QPSA (default per 2010 exam condition 9)	$N_{65}^{(12)} / N_X^{(12)}$
100% of PV of accrued benefit (no forfeiture on death)	$v^{65-x} (\ddot{a}_{65}^{(12)} / \ddot{a}_X^{(12)})$
QPSA death benefit, and plan does NOT charge for cost of QPSA (treat as no forfeiture on death)	$v^{65-x} (\ddot{a}_{65}^{(12)} / \ddot{a}_X^{(12)})$

This problem is unusual, since you are not told about the plan's death benefit. Instead, you are given actuarial increase factors based on applicable mortality, and several interest rates. The mandated basis factor uses 5% and is equal to 1.088.

Plan basis increase factor

The problem states that the plan actuarial equivalence factor is equal to 1.089.

Life annuity benefit

$$\begin{aligned} \text{\$415 dollar limit at age 66} &= 189,000 * \text{lesser of } [1.088 \text{ or } 1.089] \\ &= 205,632 \end{aligned}$$

$$\begin{aligned} \text{Life annuity \$415 limit at 66} &= \text{lesser of 3 year comp limit and dollar limit} \\ &= \text{lesser of } 207,667 \text{ and } 205,632 \\ &= 205,632 \end{aligned}$$

Problem 13 – Page 3

Revised 03/18/16

Lump sum benefit

This problem gives you various lump sum factors. To convert the straight life annuity benefit to a lump sum, you should multiply by the lesser of these annuity values:

1. Straight life annuity using plan basis for actuarial equivalence
2. Straight life annuity using 5.5% interest rate and 417(e) applicable mortality
3. 1.05 times [straight life annuity using 417(e) applicable interest rate and applicable mortality]

The lesser of these three values is 11.32. The resulting lump sum benefit is $11.32 \times 205,632$, which is equal to 2,327,754.

Answer is D

NOTES

Definition of lump sum factor

There is a slightly different lump sum calculation for some small plans. In 415(b)(2)(E)(ii), it says you should not use the third annuity definition above for plans of an eligible employer under IRC 408(p)(2)(C)(i). This is defined as an employer with 100 or less employees who earn 5,000 or more in the prior year.

Lengthy discussion of actuarial increases in 1.415 regulation - see next page

Problem 13 – Page 4

Lengthy discussion of actuarial increases in 1.415 regulation

This problem was simplified compared to most prior questions involving retirement after age 65. In earlier problems, the key point is interpretation of the plan's actuarial increase for late retirement benefits. As described in the solution above, the actuarial increase must reflect the death benefit under the plan.

Actuarial increase of 415 dollar limit above age 65 (LONG version)

If the plan document does not define a life annuity at both age 65 and the late retirement age, then the §415 dollar limit is increased using a single factor calculated based on the mandated mortality and interest rate. If the plan does define a life annuity benefit at both ages, then the §415 dollar limit is increased using the lower of two factors:

1. Actuarial increase factor based on the mandated mortality and interest rate, and
2. Adjustment ratio for plan benefits after age 65 (as defined in the regulation)

The definition of the actuarial equivalent increase factor (on the mandated mortality and interest rate) will vary depending on the definition of the death benefit. If there is no forfeiture on death, then you can ignore pre-retirement mortality:

$$v^{65-x} (\ddot{a}_{65}^{(12)} / \ddot{a}_x^{(12)})$$

If the death benefit is defined as 100% of the present value of the accrued benefit, then there is no forfeiture upon death. In 1.415(b)-1(e)(3), it states that you may treat a typical Qualified Pre-retirement Survivor Annuity (QPSA) death benefit as resulting in no forfeiture on death. This treatment is only allowed if the plan does not charge for the cost of the QPSA, and if the plan applies the same treatment for all retirement ages (both before age 65 and after age 65).

If there is a forfeiture on death, then you must reflect pre-retirement mortality:

$$(N_{65}^{(12)} / N_x^{(12)}) = (v^{65-x} / {}_{x-65}p_{65}) (\ddot{a}_{65}^{(12)} / \ddot{a}_x^{(12)})$$

If there is no death benefit, then there is a full forfeiture upon death. This can happen if the participant is single, or if they are married, and they elect out of the Qualified Pre-retirement Survivor Annuity (QPSA). With a typical QPSA death benefit, there will be a forfeiture on death. Based on 2012 exam condition 10, in the absence of any other information, you should assume that the plan does charge the participants for the cost of the QPSA.

Problem 13 – Page 5

Lengthy discussion of actuarial increases in 1.415 regulation - continued

Actuarial increase factor for 415 dollar limit, based on mandated 5%, applicable mortality:

Death benefit definition	Factor
Waived QPSA, or NO death benefit (complete forfeiture on death)	$N_{65}^{(12)} / N_X^{(12)}$
QPSA death benefit, and plan charges participants for cost of QPSA (default per exam condition 12)	$N_{65}^{(12)} / N_X^{(12)}$
100% of PV of accrued benefit (no forfeiture on death)	$v^{65-X} (\ddot{a}_{65}^{(12)} / \ddot{a}_X^{(12)})$
QPSA death benefit, and plan does NOT charge for cost of QPSA (treat as no forfeiture on death)	$v^{65-X} (\ddot{a}_{65}^{(12)} / \ddot{a}_X^{(12)})$

If the plan did define a life annuity benefit at both ages, then the §415 dollar limit would be increased using the lower of two factors: The plan basis factor is equal to the “Adjustment ratio” for plan benefits after age 65 (as defined in the regulation).

The “Adjustment ratio” is equal to A / B:

- A. Adjusted immediately commencing straight life annuity
 - (1) Ignoring Section 415 limits and accruals after age 65
 - (2) Including actuarial increases after 65

- B. Adjusted age 65 straight life annuity
 - (1) For hypothetical participant at age 65 with same accrued benefit as the actual participant
 - (2) Ignoring Section 415 limits, accruals after age 65, AND actuarial increases after 65

In the absence of any additional information, you should assume that the plan benefits are actuarially increased beyond normal retirement age. The only time you should not make this assumption is when the problem clearly indicates that the plan does not grant actuarial increases in benefits.

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Problem 14

The problem gives you the 01/01/2014 valuation results, but does not specify when the adjusted funding target attainment percentage (AFTAP) was certified. The first step in the problem is to calculate the 2014 AFTAP.

The AFTAP is defined in IRC 436(j)(2), and it is similar to the funding target attainment percentage (FTAP) defined in 430(d)(2). The AFTAP has an adjustment for any non-HCE annuity purchases (NHAP) in the prior two years. The calculation uses the actuarial asset value (AAV), the carryover balance (CB), the prefunding balance (PB), and the non At-Risk funding target:

$$\text{AFTAP} = \frac{\text{NHAP} + \text{AAV} - \text{CB} - \text{PB}}{\text{NHAP} + \text{Funding Target (non At-Risk)}}$$

The problem gives you data about annuity purchases for the prior two years. You should not include the annuity purchases for 2014.

$$\begin{aligned} \text{2014 AFTAP} &= \frac{98,000 + 2,400,000 - 80,000 - 50,000}{98,000 + 3,000,000} \\ &= 76.44\% \end{aligned}$$

Unlike prior similar exam problems, you are not told that the plan offers a lump sum payment option. Instead, you are told that the plan sponsor takes action so the AFTAP is at least 80%.

Since the AFTAP is less than 80%, there may be a deemed reduction under IRC 436(f)(3). If it is possible to reduce the CB (and PB) enough to increase the AFTAP to 80%, then this reduction must occur as if the employer had elected to do so under IRC 430(f). The simplest approach is to calculate the final value of the CB /PB that produces an AFTAP that is equal to 80%:

$$\begin{aligned} \text{Desired AFTAP} &= \frac{98,000 + 2,400,000 - Z}{98,000 + 3,000,000} \\ &= 80.0\% \end{aligned}$$

Z represents the value of the CB plus PB, after the IRC 436(f)(3) reduction.

$$.80(3,098,000) = 2,498,000 - Z$$

$$\begin{aligned} Z &= 2,498,000 - 2,478,400 \\ &= 19,600 \end{aligned}$$

The CB of 80,000 is completely eliminated. The PB is reduced from 50,000 to 19,600, so the value of X is the difference of 30,400.

Answer is C

2014 EA-2L Exam Solutions

Problem 15

FALSE

Newly established plans are exempt from the 436(e) restrictions for the first 5 years. But they are not exempt from the 436(d) restrictions on accelerated benefit distributions.

Answer is B

2014 EA-2L Exam Solutions

Problem 16 – Page 1

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

This problem gives you information about two plans. The first plan covers salaried employees, and has an eligibility requirement of age 18 and 1 year of service. The second plan covers hourly employees, and has an eligibility requirement of age 21 and 1 year of service.

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

You need to aggregate all the benefit percentages of the employer's plans to do the ABPT calculations. The key point of the problem is identifying the employees who should be included in the ABP test. The employees who are excludable (based on age and service) is based on those employees who do not satisfy either plan's eligibility requirements. All employees who are less than age 18, or who have less than 1 year of service, are excludable.

Category	Hourly employees	
	NHCEs	HCEs
1 year of service, ages 18 to 20	35*0.0%	0
1 year of service, ages 21 to 39	20*2.5%	10*2.0%
1 year of service, ages 40 +	10*2.0%	15*1.8%
Totals	65 employees 70.0%	25 employees 47.0%

Note that the 35 employees under age 21 are included with a zero benefit accrual rate. They are non-excludable, since they satisfy the salaried plan eligibility requirement.

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Problem 16 – Page 2

Category	Salaried employees	
	NHCEs	HCEs
1 year of service, ages 18 to 20	15*1.8%	0
1 year of service, ages 21 to 39	20*2.0%	5*2.2%
1 year of service, ages 40 +	10*1.8%	20*1.8%
Totals	45 employees 85.0%	25 employees 47.0%

The ABP for NHCEs equals the sum of benefit accrual rates for NHCEs in both plans divided by the total number of non-excludable NHCEs. The ABP for HCEs equals the sum of benefit accrual rates for HCEs in both plans divided by the total number of non-excludable HCEs.

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:

$$\begin{aligned}\text{ABPT} &= \frac{(70.0\% + 85.0\%) / (45+65)}{(47.0\% + 47.0\%) / (25+25)} \\ &= 1.4091\% / 1.8800 \\ &= 74.95\%\end{aligned}$$

Answer is C

2014 EA-2L Exam Solutions

Problem 17

Similar to 2012#14

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 was not made by the plan administrator, the actuary does not have to provide the information.

Answer is B

2014 EA-2L Exam Solutions

Problem 18

Similar to 2013 #05

This is a relatively straightforward 415 problem. The key point of the problem is knowing that the §415 limits are reduced for service (and participation) less than 10 years.

	At 12/31/12	At 12/31/13
Age	53	54
Service	3 years	4 years
Participation	1 year	2 years

PLAN BENEFIT

This is a simplified problem, which gives no information on the plan benefit.

415 COMP LIMIT

The §415(b)(1)(B) compensation limit is reduced when service is less than ten years. This limit is based on the highest three consecutive years of pay. Based on the 415 regulation that became final in 2007, earnings under §415 are subject to the §401(a)(17) limit. In this problem, the pay never exceeds the 401(a)(17) limit.

	At 12/31/12	At 12/31/13
2010 pay	60,000	N/A
2011 pay	75,000	75,000
2012 pay	40,000	40,000
2013 pay	N/A	250,000
Three year average pay	58,333	121,667
§415 compensation limit	$(3/10) * 58,333$ = 17,500	$(4/10) * 121,667$ = 48,667

415 DOLLAR LIMIT

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

	At 12/31/12	At 12/31/13
§415 dollar limit for ages 62-65	200,000	205,000
Reduced §415 dollar limit	$(1/10) * 200,000$ = 20,000	$(2/10) * 205,000$ = 41,000

The 415 limit on a life annuity basis is the lesser of the compensation limit and the dollar limit. X is equal to 17,500 and Y is equal to 41,000. The difference X - Y is 23,500.

Answer is B

2014 EA-2L Exam Solutions

Problem 19

FALSE

This question tests your knowledge of the requirements of the Internal Revenue Code and ERISA regarding fiduciary standards. Many similar items have appeared in True/False questions on prior exams.

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).

The key idea of this question is the meaning of a "fiduciary action". Many actions taken that are related to operation of the plan can be fiduciary actions, if they concern the management or administration of the plan or its assets.

The decision by the sponsor to terminate the plan is basically a business decision. As a result, it does not satisfy the definition of a "fiduciary action".

Answer is B

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Problem 20 – Page 1

Similar to 2009 #26

The main point of this problem is whether you know the definition of the IRC 436(c) limitation regarding plan amendments. If a plan's adjusted funding target attainment percentage (AFTAP) is less than 80%, then the amendment cannot take effect.

The AFTAP is defined in IRC 436(j)(2), and it is similar to the funding target attainment percentage (FTAP) defined in 430(d)(2). The AFTAP has an adjustment for any non-HCE annuity purchases (NHAP) in the prior two years. The calculation uses the actuarial asset value (AAV), the carryover balance (CB), the prefunding balance (PB), and the non At-Risk funding target:

$$\text{AFTAP} = \frac{\text{NHAP} + \text{AAV} - \text{CB} - \text{PB}}{\text{NHAP} + \text{Funding Target (non At-Risk)}}$$

If the AFTAP was below 80% before reflecting the effect of the plan amendment, the required contribution is the increase in the funding target due to the amendment. If the AFTAP was above 80% before reflecting the effect of the plan amendment, the required contribution is the amount necessary to produce an AFTAP equal to 80% after reflecting the effect of the plan amendment.

In this problem, you are told that there are no annuity purchases, so the NHAP is equal to zero. The CB is equal to zero and the PB is equal to 15,000.

Unlike prior exam problems, you need to calculate the funding target at 01/01/2014:

01/01/14	
Age	65
Service	10 years

$$\begin{aligned}\text{Accrued ben} &= 5.0\%(10)(100,000) && \text{(prior to the amendment)} \\ &= 50,000\end{aligned}$$

The funding target is the present value of the accrued benefit. Since the participant is at NRA 65, you simply multiply by the value of the monthly annuity given in the problem.

$$\begin{aligned}\text{FT at 65} &= 50,000(9.98) \\ &= 499,000\end{aligned}$$

$$\begin{aligned}\text{AFTAP}_{\text{before}} &= (\text{zero} + 395,000 - 0 - 15,000) / (0 + 499,000) \\ &= 76.15\%\end{aligned}$$

Problem 20 – Page 2**Revised 04/26/16**

The AFTAP before the amendment is less than 80%. The required contribution under 436(c) is the increase in the funding target due to the plan amendment.

$$\begin{aligned}\text{Accrued ben} &= 5.5\%(10)(100,000) && \text{(after the amendment)} \\ &= 55,000\end{aligned}$$

$$\Delta \text{ Accd ben} = 5,000$$

The question asks for the value of X, which is the 436(c) contribution paid at 07/01/2014. I will let Y represent the 436(c) contribution paid at the valuation date (01/01/2014).

$$\begin{aligned}Y &= \Delta \text{FT at 65} \\ &= 5,000(9.98) \\ &= 49,900\end{aligned}$$

The contribution of X must be increased by the effective interest rate for the six months from 01/01 to 07/01:

$$\begin{aligned}X &= 49,900*(1.06)^{6/12} \\ &= 51,375\end{aligned}$$

Answer is E**NOTES**

1. There is an exception in IRC 436(c)(1) for amendments to plans with benefits that are not based on compensation.
2. Using simple interest, you get a value in the same answer range:

$$\begin{aligned}X &= 49,900*[1 + (6/12)(.06)] \\ &= 51,397\end{aligned}$$

3. The employer could elect to eliminate the PB, but it does not change the answer:

$$\begin{aligned}\text{AFTAP}_{\text{before}} &= (\text{zero} + 395,000 - 0 - 0 \text{ PB}) / (0 + 499,000) \\ &= 79.16\%\end{aligned}$$

Since the pre-amendment AFTAP is less than 80%, the required contribution is still equal to the increase in the funding target due to the plan amendment, or 49,900.

2014 EA-2L Exam Solutions

Problem 21 – Page 1

The key point of this question is knowing the definition of a rate group. You must know how to do calculations involving imputed permitted disparity and the accrual rate definitions under 401(a)(4).

A rate group is defined based on all employees with rates greater than or equal to both the normal accrual rate (NAR) and the most valuable accrual rate (MVAR) for an HCE. The method to calculate accrual rates is not given. Since you are only given the annual benefit accrual, you must use the annual method.

You are told that the most valuable accrual rate (MVAR) is equal to the normal accrual rate (NAR). This makes sense, since the plan has no early retirement benefits. You must calculate the NAR, and then you can apply the rules for imputed permitted disparity.

	Smith	Jones
HCE?	YES	NO
2013 compensation	250,000	40,000
Birth date	08/01/60	03/01/85
Social Security retirement age	67	67
Permitted disparity factor	.65%	.65%
01/01/2014 age	53.42	28.83
Benefit accrual	1,804	X
401(a)(7) limit	255,000	255,000
Normal accrual rate	1,804 / 250,000 = .722%	X / 40,000

The permitted disparity factors shown above are based on the values from the lookup tables given with the exam. For all participants born after 1954, the Social Security retirement age is age 67.

The point of the problem is that you actually define the rate groups using the NAR and MVAR after imputing permitted disparity. There are different calculations for the imputed permitted disparity based on whether the average annual compensation exceeds the covered compensation.

The data in the problem gives Smith's covered compensation as 95,160 and Jones' covered compensation as 110,100. For employees with average annual compensation above covered compensation, you must calculate the "C rate" and the "D rate", and use the lesser of the rates. These are defined at 1.401(a)(4)-7(c)(3) as:

C Rate	D Rate
$\frac{\text{ER provided accrual}}{\text{avg. annual comp} - \frac{1}{2} (\text{covered comp.})}$	$\frac{\text{ER provided accrual} + (\text{permitted disparity factor}) * (\text{covered comp.})}{\text{Average annual compensation}}$

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Problem 21 – Page 2

Smith's NAR / MVAR

Pay values used for the average annual compensation must not exceed the 410(a)(17) limit. As shown in the prior calculation of the NAR, the 401(a)(17) limit has no effect.

$$\begin{aligned}\text{C rate} &= 1,804 / [250,000 - .50(95,160)] \\ &= 0.891\%\end{aligned}$$

$$\begin{aligned}\text{D rate} &= [1,804 + .65\%(95,160)] / 250,000 \\ &= 0.969\%\end{aligned}$$

The final NAR / MVAR adjusted for imputed permitted disparity is the lesser of the two values, or .891%.

Jones' NAR / MVAR

For employees with average annual compensation \leq covered compensation, you must calculate the “A rate” and the “B rate”, and use the lesser of the rates. The unadjusted accrual rate is the NAR (or MVAR) without imputing permitted disparity.

A Rate	B Rate
$2 * \text{unadjusted accrual rate}$	$\text{unadjusted accrual rate} + \text{permitted disparity rate}$

$$\text{Unadjusted rate} = X / 40,000$$

$$\text{A rate} = 2X / 40,000$$

$$\text{B rate} = .65\% + X / 40,000$$

The lesser of these two rates must equal the adjusted accrual rate for Smith, or .891%. If you think carefully about these definitions, the A rate definition will give the lesser value.

$$\begin{aligned}0.891\% &= 2X / 40,000 \\ X &= 0.891\%(20,000) \\ &= 178.24\end{aligned}$$

Answer is D

NOTE

If you assume the B rate is the lower value, you will quickly see that is impossible. The reason is that .89% minus .65% is equal to .24% (the value of $X/40,000$). But $2 * .24\%$ is less than .89%. This means that you must use the A rate to solve for X.

2014 EA-2L Exam Solutions

Problem 22

TRUE

This question tests a basic concept - when do you stop paying premiums to the PBGC? This is spelled out in the first few pages of the Comprehensive Premium package:

When Filing Obligation Ceases

You must continue to make premium filings and pay premiums through and including the plan year in which any of the following occurs:

- *Plan assets are distributed in satisfaction of all Benefit Liabilities pursuant to the plan's termination.*
- *A trustee is appointed for the plan under ERISA section 4042.*
- *The plan disappears by transferring all its assets and liabilities to one or more other plans in a Merger or Consolidation.*
- *The plan ceases to be a covered plan under ERISA section 4021.*

The point is that you continue paying premium for the plan year in which the trustee is appointed. The second example given in the instructions is quite similar to the data given in this problem.

Answer is A

2014 EA-2L Exam Solutions

Problem 23 – Page 1

Similar to 2011 #31

This is another complicated / confusing question on IRC 436 certifications. The good news is that this is simpler than question 31 on the 2011 exam.

The plan was set up at 01/01/2009, and it is not subject to IRC 436(e) restrictions on benefit accruals until 01/01/2014. The value of Y reflects the number of months in 2014 that the plan is subject to IRC 436(e) restrictions, when the AFTAP is less than 60%.

Since the plan has a lump sum payment form, the plan is subject to the IRC 436(d) restrictions from the inception date. The 436(d) restrictions apply when the AFTAP is less than 80%.

The first step is to create a table showing the certification information given in the problem. In addition, you need to allow for periods when no AFTAP has been certified.

At January 1, the presumed AFTAP will have the same value as the prior year's certified AFTAP. If there has been no certification by October 1, then the AFTAP is presumed to be less than 60% at that date.

If the current year's AFTAP is not certified by April 1, the presumed AFTAP may be subject to the "10% haircut" in the regulations. This is only done if the presumed AFTAP crosses the boundary values of 60% or 80%. For example, at 01/01/2011 the presumed AFTAP is equal to 85%, which was the value of the 2010 certified AFTAP. At 04/01/2011 the presumed AFTAP drops to 75%.

Plan Year	Certification Type	Date Issued	Value
2009	Specific	01/15/2009	100%
2010	Presumed	01/01/2010	100%
2010	Specific	02/01/2010	85%
2011	Presumed	01/01/2011	85%
2011	Presumed	04/01/2011	75%
2011	Range	05/01/2011	80%-100%
2011	Specific	12/01/2011	85%
2012	Presumed	01/01/2012	85%
2012	Presumed	04/01/2012	75%
2012	Specific	07/01/2012	58%
2013	Presumed	01/01/2013	58%
2013	Specific	03/01/2013	72%
2014	Presumed	01/01/2014	72%
2014	Presumed	10/01/2014	< 60%
2014	Specific	11/01/2014	65%

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Problem 23 – Page 2

Now I will re-write the table showing the time periods that the plan is subject to the IRC 436 restrictions.

Plan Year	Certification Type	Date Issued	Value	436(d) restrictions	436(e) restrictions
2009	Specific	01/15/2009	100%		
2010	Presumed	01/01/2010	100%		
2010	Specific	02/01/2010	85%		
2011	Presumed	01/01/2011	85%		
2011	Presumed	04/01/2011	75%	1 month	
2011	Range	05/01/2011	80%-100%		
2011	Specific	12/01/2011	85%		
2012	Presumed	01/01/2012	85%		
2012	Presumed	04/01/2012	75%	Through 12/31/14	
2012	Specific	07/01/2012	58%		
2013	Presumed	01/01/2013	58%		
2013	Specific	03/01/2013	72%		
2014	Presumed	01/01/2014	72%		
2014	Presumed	10/01/2014	< 60%		3 months
2014	Specific	11/01/2014	65%		

The value of Y is 3, since the IRC 436(e) restrictions apply for the last three months of 2014. Since the AFTAP is not certified until after 10/01, it is conclusively presumed to be less than 60% for the remainder of the year. The only effect of the 11/01/2014 certification is that the value of 65% is used for the presumed AFTAP at 01/01/2015.

The value of X is 34. The IRC 436(d) restrictions apply for one month in 2011, and for 33 months in 2012-2014 (all except the first three months in 2012).

The sum of X + Y is 37 months.

Answer is C

2014 EA-2L Exam Solutions

Problem 24

Similar to 2013 #09

FALSE

It appears the wording of the question has a minor typo. It probably should refer to the employer's annual withdrawal liability payment.

This is a simple question on the definition of the annual withdrawal liability payment. In ERISA 4219(c)(1)(C)(i), it defines the annual payment amount as the product of (1) and (2):

- (1) Highest contribution rate in the 10 years including year of withdrawal
- (2) Highest consecutive 3 year average of hours in the 10 years excluding year of withdrawal

The problem states that the employer's contribution rate has increased each year. The withdrawal liability payment should be based on the final year's contribution rate - not the highest average contribution rate.

Answer is B

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Problem 25 – Page 1

Similar to 2013 #32

This is a straightforward problem on calculating the Top Heavy (T-H) minimum. The first step in the problem is calculating the accrued benefit under the plan formula. Then you calculate the T-H minimum to see if it is larger.

01/01/2014 data

Age	60
Past service	14

The plan benefit is calculated using the final three year average earnings:

$$\begin{aligned}\text{FAE3} &= (65,000 + 75,000 + 85,000) / 3 \\ &= 75,000\end{aligned}$$

$$\begin{aligned}\text{Plan benefit} &= 75,000 * (1.25\%) * (14) \\ &= 13,125\end{aligned}$$

The problem does not tell you the T-H averaging period. Based on IRC 416(c)(1)(D)(1), the T-H averaging period can not exceed five consecutive years. In the absence of any specific data in the problem, you should assume the plan uses a T-H averaging period of five years.

The T-H minimum benefit is calculated using the highest five year average earnings from hire date up through the end of the last year that the plan was Top Heavy. The T-H pay is based on the five years from 2009 through 2013:

2009-2013

$$\begin{aligned}\text{FAE5} &= (65,000 + 75,000 + 65,000 + 75,000 + 85,000) / 5 \\ &= 73,000\end{aligned}$$

The T-H minimum is based on years the plan has been T-H. The problem says the plan has been T-H in every year, except for 2007 through 2009. The plan has been T-H for 11 years, but the years of service for the T-H minimum is limited to 10 years.

$$\begin{aligned}\text{T-H min} &= 73,000 * (2.0\%) * (10) \\ &= 14,600\end{aligned}$$

Smith's final accrued benefit is the greater of the plan benefit and the T-H minimum, or 14,600.

Answer is C

(see notes on next page)

Problem 25 – Page 2

NOTES

1. The definition of T-H pay in IRC 416(c)(D) is really vague. My interpretation has always been that the T-H pay is updated each time the plan is found to be T-H. You look back at ALL years prior to the last year that the plan was Top Heavy, and find the five highest consecutive years. This period includes years that the plan is NOT Top Heavy, which is why the 2009 pay is included in the calculation of the T-H minimum benefit.
2. The code (and regulation) state that if any service is disregarded under IRC sections 411(a)(4), (5), or (6), then for the top heavy minimum benefit, salary paid for those years is ignored. But 411(a) concerns vesting service – not benefit accrual service.
3. Questions can get tricky when they specify the plan's effective date. Years of service before the plan effective date can be excluded for vesting purposes, and this would affect the T-H pay calculation. You need to read the question carefully - for example, the problem could use language similar to this: "the plan credits the minimum amount of vesting service" or "the plan credits vesting service using the most restrictive rules allowed".

2014 EA-2L Exam Solutions

Problem 26

FALSE

This is a simple question on AFTAP recertification. In general, you must recertify the AFTAP when there is a material change.

A material change is defined as a change in the AFTAP that would result in disqualification of the plan. For example, the plan could be disqualified due to IRC 436(d) restrictions if the AFTAP was previously certified as above 80%, and after certain changes the AFTAP was actually below 80%. The opposite situation can also cause disqualification if the plan is subject to 436(d) restrictions.

In this problem, the plan's AFTAP changes from 95.60% to 100.20%. This is clearly an immaterial change. The change in AFTAP could not affect the operation of the plan.

It is important that the problem states the plan is not in bankruptcy. For a plan sponsor in Chapter 11, the 436(d) restrictions apply when the AFTAP is less than 100%.

Answer is B

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Problem 27

Similar to 2008 #28

Based on the measurement period, the method to calculate accrual rates is the “Annual method”. 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 change in the accrued benefit by (testing service)*(average annual compensation). This problem gives you the change in the accrued benefit as 600 and the annual pay as 30,000.

Smith is age 55 at 12/31, and has 15 years of service. Smith becomes eligible for early retirement at age 60. To calculate the most valuable accrual rate, you need to allow for payment at ages 60 to 65, converted to a QJ&S form. The normalized benefit reflects a life annuity payment form at testing age 65:

Δ							
<u>Age</u>	<u>Accrued Benefit</u>	<u>ERF</u>	<u>J&S</u>	<u>Early ret J&S benefit</u>	<u>50% J&S Annuity</u>	<u>Interest</u>	<u>Normalized Δ Benefit</u>
	(1)	(2)	(3)	(4)=(1)(2)(3)	(5)	(6)	(4)(5)(6) / 8.89
60	600	.70	.90	378.00	10.35	(1.085) ⁵	661.73
61	600	.76	.90	410.40	10.23	(1.085) ⁴	654.51
62	600	.82	.90				
63	600	.88	.90				
64	600	.94	.90				
65	600	1.00	.90	540.00	9.65	1.0	586.16

It should be clear that you don't need to do calculations after age 61, since the factors for annuity form and interest accumulation are lower at higher ages. The MVAR equals the greatest normalized benefit divided by both testing service and testing compensation:

$$\begin{aligned}
 \text{MVAR} &= \frac{\Delta \text{ benefit}}{(1) * (\text{Testing Comp})} \\
 &= \frac{661.73}{(1) * (30,000)} \\
 &= 2.21\%
 \end{aligned}$$

Answer is D

NOTE

If you can skip all the arithmetic at ages 62 through 64, this is a fairly short 5 point problem!

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Problem 28 – Page 1

Similar to 2013 #27

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 Premium Funding Target at 01/01/2014 on two set of segment rates. The problem states that an election was made to use the Alternative Premium Funding Target. The key point of the problem is that you do not use the MAP-21 segment rates to determine the PBGC 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 01/01/2014. 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. This is a mid-size plan (between 100 and 500 participants), so the filing date is 10/15/2014.

Since the 2013 receivable contribution is paid prior to that date, it should be included in the asset value. Note that you should not include the 2014 receivable contribution.

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 2013 plan year. The interest rate used for discounting is 5.0%:

Unadjusted Market value	=	41,000,000
Adjusted market value	=	$41,000,000 + 1,000,000(1.05)^{-6/12}$
	=	41,975,900
ALT premium funding target	=	50,000,000
Unfunded vested liability	=	$50,000,000 - 41,975,900$
	=	8,024,100

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 .014. This is another minor trick, since the rate was .009 for 2013 and earlier years.

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Problem 28 – Page 2

$$\begin{aligned}\text{Variable rate premium} &= 8,025,000 * .014 \\ &= 112,350\end{aligned}$$

Answer is D

NOTE

You could use simple interest, which gives an adjusted market value of 41,975,610. The resulting unfunded vested liability is 8,024,390, and the variable rate premium is the same value of 112,350. In general, you will get a result in the same answer range whether you use simple interest or compound interest.

2014 EA-2L Exam Solutions

Problem 29

Similar to 2013 #19

Revised 04/14/17

TRUE

Based on the information given, the plan must make a 4010 filing for the 2014 plan year.

Plans are exempt from 4010 reporting if they satisfy the exemption at 4010.11. All the plans in the controlled group must satisfy these conditions:

- The aggregate 4010 funding shortfall for all plans maintained by the controlled group is less than \$15 million, and
- Plan sponsor has made their quarterly contributions timely, and
- No minimum funding waivers that exceed \$1 million

The reason the plan is not exempt is that they did not make their quarterly contributions on a timely basis.

Answer is A

NOTE

Plans are exempt from reporting the actuarial information under 4010.8 if they meet all three of the following conditions. Note that the plans are not exempt from a 4010 filing, since they have to report information under 4010.7 and 4010.9.

- The plan either
 - Has less than 500 participants, and has a 4010 funding shortfall (defined in 4010.11) less than \$15 million, or
 - Has benefit liabilities less than or equal to the market value of assets, and
- Plan sponsor has made their quarterly contributions timely, and
- No minimum funding waivers

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Problem 30

FALSE

Based on the PBGC 4006 regulation, you do include the value of the supplement for vested participants. This is only done for those participants who are currently eligible to receive the supplement.

Answer is B

Problem 31

Similar to 2013 #10

Revised 02/16/16

§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.

The main point of the problem is determination of whether the new plan satisfies the definition of a qualified replacement plan. The new plan covers 175 participants when it is established.

You are given participant counts for the prior plan at two different dates. At the 09/30/13 termination date, there were 200 participants actively employed. The replacement plan is established at 01/01/14. At 12/31/13, there were 180 participants actively employed (since 20 participants had terminated).

The correct participant count to use for the 95% threshold is based on the date the replacement plan is established. Since $95\% \times 180$ is 171 participants, the plan is a qualified replacement plan.

That means the excise tax rate is reduced to 20%. The resulting excise tax is 200,000, which equals $20\% \times 1,000,000$.

Answer is B

NOTE

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)]

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Problem 32

Similar to 2013 #11

This question is similar to other recent exam questions on the 901.20 regulations. The main difference is that this question covers the newer version of these regulations (updated in 2011).

I. FALSE

This item is based on the certification that the enrolled actuary signs on the Schedule SB. The language is identical for the Schedule MB as well:

“To the best of my knowledge, the information supplied in this schedule and accompanying schedules, statements and attachments, if any, is complete and accurate. Each prescribed assumption was applied in accordance with applicable law and regulations. In my opinion, each other assumption is reasonable (taking into account the experience of the plan and reasonable expectations) and such other assumptions, in combination, offer my best estimate of anticipated experience under the plan.”

II. FALSE

In 901.20(k), it requires the actuary to report any non-filing of actuarial documents they have signed with the applicable agency. The applicable agency does not have to be the Internal Revenue Service. It could be the PBGC (for the variable rate premium calculations).

III. FALSE

In 901.20(b)(2), it states the actuary should not perform actuarial services for any person or organization which may utilize their services in a fraudulent manner (or in a manner inconsistent with law).

None of the items are True.

Answer is E

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Problem 33

Similar to 2010 #44

TRUE

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.

In ERISA Section 409(a), it states that a fiduciary will be personally liable for a breach of fiduciary responsibility. The result is that only the trustee who borrowed the money is liable - so they are the only one who pays the excise tax.

Answer is A

Problem 34

This question tests your knowledge of the requirements regarding 204(h) notices. Unlike earlier problems, this question tests some new details from the 54.4980F regulation.

I. TRUE

Q&A-11 of the 54.4980F regulation describes the information that must be provided in the 204(h) notice. In section (a)(4), it discusses the information necessary to determine the magnitude of the reduction in benefits due to the amendment. Item (a)(4)(ii)(B) specifically discusses the illustrative examples when changing to a cash balance plan.

II. FALSE

Q&A-15(a) of the 54.4980F regulation states, in a single employer plan, the employer is responsible for paying the excise tax. In a multiemployer plan, the plan itself is responsible for paying the excise tax.

III. FALSE

Q&A-12(a) of the 54.4980F regulation discusses the situation where the participant can choose between different formulas. There is no specific time frame to provide the 204(h) notice. It must be provided early enough for the participant to consider the information in the notice, think about the choice, and make a decision before the effective date of the amendment.

Only item I is true.

Answer is A

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Problem 35

TRUE

IRC 4975(c)(1) defines "prohibited transaction" to include any direct or indirect transaction between a plan and a disqualified person. It then lists five categories, including "lending of money or other extension of credit".

Answer is A

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Problem 36 – Page 1

Similar to 2013 #25

The main point of this problem is calculating the additional contribution under IRC 436 to allow the 02/01/14 plan amendment to go into effect. To do this, you must know the rules in the 436 regulation regarding computation of adjusted funding target attainment percentage (AFTAP).

The amount of the additional contribution under IRC 436 is different based on the value of the AFTAP prior to the amendment. If that value is less than 80%, then the contribution must be equal to the increase in the funding target due to the plan amendment. If the AFTAP is at least 80% prior to the amendment, then the contribution must be sufficient to bring the AFTAP up to 80% after reflecting the amendment.

The AFTAP is defined in IRC 436(j)(2), and it is similar to the funding target attainment percentage (FTAP) defined in 430(d)(2). The AFTAP has an adjustment for any non-HCE annuity purchases (NHAP) in the prior two years. The calculation uses the actuarial asset value (AAV), the carryover balance (CB), the prefunding balance (PB), and the non At-Risk funding target:

$$\text{AFTAP} = \frac{\text{NHAP} + \text{AAV} - \text{CB} - \text{PB}}{\text{NHAP} + \text{Funding Target (non At-Risk)}}$$

The amount of the additional contribution under IRC 436(c) is based on the value of the post-amendment AFTAP. If that value is 80% or above, then the additional contribution under IRC 436 is zero.

The problem does not give you the value of the funding target. You need to determine the presumed value of the funding target (PFT) at 01/01/2014. This calculation is based on the presumed AFTAP at 01/01/2014. At 01/01/2014, the presumed AFTAP is 83%, which is the same as the 2013 AFTAP.

Pre-amendment

Presumed

$$\text{AFTAP} = \frac{\text{NHAP} + \text{AAV} - \text{CB} - \text{PB}}{\text{NHAP} + \text{Presumed Funding Target (non At-Risk)}}$$

Pre-amendment

PAFTAP

$$83.0\% = \frac{0 + 25,000,000 - 0 - 1,500,000}{0 + \text{PFT}}$$

$$\begin{aligned} \text{PFT} &= (25,000,000 - 1,500,000) / 83.0\% \\ &= 28,313,253 \end{aligned}$$

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Problem 36 – Page 2

Revised 03/05/18

The problem states that the plan amendment increases the funding target by 3,500,000. You can use the PFT to determine the post-amendment presumed AFTAP. It should be clear that the value is less than 80%:

$$\begin{aligned}\text{Post-amendment PAFTAP} &= \frac{0 + 25,000,000 - 0 - 1,500,000}{0 + 28,313,253 + 3,500,000} \\ &= 23,500,000 / 31,813,253 \\ &= 73.86\%\end{aligned}$$

The problem states that the plan sponsor will make an additional contribution at 02/01/14 to allow the plan amendment to take effect. The contribution must be discounted to reflect the later date of payment.

The first step in the solution is to calculate the additional contribution at 01/01 to allow the plan amendment to take effect. I'll call that Y, and it must produce a PAFTAP equal to 80%.

$$\text{Post-amendment PAFTAP} = \frac{0 + 25,000,000 + Y - 0 - 1,500,000}{0 + 28,313,253 + 3,500,000}$$

$$80.0\% = (23,500,000 + Y) / 31,813,253$$

$$\begin{aligned}Y &= 31,813,253 * 80\% - 23,500,000 \\ &= 1,950,602\end{aligned}$$

In general, all 2014 plan year contributions are discounted using the 2014 effective interest rate. But the 2014 valuation has not been completed, so the 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 2014 to discount the contribution back to the valuation date. This rate is 7.50%.

$$Y = X(1.075)^{-1/12}$$

$$\begin{aligned}X &= 1,950,602(1.075)^{1/12} \\ &= 1,962,394\end{aligned}$$

Answer is C

(see notes on next page)

NOTES

1. You could also use simple interest to determine the contribution at 02/01/14. This produces a result of 1,962,794, which is in the same answer range.
2. There is another way to work this problem, which produces a different answer range. At the time of the 2014 exam, this question was not identified as a defective question. The reason is that I incorrectly assumed the same IRC 436 exam conditions applied for the EA-2L exam as are used for the EA-2F exam.

Note that the problem does not specify that the additional contribution is for the 2014 plan year. Instead, you can assume that the plan sponsor makes a 2013 plan year contribution at 02/01/2014.

The catch is that the plan sponsor must not elect to apply the additional contribution to increase the prefunding balance. If the contribution increases the prefunding balance, then there would be no change in the AFTAP at 01/01/2014. Since the IRC 436 exam conditions for the EA-2L exam do not cover the handling of the prefunding balance, you can assume that the 2013 plan year contribution does not affect the 01/01/14 prefunding balance:

The first step is to calculate the additional contribution at 01/01 to allow the plan amendment to take effect. I'll call that Y, and it must produce a PAFTAP equal to 80%. As shown earlier, the value of Y is 1,950,602.

The 2013 contribution of X must be discounted back to 01/01/14 using the 2013 effective interest rate:

$$Y = X(1.0575)^{-1/12}$$

$$\begin{aligned} X &= 1,950,602(1.0575)^{1/12} \\ &= 1,959,711 \end{aligned}$$

Answer is B

You could also use simple interest to determine the contribution at 02/01/14. This produces a result of 1,959,949, which is in the same answer range.

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2014 EA-2L Exam Solutions

Problem 37

FALSE

IRC 401(a)(14) defines the latest date for commencement of benefits. The payment of benefits under the plan to the participant will begin not later than the 60th day after the latest of the close of the plan year in which occurs

- (A) The date the participant attains the earlier of age 65 or normal retirement age under the plan
- (B) 10th anniversary of participation
- (C) Termination of service

The ages corresponding to each item above are A: 62, B: 63 and C: 61. The latest of the three ages is 63, so the plan definition (based on age 65) does not meet the requirements for a qualified plan.

Answer is B

2014 EA-2L Exam Solutions

Problem 38

Similar to 2013 #16

This is a very simple problem on calculating the variable rate premium (VRP). The key point is knowing the new definition of the variable rate premium cap that was added by MAP-21.

The plan is eligible for the small plan cap if there are 25 or less employees on the first day of the plan year. For the 2014 filing, you are told there are 27 employees and 17 participants, so the plan is not eligible for the small plan VRP cap.

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 01/01/2014. If 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.

Market value = 15,100,000

ALT premium funding target = 16,000,000

One minor point of the question is that you do not use the MAP-21 adjusted segment rates to calculate the premium funding target.

Unfunded vested liability = 16,000,000 - 15,100,000
= 900,000

In general, 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 .014. This is the new VRP rate, which was changed for 2014 by MAP-21:

Variable rate premium = 900,000 * .014
= 12,600

The real trick to this question is the new VRP cap that was added by MAP-21. This is defined as \$412 per participant for all plans (in 2014):

VRP cap = 412(17)
= 7,004

The VRP cap of 7,004 is less than the prior value.

Answer is C

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Problem 39

Similar to 2012 #12

FALSE

At first glance, it appears this participant has 7 years of service. This is based on the years 2004 through 2007 plus the years 2011 through 2013.

The key point of the problem is that the plan counts vesting service in the “most restrictive” manner. That means you should ignore the hours prior to the effective date, which is 01/01/2005. See IRC 411(a)(4)(C).

Smith has six years of vesting service, so they are not yet 100% vested.

Answer is B

2014 EA-2L Exam Solutions

Problem 40

Similar to 2013 #24

TRUE

In this problem you don't have to calculate the employer share of the UVB, since it is given as 115,000.

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

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

$$\begin{aligned}\text{De minimis} &= \text{Lesser of } 50,000 \text{ and } .0075 * 10,000,000 \\ &= 50,000\end{aligned}$$

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

$$\begin{aligned}\text{Deductible} &= 50,000 - (115,000 - 100,000) \\ &= 35,000\end{aligned}$$

The final employer withdrawal liability is the employer share minus the deductible:

$$\begin{aligned}\text{W/D liability} &= 115,000 - 35,000 \\ &= 80,000\end{aligned}$$

Answer is A

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Problem 41

Similar to 2013 #02

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.

The question asks for the T-H ratio for the calendar year starting January 1, 2014. This implies that you are calculating the T-H ratio for the defined benefit plan, since its plan year is the calendar year. For the 2014 plan year, the T-H determination date would be December 31, 2013.

Both plans are part of a required 416 aggregation group, since they both include at least one key employee. You must combine the two plans to determine the T-H status. 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 (2013). The determination date for the profit sharing plan is September 30, 2013.

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. For the DB plan, you would use the valuation results at the January 1, 2013 valuation date. For the DC plan, you would use the results at September 30, 2013.

Once you have identified the valuation dates for both plans, you can do the T-H determination. One final point is that Brown is a former key employee. Brown's values for both plans should be ignored for the T-H calculation:

	DB Plan	DC Plan	Sum
Determination date in 2013	12/31/13	09/30/13	
Valuation date within prior 12 months	01/01/13	09/30/13	
Key employees	455,000	625,000	1,080,000
Non-key employees	700,000	625,000	1,325,000

The Top heavy ratio is

$$44.91\% = 1,080 / (1,080 + 1,325)$$

Answer is A

2014 EA-2L Exam Solutions

Problem 42

FALSE

This is a very simple problem on the variable rate premium (VRP) definitions. The key point is knowing the new definition of the variable rate premium cap that was added by MAP-21.

The plan is eligible for the small plan cap if there are 25 or less employees on the first day of the plan year. You are told the plan is eligible for the small plan VRP cap.

There is a new VRP cap that was added by MAP-21 for 2014. This is defined as \$412 per participant for all plans (in 2014).

A plan can be eligible for both the small plan cap and the new cap under MAP-21.

Answer is B

2014 EA-2L Exam Solutions

Problem 43

FALSE

This is a very simple problem on the IRC 415 benefit limitations. In general, it is true that the plan benefits must be adjusted for form of payment to compare to the 415(b)(1)(A) dollar limit or the 415(b)(1)(B) compensation limit.

The exception is when the 415 limit falls below the \$10,000 floor under 415(b)(4). For example, the participant could have very low pay, such that the plan benefit exceeds the 415(b)(1)(B) compensation limit.

In that case, the 415 limit would be equal to \$10,000. There are no adjustments for form of benefit payment to the \$10,000 floor under 415(b)(4). The same limit applies whether the plan's form of benefit payment is a life annuity, annuity with cost of living adjustments, or a lump sum payment.

Answer is B

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