a/s/m

Actuarial Study Materials

Solutions to the 2012 EA-2B Exam

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Note:
NO RETURN IF OPENED

ABOUT THIS MANUAL

The solutions in this manual represent the author's interpretation of the correct method of solving each of the questions from the 2012 EA-2B examination. The solutions follow the rules of ERISA and the Internal Revenue Code as of November, 30, 2011. Note that some of these rules may have changed for subsequent years.

The actual examination questions are available on ASM's web site at www.studymanuals.com.

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Question 1

The premium funding target includes all vested benefits accrued as of the end of the prior year, not the end of the current year (ERISA section 4006(a)(3)(E)(iii)(I)). Note that ERISA regulation 4006.4(d)(1) describes vested benefits to generally exclude ancillary benefits that are not protected under the anti-cutback rules. While that part of the statement is true, the overall statement is false because it does not specify the use of vested benefits, and claims that they are determined as of the end of the current year.

Answer is B.

Question 2

The maximum annual benefit allowed under IRC section 415(b) is equal to the smaller of the dollar limitation ($200,000 for 2012) or the high consecutive 3-year average salary. The year of payment is not clear in this question, so the question must be focusing on the high 3-year salary limit. The high 3-year average salary is pro-rated for years of service less than 10, but there is no reduction to Smith's benefit because Smith has 10 years of service. There is generally an adjustment to the IRC section 415 limit due to a form of benefit other than a life annuity. However, IRC section 415(b)(2)(B) provides that if the benefit is paid as a qualified joint and survivor annuity, then there is no further adjustment. As a result, the maximum benefit payable to Smith is $50,000. The statement is true.

Answer is A.

Question 3

This statement comes straight out of ERISA regulation 2520.104b-3(a). The statement is true.

Answer is A.

Question 4

A prohibited transaction under IRC section 4975(c)(1)(B) occurs if there is a lending of money between a plan and a disqualified person. The plan sponsor is a disqualified person under IRC section 4975(e)(2)(C). Therefore, the $100,000 loan is a prohibited transaction. The statement is true.

Answer is A.

Question 5

IRC section 4980(d)(1) states that the excise tax on an employer reversion is equal to 50%, unless the employer establishes or maintains a qualified replacement plan, or increases benefits (in which case the excise tax percentage is reduced to 20%). In this question, benefits were not increased, but a replacement plan was established. In order to be considered a qualified replacement plan under IRC section 4980(d)(2), the plan must cover at least 95% of the active participants from the terminated defined benefit plan. 95% of the 230 active participants is 218.5, which means that the replacement plan must cover at least 219 of the 230 participants. That is not the case, so the excise tax on the employer reversion is 50%. The statement is true.

Answer is A.

Question 6

A plan sponsor is generally required to submit reporting under ERISA section 4010 if any plan of the employer has an FTAP of less than 80% (ERISA regulation 4010.4(a)(1)). However, there is an exemption of filing if the aggregate funding shortfall of all plans of the employer is no more than $15 million (ERISA regulation 4010.11(a)). The total unfunded benefits (funding shortfall) of plans A and B combined is $63 million. Therefore, there is no exemption and the 4010 filing is required for 2012. The statement is true.

Answer is A.

Question 7

The determination date for the top heavy ratio is defined in IRC section 416(g)(4)(C) to be the last day of the preceding year. For the 2012 top heavy ratio, the determination date is 12/31/2011. Benefits for participants who terminated more than one year before the determination date are not taken into account for the top heavy ratio (IRC section 416(g)(4)(E)). The participant in this question terminated employment in 2010, so all benefits (including the in-service distribution) for that participant are ignored for the 2012 top heavy ratio. The statement is true.

Answer is A.

Question 8

IRC section 436(c)(1) prohibits an amendment that has the effect of increasing benefit liabilities if the AFTAP is less than 80%. The amendment proposed in this question increases benefits only with regard to future service, so it does not increase the existing benefit liabilities as of 3/1/2012. The amendment can therefore take effect on 3/1/2012. The statement is true.

Answer is A.

Question 9

The survivor percentage for a Qualified Optional Survivor Annuity must be 50% if the Qualified Joint and Survivor Annuity percentage is 75% or more (IRC section 417(g)(2)(A)). The statement is true.

Answer is A.

Question 10

Plan termination is one example that would allow plan assets to be returned to the employer. However, there are other situations in which plan assets would be returned to the employer. For example, under IRC section 420 (regarding transfer of excess pension assets to retiree health accounts) there would be an employer reversion if the amount transferred to the health accounts in any year was more than the amount used to pay for retiree health benefits in that year. The statement is false.

Answer is B.

Question 11

ERISA regulation 901.20(e)(2) states that all methods and assumptions used by the enrolled actuary must be stated or clearly identified. The statement is true.

Answer is A.

Question 12

IRC section 411(a)(4) allows for certain service to be excluded for purposes of vesting years of service. Years of service prior to age 18 can be excluded. The employee does not attain age 18 until 1/1/2003, so service before that date can be excluded.

Service prior to the plan effective date can also be excluded. This has no impact on the participant because the plan effective date was prior to the participant's date of hire.

For participants who terminate employment and are subsequently rehired, service during the initial period of employment can be ignored if the participant has at least 5 consecutive years of breaks in service before being rehired, and were non-vested (0% vested) at the initial time of termination of employment. Under the 7-year graded vesting schedule, the participant had 3 years of service (2003 – 2005) at the initial termination date, and was 20% vested. In addition, the participant only had 3 years of breaks in service (2006 – 2008). As a result, the years of service during the initial period of service must be included in determining the participant's vested percentage as of 1/1/2012.

The participant has 6 years of vesting service as of 1/1/2012 (2003 – 2005 and 2009 – 2011). Under the 7-year graded vesting schedule, the participant is 80% vested.

The statement is false.

Answer is B.

Question 13

Plans terminated in a distress termination are subject to the additional premium of $1,250 per participant for each of the next 3 years after plan termination (other than an exception in certain bankruptcy situations). See ERISA section 4006(a)(7). The statement is true.

Answer is A.

Question 14

An enrolled actuary must provide supplemental advice or explanation relative to an actuarial report certified by the enrolled actuary. This is required under ERISA regulation 901.20(c). The statement is true.

Answer is A.

Question 15

ERISA section 105(a)(1)(B) requires benefit statements for a defined benefit plan to be provided to active participants with nonvested benefits once every 3 years, and to any participant or beneficiary upon request. There is no annual requirement to provide the benefit statement. The statement is false.

Answer is B.

Question 16

Only vested benefits are taken into account in determining the premium funding target (ERISA section 4006(a)(3)(E)(iii)(I)). In the description of determining unfunded vested benefits for purposes of the variable premium, the instructions for the PBGC Form 1 states that generally, benefits payable upon death are not deemed to be vested while the participant is still alive. One exception to that rule is the Qualified Preretirement Survivor Annuity. However, the additional $10,000 death benefit in this question would not be deemed to be vested for participants still alive, so that portion of the death benefit would not be taken into account in the premium funding target. The statement is false.

Answer is B.

Question 17

Each member of the plan sponsor's controlled group can be held liable for the unfunded benefits in a distress termination and are taken into account in determining whether the criteria for a distress termination apply (ERISA section 4041(c)(2)(B)). The statement is true.

Answer is A.

Question 18

ERISA section 104(b)(1)(A) requires that each participant in a defined benefit plan must receive a copy of the summary plan description within 90 days of becoming a participant in the plan. The statement is true.

Answer is A.

Question 19

ERISA regulation 901.13(k) states that an enrolled actuary must provide written notification of the non-filing of any actuarial document signed by that enrolled actuary, with the notification made to the agency where the document was supposed to be filed.

I. Smith must report the non-filing to the PBGC because Smith signed the 2010 PBGC premium form. The statement is true.
II. Smith is not required to report the non-filing to the Joint Board for Enrollment of Actuaries. The statement is false.
III. The notification must be in writing. The statement is true.

Answer is B.

Question 20

The IRC section 415(b) limit is equal to the smaller of the dollar limit and the compensation limit. The compensation limit is 100% of the high consecutive 3-year average salary (with each year's salary not to exceed the salary limitation of IRC section 401(a)(17)), reduced by 1/10 for each year of service with the employer less than 10 years.

Smith's salary was $225,000 each year, which always was below the IRC section 401(a)(17) compensation limit. Note that the limits for the last 3 years (2010 – 2012) were $245,000, $245,000, and $250,000 respectively. Smith has 13 years of service with the employer, so there is no reduction in the IRC section 415(b) compensation limit of $225,000.

The dollar limit for 2012 is equal to \$200,000, payable for retirement between the ages of 62 and 65. This is reduced by 1/10 for each year of plan participation less than 10 years. Smith has 7 years of plan participation, so the dollar limit is:

$\$200{,}000 \times 7/10 = \$140{,}000$

Smith is age 70 as of 12/31/2012, so the dollar limit is increased actuarially (from age 65 to age 70) to the smaller of the actuarially increased benefit using the plan actuarial equivalence, or the actuarially increased benefit using 5% interest and the applicable mortality table (statutory assumptions). (Note that although normal retirement age is 62, the dollar limit without adjustment would apply upon postponed retirement up to age 65, so the adjustment increasing the dollar limit begins at age 65, not age 62.) The actuarial increase uses an interest only (no mortality) adjustment from age 65 to age 70 because there is a death benefit (the present value of the accrued benefit).

$$\text{Dollar limit at 70 using plan equivalence (4\%)} = \$140{,}000 \times \ddot{a}_{65}^{(12)} \times 1.04^5 \div \ddot{a}_{70}^{(12)}$$
$$= \$140{,}000 \times \frac{N_{65}^{(12)}}{D_{65}} \times 1.216653 \div \frac{N_{70}^{(12)}}{D_{70}}$$
$$= \$140{,}000 \times \frac{1{,}232{,}637}{72{,}900} \times 1.216653 \div \frac{904{,}410}{58{,}535}$$
$$= \$186{,}403$$

$$\text{Increased dollar limit using statutory assumptions} = \$140{,}000 \times \ddot{a}_{65}^{(12)} \times 1.05^5 \div \ddot{a}_{70}^{(12)}$$
$$= \$140{,}000 \times \frac{N_{65}^{(12)}}{D_{65}} \times 1.276282 \div \frac{N_{70}^{(12)}}{D_{70}}$$
$$= \$140{,}000 \times \frac{470{,}592}{38{,}961} \times 1.276282 \div \frac{301{,}642}{28{,}773}$$
$$= \$205{,}865$$

The IRC section 415(b) dollar limit for Smith is \$186,403. This is the overall 415(b) limit since it is smaller than the compensation limit.

Answer is B.

Question 21

The PBGC flat-rate premium is equal to \$35 per participant (as of 12/31/2011) in 2012. All participants (including the terminated vested and retired participants) are included.

2012 flat-rate premium = \$35 × (26 + 20 + 4) = \$1,750

The variable-rate premium is equal to 0.9% of the unfunded vested benefits. The vested benefit value using the standard premium method is based upon the standard premium funding target. The assets taken into account are the market value of assets. The excess of the liabilities over the assets are rounded up to the next multiple of \$1,000 before multiplying by 0.9%.

2012 variable premium unfunded liabilities = \$1,370,100 – \$682,400 = \$687,700

2012 variable-rate premium = \$688,000 × 0.009 = \$6,192

For small employers (no more than 25 <u>employees</u>), there is a cap on the variable premium equal to the number of participants squared, multiplied by \$5. As of 1/1/2012 there are 26 active employees (the terminated and retired participants are not active employees), so the cap is not considered.

Total 2012 PBGC premium = \$1,750 + \$6,192 = \$7,942

Answer is D.

Question 22

Complete withdrawal liability is determined as of the last day of the plan year prior to the year of withdrawal. In this question, that would be 12/31/2010. Under the Rolling 5 Method, the total unfunded vested benefits as of the end of the year prior to withdrawal is multiplied by a fraction, the numerator consisting of the total contributions made by the withdrawing employer for the 5-year period ending on the last day of that prior year, and the denominator consisting of the total contributions made by all employers for the same 5-year period. The result is the withdrawing employer's share of unfunded vested benefits.

When there are previously withdrawn employers, as in this question, the total unfunded vested benefits are reduced by any outstanding claims that are collectible from those withdrawn employers. In addition, the total contributions made by all employers during the 5-year period are reduced by those contributions made by those previously withdrawn employers.

Employer A contributions for 2006 – 2010:

$650,000 + $870,000 + $905,000 + $805,000 + $725,000 = $3,955,000

All employer contributions for 2006 – 2010 (other than previously withdrawn employers):

($23,400,000 - $450,000) + ($25,300,000 - $350,000) + ($28,900,000 - $625,000)
+ ($29,100,000 – $800,000) + ($25,200,000 - $1,225,000) = $128,450,000

The amount of unfunded vested benefits allocated to Employer A is:

$$\text{Unfunded vested benefits}_{12/31/2010} \times \frac{\text{Employer A Contributions for 2006 - 2010}}{\text{All Employer Contributions for 2006 - 2010}}$$

$$= (\$75{,}200{,}000 - \$2{,}500{,}000) \times \frac{\$3{,}955{,}000}{\$128{,}450{,}000} = \$2{,}238{,}447$$

The mandatory de minimis rule of ERISA section 4209(a) provides a credit to be subtracted from the allocated unfunded vested benefits in order to determine the complete withdrawal liability. The credit is subject to a phase-out when allocated unfunded vested benefits exceed $100,000, and the credit is fully phased-out once the allocated unfunded vested benefits exceeds $150,000. Therefore, the unfunded vested benefits allocated to Employer A of $2,238,447 represent the complete withdrawal liability (the credit is fully phased out because the unfunded vested benefits allocated to Employer A exceed $150,000).

Answer is D.

Question 23

Years of service for vesting purposes must generally include all years of service with the employer. A notable exception to this rule (IRC section 411(a)(4) describes all of the exceptions) is years of service before attaining age 18. Both participants were born in 1949, and were hired well after the age of 18. A second exception is years of service prior to 5 consecutive years of breaks in service, but only for participants who were non-vested at the time of their initial break in service. Each participant had 5 consecutive years of breaks in service (2003 – 2007). However, as of the initial date of termination (12/31/2002) they had 3 years of service. This made them 20% vested under the 7-year graded vesting schedule, so they were <u>not</u> non-vested. As a result, all years of service for vesting must be taken into account for both Smith and Jones. They have 8 years of service as of 12/31/2012 (2000 – 2002, and 2008 – 2012). That means they are both 100% vested in their accrued benefits.

The restrictions on years of service for benefit accruals are different from the vesting restrictions. Generally, all years of benefit crediting service are used for benefit accruals. However, for participants who have previously received distributions, the service with regard to the benefits accrued and paid can be disregarded if the participant does not repay the distribution (with interest) to the plan. This is the case even if the participant was not fully vested in the accrued benefit that they were previously paid. See IRC sections 411(b)(7)(B) and (C). As a result, all years of service will continue to apply for purposes of Smith's accrued benefit, but only the 5 years of service since 2008 will apply for Jones.

X = Smith monthly payment = 3% × $50,000 × 8 years of service ÷ 12 = $1,000

Y = Jones monthly payment = 3% × $50,000 × 5 years of service ÷ 12 = $625

X – Y = $1,000 - $625 = $375

Answer is B.

Question 24

IRC section 401(a)(26) requires a minimum number of participants in a defined benefit plan equal to at least the smaller of:

(1) 40% of the nonexcludable employees of the employer (controlled group), or
(2) 50

Collectively bargained employees can be excluded from this calculation. Therefore, the total number of nonexcludable employees is:

$41 + 19 + X$, where X is the number of employees in location D

Note that the employees of location A must be included because they are part of the same employer (controlled group).

The actual plan participants are the employees in locations B and D.

40% of the nonexcludable employees must be equal to the number of employees in locations B and D, in order to satisfy IRC section 401(a)(26).

$40\% \times (41 + 19 + X) = 19 + X \quad \rightarrow \quad X = 8.3333$

Therefore, the minimum number of employees that must be in location D is 9.

Answer is B.

Question 25

This question requires allocation of assets through the PBGC priority categories, under ERISA section 4044. Note that the question is asking for the present value of benefits allocated to Smith under ERISA section 4044. The poor wording of the definition of X (with regard to what the PBGC would pay) may have an implication that the question is looking for the PBGC liability (which would be the allocation to Smith through the guaranteed benefit portion of priority category 4, for which the plan assets would be insufficient). But this type of question really is simply asking for the asset allocation to Smith, using the available plan assets.

PBGC priority categories 1 and 2 relate to voluntary and mandatory employee contributions, respectively. There are no employee contributions mentioned in this question, and as a result no category 1 or 2 benefits.

PBGC priority category 3 relates to benefits that could have been paid 3 years prior to the plan termination date, for participants who could have retired at that time. Smith and Jones are each age 52 as of the asset allocation date of 1/1/2012. The earliest retirement age is 55. Therefore, neither Smith nor Jones could have retired 3 years prior to the 1/1/2012 plan termination date, and there are no priority category 3 benefits.

PBGC priority category 4 relates to guaranteed benefits. It is not stated whether Smith or Jones are majority owners, so it should be assumed that they are not. The vested accrued benefit attributable to the benefit structure in place exactly 5 years before the plan termination date is fully guaranteed (up to the PBGC maximum guaranteeable benefit). That benefit structure is 1.5% of final average salary per year of service. It is given that the PBGC assumed XRA is age 58, so the vested accrued benefit should be determined as if it will be payable at that age. The vesting schedule is not provided, but both Smith and Jones have at least 7 years of service, and must therefore be fully vested under any vesting schedule that would satisfy the minimum vesting rules of IRC section 411(a).

The monthly accrued benefit, payable at age 58 (with an early retirement reduction factor of 0.79, reflecting the 3% per year reduction prior to age 65), for each participant using the 1.5% benefit formula is:

Smith: 1.5% × \$125,000 ÷ 12 × 27 years of service × 0.79 = \$3,332.81
Jones: 1.5% × \$80,000 ÷ 12 × 22 years of service × 0.79 = \$1,738.00

The maximum guaranteeable monthly benefit for 2012 is \$4,653.41. This is payable at age 65 as a life annuity. Since the accrued benefit for Smith and Jones is assumed payable at age 58, the maximum benefit is reduced using the PBGC adjustment factors for retirement age to age 58.

PBGC maximum benefit, payable at age 58 = \$4,653.41 × 0.57 = \$2,652.44

Smith's vested accrued benefit of $3,332.81 is limited to $2,652.44 for purposes of what the PBGC will guarantee. Therefore, Smith's guaranteed monthly benefit is $2,652.44. (There is no point in looking at increases in Smith's vested accrued benefit under the subsequent benefit formulas because no additional benefits can be guaranteed above the PBGC maximum.)

Jones' monthly benefit is less than the PBGC maximum, so the increase in Jones' vested accrued benefit using the 3/1/2009 amended benefit formula can be phased in. The vested accrued benefit for Jones using the 3/1/2009 benefit formula is:

$2.5\% \times \$80,000 \div 12 \times 22$ years of service $\times 0.79 = \$2,896.67$

This benefit exceeds the PBGC maximum, so it must be limited to $2,652.44. The increase in the vested accrued benefit under the 3/1/2009 formula is:

$\$2,652.44 - \$1,738.00 = \$914.44$

This is phased in under the rules of ERISA section 4022 at the rate of 20% for each full 12-month period that the amendment was in effect through the plan termination date. The amendment was effective for 2 years and 10 months, so it is phased in for 2 complete 12-month periods.

Phased in benefit increase for Jones = $\$914.44 \times 20\% \times 2$ years = $365.78

Total guaranteed benefit for Jones = $1,738.00 + $365.78 = 2,103.78

The guaranteed benefits are the category 4 benefits. The present value of these benefits (both participants are age 52 on 1/1/2012) must be determined to see if there are sufficient assets to pay for these benefits.

PV of Category 4 benefit for Smith = $\$2,652.44 \times 12 \times {}_{6|}\ddot{a}_{52}^{(12)} = \$335,799$

PV of Category 4 benefit for Jones = $\$2,103.78 \times 12 \times {}_{6|}\ddot{a}_{52}^{(12)} = \$266,339$

Total PV in Category 4 = $335,799 + $266,339 = $602,138

The assets are sufficient to pay for all benefits in Category 4. There is $47,862 ($650,000 - $602,136) of assets left for Category 5.

Priority category 5 represents vested accrued benefits that have not yet been reflected through category 4. As with the guaranteed benefits, they are determined first by looking at the benefit structure in effect 5 years before the plan termination date. The vested accrued benefit for Smith under the original benefit structure is $3,332.81, and the vested accrued benefit for Jones under the original benefit structure is $1,738.00. The present value of each of these benefits is:

Smith = $\$3{,}332.81 \times 12 \times {}_{6|}\ddot{a}_{52}^{(12)} = \$421{,}934$

Jones = $\$1{,}738.00 \times 12 \times {}_{6|}\ddot{a}_{52}^{(12)} = \$220{,}031$

Jones has already been allocated more than $220,031. However, Smith has yet to be allocated the full $421,934 (having been allocated only $335,799 in category 4). The balance (up to $421,934) must be allocated next to Smith. The remaining $47,862 of assets is not sufficient to get Smith to the full allocation of $421,934. As a result, the entire remaining $47,862 is allocated to Smith, and Jones receives no allocation of assets in category 5.

The total asset allocation to Smith is:

$335,799 + $47,862 = $383,661

Answer is D.

Question 26

IRC section 4980(d) provides options that allow the excise tax upon reversion of assets to the plan sponsor to be reduced to 20% from 50%. One option is to provide pro-rata benefit increases that increase the present value of benefits allocated to the plan participants by at least 20% of the excess assets (prior to the amendment). A second option is to transfer at least 25% of the excess assets to a qualified replacement plan (or a smaller percentage such that, when added to the percentage of benefit increases – as a percentage of excess assets – attributable to a plan amendment, is at least 25%).

The excess assets in this question are:

$2,100,000 - $1,600,000 = $500,000

Pro-rata benefit increases = 5% × $1,600,000 = $80,000

A qualified replacement plan is established, so the minimum amount that generally must be transferred to that plan in order to have the use of the 20% excise tax is:

25% × $500,000 = $125,000

This can be reduced by the pro-rata benefit increases, so that the smallest amount actually needed to be transferred to the qualified replacement plan is:

$125,000 - $80,000 = $45,000

Assets available for reversion = $500,000 - $80,000 - $45,000 = $375,000

X = Excise tax on reversion = 20% × $375,000 = $75,000

If the qualified replacement plan had not been set up, the 5% pro-rata benefit increase would not have been sufficient to reduce the excise tax percentage from 50% to 20%.

Y = 50% × ($500,000 - $80,000) = $210,000

|X – Y| = $210,000 - $75,000 = $135,000

Answer is B.

Question 27

The average benefit percentage of IRC section 410(b) includes all benefits from all plans of the employer, including defined benefit accruals, salary deferrals, matching contributions, and profit sharing contributions (Treasury regulation 1.410(b)-7(e)). In this question, the average benefit percentage uses allocation rates. The present value of the accrued benefits from the defined benefit plan must be determined for the allocation rates, using testing assumptions to determine the present value.

PV of Smith annual accrual = $\$15{,}000 \times \ddot{a}_{65}^{(12)} \times v_{7.5\%}^{4}$
= $\$15{,}000 \times 9.88 \times 0.748801$
= $110,972

PV of Jones' annual accrual = $\$4{,}000 \times \ddot{a}_{65}^{(12)} \times v_{7.5\%}^{34}$
= $\$4{,}000 \times 9.88 \times 0.085529$
= $3,380

The allocation percentages are equal to the ratio of the sum of the benefits (salary deferrals, matching contributions, profit sharing contributions, and present value of DB plan accrued benefit) to the 2011 salary (limited, if necessary, to the $245,000 compensation limit for 2011 under IRC section 401(a)(17)). Note that the full accrued benefit/allocations are used, not just the vested portion.

$$X = \text{Smith allocation percentage} = \frac{\$10{,}000 + \$5{,}000 + \$2{,}500 + \$110{,}972}{\$245{,}000} = 52.44\%$$

$$Y = \text{Jones allocation percentage} = \frac{\$4{,}000 + \$2{,}000 + \$2{,}500 + \$3{,}380}{\$60{,}000} = 19.80\%$$

X + Y = 52.44% + 19.80% = 72.24%

Answer is D.

Question 28

The pay credits for Smith each year are equal to 3% of annual pay:

$3\% \times \$50{,}000 = \$1{,}500$

The pay credits are allocated earnings/losses based on actual earnings/losses of the trust.

The account balance based upon the historical return on plan assets is:

$(\$1{,}500 \times 1.06 \times 1.02 \times .78) + (\$1{,}500 \times 1.02 \times .78) + (\$1{,}500 \times .78) + \$1{,}500 = \$5{,}128$

However, IRC section 411(b)(5)(B) provides that, while the hybrid plan interest credit in a given year can be negative, in no event can the account balance be less than the total amount of the contributions credited to the account.

Total contributions = $\$1{,}500 \times 4 = \$6{,}000$

Therefore, the account balance for Smith is $6,000.

The minimum required vesting schedule for a hybrid plan under IRC section 411(a)(13)(B) is a 3-year cliff vesting schedule (100% vested after 3 years of service). Smith has 4 years of service, so vesting is 100%.

The lump sum payable to Smith is $6,000.

Answer is D.

Question 29

Smith's salary must be limited each year to the IRC section 417(e)(3) compensation limit ($250,000 for 2012, and $245,000 for each of 2010 and 2011).

$$\text{Final 3-year average salary} = \frac{\$210{,}000 + \$245{,}000 + \$250{,}000}{3} = \$235{,}000$$

Accrued benefit under plan formula = 10% × $235,000 × 5 years of service = $117,500

The benefit cannot exceed the IRC section 415(b) limit. This is equal to the smaller of the compensation limit (high consecutive 3-year salary) or the dollar limit ($200,000 for 2012). The compensation limit is pro-rated for years of service less than 10, and the dollar limit is pro-rated for years of plan participation less than 10. There is no plan effective date provided for this question, so it must be assumed that the plan was in effect when Smith was hired. As a result, Smith has both 5 years of service and 5 years of plan participation.

As determined above, the high consecutive 3-year average salary is $235,000. The pro-rated compensation limit is $117,500 (5/10 of $235,000). The pro-rated dollar limit is $100,000 (5/10 of $200,000). The overall 415(b) limit is $100,000. Smith's benefit cannot exceed that amount, so the annual accrued benefit as of 12/31/2012 is $100,000.

Answer is B.

Question 30

The ratio percentage under IRC section 410(b) and as defined in Treasury regulation 1.410(b)-9 is equal to the following ratio:

$$\frac{\dfrac{\text{\# of NHCEs benefiting}}{\text{\# of NHCEs nonexcludable}}}{\dfrac{\text{\# of HCEs benefiting}}{\text{\# of HCEs nonexcludable}}}$$

Participants are benefiting if they benefit in the plan. Participants are nonexcludable if they are not excluded for anything other than IRC section 410(a) statutory reasons. IRC section 410(a) allows exclusion for service of less than 1 year and age below 21. Plan A has a one year eligibility requirement, with no minimum age. As a result, the statutory exclusion for Plan A is one year of service. Generally, all other employees of the employer are considered as nonexcludable, for purposes of the plan A ratio percentage.

There is one other more unusual situation where an employee can be considered as excludable. In the case of a plan participant who terminates employment, works no more than 500 hours during the plan year, and does not accrue a benefit for the year, that employee is deemed to be excludable.

The only employees who can be benefiting in Plan A during 2011 are the employees who have actually entered the plan and have worked at least 1000 hours in 2011. That would be the employees of Division A who were hired on or before 7/1/2010 (due to the one year eligibility requirement, anyone hired on or before 7/1/2010 would enter the plan no later than the last entry date of 2011, which is 7/1/2011).

The 20 HCEs in Division A have entered the plan, and are benefiting. The 40 active NHCEs in Division A have also entered the plan, and are benefiting. There are also 5 terminated NHCEs in Division A who have entered the plan, but are not benefiting due to working only 250 hours in 2011.

Total benefiting HCEs = 20
Total benefiting NHCEs = 40

The following groups of employees are nonexcludable (satisfied the 1 year service requirement) in 2011:

20 HCEs of Division A
10 HCEs of Division B
40 active NHCEs of Division A
25 active NHCEs of Division B, hired on 1/1/2010
10 terminated NHCEs of Division B, hired on 1/1/2010

Note that the 10 terminated NHCEs of Division B are nonexcludable because they were excluded from entering Plan A due to their employment with Division B, which is not a statutory reason. It is irrelevant how many hours they worked in 2011 because they are not plan participants.

The 15 active NHCEs of Division B who were hired on 9/1/2010 are excludable because they would not have entered Plan A until 1/1/2012 based on the statutory service requirement, regardless of which division employed those NHCEs.

The 5 terminated NHCEs of Division A are plan participants, but are excludable because they terminated employment and worked no more than 500 hours. That is the special situation previously mentioned.

Total nonexcludable HCEs = 20 + 10 = 30
Total nonexcludable NHCEs = 40 + 25 + 10 = 75

2011 Ratio Percentage = $\frac{(40/75)}{(20/30)}$ = 80%

Answer is C.

Question 31

Joint Board regulation 901.20(d) deals with conflict of interest issues with regard to actuarial performance. The specific cites are listed below for each statement.

I. This is one of the situations where a conflict of interest could exist. This statement is true. See regulation 901.20(d)(1)(ii).
II. There is a requirement that the client waive the conflict of interest, so the client must be notified. This statement is false. See regulation 901.20(d)(2)(iii).
III. There is a requirement that the actuary must reasonably believe that they can provide competent and diligent representation of a client when there is a conflict of interest. This statement is false. See regulation 901.20(d)(2)(i).

Answer is E.

Question 32

Complete withdrawal liability is determined as of the last day of the plan year prior to the year of withdrawal. In this question, that would be 12/31/2010. Under the Rolling 5 Method, the total unfunded vested benefits (UVBs) as of the end of the year prior to withdrawal is multiplied by a fraction, the numerator consisting of the total contributions made by the withdrawing employer for the 5-year period ending on the last day of that prior year, and the denominator consisting of the total contributions made by all employers for the same 5-year period. The result is the withdrawing employer's share of UVBs.

Employer A contributions for 2006 – 2010:

$315,000 + $360,000 + $376,000 + $382,000 + $369,000 = $1,802,000

All employer contributions for 2006 – 2010:

$16,100,000 + $16,687,000 + $17,200,000 + $19,550,000 + $21,150,000 = $90,687,000

The amount of unfunded vested benefits allocated to Employer A is:

$$\text{Unfunded vested benefits}_{12/31/2010} \times \frac{\text{Employer A Contributions for 2006 - 2010}}{\text{All Employer Contributions for 2006 - 2010}}$$

$$= \$10,750,000 \times \frac{\$1,802,000}{\$90,687,000} = \$213,608$$

The optional de minimis rule of ERISA section 4209(b) provides a credit to be subtracted from the allocated UVBs in order to determine the complete withdrawal liability. The credit is subject to a phase-out when UVBs exceed $150,000, and the credit is fully phased-out once the UVBs exceed $250,000. The credit is reduced by one dollar for every dollar that the allocated share of UVBs exceeds $150,000.

The credit (prior to phase out) is equal to the smaller of $100,000, or ¾% of the total unfunded vested benefits as of the end of the year prior to the employer's withdrawal.

De minimis credit = ¾% × $10,750,000 = $80,625

Credit after partial phase-out = $80,625 – ($213,608 - $150,000) = $17,017

Complete withdrawal liability = $213,608 - $17,017 = $196,591

Answer is D.

Question 33

Treasury regulation 1.436-1(f)(2)(iv)(A) states that for a plan in which the certified funded percentage (AFTAP) is less than 80%, the IRC section 436 contribution needed to allow a plan amendment increasing liabilities to take effect is a contribution equal to the increase in the liabilities. Regulation 1.436-1(f)(2)(i)(A)(2) states that if the IRC section 436 contribution is made on a date other than the valuation date for the year, then the contribution must be interest adjusted to the date of the contribution using the plan effective rate for that plan year.

In this question, the increase in the funding target due to the plan amendment is $800,000. That would be the IRC section 436 contribution if it had been contributed on 1/1/2012. However, the contribution is not made until 7/1/2012, so the $800,000 must be increased at the 6% plan effective rate for 6 months.

IRC section 436 contribution = $\$800{,}000 \times 1.06^{6/12} = \$823{,}650$

Answer is E.

Question 34

ERISA section 4050 requires that for missing participants, if the plan provides for mandatory lump sum cash outs, then the value of the designated benefit is equal to the lump sum value using plan actuarial assumptions (including IRC section 417(e)(3)). The lump sum value using plan assumptions is $5,600, which exceeds the $1,000 mandatory cash out in this plan. Therefore, the mandatory cash out does not apply to this participant.

Next, ERISA section 4050 requires that if the missing participant lump sum value using PBGC missing participant lump sum assumptions does not exceed $5,000, then that is the value of the designated benefit. The lump sum value using PBGC lump sum assumptions is $5,900, which exceeds the $5,000 mandatory PBGC cash out. Therefore, the PBGC mandatory cash out does not apply to this participant.

The plan does provide for elective lump sums. ERISA section 4050 states that the value of the designated benefit in that case is equal to the greater of the lump sum value of the participant’s benefit using plan assumptions ($5,600) or the present value of the most valuable annuity using PBGC missing participant annuity assumptions, with $300 added to that present value if it exceeds $5,000. The present value using PBGC missing participant annuity assumptions is $5,500, and with the $300 added is then equal to $5,800. This exceeds the lump sum using plan assumptions of $5,600. Therefore, the value of the designated benefit for Smith is $5,800.

Answer is C.

Question 35

I. IRC section 4975(e)(3)(A) states that any person who exercises discretionary control over a plan is a fiduciary. If the plan actuary makes the final decision on interpretation of the plan document, that would make the plan actuary a fiduciary. The statement is true.

II. ERISA section 402(a)(1) states that every plan must have at least one named fiduciary. The statement is true.

III. ERISA regulation 2550.404a-4(b) provides that in choosing an annuity provider, a fiduciary must take into account a number of considerations. One of those is the cost of the annuity, but other considerations include the ability of the provider to make future annuity payments. As a result, it is not required to use the provider that would be the least expensive. The statement is false.

Answer is B.

Question 36

In order to determine the top heavy ratio, the key employees must first be determined. The top heavy ratio is generally determined using data from the prior year, so for the 2013 top heavy ratio the data from 2012 is used. Key employees as defined in IRC section 416(i)(1) fall into three categories:

1. 5% owners (employees owning more than 5% at any time during 2012)
2. 1% owners (employees owning more than 1% at any time during 2012) who also earned more than $150,000 during 2012
3. Officers at any time during 2012 who also earned more than the compensation threshold for 2012 of $165,000.

Participants 1 and 5 are the only 5% owners for 2012.

Participants 1 and 3 are the only 1% owners who earned more than $150,000 in 2012.

Participant 1 is the only officer who earned more than $165,000 in 2012.

Therefore, participants 1, 3, and 5 are the key employees.

The top heavy ratio as described in IRC section 416(g)(1) is equal to the ratio of the present value of accrued benefits for the key employees to the present value of accrued benefits for all employees.

Employees terminated prior to 2012 (the year before the top heavy determination is being made) are ignored for purposes of the top heavy ratio (IRC section 416(g)(4)(E)). Employee 9 terminated during 2011, so that employee is not included in the top heavy ratio for 2013.

For employees who have not terminated prior to 2012, any in-service distributions are included in the top heavy ratio (IRC section 416(g)(3)(B)). The distributions paid to employees 1, 6, and 7 must be added to their present value of accrued benefit for the top heavy ratio.

Present value of accrued benefits for key employees:

$$(\$200{,}000 + \$50{,}000) + \$80{,}000 + \$60{,}000 = \$390{,}000$$

Present value of accrued benefits for all employees:

$$\begin{aligned}&(\$200{,}000 + \$50{,}000) + \$30{,}000 + \$80{,}000 + \$50{,}000 + \$60{,}000 \\ &\quad + (\$20{,}000 + \$20{,}000 + \$40{,}000) + (\$40{,}000 + \$40{,}000) + \$30{,}000 \\ &\quad = \$660{,}000\end{aligned}$$

$$\text{2013 top heavy ratio} = \frac{\$390{,}000}{\$660{,}000} = 0.5909$$

Answer is C.

Question 37

Smith's accrued benefit as of 12/31/2011 using the normal retirement benefit formula is:

$$1\% \times \frac{\$68{,}000 + \$90{,}000 + \$90{,}000}{3} \times 14 \text{ years of service} = \$11{,}573.33$$

The top heavy minimum benefit as described in IRC section 416(c)(1) is equal to 2% of the high consecutive 5-year average salary per year of top heavy plan participation, up to a maximum of 10 years. For purposes of the 5-year average salary, if the plan is not currently top heavy (as is the case in this question) then the salary paid since the last top heavy year is ignored (IRC section 416(c)(1)(D)(iii)(II)). This plan was last top heavy in 2009, so salary paid since 2009 is ignored. The highest 5 consecutive years of salary for top heavy purposes is from the years 2004 – 2008. Smith has 14 years of plan participation, and the plan was top heavy in 12 of those years. So Smith has earned the maximum 10 years of top heavy service.

Smith's top heavy minimum benefit as of 12/31/2011 is:

$$2\% \times \frac{\$72{,}000 + \$72{,}000 + \$75{,}000 + \$65{,}000 + \$75{,}000}{5} \times 10 \text{ years} = \$14{,}360.00$$

Smith's accrued benefit is the greater of the benefit using the plan formula or the top heavy minimum. That is $14,360.00.

Answer is B.

Question 38

The IRC section 415(b) limit is equal to the smaller of the dollar limit and the compensation limit. The compensation limit is 100% of the high consecutive 3-year average salary (with each year's salary not to exceed the salary limitation of IRC section 401(a)(17)), reduced by $1/10^{th}$ for each year of service with the employer less than 10 years.

Smith's salary is $150,000 each year, so that is the high consecutive 3-year average. Smith has 8 years of service with the employer as of 12/31/2012, so the IRC section 415(b) compensation limit is reduced to 8/10 of $150,000, which is $120,000.

The dollar limit for 2012 is equal to $200,000, payable for retirements between the ages of 62 and 65. This is reduced by 1/10 for each year of plan participation less than 10 years. Smith has 7 years of plan participation as of 12/31/2012, so the dollar limit is:

$\$200{,}000 \times 7/10 = \$140{,}000$

Smith has retired at age 62 on 12/31/2012, so the dollar limit is decreased actuarially (from age 62 to age 60) to the smaller of the actuarially decreased benefit using the plan actuarial equivalence, or the actuarially decreased benefit using 5% interest and the applicable mortality table (statutory assumptions). The preretirement death benefit is equal to the present value of the accrued benefit, so the actuarial decrease includes an interest only discount from age 62 to age 60.

$$\begin{aligned}\text{Dollar limit (plan equivalence)} &= \$140{,}000 \times \ddot{a}_{62}^{(12)} \times v_{7.5\%}^{2} \div \ddot{a}_{60}^{(12)}\\ &= \$140{,}000 \times 10.50 \times 0.865333 \div 10.84\\ &= \$117{,}347\end{aligned}$$

$$\begin{aligned}\text{Dollar limit (statutory assumptions)} &= \$140{,}000 \times \ddot{a}_{62}^{(12)} \times v_{5\%}^{2} \div \ddot{a}_{60}^{(12)}\\ &= \$140{,}000 \times 12.98 \times 0.907029 \div 13.56\\ &= \$121{,}553\end{aligned}$$

The IRC section 415(b) dollar limit for Smith is the smaller of these, which is $117,347. This is the overall 415(b) limit since it is smaller than the compensation limit of $120,000.

Answer is A.

Question 39

In a situation where a plan sponsor files for bankruptcy, the plan termination date in a distress termination is deemed to be the bankruptcy filing date for purposes of determining guaranteed benefits (ERISA section 4022(g)). So, the plan termination date in this question is deemed to be 1/1/2009.

Accrued vested benefits as of the plan termination date are guaranteed, subject to phase-in and maximum guaranteeable benefit rules under ERISA section 4022. The benefit formula for this plan was amended effective on 1/1/2007, so the increase in the vested accrued benefit due to the amendment must be phased in over a period of 2 years (from 1/1/2007 to the deemed plan termination date of 1/1/2009).

Under the 5-year cliff vesting schedule, there is no vesting during the first 4 years of service, with 100% vesting upon completion of the 5^{th} year of service. Jones has only 4 years of service as of the deemed plan termination date of 1/1/2009, so Jones has no vested accrued benefit as of that date, and therefore no guaranteed benefit. Smith is fully vested as of 1/1/2009, so the guaranteed benefit for Smith must be calculated.

Smith has 19 years of service as of 1/1/2009. Smith was not eligible for the early retirement benefit as of 1/1/2009, so the guaranteed benefit is determined at normal retirement age (65).

Benefit under original benefit formula as of deemed plan termination date:

$50 × 19 years of service = $950

Benefit under revised benefit formula (taking effect on 1/1/2007):

$100 × 19 years of service = $1,900

Phasing-in the benefit increase over 2 years at the rate of 20% per year (as required under ERISA section 4022(b)(7)):

($1,900 - $950) × 20% × 2 years = $380

Total guaranteed benefit for Smith = $950 + $380 = $1,330

Answer is B.

Question 40

The PBGC variable-rate premium is equal to 0.9% of the unfunded vested benefits. The vested benefit value using the standard premium method is based upon the standard premium funding target. The assets taken into account are the market value of assets, unreduced by any funding balances. The excess of the liabilities over the assets are rounded up to the next multiple of $1,000 before multiplying by 0.9%.

The market value of assets must include contributions receivable for the prior year (the 2011 year in this question). The receivable contributions are interest adjusted to the first day of the year (1/1/2012) using the prior year plan effective rate (6.25%).

$$\begin{aligned}\text{Adjusted assets} &= \$76{,}000{,}000 + (\$800{,}000/1.0625^{3/12}) + (\$4{,}500{,}000/1.0625^{8.5/12})\\ &= \$76{,}000{,}000 + \$787{,}966 + \$4{,}310{,}849\\ &= \$81{,}098{,}815\end{aligned}$$

2012 variable premium unfunded liabilities = $100,000,000 – $81,098,815 = $18,901,185

2012 variable-rate premium = $18,902,000 × 0.009 = $170,118

For small employers (no more than 25 employees), there is a cap on the variable premium equal to the number of participants squared, multiplied by $5. There are no participant or employee counts provided in this question, so it must be assumed that the variable premium cap does not apply.

Answer is D.

Question 41

I. Treasury regulation 54.4980F-1, Q&A 5(b) states that a reduction (or in this case removal) of an early retirement benefit requires a 204(h) notice to be issued to the affected participants. The statement is false.

II. Treasury regulation 54.4980F-1, Q&A 10(c) states that an alternate payee under a QDRO must receive a 204(h) notice if their rate of future benefit accrual may be significantly reduced on account of a plan amendment. The statement is true.

III. IRC section 4980F(b)(1) states that the excise tax with regard to the failure to provide a 204(h) notice is $100 per day per applicable individual. The statement is true.

Answer is E.

Question 42

IRC section 401(a)(26) requires that the minimum number of participants in any defined benefit plan of an employer is at least equal to the smaller of:

(a) 50 participants
(b) 40% of the total non-excludable employees of the employer.

In addition, if the plan only benefits NHCEs, then it is deemed to satisfy the requirements of IRC section 401(a)(26).

Each employer must be considered separately in this question, since they are unrelated.

<u>Plan I</u>
There are 105 total nonexcludable employees. 40% of this is equal to 42, requiring at least 42 employees to be benefiting. There are only 41 employees benefiting, so the plan **does not** satisfy IRC section 401(a)(26).

<u>Plan II</u>
There are 60 total nonexcludable employees. 40% of this is equal to 24, requiring at least 24 employees to be benefiting. There are only 10 employees benefiting, so the plan **does not** satisfy IRC section 401(a)(26).

<u>Plan III</u>
There are 100 total nonexcludable employees. 40% of this is equal to 40, requiring at least 40 employees to be benefiting. There are 40 employees benefiting, so the plan **does** satisfy IRC section 401(a)(26).

<u>Plan IV</u>
All employees benefiting are NHCEs, so the plan **does** satisfy IRC section 401(a)(26).

Answer is C.

Note that there was a typographical error in the data in this question with regard to the column heading of the HCEs benefiting in the plan (typed in the question as “NCE”). It should be clear that this really was meant to read “HCE”.

Question 43

Treasury regulation 1.436-1(f)(2)(iv)(A) states that for a plan in which the certified adjusted funding target attainment percentage (AFTAP) is less than 80%, an IRC section 436 contribution may be made in order to allow a plan amendment increasing liabilities to take effect. Regulation 1.436-1(f)(2)(i)(A)(2) states that if the IRC section 436 contribution is made on a date other than the valuation date for the year, then the contribution must be interest adjusted to the date of the contribution using the plan effective rate for that plan year.

This question is asking for the additional contribution that could be made on 9/30/2012 that would allow the amendment increasing the funding target by $200,000 to take effect. Although it is not specifically stated that this is to be a 436 contribution rather than an additional contribution to satisfy minimum funding for the prior year, it is clear that this must be a 436 contribution because the date of the contribution (9/30/2012) would be too late to be considered for minimum funding for 2011.

The amount of the IRC section 436 contribution is dependent on the AFTAP. The AFTAP, as defined in IRC section 436(j)(1) and determined on the plan valuation date, is equal to the ratio of the actuarial value of assets (reduced by the funding balances) to the funding target, with both the numerator and denominator increased by the total purchases of annuities for the NHCEs during the last 2 years.

$$\text{2012 AFTAP} = \frac{1{,}655{,}000 + 61{,}000}{2{,}000{,}000 + 61{,}000} = 83.26\%$$

Although the AFTAP is not less than 80%, the restriction allowing the amendment to take effect also applies if the AFTAP, determined by including the increase in the funding target attributable to the amendment, is less than 80% (IRC section 436(c)(1)(B)). We can refer to this as the "adjusted" AFTAP.

$$\text{"Adjusted" 2012 AFTAP} = \frac{1{,}655{,}000 + 61{,}000}{2{,}000{,}000 + 200{,}000 + 61{,}000} = 75.8956\%$$

When the "adjusted" 2012 AFTAP is less than 80%, Treasury regulation 1.436-1(f)(2)(iv)(B) states that the 436 contribution is the amount that would allow the "adjusted" AFTAP to be exactly 80% if that 436 contribution was included in the numerator.

“Adjusted” 2012 AFTAP = $\dfrac{1{,}655{,}000 + X + 61{,}000}{2{,}000{,}000 + 200{,}000 + 61{,}000}$ = 80%

Solving for X, X = \$92,800

However, the contribution is not made until 9/30/2012, so the \$92,800 must be increased at the 5.6% plan effective rate (for 2012) for 9 months.

IRC section 436 contribution = \$92,800 × $1.056^{9/12}$ = \$96,671

Answer is D.

Question 44

Participants can generally be treated as excludable under IRC section 401(a)(26) if they are not excluded for anything other than IRC section 410(a) statutory reasons. IRC section 410(a) allows exclusion for service of less than 1 year and age below 21. The plan has a one year eligibility requirement, with no minimum age. As a result, the statutory exclusion for the plan is one year of service. In addition, non-resident aliens can be considered as excludable.

Based upon the statutory eligibility requirement of one year of service, and the entry dates of 1/1 and 7/1, only employee 5 is excludable on account of service. In addition, employee 3 is excludable due to being a non-resident alien.

There is one other more unusual situation where an employee can be considered as excludable. In the case of a plan participant who terminates employment, works no more than 500 hours during the plan year, and does not accrue a benefit for the year, that employee is deemed to be excludable.

Employee 7 is a participant (entered the plan on 7/1/2011), but does not accrue a benefit in 2012 due to working fewer than 1,000 hours. Therefore, employee 7 (who worked no more than 500 hours) is excludable.

Note that it might appear that employee 9 would be excludable for similar reasons as employee 7. However, employee 9 is an hourly employee, and never participates in the plan. The situation described above for terminated participants who work no more than 500 hours per year and do not accrue a benefit does not apply to employee 9 because the employee is not a plan participant. Employee 9 is deemed to be non-excludable.

The excludable employees are 3, 5, and 7.

Answer is B.