Corrections and Additions to EA-2A Course Outline and Problems
Fall, 2010 (as of 10/28/2010)

Note that the final syllabus (released August 20, 2010) indicates that the cutoff date for law and regulation changes is May 31, 2010 for purposes of the 2010 EA-2A exam. Therefore, the Funding Relief changes in The Preservation of Access to Care for Medicare Beneficiaries and Pension Relief Act of 2010 (PRA 2010) are excluded from testing on the exam.

Page 16: In the first bullet item, the election must be made by the minimum funding due date, not the due date of Form 5500. In the second bullet item, the initial standing election must be signed by the minimum funding due date of the first plan year to which it will apply (not the 5500 due date). In addition, if the plan enrolled actuary is replaced and a replacement standing election is provided to the new enrolled actuary, that must be provided no later than the due date (with extension) of the Form 5500 for the year.

Page 47: There should technically be a cost of the death benefit, due to the fact that the interest rate used to accumulate the cash balance account is different from the segment rate used to discount that balance. This was not intended in this question, so the data should be changed to remove the pre-retirement mortality assumption. The solution can then be used unchanged (other than deleting the paragraph about the pre-retirement death benefit -- which is now irrelevant).

Page 49: In the data for question 11, under the actuarial assumptions section, it should state that 20% of the participants elect the life annuity (remove the word "optional").
Additionally, the pre-retirement death benefit should be changed to "none."

Page 50: The paragraph about the pre-retirement death benefit should be deleted.

Page 68: The question number should read 18.

Page 89: The phase-in is required for part c. This is:

Phased in at-risk target normal cost = 2,514 + [20% × (2,542 – 2,514)] = 2,520

Page 139: The bullet item in the middle of the page with regard to the liquid assets being adjusted by contributions for the current plan year should be deleted. This contradicts the third bullet item on page 140, which is correct.

Page 244: The question number should read 86.

Page 273: The compensation labeled as for the year "1999" should read "2000".

Page 297: The references to "no more than 100 participants" in the second to last paragraph of the solution to question 105 should actually read "no more than 100 **employees**".

Page 455: The number of years of service required to be eligible for the supplemental early retirement benefit in question 169 should be 35 years, not 30 years.

Page 456: The third and fourth paragraphs have been modified to read as follows:

At each early retirement age, the supplemental benefit must also be taken into account (if applicable). Smith was hired at age 24, and will not have at least 35 years of service at age 55. So no supplemental benefit is applicable at that age. However, Smith will have at least 35 years of service at age 60, so there is a supplemental benefit payable at age 60 of $600 per month for two years (through age 62).

Under IRS regulation 1.430(d)-1(c)(1)(ii)(D), the Social Security supplement is allocated based upon Smith's total service at the assumed retirement age. Since the supplement is only paid if Smith retires at age 60, Smith would have exactly 36 years of service at age 60. The portion of the $600 supplemental benefit attributed to the target normal cost (current 2009 service) is $16.67 (1/36th of $600). Note that this is not subject to an early retirement reduction. It is payable as a 2-year temporary annuity.

Page 457: The supplemental benefit allocated to the funding target in the third paragraph should be $100 (6/36th of $600), rather than $120. The target normal cost and funding target calculations have changed to the following:

Target normal cost $= [12 \times 49 \times \ddot{a}^{(12)}_{55@5.45\%} \times v^{25}_{.0545} \times .6]$

$\qquad + [12 \times \{(59.50 \times \ddot{a}^{(12)}_{60@5.45\%}) + (16.67 \times \ddot{a}^{(12)}_{60:\overline{2}|@5.45\%})\} \times v^{30}_{.0545} \times .28]$

$\qquad + [12 \times 70 \times \ddot{a}^{(12)}_{65@5.45\%} \times v^{35}_{.0545} \times .12]$

$\quad = (588 \times 12.018 \times 0.2654 \times .6)$

$\qquad + (\{(714 \times 10.083) + (200 \times 1.936)\} \times 0.2035 \times .28)$

$\qquad + (840 \times 8.450 \times 0.1561 \times .12)$

$\quad = 1,690$

Funding target $= [12 \times 294 \times \ddot{a}^{(12)}_{55@5.45\%} \times v^{25}_{.0545} \times .6]$

$\qquad + [12 \times \{(357 \times \ddot{a}^{(12)}_{60@5.45\%}) + (100 \times \ddot{a}^{(12)}_{60:\overline{2}|@5.45\%})\} \times v^{30}_{.0545} \times .28]$

$\qquad + [12 \times 420 \times \ddot{a}^{(12)}_{65@5.45\%} \times v^{35}_{.0545} \times .12]$

$\quad = (3,528 \times 12.018 \times 0.2654 \times .6)$

$\qquad + (\{(4,284 \times 10.083) + (1,200 \times 1.936)\} \times 0.2035 \times .28)$

$\qquad + (5,040 \times 8.450 \times 0.1561 \times .12)$

$\quad = 10,139$

Replacement pages reflecting these modifications have been included at the end of this file for pages 456 and 457.

Page 478: Treasury Announcement 2010-3 has been added to the reading list:

2010-3   This announcement updates Revenue Procedure 2000-40 with regard to automatic approvals in the change in cost method due to either a change in valuation software or a change in the enrolled actuary, with regard to single employer plans. For plan years beginning on or after 1/1/2009, automatic approval for a change in cost method is granted if the following conditions are satisfied:

(1) There has been a change in both the enrolled actuary and the business providing actuarial services
(2) The new method is substantially consistent with the method used by the prior actuary
(3) The funding target and target normal cost (determined without regard to employee contributions and plan expenses) for the prior year as determined by the new actuary using the prior actuary's assumptions are each within 5% of the funding target and target normal cost determined by the prior actuary.
(4) For plan years beginning on or after January 1, 2011, the actuarial value of assets determined by the new actuary for the prior year are within 5% of the actuarial value of assets used by the prior actuary.

Conditions (2), (3), and (4) are applied without regard to any change in method for which automatic approval has already been provided for the current year under regulation 1.430(d)-1(g)(3)(ii)(C).

With regard to a change in the valuation software, for plan years beginning on or after 1/1/2009, automatic approval is granted if the following conditions are satisfied:

(1) There has <u>not</u> been a change in both the enrolled actuary and the business providing actuarial services
(2) The underlying method is substantially consistent with the method used for the prior year
(3) The new valuation software is the same as that generally used by the enrolled actuary for the single employer plans to which the actuary provides services
(4) The funding target and target normal cost (determined without regard to employee contributions and plan expenses) under the new valuation software (for each of the current and prior years) are each within 2% of the funding target and target normal cost determined under the old software.
(5) For plan years beginning on or after January 1, 2011, the actuarial value of assets determined under the new valuation software (for each of the current and prior years) is within 2% of the actuarial value of assets under the prior software.
(6) The new software is designed to produce results no less accurate than under the old software.

Solution to question 169

a) The target normal cost is equal to the present value of the difference between the 12/31/2009 accrued benefit and the 1/1/2009 accrued benefit. Since the accrual each year is a flat $70 per month, $70 is the accrual to be used to determine the target normal cost.

The accrual is reduced if Smith retires at the early retirement age of 55 (for which there is an assumed 60% chance) or at age 60 (for which there is a 28% chance – the 40% probability that Smith did not retire at age 55 multiplied by the 70% probability that Smith retires at age 60). The early retirement reduction for age 55 is 30% (3% × 10 years), and at age 60 is 15% (3% × 5 years). The early retirement accruals at each age are:

Age 55: $70 × (1 - .30) = $49.00
Age 60: $70 × (1 - .15) = $59.50

At each early retirement age, the supplemental benefit must also be taken into account (if applicable). Smith was hired at age 24, and will not have at least 35 years of service at age 55. So no supplemental benefit is applicable at that age. However, Smith will have at least 35 years of service at age 60, so there is a supplemental benefit payable at age 60 of $600 per month for two years (through age 62).

Under IRS regulation 1.430(d)-1(c)(1)(ii)(D), the Social Security supplement is allocated based upon Smith's total service at the assumed retirement age. Since the supplement is only paid if Smith retires at age 60, Smith would have exactly 36 years of service at age 60. The portion of the $600 supplemental benefit attributed to the target normal cost (current 2009 service) is $16.67 (1/36th of $600). Note that this is not subject to an early retirement reduction. It is payable as a 2-year temporary annuity.

In determining the present value, the segment interest rates must be used. Smith is 30 as of 1/1/2009. The third segment interest rate is applicable for all of Smith's benefit payments since Smith is more than 20 years from each of the assumed retirement ages (55, 60 and 65). The first and second segment interest rates are ignored because Smith will receive no benefit payments during the next 20 years.

Note that the assumed probability of retiring at age 55 is 60%, at age 60 is 28% (70% of the remaining 40% who didn't retire at age 55), and at age 65 is 12% (100% of the remaining 40% who didn't retire at age 55 and 30% who didn't retire at age 60). The target normal cost is equal to the sum of the present value of the 2009 accrual (including the supplemental benefit payable only if Smith retires at age 60) payable if Smith retires at each possible retirement age (with each present value multiplied by the probability that Smith actually retires at that age).

Target normal cost $= [12 \times 49 \times \ddot{a}^{(12)}_{55@5.45\%} \times v^{25}_{.0545} \times .6]$

$$+ [12 \times \{(59.50 \times \ddot{a}^{(12)}_{60@5.45\%}) + (16.67 \times \ddot{a}^{(12)}_{60:\overline{2}|@5.45\%})\} \times v^{30}_{.0545} \times .28]$$

$$+ [12 \times 70 \times \ddot{a}^{(12)}_{65@5.45\%} \times v^{35}_{.0545} \times .12]$$

$$= (588 \times 12.018 \times 0.2654 \times .6)$$

$$+ (\{(714 \times 10.083) + (200 \times 1.936)\} \times 0.2035 \times .28)$$

$$+ (840 \times 8.450 \times 0.1561 \times .12)$$

$$= 1,690$$

b) The funding target is equal to the present value of the 1/1/2009 accrued benefit. This accrued benefit is \$420/month (\$70 × 6 years of past service). The early retirement accruals at each age are:

Age 55: \$420 × (1 - .30) = \$294.00
Age 60: \$420 × (1 - .15) = \$357.00

In determining the present value, the segmented interest rates and probabilities of retirement must be used in the same manner as for the target normal cost.

For purposes of the supplemental benefit payable at the early retirement age of 60, the allocation of the \$600/month benefit to past service under IRS regulation 1.430(d)-1(c)(1)(ii)(D) is equal to \$100 (6/36th of \$600, since Smith has 6 years of past service as of 1/1/2009).

In determining the present value, the segmented interest rates and probabilities of retirement must be used in the same manner as for the target normal cost.

Funding target $= [12 \times 294 \times \ddot{a}^{(12)}_{55@5.45\%} \times v^{25}_{.0545} \times .6]$

$$+ [12 \times \{(357 \times \ddot{a}^{(12)}_{60@5.45\%}) + (100 \times \ddot{a}^{(12)}_{60:\overline{2}|@5.45\%})\} \times v^{30}_{.0545} \times .28]$$

$$+ [12 \times 420 \times \ddot{a}^{(12)}_{65@5.45\%} \times v^{35}_{.0545} \times .12]$$

$$= (3,528 \times 12.018 \times 0.2654 \times .6)$$

$$+ (\{(4,284 \times 10.083) + (1,200 \times 1.936)\} \times 0.2035 \times .28)$$

$$+ (5,040 \times 8.450 \times 0.1561 \times .12)$$

$$= 10,139$$