Solutions to EA-2(B) Examination
Spring, 2002

Question 1

IRC section 6057(e) and regulation 301.6057-1(e) provide that an individual statement to each participant listed on the Schedule SSA must be provided no later than the due date of the Schedule SSA.

Answer is A.

Question 2

IRC section 411(a)(4)(C) provides that service prior to the effective date of a plan (or a predecessor plan) can be excluded for vesting purposes. The only issue here is whether the 401(k) plan is a predecessor plan. IRS regulation 1.411(a)-5(b)(3)(v)(B) defines a predecessor plan to be a plan previously terminated in the 5-year period prior to the establishment of the current plan. The 401(k) plan clearly does not fall into that category, and is not considered to be a predecessor plan. The money purchase plan may therefore exclude service prior to its effective date of 1/1/2002.

Answer is A.

Question 3

A fully insured defined benefit plan is an example of a plan not subject to the minimum funding standards of IRC section 412 (see IRC sections 412(h)(2) and 412(i)), so no Schedule B is filed for that type of plan. Defined benefit plans for which there is no requirement to file a 5500-EZ must have a Schedule B prepared, but it is not filed (see the "Who Must File" section of the instructions to the Schedule B).

Answer is B.

Question 4

Brown does not earn enough salary to qualify as a key employee due to the fact that he is an officer. So the issue here is whether the ownership attribution rules apply to him. Clearly, the 50% ownership of Smith is attributed to his daughter. However, IRC section 318(a)(5)(B) indicates that the spouse of a family member who has deemed ownership due to attribution does not have that ownership also attributed to them. As a result, Brown would not be a key employee.

Answer is B.

Question 5

The minimum funding requirement for the 2001 plan year is due no later than 8½ months after the plan year end (September 15, 2002). The fact that the company has received extensions for filing the 2001 tax return has no bearing on this deadline. See IRC section 412(c)(10).

Answer is B.

Question 6

Regardless of the stability period that has been elected, the lookback month can be up to five months preceding the first day of the stability period. See IRS regulation 1.417(e)-1(d)(4)(iii).

Answer is B.

Question 7

This is allowed by Revenue Ruling 77-2 and IRC section 412(c)(8).

Answer is A.

Question 8

IRS regulation 1.401(a)(4)-4(b)(2)(ii)(A)(1) indicates that in testing current availability, the age and service requirements with respect to optional forms of benefit (in this case, the unreduced early retirement benefit) are to be ignored. Note that IRS regulation 1.401(a)(4)-4(b)(2)(ii)(A)(2) indicates that had this been an early retirement window benefit, the age and service requirement could NOT be ignored.

Answer is A.

Question 9

Under the rules of ERISA regulation 4006.6(a), an individual is considered to be a participant for purposes of the PBGC premium if the plan has benefit liabilities with respect to the participant. Since Smith is entitled to the pre-retirement death benefit of $5,000 as of December 31, 2001, he has a benefit liability and is thus counted as a participant for purposes of the 2002 PBGC premium.

Answer is B.

Question 10

The employees of Employer A were covered in the 401(k) plan while they were employees of Employer B. IRC section 415(b)(4)(B) provides that the $10,000 floor for the defined benefit limitation does not apply to employees who have participated in a defined contribution plan sponsored by the employer. Since the employees of Employer A participated in the 401(k) plan while employees of Employer B, they are not eligible for the $10,000 floor.

Answer is A.

Question 11

A reportable event occurs if at any time during a plan year the number of active participants falls below 80% of the number of active participants as of the beginning of the year. In the given plan, the number of active participants on 6/30/2001 is equal to 70% of the active participants as of the beginning of the year. A reportable event has occurred at that time, even though the number of active participants has increased back to an acceptable level by the end of the year. See ERISA section 4043(c)(3).

Answer is A.

Question 12

All employers within a controlled group are considered as a single employer, and are thus liable for the PBGC premiums of the other employers within the controlled group. See ERISA section 4007(e)(2). Note that the fact that these are QSLOBs is irrelevant to the question being asked.

Answer is A.

Question 13

Only **multiple** employer plans subject to IRC section 413(c)(4)(A) are required to maintain separate funding standard account information. See the instructions to item 9 on the Schedule B. This is not a requirement for multiemployer plans.

Answer is B.

Question 14

In order for the plan to pass the general nondiscrimination test, each rate group (determined by each HCE) must have a ratio percentage at least as great as the Midpoint percentage. In order to determine the Midpoint percentage, the Non-highly Compensated Concentration Percentage for the employer must be calculated. This is the ratio of the number of non-highly compensated employees to the total employees.

NHCE concentration percentage = 300/(300 + 125) = 70.59%

In order to look up the safe and unsafe harbor percentages in the Nondiscriminatory Classification Test table, the concentration percentage must be rounded **down** to the next integer. Thus, 70.59% becomes 70%.

In the table, the safe harbor percentage is 42.50%, and the unsafe harbor percentage is 32.50%. The midpoint of these is 37.50%.

Next we must look at the rate groups. All employees are in a rate group if they have both a normal and most valuable accrual rate at least as great as the HCE normal and most valuable accrual rates.

Looking at HCE group 5, the normal accrual rate is 1.25% and the most valuable accrual rate is 2.20%. Clearly, all NHCEs and HCEs are in that rate group, so the rate group passes the ratio test since the ratio percentage is 100%.

Next consider HCE group 6. The only NHCEs in this rate group are the NHCEs in groups 2 and 3. However, we do not know how many employees are in group 2, and the question is not interested finding the number of employees in group 6.

So, we can proceed to HCE group 7. The only NHCEs in this rate group are in group 3, and the only HCEs in this rate group are in group 7. The ratio percentage for the rate group is:

(NHCEs in rate group/Total NHCEs)/ (HCEs in rate group/Total HCEs)
$$= (Z/300)/(50/125)$$

This ratio percentage must be at least as large as the midpoint percentage of 37.5%. Therefore,

$$(Z/300)/(50/125) = 37.5\% \quad \Rightarrow \quad Z = 45$$

Answer is B.

Question 15

First, calculate the retirement benefit under the plan provisions without regard to the limitations of IRC section 415. Smith has retired at age 60. There is an early retirement reduction of 5% for each year that retirement precedes age 65. Therefore, Smith's normal retirement benefit must be reduced by 25%. In other words, his early retirement benefit is equal to 75% of his normal retirement benefit. The early retirement benefit under the plan formula is:

Plan benefit = 100% × $195,000 × .75 = $146,250

Next, the limitation under IRC section 415(b) must be considered. The compensation limit is equal to 100% of the high consecutive 3-year average salary, reduced by 1/10 for each year of service less than 10 years. Smith has exactly 10 years of service, so there is no such reduction. The compensation limit is therefore $195,000. (Note that the compensation limit is not adjusted for early retirement age.)

The defined benefit dollar limitation is $160,000 for 2002. This is reduced for years of plan participation less than 10, as well as for retirement prior to age 62. Smith has exactly 10 years of plan participation, so there is no reduction for that. However, Smith has retired at age 60, so the $160,000 dollar limit must be reduced to age 60 from age 62. The reduced benefit is equal to the smaller of the benefit reduced using plan equivalence assumptions, or reduced using the applicable mortality table and a 5% interest rate. The only plan actuarial equivalence provided in this question is the early retirement benefit reduction. However, the question provides for a reduction in relation to age 65 (not age 62). In order to apply it to the $160,000 dollar limit, the dollar limit must be increased up to age 65 from 62 (by dividing by the 3-year early retirement reduction factor of .85), and then reduced to age 60 using the 5-year early retirement reduction factor of .75. This is:

$160,000 × (.75/.85) = $141,176

The actuarial reduction using the applicable mortality table and 5% interest from age 62 to age 60 can be determined using the immediate life annuity factors provided as an attachment to the examination. Since there is a pre-retirement death benefit, the reduction from age 62 to age 60 is discounted with interest only. This is:

$160,000 × \ddot{a}^{(12)}_{62@5\%} × v^2_{5\%} ÷ \ddot{a}^{(12)}_{60@5\%} = $160,000 × 12.46 × .907029 ÷ 13.04 = $138,670

The dollar limitation is therefore $138,670. This is the annual retirement benefit for Smith since it is less than the compensation limit as well as the plan benefit that Smith would otherwise receive without regard to the limitations of IRC section 415.

Answer is D.

Question 16

At age 65, Smith had 7 years of service. The normal retirement benefit for Smith was:

Normal retirement benefit = 10% × $35,000 × 7 years of service = $24,500

The late retirement benefit at age 70 is equal to the normal retirement benefit, increased actuarially using the applicable interest rate of 5.5% and the applicable mortality table, with interest only credit from age 65 to age 70 due to the pre-retirement death benefit (the accrued benefit is non-forfeitable before actual retirement).

Late retirement benefit = $24,500 × $\ddot{a}^{(12)}_{65@5.5\%}$ × 1.055^5 ÷ $\ddot{a}^{(12)}_{70@5.5\%}$
$$= \$24,500 \times 11.07 \times 1.306960 \div 9.57 = \$37,039$$

Next, the limitation under IRC section 415(b) must be considered. The compensation limit is equal to 100% of the high consecutive 3-year average salary, reduced by 1/10 for each year of service less than 10 years. Smith has 12 years of service, so there is no such reduction. The compensation limit is therefore $35,000. (Note that the compensation limit is not adjusted for early retirement age.)

The defined benefit dollar limitation is $160,000 for 2002. This is reduced for years of plan participation less than 10, and increased for retirement after age 65. Smith has only one month of plan participation. However, IRC section 415(b)(5)(C) indicates that the reduction for years of plan participation less than 10 shall not grant service less than 1 year. Therefore, Smith is only entitled to up to one-tenth of the dollar limit, or $16,000.

Smith has retired at age 70, so the $16,000 dollar limit must be increased to age 70 from age 65. The increased benefit is equal to the smaller of the benefit increased using plan equivalence assumptions, or increased using the standard mortality table and a 5% interest rate. Since the plan actuarial equivalence uses the standard mortality table, it is clear that the smaller of these two benefits will use the 5% interest rate rather than the plan actuarial equivalence interest rate of 5.5%.

The actuarial increase using the applicable mortality table and 5% interest from age 65 to age 70 can be determined using the immediate life annuity factors provided as an attachment to the examination. Since there is a pre-retirement death benefit, the increase from age 65 to age 70 utilizes interest only. This is:

$$\$16,000 \times \ddot{a}^{(12)}_{65@5\%} \times 1.05^5 \div \ddot{a}^{(12)}_{70@5\%} = \$16,000 \times 11.53 \times 1.276282 \div 9.91 = \$23,759$$

This is the annual life only benefit for Smith since it is less than the compensation limit as well as the plan benefit that Smith would otherwise receive without regard to the limitations of IRC section 415.

Answer is B.

Question 17

The value of the benefits in a defined benefit plan used for determining whether the plan is top-heavy for 2002 is determined as of the valuation date in the prior plan year (see IRS regulation 1.416-1, Q&A T-25). This is 12/31/2001 in the case of this plan. Benefits for participants who terminated more than one year before the current plan year begins are excluded from this determination (see IRC section 416(g)(4)(E)). Smith is included since he terminated during 2001. In addition, distributions to participants that were in-service distributions during the 5-year period before the current plan year begins are taken into account (see IRC section 416(g)(3)(B)). Therefore, the distributions for Smith in years 1997 – 2001 are taken into account. Note that although Smith retired in July of 2001, the entire $20,000 annual pension payment is taken into account for that year regardless of whether the payments were made as in-service distributions since all distributions in the last year before the current year begins are taken into account (see IRC section 416(g)(3)(A)).

Therefore, the value of Smith's benefit that must be taken into account for determining whether the plan is top-heavy for 2002 is equal to the present value of Smith's accrued benefit as of 12/31/2001, plus the 5 annual payments of $20,000 that Smith received from 1997 – 2001. This is:

$85,000 + ($20,000 × 5) = $185,000

Answer is D.

Question 18

The actuarial equivalence assumptions in effect prior to 2000 must be protected under IRC section 411(d)(6) in regard to the benefit accrued as of 12/31/1999. Therefore, the accrued benefits at both 12/31/1999 and 12/31/2002 must be determined.

$AB_{12/31/1999}$ = 2% × $100,000 × 9 years of service = $18,000
$AB_{12/31/2002}$ = 2% × $100,000 × 10 years of service = $20,000

The $18,000 benefit must be valued as of 12/31/2002 using the old plan actuarial equivalence of 5% interest and the 1983 Individual Annuity Mortality (female) table:

$$\$18,000 \times \ddot{a}^{(12)}_{55@5\%} = \$18,000 \times 15.32 = \$275,760$$

This must be compared to the current accrued benefit of $20,000, valued using the new actuarial assumptions of the applicable interest rate and mortality table:

$$\$20,000 \times \ddot{a}^{(12)}_{55@5.5\%} = \$20,000 \times 13.63 = \$272,600$$

The lump sum that must be paid is equal to the greater of these, which is $275,760.

Answer is C.

Question 19

IRC section 414(l)(2) describes the allocation of assets in a spin-off in the case where the value of the assets are in excess of the present value of the accrued benefits on a termination basis (PVAB). In this case there are $50,000 of excess assets ($300,000 - $250,000). Each plan involved in the spin-off must receive the PVAB plus an allocation of the excess assets. The excess assets are allocated in proportion to the excess, if any, of each plan's full funding limitation liability (without regard to the RPA'94 full funding limitation) over the PVAB. For 2002, the full funding limitation liability is equal to the smaller of the accrued liability or 165% of current liability. This is:

Plan B: min{$180,000; 165% × $125,000} = min{$180,000; $206,250} = $180,000
Plan C: min{$100,000; 165% × $75,000} = min{$100,000; $123,750} = $100,000

The excess of the full funding limit liability over the PVAB for each plan is:

Plan B: $180,000 - $160,000 = $20,000
Plan C: $100,000 - $90,000 = $10,000

The allocation of excess assets to Plan B is: $50,000 × ($20,000/$30,000) = $33,333
The total allocation of assets to Plan B is: $160,000 + $33,333 = $193,333

Answer is E.

Question 20

ERISA section 4006 covers Significant Events for PBGC variable premium calculations. Each of these statements is a significant event. Statement I is a significant event due to ERISA regulation 4006.4(d)(2)(iii). Statement II is a significant event due to ERISA regulation 4006.4(d)(2)(v). Statement III is a significant event due to ERISA regulation 4006.4(d)(2)(ii). Statement IV is a significant event due to ERISA regulation 4006.4(d)(2)(i).

Answer is E.

Question 21

The excess assets are equal to the difference between the market value of assets and the cost of the termination benefits.

Excess assets = $1,200,000 – ($1,000,000 + $100,000) = $100,000

The amount to be transferred to a qualified replacement plan is 25% of the excess assets (see IRC section 4980(d)(2)(B)(i)). The amount to be transferred is:

25% × $100,000 = $25,000

The transfer to the qualified replacement plan is treated as a contribution and is thus allocated proportionately to the participants based upon compensation. The allocation to Jones is:

$25,000 × ($55,000/$175,000) = $7,857

This allocation is allowable in the first year of the qualified replacement plan as it does not violate an allocation under IRC section 415(c). However, IRC section 4980(d)(2)(C)(i) allows that the allocation be limited by allocating it to a suspense account and crediting it to the participant ratably over 7 years. Since this question is looking for the minimum first year allocation to Jones, that minimum would be one-seventh of what could otherwise be allocated:

$7,857 × 1/7 = $1,122

Answer is B.

Question 22

IRS regulation 1.401(l)-5(b)(1) provides that if a participant benefits under more than one plan of the employer, then the overall permitted disparity fraction cannot exceed one. The overall disparity fraction is equal to the sum of the defined contribution disparity fraction and the defined benefit disparity fraction. The defined contribution disparity fraction is defined in IRS regulation 1.401(l)-5(b)(3) to be equal to the actual disparity divided by the maximum allowable disparity for the defined contribution plan for that year.

In a defined contribution plan, the maximum permitted disparity in any year (for a plan that uses the Taxable Wage Base as the integration level) is equal to the smaller of 5.7% or the percentage of compensation applied below the Taxable Wage Base (see IRS regulation 1.401(l)-2(b)(2)).

The permitted disparity used is equal to the difference between the excess percentage and the base percentage. This plan, therefore, uses actual disparity of 1% (5% - 4%). The maximum disparity that it could have used was 4% (the smaller of 5.7% or the 4% used for the percentage of compensation applied below the Taxable Wage Base).

Defined contribution disparity fraction: 1%/4% = .25

This leaves .75 for the defined benefit disparity fraction.

The value of X% must satisfy IRC section 401(l) for every possible plan participant, regardless of age. Therefore, the worst case must be considered, which is those participants with a Social Security Retirement Age (SSRA) of 67. Since the question is asking for the largest value of X%, we must compare the values in the permitted disparity tables between the maximum values for participants with an SSRA of 67 and the values in the simplified table. From age 62 and later (the only ages at which retirement is allowed), the simplified table yields values greater than or equal to those in the table for participants with an SSRA of 67. Therefore, the simplified table should be used in this question.

The early retirement reduction reduces the accrued benefit. Therefore, the maximum disparity factor may be increased at each early retirement age by the 4% that the accrued benefit is reduced at that age.

It is necessary to test to see what the maximum disparity factor must be at each possible retirement age. We are looking for the smallest of these factors. To determine the factor at each retirement age, divide the disparity factor from the simplified table by the early retirement adjustment factor.

Age	Simplified Factor	Early Retirement Factor	Maximum Disparity
65	0.650	1.00	0.6500
64	0.607	0.96	0.6323
63	0.563	0.92	0.6120
62	0.520	0.88	0.5909

The smallest maximum disparity percentage is 0.5909.

This factor must be adjusted to reflect the fact that disparity is being applied for 40 years rather than the maximum of 35 years. In addition, an adjustment must be made to reflect the fact that the defined benefit disparity fraction is .75. Therefore, the maximum disparity that can be used is:

$0.5909 \times (35/40) \times .75 = 0.3878$

Therefore, the largest value of X% is 1.3878.

Answer is B.

Question 23

I.   Both Companies A and B maintain the plan. IRC section 413(b)(4) says that the vesting provisions of IRC section 411(a) are to be applied as if all employers were a single employer. Therefore, Smith becomes vested upon attaining 5 years of service with Company A and/or Company B. As a result, Smith became fully vested in his Company A benefit after his second year of service with Company B. This is a false statement.

II.   IRC section 413(b)(5) indicates that the funding liability is determined as if the plan were maintained by a single employer. This is a false statement.

III.   IRC section 413(b)(1) indicates that the employers are considered to be a single employer for purposes of applying the eligibility requirements. Therefore, the hours that Jones worked for Companies A and B must be combined, yielding a total of 1,100 hours worked in 2002. Jones is therefore a participant as he has satisfied the minimum hours requirement. This is a true statement.

Answer is D.

Question 24

Anyone who was a 5% owner at any time during 2001 or 2002 is a highly compensated employee for 2002 (see IRC section 414(q)(1)(A)). Therefore, EE1, EE3, and EE9 are all highly compensated employees for 2002.

In general, anyone who earned in excess of $85,000 in 2001 (the lookback year) is a highly compensated employee for 2002 (see IRC section 414(q)(1)(B)(i)). Note that the $80,000 referred to in 414(q)(1) was increased to $85,000 for 2001. The 2001 dollar threshold is used (rather than the 2002 dollar threshold) pursuant to IRS regulation 1.414(q)-1T, Q&A3, section (c)(2).

The top paid group election of IRC section 414(q)(1)(B)(ii) is made. In general, all employees of the employer must be included in the top paid group determination. However, IRC section 414(q)(5) allows for the exclusion of certain classes of employees:

(A)   Employees who have not completed 6 months of service
(B)   Employees who normally work less than 17½ hours per week
(C)   Employees who normally work during no more than 6 months of the year
(D)   Employees who have not attained age 21
(E)   Employees covered by a collective bargaining agreement (only in certain cases)

IRS regulation 1.414(q)-1T, Q&A9, sections (b)(i)(A) and (D) make it clear that the 6 months service requirement and the age 21 requirement are determined as of the end of the lookback year (in this case 2001). In addition to the 10 employees for which there is specific data, the employees hired on 6/1/2001 have the required 6 months of service as of the end of 2001. Both the union and non-union employees are counted as employees for purposes of the top-paid group since the total number of union employees is not at least 90% of all employees (IRS regulation 1.414(q)-1T, Q&A9, section (b)(iii) for the rules governing union employees). Therefore, the total number of employees to be included in the top-paid group determination is:

10 (employees with specific data) + 15 (employees hired 6/1/2001) = 25

The top-paid group is equal to 20% of the considered employees: 20% × 25 = 5

Therefore, only the top five paid employees in 2001 with compensation in excess of $85,000 are considered top be highly compensated employees for 2002. These employees would be EE1, EE2, EE3, EE4, and EE5.

Combining our two categories (5% owners and those earning more than $85,000 in the top-paid group), the highly compensated employees for 2002 are:

EE1, EE2, EE3, EE4, EE5, and EE9 $\Rightarrow$ 6 employees

Answer is B.

Question 25

The full funding limitation for 2001 is:

ERISA: $3,100,000 - (3,300,000 - 300,000) = 100,000$
OBRA'87: $(160\% \times 4,000,000) - (3,300,000 - 300,000) = 3,400,000$
RPA'94: $(90\% \times 4,250,000) - 3,400,000 = 425,000$

The overall full funding limitation is equal to the smaller of the ERISA or the OBRA'87 limitations, but not less than the RPA'94 limitation. This is $425,000.

The PBGC full funding exemption states that the variable PBGC premium for a plan year does not apply if the contribution for the year plus the credit balance in the funding standard account are at least as large as the full funding limitation. See PBGC Technical Update 00-4, example 2 for an example of how this works. The credit balance in the funding standard account is $300,000. Therefore, the smallest employer contribution that will trigger the full funding exemption is:

$425,000 - $300,000 = $125,000

Answer is B.

Question 26

The guaranteed benefit for a multiemployer plan is equal to 100 percent of the first $11 of monthly accrual rate plus 75% of the next $33. The accrual rate is defined to be equal to the total accrued benefit divided by years of credited service. See ERISA section 4022A(c).

Smith has 30 years of accrual service as of 12/31/2002. Of this, 10 years was prior to 1/1/1983, 10 years was from 1/1/1983 through 12/31/1992, and 10 years was after 12/31/1992. The accrued benefit for Smith is:

$(\$10 \times 10 \text{ years}) + (\$25 \times 10 \text{ years}) + (\$65 \times 10 \text{ years}) = \$1,000$

The accrual rate is: $1,000/30 years = $33.33

The guaranteed benefit is:

[(100% × $11) + (75% × $22.33)] × 30 years of service = $832.50

Answer is E.

Question 27

In order to impute disparity in accrual rates (IRS regulation 1.401(a)(4)-7(c)), the participants must be divided into two groups: those with compensation less than or equal to covered compensation, and those with compensation greater than covered compensation. The imputed accrual rate for those participants with compensation less than or equal to covered compensation is equal to the smaller of:

   (i)   2 × accrual rate without imputing disparity, or
   (ii)   Accrual rate without imputing disparity + maximum permitted disparity factor

The imputed accrual rate for those participants with compensation greater than covered compensation is equal to the smaller of:

   (i) $\dfrac{\text{annual accrual}}{\text{average annual compensation} - \frac{1}{2}\,\text{covered compensation}}$, or

   (ii) $\dfrac{\text{annual accrual} + (\text{maximum permitted disparity factor} \times \text{covered compensation})}{\text{average annual compensation}}$

The maximum permitted disparity factor is the permitted disparity that could be used under IRC section 401(l) based upon the testing age and the Social Security Retirement Age (SSRA) for the individual participant.

We must determine the imputed normal and most valuable accrual rates for each participant.

HCE1

The annual accrual used for the unadjusted normal accrual rate is:

1.2% × $160,000 = $1,920

The maximum disparity factor for HCE1 is generally .75% (at retirement age 65 with an SSRA of 65). Note that this factor can be found in the permitted disparity tables in IRS regulation 1.401(l)-3(e)(3). However, the factor must be reduced due to the fact that HCE1 has more than 35 years of testing service, and the full .75% disparity can be used for no more than 35 years. Therefore, the adjusted maximum disparity for HCE1 is:

$.75\% \times (35/45) = .5833\%$

Note that the average compensation is greater than covered compensation. The imputed normal accrual rate is the smaller of:

(i) $\quad \dfrac{1,920}{160,000 - \frac{1}{2}(36,000)} = 1.352\%$, or

(ii) $\quad \dfrac{1,920 + (.005833)(36,000)}{160,000} = 1.331\%$

This is 1.331%.

The annual accrual used for the unadjusted most valuable accrual rate is:

$2.0\% \times \$160,000 = \$3,200$

The imputed most valuable accrual rate is the smaller of:

(i) $\quad \dfrac{3,200}{160,000 - \frac{1}{2}(36,000)} = 2.254\%$, or

(ii) $\quad \dfrac{3,200 + (.005833)(36,000)}{160,000} = 2.131\%$

This is 2.131%.

NHCE1

The annual accrual used for the unadjusted normal accrual rate is:

$0.8\% \times \$40,000 = \$320$

The maximum disparity factor for NHCE1 is generally .75% (at retirement age 65 with an SSRA of 65). However, the factor must be reduced due to the fact that NHCE1 has more than 35 years of testing service. The adjusted maximum disparity for NHCE1 is:

$.75\% \times (35/40) = .65625\%$

The imputed normal accrual rate is the smaller of:

(i) $\dfrac{320}{40,000 - \frac{1}{2}(36,000)} = 1.455\%$, or

(ii) $\dfrac{320 + (.0065625)(36,000)}{40,000} = 1.391\%$

This is 1.391%.

The annual accrual used for the unadjusted most valuable accrual rate is:

1.5% × $40,000 = $600

The imputed most valuable accrual rate is the smaller of:

(i) $\dfrac{600}{40,000 - \frac{1}{2}(36,000)} = 2.727\%$, or

(ii) $\dfrac{600 + (.0065625)(36,000)}{40,000} = 2.091\%$

This is 2.090%.

NHCE2

The annual accrual used for the unadjusted normal accrual rate is:

0.8% × $65,000 = $520

The maximum disparity factor for NHCE2 is generally .7% (at retirement age 65 with an SSRA of 66). Note that the factor is not reduced since NHCE2 does not have more than 35 years of testing service. The imputed normal accrual rate is the smaller of:

(i) $\dfrac{520}{65,000 - \frac{1}{2}(60,000)} = 1.486\%$, or

(ii) $\dfrac{520 + (.007)(60,000)}{65,000} = 1.446\%$

This is 1.446%.

The annual accrual used for the unadjusted most valuable accrual rate is:

1.5% × $65,000 = $975

The imputed most valuable accrual rate is the smaller of:

(i) $\dfrac{975}{65{,}000 - \frac{1}{2}(60{,}000)} = 2.786\%$, or

(ii) $\dfrac{975 + (.007)(60{,}000)}{65{,}000} = 2.146\%$

This is 2.146%.

<u>NHCE3</u>

The maximum disparity factor for NHCE3 is generally .65% (at retirement age 65 with an SSRA of 67). Note that the factor is not reduced since NHCE3 does not have more than 35 years of testing service. Also note that the average compensation for NHCE3 is less than the covered compensation. It is therefore unnecessary to determine the annual accrual for this participant, since the first set of rates above are used. The imputed normal accrual rate is the smaller of:

(i) $2 \times .7\% = 1.4\%$, or
(ii) $.7\% + .65\% = 1.35\%$

This is 1.35%.

The imputed most valuable accrual rate is the smaller of:

(i) $2 \times 1.4\% = 2.8\%$, or
(ii) $1.4\% + .65\% = 2.05\%$

This is 2.05%.

The only NHCE with both a normal and most valuable accrual rate at least as large as HCE1 is NHCE2.

Answer is B.

Question 28

Smith was hired on 10/1/1988, and had one year of service as of 10/1/1989. The entry date is the January 1ˢᵗ nearest to the eligibility date of 10/1/1989. This is 1/1/1990.

The top-heavy accrued benefit in a defined benefit plan is provided only in the years that the plan was top-heavy, and in which the employee was a plan participant. A defined benefit plan is top-heavy if the top-heavy ratio as of the valuation date in the prior year is greater than 60%. In this question, the top-heavy ratio exceeds 60% as of the valuation dates in 1991 – 1995, 1997 – 1999, and 2001. Therefore, the plan is top-heavy in the years 1992 – 1996, 1998 – 2000, and 2002. Smith was a plan participant in all of those years except for 2002. As a result, Smith has 8 years of top-heavy participation in the plan (1992 – 1996 and 1998 – 2000).

The top-heavy minimum benefit is based upon a high consecutive 5-year salary average (taking into account all years of service). However, years since the last year in which the plan was top-heavy may be ignored. (See IRC section 416(c)(1)(D)(iii)(II).) Since the plan was not top-heavy in 2001, and Smith terminated before 2002 when the plan became top-heavy again, the 2001 salary for Smith can be ignored. The high 5-year average is from the years 1993 – 1997:

$$\frac{30{,}000 + 30{,}000 + 25{,}000 + 25{,}000 + 30{,}000}{5} = 28{,}000$$

The top-heavy minimum benefit is:

2% × 8 years × 28,000 = 4,480

Answer is A.

Question 29

In order to determine the maximum lump sum benefit under IRC section 415, the maximum annual benefit payable as a life annuity at the age of the lump sum distribution must first be calculated. The 2002 dollar maximum of $160,000 must be reduced from age 62 to age 55, as well as for years of plan participation less than 10. Smith has exactly 10 years of plan participation, so there is no reduction for that. However, Smith has retired at age 55, so the $160,000 dollar limit must be reduced to age 55 from age 62. The reduced benefit is equal to the smaller of the benefit reduced using plan equivalence assumptions, or reduced using the applicable mortality table and a 5% interest rate. The plan equivalence rate of 6% will clearly yield a smaller benefit at age 55 since the 6% interest present value factor exceeds the 5% interest present value factor.

The actuarial reduction using the applicable mortality table and 6% interest from age 62 to age 55 can be determined using the immediate life annuity factors provided as an attachment to the examination. Since there is a pre-retirement death benefit, the reduction from age 62 to age 55 is discounted with interest only. This is:

$$\$160{,}000 \times \ddot{a}^{(12)}_{62@6\%} \times v^7_{6\%} \div \ddot{a}^{(12)}_{55@6\%} = \$160{,}000 \times 11.42 \times .665057 \div 12.97 = \$93{,}692.55$$

Note that the compensation limit of IRC section 415(b) is clearly greater than this since the given average compensation is $200,000.

The maximum lump sum allowed under IRC section 415 is equal to the smaller of the lump sum determined by multiplying the maximum life annuity benefit at age 55 by the smaller of the life annuity lump sum conversion factor using plan actuarial equivalence or the applicable mortality table and the applicable interest rate. In this case, the plan interest rate of 6% will yield a smaller lump sum value than the applicable interest rate of 5.5%. The maximum lump sum value is:

$$\$93{,}692.55 \times \ddot{a}^{(12)}_{55@6\%} = \$93{,}692.55 \times 12.97 = \$1{,}215{,}192$$

Answer is B.

Question 30

IRS regulation 1.414(l)-1(e)(2) provides that in cases of a merger, a special schedule of benefits must be set up for participants who would otherwise receive smaller benefits if the merged plan immediately terminated than they would have received from the prior plan.

The total present value of accrued benefits in plan A is $281,000. There is enough money in Plan A to cover all benefits in categories 3 and 4 ($244,000). However, that leaves only $6,000 to pay for the category 5 benefits for EE2 and EE3 with a value of $37,000. Only 16.2162% (6,000/37,000) of the category 5 benefits are covered.

The total present value of accrued benefits in plan B is $220,000. There is enough money in Plan B to cover all benefits in category 3 ($170,000). However, that leaves only $30,000 to pay for the category 4 benefits for EE5 and EE6 with a value of $50,000. Only 60% (30,000/50,000) of the category 4 benefits are covered.

Plan A is the better funded plan, as it has assets that cover 16.2162% of category 5, as compared with Plan B, which runs out of money in Category 4.

A benefit schedule must be set up for the participants in Plan A representing the extra 40% of the benefits in Category 4 and the 16.2162% of the benefits covered in Category 5. The total benefit to be included in the benefit schedule is:

$$[(5{,}000 + 4{,}000) \times 40\%] + [(2{,}000 + 1{,}000) \times 16.2162\%] = 4{,}086$$

Answer is C.

Note: The benefit schedule only comes into play should the merged plan terminate during the first 5 years following the date of the merger. Once assets have been allocated through categories 1 through 3, and the first 60% of category 4, assets are then allocated to the all of the benefits in the benefit schedule before the remaining benefits in category 4 receive an asset allocation.

Question 31

The benefit payable to Smith is in the form of a joint and 50% contingent benefit. In addition, the age of Smith as of the plan termination date is age 61. Therefore, the PBGC maximum guaranteed benefit must be reduced using factors provided in the regulations for ERISA section 4022. These factors are also provided as an attachment to the exam. The factor for the joint and 50% contingent annuity is .9, and the factor for the commencement age of 61 is .72. Note that the commencement age is based upon the age upon plan termination, not the age at which the benefit payment actually began. In addition, there would be an extra reduction if the spousal age had been different from the participant. The reduced PBGC maximum benefit is:

$3,392.05 \times .9 \times .72 = $2,198.05$

For a non-substantial owner, the vested accrued benefits based upon a formula in effect as of 5 years before the plan termination date is fully guaranteed (up to the PBGC maximum). Therefore, the $1,500 benefit from the 1/1/1996 formula is guaranteed.

There is a $600 increase in vested accrued benefit under the 1/1/1998 formula. This has been in effect for 3½ years before the plan termination date. It is phased in for the number of full 12-month periods that the formula has been in effect, which would be 3 years. The phased in amount is equal to the greater of:

   20% × $600 × 3 years = $360, or
   $20 × 3 years = $60

Therefore, $360 of the 1/1/1998 benefit increase is guaranteed.

The benefit increased another $400 under the 1/1/2000 formula. However, only $98.04 of this can be recognized since the additional $301.96 exceeds the PBGC maximum benefit. This formula is phased in over 1 year (since it has been in effect for 1½ years). The phased in amount is equal to the greater of:

   20% × $98.04 × 1 year = $19.60, or
   $20 × 1 year = $20

Therefore, $20 of the 1/1/2000 benefit increase is guaranteed.

The total guaranteed benefit for Smith is:

$1,500 + $360 + $20 = $1,880

Answer is C.

Question 32

A floor offset plan is one in which the accrued benefit in the defined benefit plan is offset by the equivalent benefit to the defined contribution account balance (where the account balance is converted to a life annuity payable at the retirement age in the defined benefit plan). 401(k) deferrals are not used as part of the offset.

The benefit for Smith in the defined benefit plan before the offset as of 1/1/2002 is:

3% × $50,000 × 5 years of service = $7,500

The vested profit sharing balance must be accumulated using the 8.5% actuarial equivalence pre-retirement interest rate, and divided by the life annuity factor using the applicable mortality table and the 7.5% actuarial equivalence post-retirement interest rate. The accumulation is to age 65, since that is the age at which the accrued benefit is payable. The accumulated benefit is:

$$\$10,000 \times 1.085^{13} \div \ddot{a}^{(12)}_{65@7.5\%} = \$10,000 \times 2.887930 \div 9.52 = \$3,034$$

Therefore, the offset benefit in the defined benefit plan is $4,466 ($7,500 - $3,034).

The lump sum value is equal to the greater of the value using plan actuarial equivalence, or the value using the applicable mortality table and interest rate under IRC section 417(e)(3). Clearly, the greater value would be that using the applicable interest rate of 5.5% since the smaller interest rate will yield a larger value. The lump sum payable to Smith is:

$$\$4,466 \times \ddot{a}^{(12)}_{65@5.5\%} \times v^{13}_{5.5\%} = \$4,466 \times 11.07 \times .498561 = \$24,648$$

Answer is B.

Note: This question was excluded from the grading of the exam due to the fact that the table provided with the exam did not include the column needed to determine the value of the factor $\ddot{a}^{(12)}_{65@7.5\%}$.

Question 33

Under the Alternative Calculation Method, the PBGC variable premium is calculated by first determining the difference between the adjusted value of vested benefits as of the first day of the prior year and the adjusted value of plan assets as of the first day of the prior year. The difference is then increased with interest for one year using the current year PBGC required interest rate. The result is then rounded up to the next thousand dollars, and multiplied by .9%.

In this question, the value of vested benefits is provided as of 1/1/2001 for each of the following categories of participants: retired, terminated, and active. The adjustment factors to apply to the vested benefits are given in the instructions to the PBGC premium form, as well as in an attachment to the exam.

The adjustment factor for retired participants is:

$$.94^{(RIR - BIR)}$$

The adjustment factor for the active and terminated participants is:

$$.94^{(RIR - BIR)} \times ((100 + BIR)/(100 + RIR))^{(ARA - 50)} \times 1.07$$

In the above formulas, RIR is the required interest rate for the PBGC premium year, BIR is the current liability interest rate for the PBGC premium year, and ARA is the assumed retirement age. Note that the 7% increase for the active and terminated participants represents an estimate of the increase in accrued benefit for the year (in this case the 2001 year).

The adjusted value of vested benefits for the retired participants as of 1/1/2001 is:

$$1,000,000 \times .94^{(4.75 - 6.00)} = 1,080,414$$

The adjusted value of vested benefits for the active and terminated participants as of 1/1/2001 is:

$$(3,000,000 + 260,000) \times .94^{(4.75 - 6.00)} \times (106/104.75)^{(65 - 50)} \times 1.07 = 4,502,659$$

The adjusted value of plan assets must be determined as of 1/1/2001 by subtracting contributions receivable and adding back all contributions for each year prior to the current year, each discounted with interest at the PBGC required interest rate from the date they were deposited to 1/1/2001. Note that the given asset value includes the receivable contribution for 2000. The adjusted value of the plan assets is:

$$5,000,000 - 200,000 + 200,000/1.0475^{8.5/12} + 150,000/1.0475^{17/12} = 5,133,988$$

Adjusted $UVB_{1/1/2002} = (1,080,414 + 4,502,659 - 5,133,988) \times 1.0475 = 470,416$

2002 variable premium = $471,000 \times .009 = \$4,239$

Answer is D.

Note: This question was excluded from the grading of the exam due to the fact that the formula for the adjustment factor for active and terminated participants provided with the exam had typographical errors.

Question 34

For a participant with 30 years of participation, the total retirement benefit is:

$50 + ($8 × 10 years) + ($10 × 14 years) + ($X × 5 years) = 270 + 5X

Under the 3% rule of IRC section 411(b)(1)(A), the accrued benefit at any point in time must be at least equal to 3% of the total benefit multiplied by years of accrual service (in this case, years of participation). 3% of the total benefit is:

3% × (270 + 5X) = 8.10 + .15X

It is only necessary to check to see whether the 3% rule is satisfied at the end of each period of the benefit formula, since that will always be a worst-case situation. After 1 year, the total accrued benefit is $50. Setting this equal to the minimum required accrual,

50 = 8.10 + .15X   ⟹   X = 279.33

After 11 years, the total accrued benefit is $130 ($50 plus $8 per year for 10 years). The 3% required accrual is $89.10 + 1.65X. Setting these equal to each other:

130 = 89.10 + 1.65X ⟹   X = 24.79

After 25 years, the actual accrual is $270 ($50 plus $8 per year for 10 years plus $10 per year for 14 years). The 3% required accrual is $202.50 + 3.75X. Setting these equal to each other:

270 = 202.50 + 3.75X ⟹   X = 18.00

Therefore, in order for the benefit formula to satisfy the 3% rule at every point in time, the value of $X must be $18.

Answer is E.

Question 35

I.   This is true, and described in ERISA section 3042, regulation 901.20(h).

This is false, as it is acceptable to perform actuarial services even when a known conflict of interest exists provided that the conflict is fully disclosed. See ERISA section 3042, regulation 901.20(d).

III. This is true, and described in ERISA section 3042, regulation 901.20(f).

Answer is B.

Question 36

This question deals with the issue of whether Plan A passes coverage under IRC section 410(b). Since Company A is part of a controlled group, its defined benefit plan can optionally be aggregated with the defined contribution plan of Company B.

First, let's determine the ratio percentage for Plan A without aggregation. Since the only eligibility requirement for Plan A is one year of service, there are 200 eligible NHCEs (100 at age 30 with 5 years of service and 100 at age 40 with 15 years of service) and all 200 HCEs are eligible. Note that all of these employees are also benefiting since they have equivalent accrual rates greater than 0%.

In order to determine the total non-excludable employees, the entire controlled group must be taken into account. In Company B, there are 600 non-excludable NHCEs (those at age 20 with 1 year of service and those at age 40 with 15 years of service). In Company C, there are 100 non-excludable NHCEs (those at age 30 with 5 years of service). This makes a total of 900 non-excludable NHCEs, and 200 non-excludable HCEs.

The ratio percentage is:

(benefiting NHCEs/non-excludable NHCEs)/ (benefiting HCEs/non-excludable HCEs)
= (200/900)/(200/200) = 22.22%

The ratio percentage of Plan A is not at least 70%, and Plan A fails the ratio percentage test. Statement A is false.

Next, we can look at the average benefits test. The ratio percentage must exceed the safe harbor percentage. The safe harbor percentage is determined by calculating the non-highly compensated concentration percentage. This is simply the percentage of non-excludable employees in the entire controlled group who are non-highly compensated. We have already determined that 900 NHCEs are non-excludable and that 200 HCEs are non-excludable. Therefore, the concentration percentage is:

900/1,100 = 81.82%

This is truncated to 81%. We can now look up the safe and unsafe harbor percentages in the table from IRS regulation 1.410(b)-4(c)(4)(iv), or from the table provided with the examination. The safe harbor percentage is 34.25%, and the unsafe harbor percentage is 24.25%. The ratio percentage for Plan A is less than both the safe and unsafe harbor percentages. Therefore, Plan A does not pass the average benefits test. Statement B is false.

Next, we can try to aggregate Plan A with Plan B for purposes of coverage testing. In this case, since the two plans have different eligibility requirements, an employee is considered to be non-excludable if they satisfy at least one of the eligibility requirements of the two plans. Therefore, in Company A, the 100 NHCEs age 30 with 6 months of service are now considered to be non-excludable. Similarly in Company B, the 100 NHCEs age 30 with 6 months of service are now considered to be non-excludable. And in Company C, the 100 NHCEs age 30 with 6 months of service are now considered to be non-excludable. So, there are now a total of 1,200 NHCEs who are non-excludable.

The 400 NHCEs age 40 with 15 years of service in Plan B and the 100 NHCEs age 30 with 6 months of service in Plan B are now deemed to be benefiting in the aggregated plan since they have non-zero equivalent accrual rates.

The ratio percentage for the aggregated plan is:

(700/1,200)/(200/200) = 58.33%

The aggregated plan does not pass the ratio percentage test since the ratio percentage is less than 70%. However, we can look at the average benefits test. We must calculate a new concentration percentage since we now have a different number of non-excludable NHCEs. This is:

1,200/1,400 = 85.71%

This is rounded down to 85%. Looking up the safe harbor percentage, we find that it is 31.25%. Since the ratio percentage of the aggregated plans is 58.33%, this exceeds the safe harbor percentage, and we can continue.

In order to satisfy the average benefits test, the average benefit percentage must be at least 70%. This is the ratio of the average benefit percentage (equivalent accrual rate) of the non-excludable NHCEs to the average benefit percentage of the HCEs. Note that some of these non-excludable employees have a benefit percentage of 0%. The average benefit percentage is:

$$\frac{[(100)(4\%) + (100)(4\%) + (400)(3\%) + (100)(4\%)]/1,200}{[(200)(3\%)]/200} = 66.67\%$$

The aggregated plan fails the average benefits test since the average benefit percentage is less than 70%. Therefore, statements C and D are false.

Answer is E.

Question 37

I.   In order to satisfy IRC 411(a), a vesting schedule must always provide a vested percentage of at least what would be provided under the 5-year cliff or 3 to 7 year vesting schedules. This schedule does not satisfy the 5-year cliff schedule since a participant is not fully vested after 5 years. Similarly, it does not satisfy the 3-7 year vesting schedule since that schedule requires at least 20% vesting after 3 years, and this schedule provides for no vesting after 3 years. This is not an acceptable vesting schedule.

II.   Vesting years of service can be based upon plan years in which at least 1,000 hours are worked. These do not have to be full years, and they cannot be required to be calendar years. See IRC section 411(a)(5)(A). This is not an acceptable vesting schedule.

III. It is acceptable to use a 12-month period other than the plan year. See IRC section 411(a)(5)(A). The schedule satisfies the 5-year cliff schedule and is an acceptable vesting schedule.

Only schedule III is acceptable.

Answer is E.

Question 38

A partial withdrawal has occurred on 12/31/2001 due to a 70% decline, as defined in ERISA section 4205(b)(1). Looking at the years 1994 – 1998 (the five year period before the three year period ending on 12/31/2001), the years with the two largest contribution base units are 1994 and 1995. The average of the base units from 1994 and 1995 is:

(270,000 + 230,000)/2 = 250,000

30% of this amount is:

$250,000 \times .3 = 75,000$

Clearly, a 70% decline has occurred since the base units in each of 1999, 2000 and 2001 are less than 75,000.

The complete withdrawal liability must be determined for Employer A as of 12/31/1998, the end of the year before the three-year period ending 12/31/2001. Under the Rolling Five method, the value of the unfunded vested benefits as of 12/31/1998 must be pro-rated to Employer A using the ratio of the sum of the contributions of Employer A from 1994 – 1998 to the sum of the contributions of all employers from 1994 – 1998. This yields Employer A's share of the unfunded vested benefits. This is:

$$\$2,500,000 \times \frac{135,000 + 115,000 + 55,000 + 55,000 + 45,000}{800,000 + 800,000 + 750,000 + 750,000 + 725,000} = 264,706$$

This must be reduced by the de minimis credit of ERISA section 4209. We are not told whether the standard or optional de minimis credit is to be used here. However, it is irrelevant because the standard de minimis credit would be phased out once the share of unfunded benefits reaches $150,000 and the optional de minimis credit would be phased out once the share of unfunded benefits reaches $250,000. In either case, the de minimis credit is phased out, and the complete withdrawal liability is $264,706.

The fraction used to prorate the complete liability for Employer A upon the partial withdrawal due to the 70% decline, as defined in ERISA section 4206(a)(2), is:

$$1 - \frac{78,000}{(270,000 + 230,000 + 110,000 + 110,000 + 90,000)/5} = .518519, \text{ or } 51.8519\%$$

Note that the numerator in the above fraction is equal to the base units in 2002 (the year following the year of the partial withdrawal).

The partial withdrawal liability is:

$\$264,706 \times .518519 = \$137,255$

Answer is C.