

# a/s/m

## EA-2L Exam

### Course Outline & Problems 2019



David B. Farber, A.S.A.

NO RETURN IF OPENED

# a/s/m

*Actuarial Study Materials*  
Learning Made Easier



## ABOUT THIS MANUAL

This manual consists of my course outline and review questions that have been inserted into the various sections of the outline. It reflects the course syllabus as published in July of 2018. Most, but not every topic is covered in this outline. Any changes to the syllabus that might be published in the January, 2019 Joint Board program document are not reflected in this outline. Please check for updates on the A.S.M. web site in early 2019.

The 2019 edition has been updated from 2018 to correct any errata and add new clarifying material. The 2019 edition also includes any increases in limitations that are updated annually by the Department of the Treasury and PBGC. (Note that while these limitations are noted in the body of the sample questions in this manual, they would not be included in the body of an actual exam question since tables of historical limitations and factors needed to solve the problems are provided with the exam – see the Joint Board program document).

This manual assumes knowledge of the material covered on the EA-1 exam. Note that the pension law exam (EA-2L) does not presume knowledge of the material from the funding exam (EA-2F).

As always, I expect that there will be some last minute changes to the syllabus, and that errata will occur, so please check the A.S.M. website below.

David B. Farber, ASA

**Please check A.S.M.'s web site at [www.studymanuals.com](http://www.studymanuals.com) for errata and updates.  
If you have any comments or reports of errata, please  
e-mail us at [mail@studymanuals.com](mailto:mail@studymanuals.com).**

©Copyright 2018 by Actuarial Study Materials (A.S.M.), PO Box 69, Greenland, NH 03840.  
All rights reserved. Reproduction in whole or in part without express written permission  
from the publisher is strictly prohibited.

## Table of Contents

<u>Topic</u>	<u>Starting Page Number</u>
Vesting	1
Accrued Benefits	12
Postponed Retirement	36
Spousal Benefits	41
Lump Sum Distributions	45
Compensation Limits	53
Benefit Limitations	57
Top Heavy Rules	96
Nondiscriminatory Compensation	121
Highly Compensated Employees	123
Minimum Participation Requirements	130
Minimum Coverage Requirements	137
Nondiscrimination (IRC section 401(a)(4))	160
Defined benefit plan safe harbors	160
Defined benefit plan general testing	164
Defined contribution plan testing	193
Cross testing	197
Aggregating DB and DC plans	204
Plan amendments	216
Distribution restrictions to top paid HCEs	218
Benefits, rights and features	222
Permitted Disparity	224
Funding-based Benefit Limits	
for single employer plans	247
Multiemployer Withdrawal Liability	291
PBGC Plan Termination	329
General plan termination rules	329
Guaranteed benefits	332
Asset allocation	357
Employer reversions	387
Missing participants	396
PBGC Premiums	403
PBGC Notice of failure to make required contribution	418
PBGC Filings for grossly under-funded plans	419
PBGC Reportable Events	426
Retiree health accounts (IRC section 420)	434
Prohibited transactions (IRC section 4975)	435
Standards of performance of	
an enrolled actuary (ERISA regulation 901.20)	436
Minimum required distributions (IRC section 401(a)(9))	437
Controlled groups (IRC section 1563)	438

Notice of reduction in future benefit accrual (IRC section 4980F and regulation 54.4980F-1)	439
Reporting and Disclosure	440
Fiduciary Responsibility	441
MAP-21 stabilized segment rates	448
Summary of Revenue Rulings, Notices, Procedures	455
Commutation Functions	467
IRC section 318 Constructive Ownership	469
EA-2B Compensation Types	471
Collectively Bargained and Multiemployer Plans Summary	472
Summary of Aggregation for Nondiscrimination	473
Applicable EA-2L Topic Due Dates	474
Nondiscrimination Flow Chart	475
PBGC Priority Category Asset Allocation Flow Chart	476
Missing Participant Flow Chart	477

# Guide for using 2018 EA-2L Outline

Some of the syllabus items for the EA-2L exam are rarely tested. This guide can be used to help you focus on what are typically the most important parts of the outline.

Pages 1 – 40: Vesting and accrued benefit rules are always tested on this exam. Expect about 4 to 6 questions on this material.

Pages 41 – 44: There are typically 2 or 3 questions dealing with spousal benefits.

Pages 45 – 120: These sections deal with specialized rules that are part of the calculation of benefits that can be distributed to participants. There are typically 6 to 10 questions dealing with these sections.

Pages 121 – 223: This is one of the most tested parts of the outline. A lot of time should be devoted to the nondiscrimination items in these sections. This often makes up about 25% of the exam questions.

Pages 224 – 246: The permitted disparity rules have been rarely tested during the past 10 to 12 years. Although the topic remains on the syllabus, this might be a section to skip until all other sections are understood, as the time spent to understand the topic probably outweighs the probability of a question appearing on the exam.

Pages 247 – 290: Funding based limits (IRC section 436) is typically tested in about 3 – 5 exam questions.

Pages 291 – 328: There are typically 1 – 3 exam questions dealing with multiemployer plan withdrawal liability.

Pages 329 – 433: This is the other really big topic (typically about 25% of the exam – plan terminations and PBGC rules).

Pages 434 – 447: These miscellaneous topics have varying probabilities of being tested. There are never many points devoted to any of these topics. Due to the primarily factual nature of these topics, they are generally best left to the later stages of studying for this exam.

Pages 448 – 454: The MAP-21 stabilization rules might show up in a few questions (usually requiring you to choose whether or not to use the stabilized interest rates). The most important thing to know is when to use MAP-21 rates and when not to use them. The rules have been mentioned throughout the outline, but this section goes into more detail.

Pages 514 – 515: Commutation functions will likely show up in several questions, and this section provides a brief review of how to use them.

Pages 516 – 517: Constructive ownership rules have only been tested a couple of times within the past several years.



## Vesting

Supplemental reading: IRC sections 411(a), 411(d)(3), 413(b)(4), and 416(b)  
Treasury regulations 1.401(a)-1, 1.411(d)-2  
Revenue Rulings 2003-65, 2007-43

- Defined benefit plans must provide a vesting schedule at least as good (in every year) as one of two schedules.
  - 5-year cliff vesting (100% after 5 years of service). (Note that prior to 1999, multiemployer plans were allowed to use a 10-year cliff schedule. This is no longer the case, and they must satisfy the same rules as single employer plans.)
  - 3 to 7 year vesting (20% after 3 years, increasing 20% per year to a maximum of 100% after 7 years of service). This is also referred to as the 7-year graded vesting schedule.
- Top heavy plans must provide a vesting schedule at least as good (in every year) as one of two schedules (IRC section 416(b)).
  - 3-year cliff vesting (100% after 3 years of service).
  - 2 to 6 year vesting (20% after 2 years, increasing 20% per year to a maximum of 100% after 6 years of service). This is also referred to as the 6-year graded vesting schedule.
- Defined contribution plans must provide a vesting schedule under IRC section 411(a)(2)(B) as good as the top heavy minimum vesting schedules even if the plan is not top heavy.
- Plans requiring more than one year of service for eligibility must provide 100% vesting.
- “Applicable defined benefit plans” (cash balance plans and other plans with a hypothetical account balance) must provide 100% vesting after 3 years of service (IRC section 411(a)(13)(B)).
- All participants must be fully vested upon attaining normal retirement age. There is no requirement for full vesting upon reaching a plan’s early retirement age, or upon death or disability.
- Normal retirement age cannot exceed the later of age 65 or the 5<sup>th</sup> anniversary of plan participation (IRC section 411(a)(8)).
  - IRC section 401(a)(36) allows for in-service distribution to begin at age 62, even if this is prior to normal retirement age.
  - The normal retirement age under the terms of the plan must be reasonable for the particular industry of the employer.
  - A normal retirement age of at least 62 will be deemed a safe harbor as a reasonable retirement age (Treasury regulation 1.401(a)-1(b)(2)(ii)).

- Vesting schedules may be amended; however, participants with at least 3 years of service must be allowed to elect to remain under the old schedule. This includes changes in vesting schedules due to top heavy status of the plan.
- Once a participant earns the right to a vested percentage, that percentage may not be reduced.
- Employee contributions (including 401(k) employee deferrals) are always fully vested.
- Affected participants must become fully vested upon the termination or partial termination of the plan (IRC section 411(d)(3)).
  - Whether a partial termination has occurred is determined based upon facts and circumstances, but generally occurs when there has been a substantial decrease in future benefit accruals (Treasury regulation 1.411(d)-2(b)).
  - If as a result of the decrease in future benefit accruals there becomes a potential reversion to the employer (or substantial increase in a potential reversion), then a partial termination is deemed to have occurred.
  - Revenue Ruling 2007-43 indicates that a partial termination may *generally* be deemed to occur when there has been a turnover rate in the plan participants of at least 20%. This is still subject to facts and circumstances.
- A year of service is generally a year in which the employee works at least 1,000 hours. It can be any 12-consecutive month period (usually it's the plan year).
  - A plan can require fewer than 1,000 hours in order for a participant to earn credit for a year of service. It may not require more than 1,000 hours, however.
  - The elapsed time method of service can be used instead of the 1,000 hour rule. This method is based not on hours worked, but rather the actual period of service (including fractional years). A year of service is credited for vesting based upon completion of integral years of service.
  - The elapsed time method should be assumed (unless you are told otherwise) as the method for crediting years of service on exam questions as it is a general condition of the exam.

- Years of service for vesting may exclude:
  - Years before attaining age 18
  - Years when an employee declined to contribute to a plan requiring employee contributions
  - Years of service during which the employer did not maintain the plan (or a predecessor plan). (Note that a predecessor plan is one that was terminated no earlier than 5 years before the establishment of the current plan. Another plan of the employer that currently exists is not a predecessor plan.) If a plan is adopted after the first day of the plan year, any service exclusion is for years prior to the first day of the plan year.
  - Years allowed to be excluded due to breaks in service.
    - A break in service occurs (generally) in a year in which the employee works 500 hours or less. (A plan may require fewer than 500 hours for a break in service, but not more than 500 hours.) No break in service is deemed for a maternity or paternity leave.
    - Non-vested participants with a break in service need not have their pre-break service used for vesting if they had consecutive years of breaks in service at least equal to 5 (or the number of years of service they had before the first break year, if larger). Note: The parenthetical comment in the prior sentence comes from IRC section 411(a)(6)(D), which was written under the original terms of ERISA, when the minimum vesting schedules allowed for longer periods of vesting. Under the current minimum schedules (5-year cliff and 3 to 7-year vesting), if a participant had 5 years of service at the time they suffered a break year, they would be partially vested. Therefore, this IRC provision would only apply if the participant is non-vested at the time that they suffer a break in service, and have at least 5 consecutive years of breaks in service.
    - For an employee with a 1-year break in service, years of service prior to the break are not required to be included in determining the vested percentage until one year of service is subsequently worked
  - Years of service with all employers within the controlled group, or with a predecessor employer, are deemed to be from the same employer.
  - Years of service with all employers participating in the same multiemployer plan are applied as if the employers are a single employer. See IRC section 413(b)(4).

- Years of service upon reemployment after qualified military service must include the years in which the employee was not employed with the employer while engaged in the qualified military service (note that benefit accruals are not required upon reemployment during the period of qualified military service, although the plan can allow for the crediting of these benefit accruals). See IRC section 411(u)(8)(B).
  - For purposes of determining the death benefit under a plan, the beneficiary of a participant who dies while performing qualified military service must receive a death benefit taking into account years of service as if the participant had been reemployed upon the date of death. As a result, all years of service while engaged in the qualified military service must count towards vesting used in the determination of the death benefit. See Revenue Notice 2010-15, section II, Q&A3. Note that the vesting credit is only required on account of death, and is not required on account of disability while engaged in qualified military service.

## Question 1

Which of the following vesting schedules satisfy the minimum vesting requirements of IRC section 411(a)?

	<u>Years of service</u>	<u>Vesting percentage</u>
I.	1	0%
	2	0%
	3	0%
	4	50%
	5	100%
II.	1	0%
	2	0%
	3	30%
	4	60%
	5	70%
	6	75%
	7	100%
III.	1	0%
	2	40%
	3	50%
	4	50%
	5	50%
	6	100%

### Solution to question 1

Schedule I is acceptable since it provides for 100% vesting in the 5<sup>th</sup> year. The vesting provided before the 5<sup>th</sup> year is irrelevant.

Schedule II does not provide for 100% vesting in the 5<sup>th</sup> year, so it does not satisfy the 5-year cliff schedule. It also does not satisfy the 3 to 7 year schedule since it provides less than 80% vesting in the 6<sup>th</sup> year (even though in all other years it does satisfy the 3 to 7 year schedule). Schedule II is not an acceptable vesting schedule.

Schedule III does not provide for 100% vesting in the 5<sup>th</sup> year, so it does not satisfy the 5-year cliff schedule. It also does not satisfy the 3 to 7 year schedule since it provides less than 60% vesting in the 5<sup>th</sup> year (even though in all other years it does satisfy the 3 to 7 year schedule). Schedule III is not an acceptable vesting schedule.

## Question 2

Vesting schedule: 3 to 7 year vesting

Data for participant Smith:

Original date of hire: 1/1/1995  
Termination date: 12/31/1996  
Rehire date: 1/1/2002

Smith has worked 2,000 hours in each year of employment.

What is the smallest possible vested percentage for Smith as of 12/31/2003?

## Solution to question 2

Smith was non-vested at the time of termination of employment. Upon rehire, the years of service prior to his termination date can be ignored provided he had at least 5 (or the number of years of service he had prior to his termination – 2 in this case – if greater) consecutive 1-year breaks in service. Therefore, service prior to 1/1/2002 can be ignored since Smith did have 5 consecutive 1-year breaks in service.

As of 12/31/2003, Smith has 2 years of service, and is non-vested under the vesting schedule.

Note that had Smith had fewer than 5 one-year breaks in service before being rehired, the service earned in 1995 and 1996 would have been required to be taken into account in determining the vested percentage as of 12/31/2003.

### **Question 3**

Plan effective date: 1/1/2003

Vesting schedule:

In non-top-heavy years: 3 to 7 year vesting

In top-heavy years: 3-year cliff vesting

Date of hire for participant Smith: 1/1/2005

Smith has worked 2,000 hours in each year of employment.

The plan was top-heavy in 2006 and 2007 only.

What is the smallest possible vested percentage for Smith as of 12/31/2008?

### **Solution to question 3**

The 3 to 7 year vesting schedule applied in 2005 when Smith first entered the plan. However, the plan became top-heavy in 2006, so the 3-year cliff vesting schedule applied for those years. As of the end of 2007 (the last year that the plan was top-heavy), Smith had 3 years of service and was 100% vested under the 3-year cliff schedule.

In 2008, the plan's vesting schedule reverted to the 3 to 7 year schedule. However, the vested percentage for Smith cannot be reduced (see IRC section 411(a)(10)(A)). Smith's vested percentage as of 12/31/2008 must continue to be 100%.

## Question 4

Defined benefit plan effective date: 1/1/2009

Defined contribution plan effective date: 1/1/1990

Defined contribution plan termination date: 12/31/2006

Data for participant Smith:

Date of birth: 1/1/1987

Date of hire: 1/1/2004

The plan excludes service for vesting to the extent allowed under IRC section 411(a).

How many years of service for vesting purposes does Smith have as of 12/31/2009 in the defined benefit plan?

## Solution to question 4

IRC section 411(a)(4) allows for certain service to be excluded for purposes of determining the vested percentage. In particular, service before attaining age 18 can be excluded, and service during any period when the employer did not maintain a predecessor plan can be excluded. A predecessor plan is defined as another plan sponsored by the same employer that was terminated within 5 years of the effective date of the current plan.

Smith was born on 1/1/1987, and attained age 18 on 1/1/2005, so service prior to 2005 can be ignored.

The prior defined contribution plan terminated on 12/31/2006, and that is within 5 years of the effective date of the new defined benefit plan. Years of service between that plan termination date and the 1/1/2009 effective date of the defined benefit plan can be ignored for vesting purposes, so the 2007 and 2008 years can be ignored.

Therefore, only the years 2005, 2006, and 2009 must be included for vesting as of 12/31/2009, for a total of 3 years of service.

## Question 5

Plan effective date: 1/1/2007

Normal retirement age: Latest allowed by law

Vesting schedule: 3 to 7 year vesting

Data for participants:

	<u>Date of birth</u>	<u>Date of hire</u>
Smith	1/1/1945	1/1/2008
Brown	1/1/1950	1/1/2005

What is the date on which each participant first becomes 100% vested?

## Solution to question 5

Under the 3 to 7 year vesting schedule, a participant becomes fully (100%) vested after 7 years of service. For Smith that would be on 1/1/2015, and for Brown that would be on 1/1/2012.

However, if a participant reaches normal retirement date, then they must become fully vested on that date, if it occurs before they would otherwise be fully vested under the vesting schedule. The plan's normal retirement age is the latest as allowed by law, which is the later of age 65 or 5 years from the entry date into the plan.

Smith turns age 65 on 1/1/2010. However, Smith did not enter the plan until 1/1/2008 (Smith's date of hire, which is after the plan effective date – note that it is assumed that there are no eligibility requirements unless you are told otherwise). Smith's latest normal retirement age allowed by law would be at age 68, on 1/1/2013 – 5 years from the entry date.

Brown turns age 65 on 1/1/2015. However, Brown would have become fully vested under the vesting schedule on 1/1/2012, before the normal retirement date. Note that although years of service before the plan effective date can be excluded for vesting purposes, it is assumed that all years of service are included unless the question specifically states that some service is excluded.

The dates that Smith and Brown first become 100% vested are:

1/1/2013 for Smith  
1/1/2012 for Brown

## Question 6

Plan effective date: 1/1/1990

Vesting: 2 to 6 year top heavy vesting schedule

The plan credits a year of service for any year in which a participant works at least 1,000 hours.

The plan excludes service for vesting to the extent allowed by law.

The plan has always been top heavy.

Data for participant Smith:

Date of birth: 1/1/1982

Date of hire: 1/1/1998

Hours worked each year:

1998 – 2000 2,000

2001 – 2003 400

2004 – 2007 800

2008 – 2009 2,000

What is Smith's vested percentage as of 1/1/2010?

## **Solution to question 6**

There are three ways that service can be ignored for vesting purposes:

1. Years of service before age 18.
2. Years of service before the plan effective date.
3. Years of service before a 5-consecutive year break in service if the participant was non-vested.

Smith was hired on 1/1/1998 at age 16. Therefore, years of service for vesting are ignored before Smith turned 18 on 1/1/2000. Smith had a 3-year break in service from 2001 through 2003, but since that is less than a 5-year break in service, service before that period cannot be ignored (other than 1998 and 1999 which are ignored because those years are prior to attaining age 18).

In years 2004 through 2007 Smith worked 800 hours, no longer break in service years, but also not enough hours to qualify for a year of service for vesting.

As of 1/1/2010, Smith has 3 years of service for vesting: 2000, 2008 and 2009. Under the 2 to 6 year vesting schedule, Smith is 40% vested.

## Accrued Benefits

Supplemental reading: IRC sections 411(b), 411(c), 411(d)(6)  
Treasury regulations 1.411(d)-3, 1.411(d)-4  
Revenue Ruling 81-11

- All benefit formulas must satisfy at least one of three accrual rules.
  - 133 $\frac{1}{3}$ % rule
    - No accrual can exceed 133 $\frac{1}{3}$ % of any prior year accrual. This is applied without regard to plan amendments (treat plan amendments as if they have always been in effect for purposes of satisfying the 133 $\frac{1}{3}$ % rule).
  - 3% rule
    - The accrued benefit at any point in time must be at least as large as 3% of the total retirement benefit, multiplied by years of accrual service to date. This rule does not apply if participants can have more than 33 $\frac{1}{3}$  years of accrual service at retirement.
  - Fractional rule
    - The accrued benefit at any point in time must be at least as large as the total retirement benefit, multiplied by years of accrual service to date and divided by total years of accrual service at retirement. IRC section 411(b)(1)(C) indicates accrual service to be years of plan participation; however, a definition of accrual service providing more years than just years of plan participation (such as all years of service with the employer) will provide for an accrued benefit greater than using plan participation, and would satisfy the minimum accrual rules. The total retirement benefit (before the accrual fraction is applied) is determined using the same rate of compensation as would be used for the normal retirement benefit (but not taking into account any compensation paid more than 10 years prior to separation of service).

- Note for exam purposes: The fractional rule is really a method. So, it only applies when the plan defines the accrued benefit in terms of the fractional rule, rather than the accrued benefit earned as the benefit formula is written (which is the general condition of the exam). As a result, it is not necessary (although not incorrect) to check to see if a benefit formula satisfies the fractional rule as you would do with the other accrual rules. Note that while that check is performed in many of the sample questions in this outline (so you can see how it might be applied), it is not necessary (and you would be wasting your time to do this on the exam). If such a check does not satisfy the 3% rule, it will not satisfy the fractional rule.
- These rules do not apply to fully insured plans.
- The accrued benefit cannot be decreased on account of increases in age or service (this includes a decrease in a defined contribution plan allocation formula due to the attainment of a particular age or a specific amount of service). The accrued benefit cannot decrease due to decreases in compensation because that would be deemed a decrease in accrual due to additional service.
- Accrual cannot cease due to attainment of a specific age.
- Accrual can cease due to satisfying a maximum service requirement.
- A participant can be forced by the plan to receive their benefit in the form of a lump sum (valued under IRC section 417(e)(3)) if the total lump sum is no larger than \$5,000. See IRC section 411(a)(11). Note that technical corrections to the Pension Protection Act of 2006 (PPA) allow a forced lump sum payment of no more than \$5,000 even if the plan is subject to the lump sum distribution restrictions of IRC section 436.

- Years of service for benefit accrual
  - A year of service can be defined as a year in which the employee works at least 1,000 hours, as is used for minimum vesting requirements.
  - If the elapsed time method is used to determine the accrued benefit, pro-rated benefits are based upon the actual period of time worked (including fractional years).
  - The definition of a year of service for benefit accrual can be different from the plan's definition for vesting.
  - For participants who have previously received distributions (such as terminated and rehired participants), 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(a)(7)(B) and (C).
- Accrued benefit in cash balance plans (Treasury regulation 1.411(a)(13)-1)
  - The accrued benefit is equal to the hypothetical account balance under the plan.
    - The hypothetical account balance is equal to the sum of the contributions credited to the account and the interest credited to the account.
    - The interest credited to the account must be a rate specified in the plan document that reflects an interest rate no greater than a market rate of return. Acceptable interest crediting rates include:
      - Actual asset rate of return – this could include a floor (minimum) on the interest rate.
      - Fixed rate (prior to 2015, the fixed rate maximum was 5%, and beginning in 2016 the fixed rate maximum is 6%).
  - If the plan has at least two benefit formulas, and any part of the accrued benefit is derived from the hypothetical account balance, then the entire accrued benefit must be vested according to the hybrid plan rules (100% vested after no more than 3 years). If a plan defines the benefit as the larger of two benefit formulas, one of which uses a hypothetical account balance, then the hybrid plan vesting rules must be used even if the larger benefit is not based on the hypothetical account balance.

- Accrued benefit in a floor offset plan
  - A floor offset plan consists of both a defined benefit plan and a defined contribution plan.
  - The accrued benefit for a participant in a defined benefit plan that is part of a floor offset plan is equal to the accrued benefit determined by the benefit formula, reduced by the benefit that is actuarially equivalent to the contributions made by the employer for that participant in the defined contribution plan.
  - For example, if a participant is age 35 with 6 years of service, the defined benefit plan formula provides for a benefit payable beginning at age 65 of \$150 per month per year of service, the defined contribution plan account balance is currently \$3,000, and actuarial equivalence is based on 5% interest and a life annuity at age 65 equal to 10, then the defined benefit plan accrued benefit would be determined as follows:

$$\$150 \times 6 \text{ years of service} = \$900$$

$$\$3,000 \times 1.05^{30} \div (10 \times 12) = \$108$$

$$\text{Defined benefit accrued benefit} = \$900 - \$108 = \$792$$

Note that the factor used to convert the account balance to a life annuity is equal to the interest accumulation factor for 30 years (from age 35 to age 65), divided by the life annuity factor at age 65, divided by 12 (to convert the annuity to a monthly benefit).

- Accrued benefit from mandatory employee contributions (IRC section 411(c)(2))
  - Prior employee contributions (contributions made before the current valuation date) must be accumulated with interest using 120% of the Federal mid-term rate in effect as of the beginning of each plan year, through the current valuation date (creating a theoretical account balance for the employee contributions).
  - In order to determine the portion of the accrued benefit attributable to the employee contributions, the theoretical account balance is increased from the valuation date to normal retirement date using the applicable interest rate used under IRC section 417(e)(3). There is no increase due to mortality. This accumulation is then converted to a benefit at normal retirement age using the applicable interest rate (the IRC section 430(h)(2)(C) segment interest rates beginning in 2008) and the applicable mortality table (the 1994 GAR table for years prior to 2008, and the IRC section 430 applicable mortality table as published for 2008 and later).
  - The accrued benefit attributable to employee contributions is always 100% vested. The balance of the accrued benefit is subject to the vesting schedule.
  - The plan accrued benefit cannot be less than the accrued benefit attributable to the employee contributions.
  - The accrued benefit attributable to employee contributions cannot be used to satisfy the top-heavy minimum benefit accrual requirement.
  - Note: voluntary after-tax employee contributions are simply kept in an account balance and allocated actual trust earnings each year. These contributions do not have any impact on the amount of benefit provided under the defined benefit plan – they are treated like defined contribution plan account balances.

- Accrued benefits may not be eliminated under IRC section 411(d)(6). Regulation 1.411(d)-3 and 4 provide detailed anti-cutback rules.
  - Future benefit accruals may be reduced. Note that this could cause a nondiscrimination issue under IRC section 401(a)(4), but is not a problem under IRC section 411(d)(6).
  - In general, optional forms of benefit and the optional ages at which this benefit can be received may not be eliminated with regard to benefits already accrued. The plan can be amended with regard to these options to remove them with regard to future benefit accruals.
  - Otherwise protected benefits that both create a significant burden to the plan and its participants (facts and circumstances), and that affects the rights of the participants in no more than a de minimis manner may be eliminated. (See Treasury regulation 1.411(d)-3(e).)
    - Example: A plan offers a 50% joint and survivor annuity with a pop-up feature (if the spouse dies first, the benefit for the participant “pops up” to the life annuity benefit that the participant would have received if the 50% joint and survivor annuity had not been elected). The plan can be amended to remove the pop-up feature without violating the protected benefits rules.
  - Redundant optional forms of benefit may be eliminated
    - J&S options with 50% to 100% of benefit payable to survivor are in same family
    - J&S options with less than 50% of benefit payable to survivor are in same family
    - Term certain and life annuity of no more than 10 years are in same family
    - Term certain and life annuity of more than 10 years are in same family

- Optional benefits can be eliminated as long as core options remain, for categories with a core option
  - A life annuity is a core option
  - A 75% J&S is core a option (if a plan has both a 50% J&S and 100% J&S option, this satisfies the 75% requirement)
  - Term certain and life annuity of 10 years
  - Most valuable option for participants with short life expectancy
- Types of benefits not subject to IRC section 411(d)(6) that can be eliminated
  - Death benefits
  - Disability benefits
  - Early retirement window benefits
- Changes in early retirement reduction factors are subject to the anti-cutback rules.
  - The actual early retirement benefit that must be paid at the time of actual retirement is the greater of the benefit payable using the new factors or the benefit accrued as of the date of the amendment changing the factors, applying the old factors to that benefit.
- Changes in actuarial equivalence assumptions are generally subject to the anti-cutback rules. However, a change in the interest rate under IRC section 417(e)(3) beginning in 2008 due to the required use of segmented interest rates under IRC section 430(h)(2)(C) is deemed not to be a violation of IRC section 411(d)(6) – see Revenue Ruling 2007-67, issue 3.
- Benefits transferred to another plan of the same employer are still subject to the requirements of IRC section 411(d)(6).

## Question 7

Which (if any) of the following benefit formulas satisfy the minimum accrual rules of IRC section 411(b)?

- I. 1.25% of final compensation for each of the first 5 years of service, plus 1.00% of final compensation for each of the next 15 years of service, plus 1.50% of final compensation for each of the next 10 years of service
- II. 2.00% of final compensation for each of the first 10 years of service, plus 2.50% of final compensation for each of the next 5 years of service, plus 3.00% of final compensation for each of the next 5 years of service
- III. 2.25% of final compensation for each of the first 5 years of service, plus 2.00% of final compensation for each of the next 15 years of service, plus 2.75% of final compensation for each of the next 10 years of service

## Solution to question 7

Formula I: The  $133\frac{1}{3}\%$  rule is not satisfied because  $1.50\%/1.00\% = 150\% > 133\frac{1}{3}\%$ . The 3% rule is checked by calculating the total benefit at retirement (for someone with maximum 30 years of service). This benefit is 36.25% of final compensation ( $1.25\% \times 5$  years, plus  $1\% \times 15$  years, plus  $1.5\% \times 10$  years). 3% of 36.25% is 1.0875%. This is the minimum annual accrual under the 3% rule. Clearly, since 1.25% is the accrual for each of the first 5 years, the 3% rule is satisfied for those years. The next break point in the benefit formula is after 20 years of total service. The benefit under the plan formula at that point is 21.25% of final compensation ( $1.25\% \times 5$  years, plus  $1\% \times 15$  years). The minimum accrual after 20 years under the 3% rule is 21.75% of final compensation ( $1.0875\% \times 20$  years). The 3% rule is not satisfied.

The annual accrual under the fractional rule is 1.208% of final compensation ( $36.25\% \times 1/30$ ). After 20 years, the total accrual should be at least 24.16% of final compensation, not 21.25% as calculated above. The fractional rule is not satisfied.

Formula II: The  $133\frac{1}{3}\%$  rule is not satisfied because  $3.00\%/2.00\% = 150\% > 133\frac{1}{3}\%$ .  
The 3% rule is checked by calculating the total benefit at retirement (for someone with maximum 20 years of service). This benefit is 47.50% of final compensation ( $2.00\% \times 10$  years, plus  $2.50\% \times 5$  years, plus  $3.00\% \times 5$  years). 3% of 47.50% is 1.425%. This is the minimum annual accrual under the 3% rule. Clearly, each year's accrual exceeds this amount. The 3% rule is satisfied.  
The annual accrual under the fractional rule is 2.375% of final compensation ( $47.50\% \times 1/20$ ). This exceeds the accrual under the formula for each of the first 10 years. The fractional rule is not satisfied.

Formula III: The  $133\frac{1}{3}\%$  rule is not satisfied because  $2.75\%/2.00\% = 137\frac{1}{2}\% > 133\frac{1}{3}\%$ .  
The 3% rule is checked by calculating the total benefit at retirement (for someone with maximum 30 years of service). This benefit is 68.75% of final compensation ( $2.25\% \times 5$  years, plus  $2\% \times 15$  years, plus  $2.75\% \times 10$  years). 3% of 68.75% is 2.0625%. This is the minimum annual accrual under the 3% rule. Clearly, since 2.25% is the accrual for each of the first 5 years, the 3% rule is satisfied for those years. The next break point in the benefit formula is after 20 years of total service. The benefit under the plan formula at that point is 41.25% of final compensation ( $2.25\% \times 5$  years, plus  $2\% \times 15$  years). The minimum accrual after 20 years under the 3% rule is also 41.25% of final compensation ( $2.0625\% \times 20$  years).  
The accrual for each of the last 10 years exceeds the 2.0625% minimum. The 3% rule is satisfied.  
The annual accrual under the fractional rule is 2.2917% of final compensation ( $68.75\% \times 1/30$ ). After 20 years, the total accrual should be at least 45.83% of final compensation, not 41.25% as calculated above. The fractional rule is not satisfied.

## Question 8

Which (if any) of the following benefit formulas satisfy the minimum accrual rules of IRC section 411(b)?

- I. \$15 per year of service for the first 15 years, plus \$22 per year of service for each of the next 15 years
- II. \$15 per year of service for the first 25 years, plus \$22 per year of service for each of the next 5 years
- III. \$20 per year of service for the first 10 years, plus \$22 per year of service for each of the next 10 years, plus \$26 per year of service for each of the next 10 years

## Solution to question 8

- I. Assume participant will have 30 years of service at retirement.
  - 3% rule: retirement benefit =  $(15)(15 \text{ years}) + (22)(15 \text{ years}) = 555$   
 $3\% \text{ of } 555 = 16.65$   
Not satisfied since the accrual in each of the first 15 years is less than 16.65.
  - 133% rule:  $22/15 = 1.47 > 1.3333$ . So, this rule is not satisfied.
  - Fractional:  $555 \times 1/30 = 18.50$ . Not satisfied since the accrual in each of the first 15 years is less than 18.50.Therefore, this does not satisfy the accrual rules.
- II. Assume participant will have 30 years of service at retirement.
  - 3% rule: retirement benefit =  $(15)(25 \text{ years}) + (22)(5 \text{ years}) = 485$   
 $3\% \text{ of } 485 = 14.55$   
3% rule is satisfied.Therefore, this does satisfy the accrual rules.
- III. 133% rule:  $26/20 = 1.3 < 1.3333$ . So, this rule is satisfied.  
Therefore, this does satisfy the accrual rules.

## Question 9

Consider the following monthly benefit formula:

\$30 per year of service up to 10 years, plus  
\$24 per year of service for the next 15 years, plus  
\$Z per year of service for the next 5 years.

All plan participants are fully accrued after 30 years of service.

What is the maximum value for \$Z that will comply with the minimum benefit accrual rules of IRC section 411(b)?

## Solution to question 9

Under the 133 1/3% rule, the benefit accrual in any year cannot exceed 133 1/3% of the accrual in any prior year. The maximum value for \$Z would be \$32 (133 1/3% of 24).

Under the 3% rule, the accrued benefit in any year must be at least equal to 3% of the total retirement benefit multiplied by years of accrual service. For a participant with exactly 25 years of service at retirement, the total benefit would be \$660 (\$30 × 10 years plus \$24 × 15 years). 3% of this is \$19.80. Clearly, the 3% rule is satisfied for a participant with 25 years of service.

For a participant with 30 years of service at retirement, the total benefit would be:

(\$30 × 10 years) plus (\$24 × 15 years) plus (\$Z × 5 years).

Clearly, the accrued benefit under the 3% rule after 25 years must be at least \$660. So,

$$[660 + (Z \times 5 \text{ years})] \times 3\% \times 25 \text{ years} = 660$$

Solving for Z, Z = \$44.

Under the fractional rule, the accrued benefit must be equal to the total retirement benefit multiplied by a fraction, the numerator being years of service to date and the denominator being the years of service at retirement. Again, the accrued benefit after 25 years must be at least \$660. So,

$$[660 + (Z \times 5 \text{ years})] \times 25/30 = 660$$

Solving for Z, Z = \$26.40

Only one of the minimum accrual rules needs to be satisfied in order to comply with the minimum accrual rules of IRC section 411(b). Therefore, Z may be equal to no more than \$44.00 and still satisfy the minimum accrual rules.

## Question 10

Consider the following benefit formulas:

- I. \$12 per month per year of service for each of the first 25 years, plus \$X per month per year of service for each of the next 20 years
- II. \$10 per month per year of service for each of the first 10 years, plus \$11 per month per year of service for each of the next 10 years, plus \$12 per month per year of service for each of the next 10 years, plus \$Y per month per year of service for each of the next 10 years.
- III. \$18 per month per year of service for each of the first 20 years, plus \$10 per month per year of service for each of the next 10 years, plus \$Z per month per year of service for each of the next 10 years.

X, Y and Z are equal to the largest values for each formula that will satisfy the 133⅓% accrual rule of IRC section 411(b).

What is \$X + \$Y + \$Z?

## Solution to question 10

The 133⅓% rule states that the accrual (or accrual rate) in any year cannot be more than 133⅓% of the accrual (or rate) in any previous year.

In formula I, 133⅓% of the initial accrual of \$12 is equal to \$16. So, X = 16.

In formula II, 133⅓% of the initial accrual of \$10 is equal to \$13.33. So, Y = 13.33. Note that the additional pieces of the formula have no effect on the solution since the additional accruals are larger than the initial accruals.

In formula III, 133⅓% of the smallest accrual of \$10 is equal to \$13.33. So, Z = 13.33. Note that the \$10 accrual is smaller than the initial accrual of \$18, and it is that smallest accrual that is used as the barometer to measure whether any future accrual exceeds 133⅓%.

$$\text{\$X} + \text{\$Y} + \text{\$Z} = \text{\$16.00} + \text{\$13.33} + \text{\$13.33} = \text{\$42.66}$$