

## TABLE OF CONTENTS

Preface.....	i
Chapter 1 Overview of Qualified Plans (IRC section 401) .....	1
Chapter 2 Benefits under Defined Benefit Plans .....	9
Chapter 3 Minimum Participation, Minimum Coverage, and Non-discrimination Requirements.....	53
Chapter 4 Reporting and Disclosure .....	97
Chapter 5 Certification of AFTAP (IRC section 436) .....	107
Chapter 6 Plan Terminations and Guaranteed Benefits .....	119
Chapter 7 PBGC Premiums .....	139
Chapter 8 Multiemployer Plans and Withdrawal Liability .....	145
Chapter 9 Excise Taxes, Prohibited Transactions, Fiduciary Standards, and Joint Board for Enrollment of Actuaries .....	165
May 2008 EA-2B Exam .....	183
Conditions, Limits, Tables and Formulas .....	184
Questions .....	191
Answer Key.....	233
Solutions.....	235
May 2009 EA-2B Exam .....	253
Questions.....	255
Solutions.....	299
May 2010 EA-2B Exam .....	313
Answer Key.....	314
Questions.....	315
Solutions.....	363
Solutions to Review Questions.....	377

## PREFACE

The purpose of this Study Guide is to familiarize you with the materials you will need to know to prepare for and *pass* the EA-2B Exam. The material in this book is specifically targeted to candidates who will be taking the exam in May of 2011.

To be designated as an enrolled actuary by the U. S. Treasury department, you must pass two exams. The first exam (EA-1) covers mathematics, including the theory of interest, life tables, and commutation functions. The second exam covers the laws governing U. S. retirement plans and is broken into two parts. The first part (EA-2A) deals with rules regarding the funding of pension plans, and the second part (EA-2B) covers – everything else.

This sturdy guide does presume that you have knowledge of the subjects covered on the EA-1 and EA-2A exams. Actuarial terms and equations will be used without explanation, presuming the reader is familiar with such procedures. Also, this guide will use the abbreviation IRC to refer to the Internal Revenue Code, or refer to simply the Code. The terms IRC and Code will be used interchangeably throughout the book.

The EA-2B exam is a catch-all of everything not covered in one of the prior exams. This means that there are literally thousands of pages of laws, rules, and regulations pertaining to the exam, and any single point within this material can be drawn on to supply a question for this exam.

To make matters worse, there is almost never a year that passes in which the material covered by the test does not change in some way. New laws passed by Congress, new regulations from government agencies interpreting such laws, and new practices in American business practice that create new retirement plan designs happen every year to obsolete some of the old test topics and introduce new ones in their place.

The best way to study for this exam is to work on actual employer sponsored tax qualified retirement plans, especially the defined benefit plans that are the main focus of the exam. Solving the real life problems faced by plan sponsors and researching answers to actual questions asked by plan sponsors will teach the material more thoroughly than simply reading the regulations generally, with no specific question of fact in mind.

That said, even an experienced practitioner may not have experience in all aspects covered by this exam. For example, a pension professional who works primarily with retirement plans of small employers may know the intricate details of passing non-discrimination testing for these plans, but have close to no experience with multiemployer plan withdrawal liabilities. Meanwhile, another professional working on a single plan for a very large corporation may know quite a bit about annual premium payments to the PBGC but have no experience with that organization's plan termination procedures.

This study guide will discuss each area of the exam and give a broad overview of what the test questions are looking for, and what materials can be studied for additional, more detailed information. It is recommended that you read each chapter in its entirety. Some chapters may present new material that you have never had an opportunity to work with. Others may read like a review of material that you already know and use on a regular basis, but even these chapters will introduce you to details that you may not have encountered in the past. The review questions at the end of each chapter will help you gauge how well you understand the material that you will need for the exam.

The material chosen for this study guide is based on the test description in the Fall 2010 Examination Program Booklet, published by the Joint Board for the Enrollment of Actuaries (JBEA) at their website here:

<http://www.irs.gov/taxpros/actuaries/article/0,,id=97444,00.html>

The booklet includes a syllabus and a list of suggested readings for the exam. The JBEA may modify this official test guideline in the final months before the exam, after the publication of this study guide. You should refer to this internet site periodically to see if any updates have been published.

Since the subject matter covered by the exam changes each year as new laws are passed and regulations issued, this Study Guide is updated each year. This year's study guide includes the following features:

Ø Organized into 9 chapters; the first chapter is a broad overview of the exam and its main focus, IRC 401(a). The remaining chapters cover one or more of the 12 topics listed on the exam syllabus. The topics are grouped and presented in an order that allows each section build upon past sections – the information in chapter two will help you study chapter three, the info in chapters two and three will help with chapter four, etc.

Ø Each chapter includes an introduction/overview of the topic(s) presented. Most of the chapters are summarizing dozens if not hundreds of pages of rules from regulations and other publications into a 10-20 page summary. As such, the chapter is a broad overview that spotlights only the major points of the topic. The overview will introduce you to the subject, and tell you how to look up additional information on topics you would like to research further.

Ø Each chapter's overview is fully referenced to the Code and applicable Regulations.....

- Outdated material (included in past tests, but removed from the current syllabus or made obsolete by changes in the law) has been removed from this study guide
- New information contained in laws passed and IRS regulations and announcements published since last year's exam has been reviewed and added

Ø After the introduction/overview of each chapter's topic are the Review Questions. The Review Questions are the heart of this study guide. I believe the best way to study for the EA-2B exam is by use of a question and answer format – to examine the syllabus material with a specific goal in mind, rather than just reading through. This promotes real learning of the material, rather than superficial memorization that can be forgotten when it comes time to take the exam.

Ø The Review Questions come from exams given in 2007 and prior years; in most cases, the solutions have been expanded to include additional details that discuss topics related to but not specifically needed for a particular question – to illustrate other types of questions that could be on the next exam and to emphasize the point(s) that the question is designed to test. While it is true that questions from past tests may not be repeated on future exams, many of the items that the JBEA expects an enrolled actuary to know remain constant from year to year. Understanding the key point of past exam questions will help you with questions on the next exam.

Review Questions from prior exams will show you what types of information will be given on actual exam questions, and acquaint you with the style, tone, and layout of

exam questions. Familiarity prior to the exam will help eliminate anxiety during the exam and allow you to block out distractions and instead focus on nothing other than getting the correct answer to each question. Some of the exam topics were added to the law too recently to be included on exams in 2007 and earlier (specifically, the benefit restriction rules under Code section 436 and the new PBGC premium rules). For these topics, actual exam questions are included in the 2008, 2009, and 2010 exams included in this book.

- Ø The Guide has been organized not only for the student's initial studying of the material, but so it can be used to review all material during those critical final weeks before the exam.

## STUDY APPROACH

The chapters are designed according to the following format:

- Readings (all of the readings in the chapters are taken from the reading list in the Examination Program Booklet)
  - Internal Revenue Code sections
  - Regulations
  - Revenue Rulings
  - Notices and other Publications
- Introduction to Chapter with study hints
- Summary outline with examples where applicable
- Review Questions (from prior exams); Solutions to Review Questions from all chapters are at the end of this study guide

The recommended study approach is:

1. Read the Introduction
2. Study the summary outline with examples
3. Study the Internal Revenue Code sections
4. Read the Regulations and related Revenue Rulings and Notices in regard to any areas where you still have questions
5. Solve the Review Questions (study solutions)
6. Re-read the portions of the suggested readings based on type of questions asked on prior exams until you are thoroughly familiar with the concepts asked about on the exam.

## EXAM PRACTICE

After completing all 10 chapters in the Study Guide, take the May 2008, May 2009, and May 2010 Exams (included after the chapters in the Study Guide). Try to simulate actual exam conditions when taking the prior year exams. Then review your answers with the solutions (also included in the Study Guide). This will help you identify difficult topics for you that will require additional study before the actual Exam.

The current EA-2B Exam has been given eight times (May 2001 through May 2008). Prior to this (November 2000 and earlier), the current EA-2B material was included in the EA-2 Exam. Hence, EA-2 included IRC section 412 (minimum funding) and IRC section 404 (deductible contributions) which are now part of the EA-2A Exam given each November. While pre-2001 questions can be helpful in preparing for the current EA-2B Exam, you must be careful about any changes due to

new laws and regulations, changes in limits and factors, and shifts in type of questions (exam committee members do turn over), that would make the question unsuitable in 2009.

The May 2010 EA-2B Exam will be 2½ hours long. It is not known how many questions the exam will contain, but each exam questions will have a value of from 1 to 5 points (typically, true/false questions tend to be 1 or at most 2 points, while numerical questions involving calculations will be of the 3-5 point variety), and all of the exam questions will sum to a total of 100 points. Therefore, the exam is designed to allow 1½ minutes per point. Use this general guideline during the exam to know about how far along you should be based on the time expired. Do not spend too long on a very complex question if it means you will not have the time to finish several questions at the end of the exam.

It may help you to know, before taking the exam, that recent exams have been organized with all of the one point true/false questions at the start of the exam, followed by the longer calculation questions at the end of the exam. Since the true/false questions can often be answered very quickly, this test format may allow you to build up a time cushion, in case you get stuck and spend overly long on one or two questions later. Although this method of grouping questions has been used in recent years, there is no guarantee that the 2010 exam will again be given in the format of all true/false questions given at the start of the exam.

Since there is no credit for unanswered questions and no penalty for incorrect answers, you should answer EVERY question even if it is a guess. Also, remember when studying particularly complex topics that even for the most complex exam questions (those valued at 5 points), you should be able to be read and solve the question in about 7½ minutes.

If you have any questions regarding the information in this study guide, or if you believe there is some question about any of the information contained on any topic, please use the feedback sheet included in this book to report you comments to ACTEX publications. And good luck to you on the 2011 EA-2B exam.

-- Cliff Woodhall  
November, 2010

## SYLLABUS FOR THE EA-2B EXAMINATION

The syllabus for the EA-2B exam, published each year by the JBEA as part of its Examination Program Booklet, has had no changes since its last alteration in 2009, when a new topic introduced by the Pension Protection Act of 2006 (PPA) was introduced (more on this below). The syllabus is broken into 12 major topics reproduced in the chart below.

The chart also shows, by number, the specific questions asked on each topic for the last three exams, and the total point value of such questions. The specific question numbers are provided to guide students looking for questions on a specific topic from a particular exam. The point values are shown to show the relative weight given to the topics on the last few exams.

The 2011 exam, of course, is not required to follow the trends of the last three exams regarding the number of questions or point value to assign to any of the syllabus topics. However, the chart may reveal some patterns on which topics the exam question writers have focused on over the past three years, and these patterns may help you decide where to best focus your study time for the exam.

The chart also shows the nature and types of questions likely to be asked on each topic. For example, by comparing the number of questions to the total point value for the first topic, regarding reporting and disclosure, shows that the topic lends itself to questions of the one and two point variety, mostly true/false types of questions. Topics on non-discrimination, on the other hand, frequently involve extensive calculations, making them more time consuming and of the 3, 4, and 5 point variety.

The chart also reveals something interesting about the most recent topic added in 2009, regarding funding based limits on defined benefit plans. This was a new requirement of plans effective in 2008. You can see that in 2008, the topic was so unfamiliar to even the exam writers that it was not included on the exam. In 2009, the exam included just a few questions on the topic. But by 2010, the subject was familiar enough (and enough written guidance had been published on the subject) to rate as a major testing area, with 16 total points of the exam. This represents a pattern on the part of the exam writers to avoid new or controversial areas of law until such matters become settled law in the eyes of the actuarial community.

Please use this chart to gain any advantage you can regarding areas to study, study time to devote, and what to expect on the upcoming 2011 exam.

Topic	2008 Questions	2008 Points	2009 Questions	2009 Points	2010 Questions	2010 Points
Requirements with respect to reporting and disclosure, including underfunded plans, reductions in future benefit accruals, and reportable events.	17	2	2, 14, 15, 16, 31	6	1, 4, 8, 9, 14, 17, 19	7
Funding based limits on benefits and benefit accruals under single employer defined benefit plans.	This topic was not applicable for questions on the 2008 EA-2B exam.		9, 19, 26	5	5, 15, 24, 34, 38, 46	16

Nondiscrimination requirements including those related to plan participation, coverage, and permitted disparity.	1, 19, 20, 21, 22, 23, 31	25	18, 30, 38, 42	14	21, 25, 26, 27, 36, 41, 47	20
Requirements with respect to vesting, service credits, employee contributions, accrued benefits, normal retirement.	2, 4, 5, 24, 25	8	1, 3, 6, 7, 37, 39, 44	12	6, 7, 10, 16, 28	6
Requirements with respect to and adjustments for early retirement, postponed retirement, joint and survivor annuities, and pre-retirement death benefits.	3, 6, 26, 27	8	5, 10, 33	5	11, 42, 43	6
Determination of benefits, including permitted disparity.	28	4		0	30	3
PBGC premium requirements.	7, 8, 29, 30, 32, 33	12	8, 23, 28, 35, 40	12	13, 22, 35, 39	11
Plan termination requirements including standard and distress terminations, involuntary terminations, missing participants, guaranteed benefits, allocation of assets, plan liability and employer liability.	9, 10, 11, 18, 34, 35, 36	17	22, 24, 27, 34, 36, 41	23	12, 29, 31, 37	9
Withdrawal liability under multiemployer plans.*	12, 38, 39	9	11, 20, 21, 25	12	2, 18, 23, 33, 40, 45	14
Excise taxes other than for funding requirements.	13, 14, 37, 40	9	12, 43	4	3, 32	5
Prohibited transactions and fiduciary standards.	15, 16, 41	4	4, 13, 29	4	20, 44	3
Standards of performance and professional conduct for enrolled actuaries.	42	2	17, 32	3		0

Total Points:

100

100

100

\*Question on the 2009 and 2010 exams regarding endangered and critical multiemployer plans are included in this category, although this specific issue is not included on the official exam syllabus.

## CHAPTER 6

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### The Pension Benefit Guaranty Corporation

#### Plan Terminations and Guaranteed Benefits

READINGS: ERISA Act Sections and PBGC Regulations

- 4022 Guaranteed Benefits
- 4041 Termination of Single-employer Plans
- 4044 Allocation of Assets
- 4050 Missing Participants
- 4062 Liability for Termination under Distress Termination

PBGC Technical Update

- 08-4 Minimum Lump Sum Assumptions for Terminating Plans

Rev Ruling 89-87 Distribution of Plan Assets for Terminating Plan

Title IV of ERISA establishes the Pension Benefit Guarantee Corporation (PBGC). The PBGC is a department of the federal government in charge of monitoring and protecting private sector employer sponsored tax qualified defined benefit plans. In the event of a plan termination, the PBGC ensures that all participants receive the benefits promised by the plan document. In the event of the termination of an underfunded defined benefit plan, the PBGC uses its own assets to make whole those benefits, up to certain maximum limits. The PBGC maintains funds for this purpose by means of collecting insurance premiums from the employer sponsored plans it protects (more about these premiums will be found in the next chapter).

Effective July 1, 1996, the PBGC regulations were renumbered to correspond to the ERISA Act sections (e.g., ERISA Act section 4001 and PBGC Regulation 4001). References in the next three chapters of this study guide to ERISA sections and PBGC regulations will follow this numbering procedure. [Note: Title I of ERISA covers Protection of Employee Benefit Rights; these ERISA Act sections are reflected in the Internal Revenue Code (IRC) sections, and IRS regulation numbers correspond to the Code.]

The PBGC Regulations listed above (4022, 4041, 4044, 4050, and 4062) are all included in the JBEA syllabus for the EA-2B exam. Each of these regulations, all available on the PBGC.gov web site, should be studied carefully; you will find questions at the end of this chapter taken from previous exams that touch on all of these topics.

**ERISA ACT SECTION 4022 SINGLE-EMPLOYER BENEFITS GUARANTEED**

Generally speaking, the PBGC will pay the full benefit promised by the terminating plan as of the plan termination date and in the form promised by the plan. However, this general rule is subject to a series of limits as described below.

In applying the limitations described here, keep in mind that all benefit payments are determined by the PBGC based on the laws and assumptions as of the date of plan termination. For example, if a plan has a termination date of 12/31/2008, the maximum guaranteed benefit from the PBGC will be the 2008 maximum. The 2009 maximum will not be considered in any calculations, even though benefits will actually be paid after the start of the 2009 calendar year.

**Maximum PBGC benefit guarantee.**

Each year, the PBGC will announce a maximum guaranteed benefit. The guaranteed benefit is in the form of a life only annuity payable at age 65. The maximum payment is adjusted for benefits payable in other forms or beginning at other ages.

Specifically, the maximum benefit is increased if distributions begin after age 65, but decreased if payments begin at earlier ages. The maximum is decreased if the benefit form includes any type of period certain payment in addition to the life annuity. The maximum benefit is reduced if the payment form is a Joint and Survivor or Joint and Contingent benefit. The amount of the reduction for these forms depends upon the percentage payment to the beneficiary of the survivor or contingent benefit. The benefit must be further adjusted based on the age of the beneficiary in relation to the participant (increased if the beneficiary is older, decrease if the beneficiary is older).

A table of the maximum PBGC benefit for past years will be included with the exam, along with several tables showing reduction percentages for each of the factors listed above. There is no reason to memorize these factors, since they will be provided with the exam, but you do need to know under what circumstances an adjustment applies, and which table to use to find the factor.

The PBGC published maximum applies when a participant's five year average compensation (expressed as a monthly value) at the date of plan termination is at least as much as the PBGC maximum guaranteed benefit. If the participant's 5 year average compensation is less than the PBGC maximum benefit, the average compensation is used instead of the PBGC maximum, and all of the conversion factors are applied to the five year average to determine the PBGC maximum.

For each participant, the benefit under the plan (calculated as of the participant's normal retirement or as of the earliest date on which the employee meets the plan requirements for early retirement) is compared to the PBGC maximum benefit payable at the same age and in the same form of payment. The PBGC provides the plan benefit, up to the maximum benefit level.

In calculating the benefit provided by the plan, benefit increases that have been in effect less than 60 months must be phased in. A benefit increase is any change in the terms of the plan that have the effect of increasing benefits, including changes to the benefit formula, the eligibility rules, the vesting requirements, or normal or early retirement ages. Benefit increases are most commonly implemented by means of a plan amendment. For purposes of the phase in rules, increase caused by a plan amendment are deemed to take effect on the later of the amendment's effective date or adoption date.

When a plan experiences a benefit increase, the participant's accrued benefit is determined both before and after the increase. The two values are compared to determine the amount of increase attributable to the change in the plan. This total increase is phased in at 20% of the total increase per year for each *full* year the increase has been in place, up to a maximum of 5 (or 60 months, at which time the new benefit formula has been fully phased in for PBGC purposes.

For this purpose, both the benefit before and after the amendment are limited to the PBGC maximum determined under the rules discussed above. Thus, for example, if the benefit exceeded the PBGC maximum both before and after the change, the increase is \$0 and is not phased in.

**Special rule for small benefit increases.** If the total benefit increase caused by a change in the terms of the plan is less than \$100 (when expressed as a monthly annuity), the benefit is phased in at the dollar amount of \$20 per year, rather than the smaller 20% value, until the entire increase has been phased in. For example, if a benefit increase raises a participant's monthly annuity benefit by an amount between \$40 and \$60, the entire benefit will be phased in after three full years.

**Phase in rules for substantial owners.** The above rules apply only for employees who are not considered substantial owners, under the rules of the PBGC. For this purpose, a substantial owner is an employee who owns more than 10% of the plan sponsor.

For substantial owners, the phase in rules apply to all benefits that have been in place for less than 30 full years upon the date of plan termination. These benefit increases are phased in at a rate of 1/30 for each full year in place.

Note that for this purpose, the establishment of a plan is considered a benefit increase (from a previous benefit level of \$0). Thus, if a plan is terminated less than 30 full years after installation, *all* of a substantial owner's benefits will be phased in, effectively limiting the owner's PBGC maximum to the portion that could be phased in over the life of the plan. This rule would also apply to a non-substantial owner if the plan is terminated within 5 years after its establishment, although plans usually last more than five years before they are terminated (but such an early termination is a possibility).

**EXAMPLE** THE FOLLOWING EXAMPLE BRINGS TOGETHER SEVERAL OF THE RULES DISCUSSED ABOVE:

Plan effective date: 1/1/1960  
Plan termination date: 12/31/1996

Normal retirement benefit:

Effective 1/1/1980: \$55.00 per month for each year of service  
Effective 1/1/1993: \$60.00 per month for each year of service, adopted 7/1/1993  
Effective 1/1/1995: \$70.00 per month for each year of service, adopted 7/1/1993

Early retirement age: Age 62 with 30 years of service

Early retirement benefit: Accrued benefit payable immediately without reduction

Date for participant Smith (not a substantial owner) as of 12/31/1996:

Date of birth: 1/1/1935  
Date of hire: 1/1/1965  
Date of retirement: 12/31/1996

Compensation	
1992	\$29,000
1993	\$30,000
1994	\$31,000
1995	\$32,000
1996	\$33,000

Maximum monthly benefit guaranteed by PBGC for 1996  
under ERISA section 4022(b)(3)(A) payable at age 65 as a life annuity: \$2,761.36

Factors to adjust PBGC maximum guaranteed benefit for payments beginning before age 65:

Age: 64	63	62	61
Factor: .93	.86	.79	.72

In what range is Smith's PBGC guaranteed monthly benefit payable 1/1/1997?

I. Maximum benefit guaranteed by PBGC at 62

Smaller of:     \$2761 (dollar max)  
                  2583 (5-year comp avg.) × 79% = \$2041

II. Apply phase-in of plan amendments (above limit applied first)

		$\Delta$	Phase-in %	=	Guarantee
1980	55 × 32 yrs = 1760	1760			1760
1993	60 × 32 yrs = 1920	160	× 60%	=	96
1995	70 × 32 yrs = 2240*	121	× 40%	=	48
*limited to 2041					<u>\$1904</u>

Note: Phase-in % is full years from later of effective date or adoption date.

Many more examples of this calculation will be found in the review questions at the end of this chapter. Study of these (somewhat repetitive) questions will make you an expert on the intricacies of these calculations before you take the exam.

## ERISA ACT SECTION 4041    TERMINATION OF SINGLE-EMPLOYER PLAN

PBGC regulations under ERISA section 4041 discuss the rules and requirements regarding the standard and distress termination of a plan, including the timing of notices, distributions, and other aspects of the plan termination. Plans which terminate with sufficient assets are generally terminated by means of a standard termination, while those with insufficient assets (which may require additional funding from the PBGC) are known as distress terminations.

The rules in this PBGC regulation usually generate one or two true or false questions for the EA-2B exam, and should be studied in a broad overview, but do not spend an excessive amount of time reading the rules in detail.

## PBGC REGULATIONS 4044

PBGC regulations published under ERISA section 4044 deal with the allocation of plan assets. Benefits guaranteed by the PBGC must be paid exclusively by means of the plan's assets, to the extent possible, prior to use of any PBGC assets. In using the available plan assets, the PBGC divides the plan's guaranteed benefits into 4 categories, as described below:

Category 1: Benefits attributable to non-mandatory employee plan contributions.

Category 2: Benefits attributable to mandatory employee contributions.

Category 3: Benefits to employees who have been in pay status for at least three years upon the date of plan termination, or who could have began an annuity form of benefit upon termination of employment on the date three years prior to the plan termination date. In determining the amount of benefit payable three years prior to the date of the plan termination, benefit increases for the five year period ending on the termination date are not taken into account.

Category 4: The remainder of the maximum PBGC guaranteed benefits not already allocated to one of categories 1, 2, or 3.

The rules for determining the participant's accrued benefit attributable to mandatory and non-mandatory employee contributions are discussed in chapter 2. Examples of allocating benefits to category 3 and 4 can be found in the review questions at the end of this chapter.

Assets from a terminated plan are allocated to provide benefits in order of the four categories listed above. In the event plan assets cannot cover an entire category of benefits, the remaining assets are allocated pro-rata among participants with benefits in that category.

### **PBGC REG 4050 DESIGNATED BENEFIT**

In the event some participants who are owed benefits from a terminated plan cannot be located after a diligent search, the employer may satisfy its obligations for the participants by making a lump sum payment to the PBGC to provide the full benefit to such participants. PBGC regulations under ERISA section 4050 discuss the calculation of the amount to be paid for such participants.

The first step in the calculation of the PBGC payment amount is to determine the lump sum value of the most valuable form of benefit offered by the plan, using the lump sum rates determined using PBGC assumptions as of the deemed distribution date. If necessary for an exam calculation, these factors will be provided by the question. In order to find the most valuable form, it may be necessary to calculate each form of benefit offered by the plan at each age the benefit is offered.

#### **EXAMPLE**

Date of plan termination:	1/1/1999
Date of birth of missing participant Smith:	1/1/1949
Normal form of annuity:	Single life annuity
Amount of monthly pension at age 65 in normal form:	\$1,200

Possible early retirement ages for Smith: 60, 61, 62, 63, 64  
Benefits are reduced by 6% for each year benefit commencement precedes age 65  
Smith is assumed to be married as of the deemed distribution date.

The qualified joint and 50% survivor annuity payable to Smith requires a 20% reduction in the benefit otherwise payable as a single life annuity.

The plan does not provide for elective lump sums.

PBGC present value factors for a monthly joint and 50% survivor annuity of \$1 as of the deemed distribution date:

Age at Distribution Date	Factor
65	64.7
64	70.2
63	76.0
62	82.1
61	88.6
60	95.4

What is the value of the designated benefit for missing participant Smith as of the deemed distribution date?

Age	Benefit	PBGC Factor	Value
60	$1200 \times .8 \times 70\%$	95.4	\$64,109
61	$1200 \times .8 \times 76\%$	88.6	64,643*
62	$1200 \times .8 \times 82\%$	82.1	64,629
63	$1200 \times .8 \times 88\%$	76.0	64,205
64	$1200 \times .8 \times 94\%$	70.2	63,348
65	$1200 \times .8 \times 100\%$	64.7	62,112

Value of designated benefit:      \$64,643

Once the value of the most valuable form of benefit is determined, one additional calculation is required to determine the payment amount to the PBGC. The participant may fall into one of three categories.

First, if the lump sum value of the most valuable form of benefit is less than the mandatory lump sum payout under the terms of the plan (which, by law, may not be more than \$5,000, the value is unadjusted and the amount calculated is the PBGC payment.

Second, if the lump sum value of the most valuable benefit is greater than the maximum that may be paid to an employee under the terms of the plan, the amount calculated is not adjusted and is required to be paid to the PBGC.

Suppose, in the example shown above, the plan does not allow any lump sum distributions in an amount greater than \$50,000. The employer must pay the PBGC the most valuable benefit lump sum of \$64,643.

Third, if the most valuable lump sum calculated is greater than the mandatory lump sum distribution amount specified by the plan but less than the permitted lump sum distribution amount, the amount so calculated must be adjusted. The adjustment is made by dividing the calculated lump sum by the single life annuity factor using PBGC assumptions (to convert the lump sum to a SLA) and then multiplying the result by the single life annuity factor determined under the plan assumptions.

Suppose now that, in the above example, the plan allows lump sum distributions up to \$100,000. The participant in question must have his most valuable benefit lump sum adjusted. Suppose for this purpose, the PBGC SLA purchase rate at age 61 is 84.2 (it must be less than the 88.6 purchase rate for the J&S benefit shown above), and the plan's SLA purchase rate at age 61 is 87.1. The payment to the PBGC is  $\$64,643 / 84.2 \times 87.1 = \$66,869$ .

## REVIEW QUESTIONS

6-1. Consider the following statement:

Under Title IV of ERISA, an amendment to increase participants' benefits may be adopted after the plan's termination date.

Is the above statement true or false?

- (A) True
- (B) False

6-2. Consider the following statement:

When determining the value of an annuity payable to a missing participant, the actuarial assumptions required by the PBGC for that purpose are those in effect on the actual date of plan termination.

Is the above statement true or false?

- (A) True
- (B) False

6-3. Consider the following statement:

In a distress termination, a notice of intent to terminate must be issued to all affected parties and to the PBGC.

Is the above statement true or false?

- (A) True
- (B) False

6-4. Consider the following statement:

The PBGC is not permitted to proceed with an involuntary termination of a single employer plan if that termination violates an existing collective bargaining agreement.

Is the above statement true or false?

- (A) True
- (B) False

6-5. Normal retirement benefit: 2% of highest 3-year average compensation times service.

Early retirement age: Age 55 and 5 years of service.

## Early retirement reduction:

Prior to 2002	6% per year prior to age 65
After 2001	2% per year prior to age 65 (adopted 1/1/2002)

Date of plan termination: 1/1/2006.

## Participant data for participant Smith, who is not a substantial owner:

Date of birth	1/1/1947
Date of hire	1/1/1980
Date of retirement	12/31/2005
Form of payment	Life only

## Compensation:

1997	\$30,000
1998	35,000
1999	40,000
2000	45,000
2001	50,000
2002	55,000
2003	65,000
2004	70,000
2005	75,000

In what range is the annual annuity benefit assigned to priority category 4 for participant Smith?

- (A) Less than \$16,500
- (B) \$16,500 but less than \$17,500
- (C) \$17,500 but less than \$18,500
- (D) \$18,500 but less than \$19,500
- (E) \$19,500 or more

6-6. Plan effective date: 1/1/1980

Plan termination date: 1/1/1994

## Plan provisions:

Effective 1/1/1980: 1.0% of final average compensation for each year of service

Effective 7/1/1991: 3.0% of final average compensation for each year of service

Normal form of annuity: Unreduced 50% joint and survivor (contingent basis).

Early retirement benefit: Normal retirement benefit reduced  $\frac{1}{2}$  of 1% for each month by which the benefit commencement date precedes the normal retirement date. Unreduced benefits are available at age 62 if the participant has completed 20 years of service.

Years of service: Based on elapsed time

PBGC maximum monthly guaranteed benefit:

As of 1/1/1994: \$2,556.82  
 As of 1/1/1998: \$2,880.68

Factors to reduce PBGC maximum guaranteed benefit for payments beginning before age 65:

Age	Factor
64	.93
63	.86
62	.79
61	.72
60	.65
59	.61
58	.57

Other PBGC reduction factors for participant Smith (not a substantial owner):  
 For difference in ages between Smith and spouse: .92  
 For payment in the form of a 50% joint and survivor annuity (contingent basis): .90

	Data for Participant Smith	Data for Spouse
Date of Birth	1/1/1936	1/1/1944
Date of Hire	7/1/1974	N/A
Date of Retirement	1/1/1998	N/A
Final average earnings as of 1/1/1994	\$60,000	N/A

In what range is Smith’s PBGC guaranteed monthly benefit payable 1/1/1998?

- (A) Less than \$1,050
- (B) \$1,050 but less than \$1,150
- (C) \$1,150 but less than \$1,250
- (D) \$1,250 but less than \$1,350
- (E) \$1,350 or more

6-7. A defined benefit plan was terminated on 1/1/2006 and was accepted by the PBGC as a distress termination.

Normal retirement age: 62  
 Early retirement age: None

Date	Accrued benefit	Normal form of payment
Effective 1/1/1990	\$100 per month times years of service	Life
Effective 1/1/2003	\$110 per month times years of service	100% joint and survivor

Plan definition of actuarial equivalence used to calculate the 100% joint and survivor annuity:

Effective 1/1/1990 Same factors as those used by the PBGC to adjust the maximum guaranteed benefit  
 Effective 1/1/2003 Not applicable.

Vesting schedule: 2 – 6 year top-heavy graded vesting.

Selected participant data as of 1/1/2006:

Name	Age	Spouse's age	Years of service	Substantial owner
Smith	45	42	5	No
Jones	58	60	25	No

Each participant's 5-year average compensation is greater than the PBGC maximum guaranteed benefit.

The plan's qualified joint and survivor annuity is a 100% joint and survivor annuity.

In what range is the sum of the monthly benefits payable at normal retirement age as a 100% joint and survivor annuity for Smith and Jones that are allocated through PBGC priority category 4?

- (A) Less than \$2,600
- (B) \$2,600 but less than \$2,700
- (C) \$2,700 but less than \$2,800
- (D) \$2,800 but less than \$2,900
- (E) \$2,900 or more

6-8. Benefit formula:

Prior to 7/1/2004    2.25% of final average compensation times years of service limited to 20 years  
 After 6/30/2004    2.50% of final average compensation times years of service limited to 20 years

Early retirement eligibility:    Age 55 with 5 years of service

Early retirement benefit:    Accrued benefit reduced by 3% for each year the benefit commencement date precedes age 65

Plan is terminated 12/31/2006

Data for participant Smith:

Date of birth	12/31/1946
Date of hire	12/31/1986
Final average compensation as of 12/31/2006	\$ 80,000
Final average compensation as of 12/31/2005	75,000
Final average compensation as of 12/31/2004	70,000
Final average compensation as of 12/31/2003	65,000
Final average compensation as of 12/31/2002	60,000

In what range is Smith's immediate monthly life only benefit attributed to priority category 4?

- (A) Less than \$905

- (B) \$905 but less than \$950
- (C) \$950 but less than \$995
- (D) \$995 but less than \$1040
- (E) \$1040 or more

6-9. Plan effective date:	1/1/1990
Plan termination date:	12/31/1998
Data for participant Smith:	
Date of birth:	1/1/1939
Spouse date of birth:	1/1/1939
Date of retirement:	1/1/1997
Monthly benefit under formula effective 1/1/1990:	\$1,200.00
Monthly benefit under formula effective 3/1/1995:	\$1,600.00
Form of benefit payment	100% joint and survivor

Smith is not a substantial owner.

Maximum monthly benefit guaranteed by the PBGC at age 65 in life-only form of payment:	\$2,880.68
Adjustment to PBGC monthly benefit for 100% joint and survivor form of payment:	80%
PBGC adjustment for early retirement:	$\frac{7}{12}$ of 1% for each of the first 60 months and $\frac{4}{12}$ of 1% for each of the next 60 months by which commencement date precedes age 65

In what range is the monthly accrued benefit guaranteed for Smith by the PBGC?

- (A) Less than \$1,260
- (B) \$1,260 but less than \$1,320
- (C) \$1,320 but less than \$1,380
- (D) \$1,380 but less than \$1,440
- (E) \$1,440 or more

6-10. Plan effective date:	1/1/1965
Plan termination date:	12/31/1999

Normal retirement benefit:

Effective 1/1/1992 (adopted 2/1/1993): \$60 per month for each year of service  
 Effective 1/1/1995 (adopted 2/1/1996): \$80 per month for each year of service  
 Effective 1/1/1998 (adopted 2/1/1999): \$90 per month for each year of service

Early retirement eligibility: Earlier of 30 years of service or age 55 with 15 years of service

Early retirement reduction factor: No reduction between the plan's normal retirement age and age 62, 7.8% per year reduction for commencement below age 62.

Data for non-substantial owner participant Smith:

Date of birth: 1/1/1937  
 Date of hire: 1/1/1965  
 Date of retirement: 12/31/1999  
 Form of payment: Life annuity

Year	Compensation	Year	Compensation
1999	\$37,000	1995	\$33,000
1998	\$36,000	1994	\$32,000
1997	\$35,000	1993	\$31,000
1996	\$34,000	1992	\$30,000

Maximum monthly benefit guaranteed by the PBGC for plans terminating in 1999 under ERISA section 4022(b)(3)(A) payable at age 65 as a life annuity: \$3,051.14

Factors to adjust PBGC maximum guaranteed benefit for payments commencing before age 65:

Age	Factor
64	0.93
63	0.86

In what range is Smith's PBGC guaranteed monthly benefit payable 12/31/1999?

- (A) Less than \$2,350
- (B) \$2,350 but less than \$2,400
- (C) \$2,400 but less than \$2,450
- (D) \$2,450 but less than \$2,500
- (E) \$2,500 or more

6-11. Plan effective date: 1/1/1992

Plan termination date: 12/31/2000

Data for participant Smith:	
Date of birth:	1/1/1939
Date of retirement:	1/1/1999
Monthly benefit under formula effective 1/1/1992:	\$ 2,200.00
Monthly benefit under formula effective 1/1/1998:	\$ 2,250.00
Monthly benefit under formula effective 1/1/1999:	\$2,550.00
Form of benefit payment	Life annuity with 5-year certain

Smith is not a substantial owner.

Maximum monthly benefit guaranteed by the  
PBGC at age 65 in life-only form of payment: \$ 3,221.59

PBGC adjustment factor for life annuity  
with 3-year certain form of payment: 0.985

PBGC adjustment for early retirement:  $\frac{7}{12}$  of 1% for each of the first 60 months and  
 $\frac{4}{12}$  of 1% for each of the next 60 months by  
which the benefit commencement date  
precedes age 65

In what range is the monthly benefit guaranteed for Smith by the PBGC as of 12/31/2000?

- (A) Less than \$2,275
- (B) \$2,275 but less than \$2,300
- (C) \$2,300 but less than \$2,325
- (D) \$2,325 but less than \$2,350
- (E) \$2,350 or more

6-12. Date of plan termination 1/1/2001

Optional forms of payment: Lump sum for distributions less than \$10,000

Conversion to Qualified Joint and  
50% Survivor Annuity (QJ&50%S): 7% reduction to life annuity

Data for missing participant Smith:

Date of birth: 1/1/1936

Monthly benefit payable at age 65 for life: \$75.00

Assumed marital status: Married

Lump sum factors under PBGC missing participant assumptions and plan assumptions for monthly benefit of \$1.

Age at Distribution Date	PBGC Factor	Plan Factor
65	125.0	120.7

PBGC present value factors for a monthly single life annuity and a monthly joint and 50% survivor annuity of \$1 as of the deemed distribution date:

Age at Distribution Date	Life Annuity Factor	QJ&50%S
65	116.8	126.3

In what range is the value of the designated benefit for missing participant Smith as of the deemed distribution date?

- (A) Less than \$8,900
- (B) \$8,900 but less than \$9,100
- (C) \$9,100 but less than \$9,300
- (D) \$9,300 but less than \$9,500
- (E) \$9,500 or more

6-13. Plan effective date: 1/1/1970

Plan termination date: 12/31/2000

Normal retirement benefit: 4% of 3-year final average compensation times service

Normal form of benefit: Joint & 100% survivor annuity

Early retirement benefit: None

Date for participant Smith (not a substantial owner):

Date of birth: 1/1/1955

Date of hire: 1/1/1976

Spouses date of birth: 1/1/1955

Compensation	
1996	\$32,000
1997	\$34,000
1998	\$36,000
1999	\$38,000
2000	\$40,000

Maximum monthly benefit guaranteed by PBGC  
at age 65 in life-only form of payment: \$3,221.59

In what range is Smith's PBGC guaranteed benefit payable monthly?

- (A) Less than \$2,200
- (B) \$2,200 but less than \$2,500
- (C) \$2,500 but less than \$2,800
- (D) \$2,800 but less than \$3,100
- (E) \$3,100 or more

6-14. Plan effective date: 1/1/1990  
 Plan termination date: 12/31/2001  
 Benefit formula: Effective 1/1/1990: \$15 per month times all years of service  
 Effective 1/1/1999: \$20 per month times all years of service  
 Effective 4/1/2001: \$25 per month times all years of service  
 Vesting: 100% after 3 years of service  
 Date for selected participants as of 12/31/2001:

	Smith	Brown
Date of birth	1/1/1950	1/1/1950
Date of hire	1/1/1993	1/1/1998
Ownership	50%	5%

In what range is the sum of monthly benefits guaranteed by the PBGC for Smith and Brown as of 12/31/2001?

- (A) Less than \$70
- (B) \$70 but less than \$95
- (C) \$95 but less than \$120
- (D) \$120 but less than \$145
- (E) \$145 or more

6-15. Plan effective date: 1/1/1991  
 Plan termination date: 1/1/2001  
 Date of provisions (adopted and effective):

	1/1/1991	1/1/1996	1/1/1999
Early retirement eligibility age	55	55	55
Early retirement eligibility service	15	10	10
Early retirement reduction per year prior to normal retirement age 65	5%	5%	3%
Accrued benefit per year of service	\$24	\$28	\$38

Data for active non-owner participant Smith:

Date of birth: 1/1/1941

Date of hire: 1/1/1987

Smith's expected retirement age pursuant to PBGC regulations: 62

Selected annuity values:

$${}_2|\ddot{a}_{60}^{(12)} = 8.52$$

$${}_5|\ddot{a}_{60}^{(12)} = 6.07$$

In what range is the PBGC category 4 liability for participant Smith as of 1/1/2001?

- (A) Less than \$10,000
- (B) \$10,000 but less than \$20,000
- (C) \$20,000 but less than \$30,000
- (D) \$30,000 but less than \$40,000
- (E) \$40,000 or more

6-16. Plan effective date: 1/1/1980  
Plan termination date: 7/1/2001

Data for participant Smith

Date of birth:	7/1/1940
Date of retirement:	7/1/2000
High 5-year average monthly compensation:	\$4,000
Monthly benefit under formula effective 1/1/1996:	\$1,500
Monthly benefit under formula effective 1/1/1998:	\$2,100
Monthly benefit under formula effective 1/1/2000:	\$2,500
Form of annuity:	Joint & 50% contingent
	Spouse's date of birth:
	7/1/1940

Smith is not a substantial owner.

Maximum monthly PBGC guaranteed benefit at 65: \$3,392.05

In what range is Smith's monthly benefit guaranteed by the PBGC?

- (A) Less than \$1,700
- (B) \$1,700 but less than \$1,800
- (C) \$1,800 but less than \$1,900
- (D) \$1,900 but less than \$2,000
- (E) \$2,000 or more

- 6-17. Plan effective date: 1/1/1980  
 Normal retirement age: 65  
 Early retirement eligibility: Age 60 with 25 years of service  
 Early retirement benefit: Accrued benefit payable immediately  
 Monthly benefit before 1/1/2000: \$50 times all years of service  
 Monthly benefit after 12/31/1999: \$55 times all years of service  
 Normal form of payment: Life annuity with 3 % annual cost of living increase  
 Plan termination date: 12/31/2003  
 Market value of assets as of 12/31/2003: \$300,000

Data for all participants as of 12/31/2003:

	<b>Smith</b>	<b>Jones</b>
Date of birth	1/1/1936	1/1/1939
Date of hire	1/1/1973	1/1/1974
Date of retirement	1/1/1998	
Annuity elected	Normal Form	

Selected annuity values as of 12/31/2003 using PBGC assumptions

	<b>Age 62</b>	<b>Age 65</b>	<b>Age 68</b>
Life annuity	12.10	10.81	9.88
Life annuity with 3% cost of living increase	15.64	14.61	12.61

In what range are the assets allocated to Smith under ERISA §4044?

- (A) Less than \$138,000  
 (B) \$138,000 but less than \$140,000  
 (C) \$140,000 but less than \$142,000  
 (D) \$142,000 but less than \$144,000  
 (E) \$144,000 or more

- 6-18. Plan effective date: 1/1/1980  
 Plan termination date: 10/1/2004  
 Normal retirement benefit: \$110 per month times elapsed-time service  
 Normal form of benefit: Life annuity  
 Early retirement benefit: Unreduced at age 62

Data for substantial owner Smith:

Date of birth: 10/1/1942  
 Date of hire: 1/1/1976  
 Date of benefit commencement: 10/1/2004

In what range is Smith's PBGC guaranteed benefit payable monthly?

- (A) Less than \$2,200  
 (B) \$2,200 but less than \$2,400  
 (C) \$2,400 but less than \$2,600  
 (D) \$2,600 but less than \$2,800  
 (E) \$2,800 or more

6-19. With respect to plans covered by Title IV of ERISA, the PBGC must be provided a Notice of Intent to Terminate for any plan termination.

Is the above statement true or false?

- (A) True
- (B) False

6-20. Mr. and Mrs. Smith were both participants in a plan that was terminated under a distress termination procedure and was taken over by the PBGC.

Data for:	<u>Mr. Smith</u>	<u>Mrs. Smith</u>
Age	65	65
Monthly guaranteed benefit	\$3,400	\$2,500
Form of payment	Life annuity	Joint and 100% survivor annuity
Beneficiary	N/A	Mr. Smith

Mrs. Smith dies and her benefit becomes payable to Mr. Smith.

Consider the following statement:

The PBGC will pay the full \$5,900 monthly benefit to Mr. Smith.

Is the above statement true or false?

- (A) True
- (B) False

6-21. An employer sponsors a plan in which the amount of benefits depends on the participant's age or service, and the participant becomes entitled to increased benefits solely because of advancement in age or service.

Consider the following statement:

The increased benefits to which the participant becomes entitled will, for the purpose of determining the PBGC guaranteed benefit, be treated as a benefit increase.

Is the above statement true or false?

- (A) True
- (B) False

6-22. A plan is terminating under a PBGC standard termination.

Plan provisions regarding lump sum distribution:

Elective lump sum distribution limit	\$25,000
Mandatory lump sum limit	5,000

Three plan participants cannot be located after a diligent search.

Single sum present values as of the deemed distribution date for the three missing participants are listed below:

<b>Participant</b>	<b>Missing Participant Annuity Values</b>	<b>Missing Participant Lump Sum Values</b>	<b>Plan Lump Sum Values</b>
Smith	\$10,000	\$12,000	\$11,000
Jones	26,000	28,000	29,000
Brown	24,000	20,000	22,000

The above values do not include any adjustment (loading) for expenses.

In what range is the designated benefit payable to the PBGC for these three missing participants?

- (A) Less than \$60,050                      (D) \$61,150 but less than \$61,700  
 (B) \$60,050 but less than \$60,600      (E) \$61,700 or more  
 (C) \$60,600 but less than \$61,150

- 6-23. Plan effective date:                      1/1/1985  
 Plan termination date:                      12/31/2004

Normal retirement benefit:

Effective 1/1/1985 (Adopted 2/1/1985) 2.5% times 5-year average compensation for each year of service.

Effective 1/1/1990 (Adopted 7/1/2000) 3.0% times 5-year average compensation for each year of service.

Early retirement: Age 55 with 15 years of service, reduced 5% per year prior to age 65

Normal form of annuity:

Joint and 100% survivor for married participants;  
 Single life annuity for unmarried participants.

Data for selected participants as of 12/31/2004:

	<b>Smith</b>	<b>Jones</b>
Date of birth	1/1/1945	1/1/1942
Date of hire	1/1/1980	1/1/1975
Spouse date of birth	1/1/1945	1/1/1942
Date of retirement	12/31/2004	12/31/2004
5-year average compensation	\$40,000	\$80,000
Ownership	8%	92%

In what range is the sum of PBGC guaranteed monthly benefits for Smith and Jones payable 12/31/2004?

- (A) Less than \$3,100                      (D) \$3,600 but less than \$3,850  
 (B) \$3,100 but less than \$3,350      (E) \$3,850 or more  
 (C) \$3,350 but less than \$3,600

- 6-2. Benefits paid to missing participants under the PBGC missing participant program determine assumptions by replacing the actual termination date with the deemed distribution date, which is the final day on which benefits may be paid under a standard termination, or an earlier date specified by the plan sponsor by which all other participants have received their distributions. PBGC regulation 4050.2

ANSWER: B (False)

- 6-3. ERISA Act section 4041(a)(2)

ANSWER: A (True)

- 6-4. PBGC regulations regarding termination of plans anticipate the possibility of an involuntary termination of a plan covering employees subject to a collective bargaining agreement. A formal challenge may be made to the termination procedure when the bargaining agreement prohibits such a termination, but the challenge may or may not result in a stop to the termination procedures. See PBGC regulation 4041.7 subparagraphs (b) through (e).

ANSWER: B (False)

- 6-5. Smith is 59 years old on the date of termination. Three years prior to the termination date, Smith was age 56 and had already completed the requirements to be eligible for an early retirement annuity benefit, if he had retired on such date. Smith meets the requirements to have a category 3 benefit.

Smith's category 3 benefit is based on the benefit Smith could have received on 1/1/03 (age 56), using the less generous plan provisions prior to the amendment which became effective within the five years prior to plan termination:

Average Compensation:  $(\$45,000 + \$50,000 + \$55,000) / 3 = \$50,000$

Early retirement benefit:  $\$50,000 \times 2\% \times 23 \text{ years} \times (1 - 9 \times 6\%) = \$10,580$

Smith's current age 59 benefit calculated both with and without respect to the amendment that was made effective four years before the termination date is:

Average Compensation:  $(\$65,000 + \$70,000 + \$75,000) / 3 = \$70,000$

With amendment:  $\$70,000 \times 2\% \times 26 \text{ years} \times (1 - 6 \times 2\%) = \$32,032$

Without amendment:  $\$70,000 \times 2\% \times 26 \text{ years} \times (1 - 6 \times 6\%) = \$23,296$

However, the benefit with the amendment is greater than the maximum PBGC guarantee at age 59 in the year 2006:

$3971.59 \times 12 \times .61 = \$29,072$

The amendment is phased in at 20% per year for the four years it has been effective at the plan termination date, and the full benefit guaranteed by the PBGC is:

$$\$23,296 + (\$29,072 - \$23,296) \times 80\% = \$27,917$$

When the full benefit is reduced by the amount of benefits already classified as a category 3 benefit, the result is the category 4 benefit asked for by the question:

$$\text{Priority category 4 benefit: } \$27,917 - \$10,580 = \$17,337$$

ANSWER B

- 6-6. Smith is age 58 at the plan's termination date but is 62 at retirement. Smith's maximum PBGC guaranteed benefit at 62 as a 50% J&S is based on the maximum benefit at plan termination date as follows:

$$2556.82 \times .79 \times .9 \times .92 = \$1,672.47$$

Smith's actual plan benefit at retirement has been increased by a plan amendment which took effect between 2 and 3 full years before the termination date of the plan. The effect of the amendment is phased in at 20% per full year of the amendment being in place:

Average compensation:  $\$60,000 / 12 = \$5,000$  monthly

Benefit without amendment:  $\$5,000 \times 1\% \times 19.5 \text{ years} \times (1 - 36 \times .005) = \$800$

Benefit with amendment:  $\$5,000 \times 3\% \times 19.5 \text{ years} \times (1 - 36 \times .005) = \$2,399$

However, this second calculated amount must be limited by the PBGC maximum calculated above. The phased in value of the PBGC protected benefit is:

$$\$800 + (\$1,672.47 - \$800) \times 40\% = \$1,149$$

ANSWER: B

- 6-7. Neither Smith nor Jones is eligible for any category 3 benefits (neither had reached the plan's earliest retirement age, which is the normal retirement age of 62, three years prior to the plan's termination date. For both participants, the benefit must be reduced (using PBGC factors provided in charts with the exam) to reflect the retirement age of 62, the benefit form of a 100% J&S, and the difference in ages between the participant and spouse beneficiary:

Smith

Maximum:  $\$3,971.59 \times .79 \times .8 \times .97 = \$2,434.74$

AB before amendment:  $\$100 \times 5 \text{ years} \times 80\% \text{ vested} \times .8 \times .97 = \$310.40$

AB after amendment:  $\$110 \times 5 \text{ years} \times 80\% \text{ vested} = \$440$

Neither benefit is limited by the PBGC maximum for Smith. The increase caused by the amendment effective three years before the termination date is  $\$440 - \$310.40 = \$129.40$ . 60% of this increase is  $\$77.64$ , which is larger than the minimum phase in of \$60 (\$20 per

year for three years), and Smith's PBGC guaranteed benefit is  $\$310.40 + \$77.64 = \$388.04$ .

Jones

Maximum:  $\$3,971.59 \times .79 \times .8 \times 1.010 = \$2,535.15$

AB before amendment:  $\$100 \times 25 \text{ years} \times .8 \times 1.010 = \$2,020$

AB after amendment:  $\$110 \times 5 \text{ years} = \$2,750$

Notice that the benefit for Jones when considering the plan amendment is limited by the PBGC maximum benefit. 60% of the increase taking into account the limit on the higher benefit is  $(\$2,535.15 - \$2,020) \times 60\% = \$309.09$ , and the PBGC guaranteed benefit for Jones is  $\$2,020 + \$309.09 = \$2,329.09$ .

The total benefit for Smith and Jones guaranteed by PBGC under category 4 is  $\$388.04 + \$2,329.09 = \underline{\$2,717.13}$

ANSWER C

- 6-8. Smith is age 40 when he enters the plan, and has 20 years of service when the plan terminates at Smith's age 60. 17 of those years are under the plan's initial benefit formula, and the final three years are under the increased benefit formula.

Smith's Priority Category 3 benefit – calculated as if in pay status at the beginning of the 3-year period ending on the plan termination date:

Benefit formula in effect prior to 2004 x avg. comp at the end of 2003 x years of service x age 57 early reduction factor:

$$2.25\% \times \$65,000 / 12 \times 17 \times (1 - 3\% \times 8) = \$1,575$$

On termination date, Smith's maximum PBGC guaranteed benefit at age 60 is:

$$\$3,971.59 \times 0.65 = \$2,582$$

Smith's total PBGC benefit at termination date is determined as follows:

AB before amendment:  $2.25\% \times \$80,000 / 12 \times 20 \times (1 - 3\% \times 5) = \$2,550$

AB after amendment:  $2.50\% \times \$80,000 / 12 \times 20 \times (1 - 3\% \times 5) = \$2,833$  (capped by PBGC maximum)

Benefit Increase:  $\$2,582 - \$2,550 = \$32$

Minimum increase phase in for two complete years amendment is  $\$20 \times 2 = \$40$ , so the full increase applies and Smith receives the maximum PBGC benefit.

Smith's Priority Category 4 benefit is the total benefit guaranteed by PBGC minus the category 3 benefit:

$$\$2,582 - \$1,575 = \$1,007$$

## ANSWER D

- 6-9. Smith had retired prior to the plan's termination, at age 58. However, Smith's maximum PBGC guaranteed benefit is based on the data at the date of plan termination, when Smith is age 60. The maximum benefit guaranteed by PBGC at 60 on J+100%S:

$$\$2,880.68 \times (1 - 7/12\% \times 60) \times .80 = \$1,498$$

This cap limits the benefit calculated after the plan amendment but not the benefit prior to the amendment:

$$\text{Phase in amount } (\$1,498 - \$1,200) \times 60\% = \$179 \text{ (greater than minimum of } \$60)$$

$$\text{PBGC guaranteed benefit: } \$1,200 + \$179 = \$1,379$$

ANSWER: C

Notice that Smith, who is a retired employee in pay status with a monthly benefit of \$1,600 at the time of the plan termination, will have his monthly annuity payment cut upon takeover of the plan by the PBGC. This is a distinct possibility for participants of a plan that undergoes a PBGC termination, especially early retirees from the plan.

- 6-10. The key to this question is to remember that a plan amendment is phased in based on *the later of its effective date or adoption date*. Based on the adoption dates of the two amendments, each of which is later than the effective date of the amendment, the increase in benefits from \$60 to \$80 is effective for only three full years at plan termination date (60% phase in) and the increase from \$80 to \$90 is effective less than one full year upon termination, and so is phased in at 0%.

Smith's 5 year average compensation at the date of plan termination is  $(\$37,000 + \$36,000 + \$35,000 + \$34,000 + \$33,000) / 60 = \$2,916.67$ . Since this is less than the PBGC guaranteed benefit at age 65 (given in the question as \$3,051.14), the average compensation value is used instead to compute the maximum guaranteed benefit by PBGC at age 63:

$$\$2,916.67 \times .86 = \$2,508$$

$$\text{Initial benefit level: } \$60 \times 35 \text{ years} = \$2,100$$

$$\text{Benefits after amendment: } \$80 \times 35 \text{ years} = \$2,800$$

As discussed above, the amendment of benefits to \$90 per year is not considered. The amended benefit level is limited by the PBGC maximum benefit, so the phased in increase is:  $(\$2,508 - \$2,100) \times 60\% = \$245$ , and the PBGC maximum benefit for the employee is:  $\$2,100 + \$245 = \$2,345$ .

ANSWER: A

- 6-11. Smith is age 60 when the participant retires and begins to collect benefits, but Smith is age 62 when the plan terminates two years later. Smith's maximum PBGC benefit is calculated at age 62 on life with 3-year certain (remaining of the annuities original 5 year certain period) annuity:

$$\$3,221.59 \times (1 - 36 \times 7/12\%) \times .985 = \$2,507$$

The benefit under the formula five years prior to the plan termination is given by the question as \$2,200. The amendment three years prior to the plan termination increases the benefit by \$50, to \$2,250. Since 20% of the increase (\$10) is less than \$20, the benefit increase can be phased in by \$20 per year. So, after three years, the full \$50 increase has been phased in, and the benefit is now \$2,250.

The final amendment in effect for two full years at the date of plan termination raises the benefit to \$2,550. Since this is greater than the maximum benefit of \$2,507, the considered increase is  $\$2,507 - \$2,250 = \$257 \times 40\% = \$103$ . The full PBGC protected benefit is  $\$2,250 + \$103 = \$2,353$ .

ANSWER: E

- 6-12. First, determine the most valuable benefit accrued by the participant under the terms of the plan. The PBGC rates at the deemed distribution date are used to compare the different benefit forms as lump sum values:

$$\text{Life annuity: } \$75 \times 116.8 = \$8,760$$

$$50\% \text{ J\&S annuity: } \$75 \times (1 - 7\%) = \$69.75 \times 126.3 = \$8,809$$

Notice that the amounts of the benefits in different forms are determined under the plan provisions, but the lump sum values are determined using the PBGC rates at deemed distribution date. Using these same rates, the greatest lump sum calculated above (the most valuable benefit) is converted to a single life annuity (SLA):

$$\$8,809 / 116.8 = \$75.42$$

This increased SLA equivalent to the plan's most valuable benefit form is converted to a lump sum using the lesser of the plan rate or PBGC missing participant factor:

$$\$75.42 \times 120.7 = \$9,103$$

ANSWER: C

- 6-13. 5 year average compensation for Smith:  $(\$32,000 + \$34,000 + \$36,000 + \$38,000 + \$40,000) / 60 = \$3,000$ . This is less than the maximum benefit dollar amount provided in the plan and is used instead to determine the maximum guaranteed benefit for Smith.

The plan has no early retirement provisions. The normal retirement age is not given and so assumed to be 65. Smith's maximum benefit guaranteed by PBGC at 65 is adjusted only for the fact that it is payable as a 100% J&S annuity:

Maximum PBGC guaranteed benefit:  $\$3,000 \times .80 = \$2,400$

Smith's monthly benefit under the terms of the plan is:

$(\$40,000 + \$38,000 + \$36,000) / 36 \times 4\% \times 25 \text{ years} = \$3,167.$

Since the plan benefit is greater than the PBGC maximum, Smith receives the statutory maximum of \$2,400.

ANSWER: B

- 6-14. Because the question does not specify otherwise, both participants are assumed to have no distribution options before normal retirement age 65, and the form of benefit is a life only annuity. The maximum benefit for each of the participants is the PBGC statutory 2001 maximum of \$3,392.05.

Smith is a substantial owner with more than 10% ownership of the plan sponsor, and benefits attributable to Smith phase in over 30 years, including the initial benefits effective on the plan effective date. Brown is not a substantial owner (he owns less than 10% of the plan sponsor, and changes in benefits phase in at 20% or \$20 per year. At plan termination, Smith has 9 years of service and Brown has 4 years of benefit service.

For both participants, the 1999 amendment to benefits is effective for three years prior to the plan termination date, and the amendment effective on 4/1/2001 is effective less than one full year before the plan termination and is not considered at all for the PBGC maximum benefit:

Smith:

Initial benefit:  $\$15 \times 9 = \$135$  Phase in:  $\$135 \times 12/30 = \$54$

Amendment:  $\$20 \times 9 = \$180$  Increase:  $\$180 - \$135 = \$45$  Phase in:  $\$45 \times 3/30 = \$5$

Total PBGC guarantee:  $\$54 + \$5 = \$59$

Brown:

Initial benefit:  $\$15 \times 4 = \$60$

Amendment:  $\$20 \times 4 = \$80$  Increase:  $\$80 - \$60 = \$20$  Phase in: \$20 (because full phase in is less than the minimum  $\$20 \times 3$  years, or \$60)

Total PBGC guarantee:  $\$60 + \$20 = \$80$

Total guaranteed benefits for participants Smith and Brown =  $\$59 + \$80 = \$139$

ANSWER: D

- 6-15. 3 years prior to the termination date of the plan, Smith had met the plan's early retirement eligibility conditions, and so could have retired and received an immediate annuity benefit. Therefore, Smith has a category 3 benefit based on the lowest benefit formula for the five year period ending on the plan termination date. Smith's priority category 3 benefit (the annuity benefit 3 years before term date) is:

$$\$28 \times 11 \times (1 - 8 \times 5\%) = 185$$

The total PBGC protected benefit projected to retirement age 62 is calculated as:

$$1996 \text{ benefit: } \$28 \times 14 \times (1 - 3 \times 5\%) = \$333$$

$$1999 \text{ benefit: } \$38 \times 14 \times (1 - 3 \times 3\%) = \$484$$

$$\text{Increase: } \$484 - \$333 = \$151$$

$$2 \text{ year phase-in: } \$151 \times 40\% = \$60$$

$$\text{Total benefit: } \$333 + \$60 = \$393$$

The priority category 4 benefit is the total PBGC benefit minus the category 3 benefit:  $\$393 - \$185 = \$208$ , and the present value of this benefit based on the factors provided within the question data is:  $\$208 \times 12 \times 8.52 = \$21,266$ .

ANSWER: C

Note that the accrued benefit both before and after the amendment are small enough to assume that the PBGC maximum benefit level does not override either of these amounts. Therefore the question does not provide the data needed to calculate the maximum and that step has been skipped in this solution.

- 6-16. Smith retires at age 60 but is age 61 at the date of termination. Smith's maximum monthly PGBC guaranteed benefit at age 61 in the form of a 50%J&C:

$$\$3,392.05 \times .900 \times .72 = \$2,198$$

The PBGC guaranteed benefit is calculated using the following steps:

$$1996 \text{ benefit: } \$1,500$$

$$1998 \text{ benefit: } \$2,100$$

$$\text{Increase: } \$2,100 - \$1,500 = \$600$$

$$3 \text{ year phase in: } \$600 \times 60\% = \$360$$

$$2000 \text{ benefit: } \$2,500 - \text{limited to PBGC maximum } \$2,198 \text{ determined above}$$

$$\text{Increase: } \$2,198 - \$2,100 = \$98$$

$$1 \text{ year phase in: } \$98 \times 20\% = \$19.60, \text{ but use } \$20 \text{ one year minimum}$$

$$\text{Total PBGC benefit: } \$1,500 + \$360 + \$20 = \$1,880$$

ANSWER: C

- 6-17. PBGC regulation 4044.13(b)(5) deals with automatic increases in benefits after retirement, such as a cost of living allowance (COLA) of the type described in this question. Generally, PBGC does not cover COLA or other benefit increases, changing such benefit forms to non-increasing annuities. However, in calculating category 3 benefits, PBGC calculates the benefit available three years before termination using the benefit formula available five years earlier. In performing this calculation, the PBGC does include the

COLA that was actually received by a participant in the fourth and fifth years prior to the plan termination date.

Smith retired at age 62 and is 68 years old at the termination date, so Smith has actually been in pay status for the past six years prior to the termination date. In calculating Smith's benefit in pay status three years prior to termination (1/1/2001) using the formula in effect five years before the plan termination (1/1/1999), the actual COLA attributable to 1999 and 1998 is included:

$$\begin{aligned} \$50 \times 12 \times 25 \text{ years of service at retirement} \times 1.03 \times 1.03 &= \$15,914 \\ \text{Smith's category 3 lump sum: } \$15,914 \times 9.88 &= \$157,230 \end{aligned}$$

Jones also has a category 3 benefit, since Jones had satisfied the plan's early retirement requirement three years prior to the plan's termination date. Jones' category 3 benefit, based on the 1998 benefit formula and Jones' service through 1/1/2001, is:

$$\$50 \times 12 \times 27 \text{ years of service} = \$16,200$$

Jones' category 3 lump sum is based on current age 65:

$$\$16,200 \times 10.81 = \$175,122$$

Because the sum of the participants' category 3 benefits ( $\$157,230 + \$175,122 = \$332,352$ ) is greater than the plan's total assets of  $\$300,000$ , there is no need to compute the total PBGC protected benefits or the category 4 benefits for the two participants to answer the question. The assets are allocated pro-rata on the category 3 lump sums, and Smith's share is:

$$\$300,000 \times (\$157,230 / \$332,352) = \$141,925$$

ANSWER: C

- 6-18. Smith is age 62 at the termination date and is eligible for the age 62 unreduced early retirement benefit. The 2004 PBGC maximum benefit is reduced only for the fact that the benefit begins at age 62:

$$\text{Maximum PBGC guaranteed benefit: } \$3,698.86 \times .79 = \$2,922$$

Since the plan uses elapsed time to determine benefit service, the plan must grant service credit for partial years of service. Smith's total benefit service from hire date 1/1/1976 to plan termination date 10/1/2004 is 28.75 years.

$$\text{Smith's accrued benefit: } \$110 \times 28.75 = \$3,163$$

This benefit is more than the maximum and the maximum value overrides the plan's benefit formula. The plan has had only one benefit formula. But, since the plan is less than 30 years old and since Smith is a substantial owner, the one and only benefit formula must still be phased in over the 24 full years in which the plan has been in existence:

$$\text{Smith's phased in benefit: } \$2,922 \times 24 / 30 = \$2,338$$

## ANSWER B

- 6-19. The employer must provide a Notice of Intent to Terminate (NOIT) to all affected employees at least 60 days prior to the proposed termination date, in either a standard or a distress termination. The NOIT must also be provided to the PBGC in the event of a distress termination. However, the NOIT does not need to be provided to the PBGC in advance of a standard termination.

ANSWER B (False) ERISA Act Sec 4041(a)(2)

- 6-20. The PBGC determines the amount and form of guaranteed benefits to be paid at the date of plan termination. These amounts and benefit forms do not change based on who are the named beneficiaries of an approved benefit. Mr. Smith will receive the combined approved benefit as a participant and the approved benefit as a beneficiary. Each of these two benefit amounts has already been approved as within PBGC limits. The fact that the two benefits combined exceed such limit does not affect their payment as two separate benefits.

ANSWER A (True) PBGC regulation 4022.3 and 4022.4

- 6-21. PBGC regulations define the term benefit increase as to not include any increase in benefits attributable solely to advancement of age or service.

ANSWER B (False) PBGC regulation 4022.2

- 6-22. Smith and Brown each have benefits which, under the terms of the plan, would be available for pay out as lump sums, since the annuity benefit converted to a lump sum under the terms of the plan is less than the \$25,000 lump sum distribution limit. Since both benefits are greater than the mandatory lump sum distribution level of \$5,000. For these participants, the most valuable benefits determined under the plan rates must be converted to an annuity value by dividing by the PBGC missing participant factors and then back to a lump sum using the plan lump sum values.

The cost for Jones, whose most valuable annuity benefit is greater than the plan's maximum amount that can be paid as a lump sum, is simply the unadjusted value of the most valuable form of annuity benefit:

Smith:  $\$10,000 / \$12,000 \times \$11,000 = \$9,167$

Jones: \$26,000

Brown:  $\$24,000 / \$20,000 \times \$22,000 = \$26,400$

Total payable to PBGC:  $\$9,167 + \$26,000 + \$26,400 = \$61,567$

## ANSWER D

- 6-23. As of the plan termination date, Smith is age 60 and Jones is age 63. Both have satisfied the requirements for early retirement under the plan and could terminate employment with an immediate 100% J&S annuity benefit.

Smith (not a substantial owner):

5 year average monthly compensation:  $\$40,000 / 12 = \$3,333.33$  (less than the 2004

PBGC age 65 maximum annuity of  $\$3,698.86$ )

PBGC maximum benefit:  $\$3,333.33 \times .65$  (age 60)  $\times .80$  (100% J&S) =  $\$1,733$

Formula adopted 2/1/1985 (in effect 19 full years):  $\$3,333.33 \times 2.5\% \times 25$  years of service  $\times (1 - 5 \times 5\%) = \$1,562$

Formula adopted 7/1/2000 (in effect 4 full years):  $\$3,333.33 \times 3.0\% \times 25$  years of service  $\times (1 - 5 \times 5\%) = \$1,875$  (replace by maximum above)

Phase in:  $(\$1,733 - \$1,562) \times 80\% = \$137$

Smith guaranteed benefit:  $\$1,562 + \$137 = \$1,699$

Jones (substantial owner):

5 year average monthly compensation:  $\$80,000 / 12 = \$6,666.67$

PBGC maximum benefit:  $\$3,698.86 \times .86$  (age 63)  $\times .80$  (100% J&S) =  $\$2,545$

Formula adopted 2/1/1985 (in effect 19 full years):  $\$6,666.67 \times 2.5\% \times 30$  years of service  $\times (1 - 2 \times 5\%) = \$4,500$  (replace by maximum above)

Phase in:  $\$2,545 \times 19/30 = \$1,612$

There is no need to calculate the increased formula benefit for Jones, since the benefit cannot be greater than the maximum already determined under the earlier formula, the increase cannot be more than \$0. The total PBGC benefits to the two participants is:

$$\$1,699 + \$1,612 = \$3,311$$

ANSWER B

## Chapter 7

- 7-1. As of the plan's snapshot date of December 31, 2001, participant Smith does not have any accrued benefit under the plan and is not counted as a plan participant for purposes of determining the PBGC premium. See PBGC regulation 4006.6 and note example 1 provided in the section.

ANSWER: A (True)

- 7-2. If the estimated PBGC payment sent with PBGC form 1-ES is not less than 90% of the actual premium owed for the year, then no penalties are charged against the employer. In this case, 90% of the premium for 2600 participants is equal to the premium for 2340 participants. Since the estimated premium paid was for 2500 participants, the payment satisfies this requirement.

However, if an estimated premium payment is less than 100% of the actual premium owed for the year, there will be interest charges on the portion of the premium not paid with the estimated premium. Since, in the situation described in the question, the full payment is