JOINT BOARD FOR THE ENROLLMENT OF ACTUARIES

AMERICAN SOCIETY OF PENSION PROFESSIONALS AND ACTUARIES

SOCIETY OF ACTUARIES

EXAMINATION PROGRAM

MAY 2018 BASIC (EA-1) EXAMINATION

MAY 2018 PENSION EA-2 (SEGMENT L) EXAMINATION

NOVEMBER 2018 PENSION EA-2 (SEGMENT F) EXAMINATION

January 2018
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INTRODUCTION

The Joint Board for the Enrollment of Actuaries administers two actuarial examinations that must be successfully completed by individuals to satisfy the actuarial knowledge requirement for the designation of Enrolled Actuary.

The actuarial knowledge requirement for enrollment is augmented by a requirement that a candidate have certain responsible pension actuarial experience. Through a combined knowledge and experience requirement, the Joint Board seeks to determine which applicants for the designation of Enrolled Actuary have the skills necessary to protect the interests of pension plan participants.

The examinations are structured as follows:

> The EA-1 examination is two-and-one-half hours in length and covers (1) the mathematics of compound interest and practical financial analysis and (2) the mathematics of life contingencies and practical demographic analysis.
>
> The pension (EA-2) examination consists of two segments:
>
> (a) The EA-2 (Segment L) law examination (formerly EA-2 (Segment B)) is two-and-one-half hours in length and covers relevant pension laws (in particular the provisions of the Employee Retirement Income Security Act (ERISA) and related laws, regulations, and rulings) as they affect pension actuarial practice. The EA-2 (Segment L) examination presupposes knowledge of the topics covered in the EA-1 examination.
>
> (b) The EA-2 (Segment F) examination (formerly EA-2 (Segment A)) is four hours in length and covers the selection of actuarial assumptions and calculation of minimum required and maximum tax-deductible contributions under current pension law, along with the related actuarial mathematics. The EA-2 (Segment F) examination presupposes knowledge of the topics covered in the EA-1 and EA-2 (Segment L) examinations.

EA-1 and the EA-2 (Segment L) examinations are given in May; the EA-2 (Segment F) examination is given in November.

A candidate for enrollment may be able to satisfy part of the actuarial knowledge requirement of the Joint Board regulations by earning a degree in actuarial mathematics or its equivalent from an accredited college or university. Such candidates will not have to pass the EA-1 examination. The courses in the plan of study and their successful completion must comply with guidelines adopted by the Joint Board for determining what demonstrates the requisite knowledge. The Joint Board will grant a waiver of the EA-1 examination to any candidate who received credit from the Society of Actuaries (SOA) for Courses FM and MLC of the SOA's education and examination program. Under either approach, the candidate must apply to the Joint Board for a waiver of the EA-1 examination as outlined on the Joint Board website at http://www.irs.gov/Tax-Professionals/Enrolled-Actuaries/Joint-Board-Examination-Program.

Both the EA-1 and EA-2 actuarial examinations consist solely of multiple-choice questions. Each question will be assigned from one to five points. Point values for each question will be shown at the beginning of the question. The score on each examination is based on the questions answered correctly; no credit is given for omitted answers and no credit is deducted for wrong answers.

ALL EXAMINATIONS

Most examination questions require arithmetical computations. Each candidate should bring an electronic calculator to the examination center for use in performing computations. Calculators should be able to compute financial functions such as amortization payments, present and future values, interest rates, time periods, logarithmic functions, and exponential functions. Calculators are permitted subject to the following conditions:

The examination supervisor will ascertain that all calculators:

- have self-contained power sources,
- are noiseless, and
- do not have the capability to retain text.

A candidate generally will be allowed to take the examination using a questionable calculator. However, any questions raised as to the appropriateness of a calculator will be noted on the supervisor's report along with the candidate's number and the make and model number of the calculator; a determination will be made later as to whether the calculator was permissible.

Candidates are solely responsible for the proper functioning and operation of their calculators during the examination. In addition, candidates must indicate on their examination answer sheets both the make and the model number of any calculator used.

The use of a calculator that does not meet the conditions above constitutes an irregularity and may be sufficient cause for disqualification from the examination.

In preparing the examinations, great care is taken so that each question has one and only one correct answer based on the data given. Each question is reviewed by all members of the Advisory Committee on Actuarial Examinations and by representatives of the sponsoring organizations. Nevertheless, because mistakes can occur, a request for consideration of an alternative answer to a given question, or for disregarding a question, will be entertained by the Joint Board but only under the following conditions:

An appeal must be made in writing and postmarked not later than six months after the examination was administered.

The appellant must describe in detail the fault found with the question and an alternative answer if one is claimed.

In the case of claimed ambiguity, credence will be given to an alternative interpretation only to the extent that such interpretation is one that might be reasonably made and is not strained in the light of attendant circumstances. This policy is of positive benefit to most candidates; otherwise, it would be necessary to burden each question with numerous qualifications and stipulations that the qualified practitioner does not require and which would make the question more difficult to read.

Not all topics listed in the syllabus of this examination program are necessarily covered on any particular year's examination, nor are the examination questions necessarily confined solely to the listed topics or suggested readings. Also, it is assumed that all candidates are familiar with the basic concepts and techniques of algebra and calculus.

Candidates are urged to develop a thorough understanding of the conditions generally or specifically applicable to all examination questions as set forth later in this examination program. Conditions for each examination will be included in the applicable examination booklets.

In addition, candidates should familiarize themselves with the list of limits, tables, and formulas applicable to the EA-2 (Segment F) and EA-2 (Segment L) examinations, as set forth in this program. A copy of the appropriate list will also be included in the respective examination booklet.

BASIC EA-1 EXAMINATION
MAY 2018

The EA-1 examination is two-and-one-half hours in length and covers (1) the mathematics of compound interest and practical financial analysis and (2) the mathematics of life contingencies and practical demographic analysis.

Questions on the Basic EA-1 examination may contain commutation functions. **Candidates are expected to understand and be able to use commutation functions.** Candidates who are not familiar with commutation functions may wish to read the SOA Study Note "Commutation Functions".

SYLLABUS

Mathematics of Compound Interest and Financial Analysis

Nominal and effective rates of interest and discount, force of interest, accumulated value factors, and present value factors.

All forms of annuities including, but not limited to annuities certain, increasing and decreasing annuities, annuities in which the payment frequency is not the same as the frequency at which interest is compounded, and perpetuities.

Amortization schedules and sinking funds, including the determination of outstanding principal, the split of payments into principal and interest, and the determination of required periodic payments.

Bonds and related securities, including bond price formulas, bond accounting, the split of periodic payments into amortization and interest, mortgages, and variable interest securities.

Determination of fund yield rates and effective rates of return using time-weighted and dollar-weighted methods.

Duration and immunization of cash flows.

Asset reporting, including realized and unrealized gains/losses, asset reconciliation, book value versus market value, and receivables.

Financial analysis, including inflation and its role, elements of risk and uncertainty, yield curves and available investments, and employee compensation increases.

Mathematics of Life Contingencies and Demographic Analysis

Measurements and demographic analysis of mortality, including the definition and application of standard mortality probability symbols and force of mortality.

Approximation of fractional period decrements using a uniform distribution assumption.

Measurement and demographic analysis of disability, employee turnover and employee retirement, including construction of single and multiple decrement tables.

Adjustments to mortality, disability, turnover and retirement rate tables, such as age setbacks and set forwards, select and ultimate tables, projection scales and generation adjustments.

Life annuities, including life annuities with a term certain.

Population theory, including complete and curtate expectation of life, central death rates, stationary population, and average ages in a stationary population.

Multiple life functions, probabilities and annuities.

Multiple decrement functions, including associated single decrement tables, probabilities of decrement and the construction of multiple decrement tables from associated single decrement tables.

Principles of actuarial equivalence and related calculations.

One-year term costs for ancillary benefits.

Life insurance, including basic forms, single and annual premiums, varying insurance, and insurance and annuity relationships.

SUGGESTED READINGS FOR EA-1

The Advisory Committee on Actuarial Examinations believes that most (if not all) of the topics in the syllabus are covered in one or more of the following sources. There is a great deal of overlap among the following references. Candidates do not need to use them all. The references listed below are to identify available resources from which the candidate may select. This list is not meant to describe or modify the syllabus listed above.

Bowers, N.L. et. al., *Actuarial Mathematics*, (Second Edition–1997) (excluding Chapters 1, 2, 12, 13, 14, and 15); Society of Actuaries, 475 N. Martingale Road, Suite 600, Schaumburg, IL 60173-2226.

Brown, R.L., *Introduction to Mathematics of Demography*, (Third Edition–1997), Chapters 3-5; ACTEX Publications, P.O. Box 974, Winsted, CT 06098

Broverman, S.A., *Mathematics of Investment and Credit*, (Sixth Edition–2015); ACTEX Publications, P.O. Box 974, Winsted, CT 06098

Camilli, S., Herzog, T.N, London, R.L., *Models for Quantifying Risk*, Chapters (Sixth Edition, 2015); ACTEX Publications, P.O. Box 974, Winsted, CT 06098

Jordan, C.W., *Life Contingencies*, (Second Edition–1967, Second Printing 2003); Society Of Actuaries, 475 N. Martingale Road, Suite 600, Schaumburg, Il 60173-2226

Kellison, S.G., *The Theory of Interest*, (Third Edition–2008); McGraw-Hill, 6350 Crested Butte Circle, Colorado Springs, CO 80919

London, D., *Survival Models and Their Estimation*, (Third Edition–1997), Chapters 1, 3-6, 8-9; ACTEX Publications, P.O. Box 974, Winsted, CT 06098

Parmenter, M.M., *The Theory of Interest and Life Contingencies with Pension Applications: A Problem-Solving Approach*, (Third Edition–1999); ACTEX Publications, P.O. Box 974, Winsted, CT 06098

Zima, P. and Brown, R.L., *Mathematics of Finance* (2001), (Fifth Edition); McGraw-Hill Ryerson Limited, 300 Water Street, Whitby, ON, L1N 9B6

Actuarial Standard of Practice, No. 27, "Selection of Economic Assumptions for Measuring Pension Obligations"

Actuarial Standard of Practice, No. 35, "Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations"

SOCIETY OF ACTUARIES STUDY MATERIAL

The Society of Actuaries has developed various study notes for the use of students preparing for its examinations on these subjects. These study notes are revised periodically, and new study notes may be added.

Measurement of Investment Return

Actuarially Equivalent Benefits

Commutation Functions

It should be realized, however, that such material was not necessarily drawn up with the particular nature of the Joint Board examinations in mind.

CONDITIONS GENERALLY APPLICABLE TO ALL EA-1 EXAMINATION QUESTIONS

If applicable, the following conditions should be considered a part of the data for each question, unless otherwise stated or implied:

(1) The normal retirement age is 65.

(2) Retirement pensions commence at normal retirement age and are paid monthly for life at the beginning of each month.

(3) There are no pre-retirement death or disability benefits.

(4) Actuarial equivalence is based on the mortality table and interest rate assumed for funding purposes.

(5) Interest rates that are compounded more frequently than annually are expressed as nominal rates.

(6) Where multiple lives are involved, future lifetimes are assumed to be independent of each other.

(7) The term “gross single premium” is equivalent to “contract single premium;” the term “net single premium” is equivalent to “single benefit premium;” the term “gross annual premium” is equivalent to “annual contract premium;” the term “net annual premium” is equivalent to “annual benefit premium.”

(8) There are no policy loans in effect.

(9) For a bond, the face amount and the redemption value are the same.

(10) Interest rate equals yield rate.

(11) The term “duration” means “Macaulay duration”.

PENSION EA-2 (SEGMENT L) EXAMINATION
MAY 2018

The EA-2 (Segment L) examination is two-and-one-half hours in length and covers relevant pension laws (in particular the provisions of the Employee Retirement Income Security Act (ERISA) and related laws, regulations, and rulings) as they affect pension actuarial practice. The EA-2 (Segment L) examination presupposes knowledge of the topics covered in the EA-1 examination.

Please note that certain topics are tested on both the EA-2 (Segment L) and EA-2 (Segment F) examinations. Questions on the EA-2 (Segment F) examination will focus on the effect of the law on funding requirements. Questions on the EA-2 (Segment L) examination will focus on the effect of the law on non-funding aspects.

Questions on the Pension EA-2 (Segment L) examination may contain commutation functions. **Candidates are expected to understand and be able to use commutation functions.** Candidates who are not familiar with commutation functions may wish to read the SOA Study Note "Commutation Functions."

SYLLABUS

Requirements with respect to vesting, service credits, employee contributions, accrued benefits, normal retirement.

Requirements with respect to and adjustments for early retirement, postponed retirement, joint and survivor annuities, optional forms of distribution, and pre-retirement death benefits.

Determination of benefits, including permitted disparity.

Maximum benefit limitations.

Determination of top-heavy status; additional requirements with respect to top-heavy plans.

Funding-based limits on benefits and benefit accruals under single-employer defined benefit plans.

Nondiscrimination requirements including those related to plan participation, coverage, and permitted disparity.

Requirements with respect to reporting and disclosure, including underfunded plans, reductions in future benefit accruals, and reportable events.

PBGC premium requirements.

Plan termination requirements including standard and distress terminations, involuntary terminations, missing participants, guaranteed benefits, allocation of assets, plan liability and employer liability.

Withdrawal liability under multiemployer plans.

Prohibited transactions and fiduciary standards.

Excise taxes other than for funding requirements.

Standards of performance and professional conduct for enrolled actuaries.

SUGGESTED READINGS FOR EA-2 (SEGMENT L)

Pension law and IRS promulgations can be found in publications of Warren, Gorham & Lamont, Commerce Clearing House, Maxwell Macmillan, Research Institute of America, and similar organizations. This list is not meant to describe or modify the syllabus listed above.

TITLE I OF THE EMPLOYEE RETIREMENT INCOME SECURITY ACT OF 1974, ALL AS AMENDED THROUGH NOVEMBER 30, 2017

3 Definitions (excluding (1), (32), (33), (36), (37)(E)-(G), and (40))
101 Duty of Disclosure and Reporting (excluding subsections (g), (h), (i), (m), and (n))
102 Contents of summary plan description (SPD)
103 Contents of annual report (Form 5500)
104 Furnishing annual report and SPD
105 Pension benefit statements (excluding subsections (a)(1)(A), (a)(2)(B), and (a)(2)(C))
107 Retention of Records
403 Establishment of trust
404 Fiduciary duties (excluding subsection (c))
406 Prohibited transactions
408 Exemptions from prohibited transactions
502(c) Civil penalties (but only subsections (c)(1) – (4), (6) and (8))

Title IV of Employee Retirement Income Security Act of 1974 (ERISA), as amended through November 30, 2016.

Current PBGC Comprehensive Premium Payment Instructions

Current IRS Form 5330, including instructions

- Line 3 / Schedule C – Tax on prohibited transactions (Sections 4975(a) and (b))
- Line 14 / Schedule I – Tax on reversion of qualified plan assets to an employer (Section 4980)
- Line 15 / Schedule J – Tax on failure to provide notice of significant reduction in future accruals (Section 4980F)

INTERNAL REVENUE CODE SECTIONS, ALL AS AMENDED THROUGH NOVEMBER 30, 2017

318 Constructive Ownership of Stock
401 Qualified Plans – definition (excluding subsections (f),(g),(i),(m),(n), and (o))
410 Minimum Participation Standards (excluding subsections (c) and (d))
411 Minimum Vesting Standards (excluding subsection (e))
413 Collectively Bargained Plans, etc.
414 Definitions and Special Rules – controlled group, multiemployer, mergers, HCE, SLOB, compensation (excluding subsections (d), (e), (u), and (w))
415 Limitations on benefits & contributions (excluding subsections (m) and (n))
416 Top heavy rules
417 Minimum Survivor Annuity Requirements
420 Transfers of excess pension assets to retiree health or applicable life insurance accounts
436 Funding based limits on benefits and benefit accruals under single employer defined benefit plans
1563 Definitions and Special Rules
4974 Excise Tax on Certain Accumulations in Qualified Retirement Plans

4975	Tax on Prohibited Transactions
4980	Tax on Reversion of Qualified Plan Assets to Employer
4980F	Failure of Applicable Plans Reducing Benefit Accruals to Satisfy Notice Requirements
6057	Annual Registration
6058	Information Required in Connection with Certain Plans of Deferred Compensation
6059	Periodic Report of Actuary

Joint Board regulations (20 CFR Part 901.20) governing the performance of actuarial services under ERISA

Treasury Department Circular No. 230 (31 CFR Part 10) Section 10.3

IRS PROMULGATIONS

REGULATIONS

1.401(a)-1	Normal retirement age
1.401(a)(4)	Nondiscrimination requirements
1.401(a)(9)	Minimum Distribution (-1, -2, -3, -6 except Q&A-12)
1.401(a)(26)	Minimum participation requirements
1.401(*l*)	Permitted disparity
1.410(b)	Minimum coverage requirements
1.411(a)(13)-1	Hybrid plans
1.411(b)(5)-1	Age nondiscrimination requirements
1.411(d)-2	Nonforfeitability of benefits, termination or partial termination of a plan
1.411(d)-3	Section 411(d)(6) protected benefits
1.411(d)-4	Section 411(d)(6) protected benefits
1.414(s)	Definition of Compensation
1.414(q)-1T	Highly compensated employees
1.415(a)-1	General rules with respect to limitations on benefits and compensations under qualified plans
1.415(b)-1	Limitations for defined benefit plans
1.415(c)-1	Limitations for defined contribution plans
1.415(c)-2	Compensation
1.415(d)-1	Cost of living adjustments
1.415(f)-1	Aggregating plans
1.415(g)-1	Disqualification of plans and trusts
1.415(j)-1	Limitation year
1.416-1	Questions and answers to top-heavy plans
1.417(a)(3)-1	Disclosure on relative values of optional forms of benefit
1.436-1(a)	General rules
1.436-1(b)	Limitation on shutdown benefits and other unpredictable contingent event benefits
1.436-1(c)	Limitations on plan amendments increasing liability for benefits
1.436-1(d)	Limitation on prohibited payments
1.436-1(e)	Limitation on benefit accruals for plans with severe funding shortfalls
1.436-1(f)	Methods to avoid or terminate benefit limitations
1.436-1(g)	Rules of operation for periods prior to and after certification
1.436-1(h)	Presumed underfunding for purposes of benefit limitations
1.436-1(j)	Definitions
54.4980F-1	Final regulations implementing section 659 of EGTRRA
301.6057-1	Employee retirement benefit plans; identification of participant with deferred vested retirement benefit
301.6057-2	Employee retirement benefit plans; notification of change in plan status
301.6058-1	Information required in connection with certain plans of deferred compensation
301.6059-1	Periodic report of actuary

REVENUE RULINGS

81-11	Minimum accrued benefits; fractional rule; break-in service
81-140	Suspension of benefits due to reemployment
89-60	Interest rates used in determining employees' "accumulated contributions"
2002-42	Partial termination merger or conversion of money purchase plan: IRC section 4980F notice and 204(h) of ERISA
2002-43	General rules relating to excise tax on prohibited transactions
2003-65	Vesting service upon resumption of accruals
2003-85	Application of IRC section 4980 excise tax
2007-43	Partial termination, turnover
2012-4	Rollover from qualified defined contribution plan to qualified defined benefit plan to obtain additional annuity
2013-17	Effect of Windsor decision on certain federal tax matters.

NOTICES

97-75	Guidance relating to the amendments to the minimum distribution requirements of section 401(a)(9) of the Code made by section 1404 of the Small Business Job Protection Act of 1996, Pub. L. 104-188
2008-30	Sections III and IV – Guidance on PPA changes to IRC sections 401(a)(11) and 417
2010-15	Miscellaneous HEART Act changes
2014-19	Application of Windsor decision and Rev. Rul. 2013-17 to qualified retirement plans

PBGC PROMULGATIONS

REGULATIONS

4001	General and Definitions
4006	Computing Premiums
4007	Paying Premiums
4010	Notification to PBGC
4022	Guaranteed Benefits
4041	Terminations
4043	Reportable Events
4044	Allocation of Assets
4050	Missing Participants
4062	Termination Liability for Sponsor
4211	Multiemployer Plan Withdrawal Liability
4219	Multiemployer Plan Withdrawal Liability

PBGC TECHNICAL UPDATES

00-7	Increased Guarantee Limit for Multiemployer Plans
08-4	Lump Sum Issues in Standard Terminations
09-2	Section 4010 Reporting
10-3	Withdrawal Liability for Multiemployer Plans in Critical Status
11-1	Reportable Events
12-1	Effect of MAP-21 on PBGC Premiums
12-2	Effect of MAP-21 on 4010 Reporting
13-1	Reportable Events
14-1	Effect of HATFA on PBGC Premiums
14-2	Effect of HATFA on 4010 Reporting
17-1	Active Participant Reduction Reportable Events

DOL PROMULGATIONS

REGULATIONS

	DEFINITIONS
2510.3-2	Definition of pension plans
2510.3-21	Definition of fiduciary
	REPORTING AND DISCLOSURE
2520.101-5	Annual funding notice for defined benefit plans
2520.101-6	Multiemployer pension plan information made available on request
2520.102-2	Style and format of summary plan description
2520.102-3	Contents of summary plan description
2520.104b-2	Summary plan description
2520.103-1	Contents of the annual report
2520.103-10	Annual report financial schedules
2520.104-42	Waiver of certain actuarial information in the annual report
2520.104-46	Waiver of examination and report of an independent qualified public accountant for employee benefit plans with fewer than 100 participants
2520.104a-5	Annual report filing requirements
2520.104b-3	Summary of material modifications to the plan and changes in the information required to be included in the SPD
2520.104b-10	Summary annual report (SAR)
2520.107-1	Use of electronic media for maintenance and retention of records
	FIDUCIARY RESPONSIBILITY
2550.403a-1	Establishment of trust
2550.403b-1	Exemptions from trust requirement
2550.404a-4	Selection of annuity providers – safe harbor for individual account plans
2550.408b-2	General statutory exemption for services or office space
2550.408c-2	Compensation for services
	ADMINISTRATION AND ENFORCEMENT
82 FR 5373, 5384-5385	Federal Civil Penalties Inflation Adjustment Act Catch-Up Adjustments for ERISA penalties under the Title I sections listed above (see the final regulation in the Federal Register for 29 CFR 2575.1 through .3)

INTERPRETIVE BULLETINS

2509.75-2	Prohibited Transactions
2509.75-4	Indemnification of fiduciaries
2509.75-5 & 2509.75-8	Questions and answers relating to fiduciary responsibility
2509.75-6	Section 408(c)(2) of ERISA
2509.75-9	Guidelines on independence of accountant retained by employee benefit plan
2509.95-1	Fiduciary standard under ERISA when selecting an annuity provider for a defined benefit pension plan
2509.2015-01	Fiduciary standard under ERISA in considering economically targeted investments.

FIELD ASSISTANCE BULLETINS

2013-01	ERISA's Annual Funding Notice Requirements Following the Moving Ahead for Progress in the 21st Century Act
2015-01	ERISA's Annual Funding Notice Requirements Following the Highway and Transportation Funding Act of 2014

SOCIETY OF ACTUARIES STUDY MATERIAL

The Society of Actuaries has developed various study notes for the use of students preparing for its examinations on these subjects. These study notes are revised periodically, and new study notes may be added.

Pension Plan Terminations

Contributory Pension Plans after OBRA '89

Tax Forms

Summary of Economic Growth and Tax Relief Reconciliation Act of 2001 (EGTRRA) Provisions Relating to Pension and Profit-Sharing Plans

Penalty Taxes under the U.S. Internal Revenue Code

Commutation Functions

It should be realized, however, that such material was not necessarily drawn up with the particular nature of the Joint Board examinations in mind.

The Society of Actuaries also suggests the following text:

> McGinn, Daniel F., *Multi-employer Retirement Plans: Handbook for the 21st Century (2003)*; International Foundation of Employee Benefits; P.O. Box 69, Brookfield, WI 53008

AMERICAN SOCIETY OF PENSION PROFESSIONALS AND ACTUARIES STUDY MATERIAL

The American Society of Pension Professionals and Actuaries (ASPPA) suggest the following books. These books, while not designed specifically for the examination, cover much of the syllabus and more.

> McGhie, G. N., *The Defined Benefit Answer Book* (Current Edition), Aspen Publishers; 7201 McKinney Circle; P.O. Box 990; Frederick, MD 21701

> Tripodi, Sal L., *The ERISA Outline Book*, (Current Edition)

The ERISA Outline Book is available from ASPPA.

CONDITIONS GENERALLY APPLICABLE TO ALL EA-2 (SEGMENT L) EXAMINATION QUESTIONS

If applicable, the following conditions should be considered a part of the data for each question, unless otherwise stated or implied.

For purposes of this examination, IRS, Treasury and PBGC releases granting disaster relief should be ignored.

GENERAL CONDITIONS REGARDING PLAN PROVISIONS

(1) "Plan" or "pension plan" means a defined benefit pension plan.

(2) The plan is qualified under IRC section 401. Thus, for example, any benefit formulas should be understood to be limited by other plan provisions required by the Code.

(3) The normal retirement age is 65.

(4) Retirement pensions commence at normal retirement age and are paid monthly for the life of the retiree at the beginning of each month.

(5) The plan covers all active employees of the employer; there is no age or service requirement for participation. Thus, when referring to active employees, the terms "employee" and "participant" are synonymous.

(6) There are no, and never have been any, mandatory or voluntary employee contributions.

(7) Service for purposes of vesting and benefit accrual is credited on the basis of time elapsed since date of hire.

(8) When the normal retirement benefit is computed as a dollar amount, or as a percentage of compensation, for each year of service, the accrued benefit is defined likewise.

(9) Actuarial equivalence is based on the mortality table and interest rate assumed for funding purposes.

(10) Qualified joint and survivor annuities, qualified pre-retirement survivor annuities, and any other specified forms of payment are provided in such manner that they result in no cost to the employer.

(11) The plan has not been amended since its effective date.

(12) The adoption date of any plan or amendment is the same as its effective date.

(13) The terms "applicable mortality (table)" and "applicable interest (rate)" are as defined in IRC section 417(e)(3).

(14) The plan is not an applicable defined benefit plan described in IRC section 411(a)(13)(C) unless otherwise stated.

GENERAL CONDITIONS REGARDING FUNDING

(15) Any actuarial valuation encompasses not only all active employees but also retired employees, beneficiaries, alternate payees, and former employees entitled to vested deferred pensions.

(16) The terms "value of plan assets," "actuarial value of assets," and "market value of assets" mean the values developed for purposes of IRC section 412, 430, and 431 before being adjusted for items such as the existing credit balance, funding standard carryover balance, prefunding balance, or the outstanding balances of certain bases.

(17) All actuarial assumptions are deemed "reasonable" and meet the "best estimate" criterion.

GENERAL CONDITIONS REGARDING NONDISCRIMINATION TESTING

(18) For purposes of nondiscrimination testing under IRC section 401(a)(4), grouping of allocation rates or accrual rates has not been used.

(19) For purposes of coverage testing under IRC section 410(b), "snapshot" testing is not used and permitted disparity is not imputed.

GENERAL CONDITIONS REGARDING BENEFIT RESTRICTIONS

(20) AFTAPs have been certified on a timely basis.

(21) The plan has provisions for automatically restoring accruals ceased due to the application of IRC section 436, to the extent permitted by regulations, and the plan's actuary has provided the required certification to permit such restoration.

MISCELLANEOUS GENERAL CONDITIONS

(22) All plan provisions and funding comply with all temporary and final regulations under the Internal Revenue Code and ERISA, as amended through November 30, 2017, and proposed regulations as listed in the Suggested Readings.

(23) The plan is sponsored by a single employer; the sponsoring employer is a taxable entity and is not a member of a controlled group.

(24) The plan is not established or maintained in connection with a collectively bargained agreement.

(25) Employees subject to a collective bargaining agreement are non-professional. If employees covered by a collective bargaining agreement are covered by the plan, their coverage is pursuant to that collective bargaining agreement.

(26) The plan year, the employer's limitation year, and the employer's tax year are all the calendar year.

(27) The employer has never maintained a defined contribution plan or another defined benefit plan. No employee has been covered by a defined contribution or defined benefit plan that is required to be aggregated with his employer's plans for purposes of IRC section 415.

(28) Where IRC section 401(a)(17) applies, compensation does not exceed these limits unless sufficient information to apply the limits is provided.

(29) Benefits do not exceed IRC section 415 limits unless sufficient information to apply these limits is provided.

(30) The plan is covered by the PBGC.

(31) All union plans are collectively bargained and all union employees are subject to collective bargaining.

(32) The plan sponsor is not now, and never has been, in bankruptcy.

(33) The PBGC has determined that a terminated plan was terminated for a legitimate business purpose.

(34) References to law and regulation section numbers are for clarity and can be assumed to be correct.

(35) Even if not so, assume all due dates are NOT Saturdays, Sundays, or holidays.

(36) Disregard any industry-specific rules. Furthermore, plans are not eligible for PPA delayed effective dates (PPA sections 104-106).

(37) The plan has not been top-heavy in any year.

(38) A multiemployer plan has never applied for approval to suspend benefits as provided in IRC section 432(e)(9).

If applicable, the preceding conditions should be considered a part of the data for each question, unless otherwise stated or implied.

LIMITS AND TABLES
(Included with the 2018 EA-2 (Segment L) examination)

Compensation Limit IRC section 401(a)(17)	
Year	Limit
2000-2001	170,000
2002-2003	200,000
2004	205,000
2005	210,000
2006	220,000
2007	225,000
2008	230,000
2009-2011	245,000
2012	250,000
2013	255,000
2014	260,000
2015-2016	265,000
2017	270,000
2018	275,000

Maximum Benefit Limit IRC section 415(b)	
Year	Limit at SSRA
2000	135,000
2001	140,000
Year	Limit at 65
2002-2003	160,000
2004	165,000
2005	170,000
2006	175,000
2007	180,000
2008	185,000
2009-2011	195,000
2012	200,000
2013	205,000
2014-2016	210,000
2017	215,000
2018	220,000

Nondiscriminatory Classification Test IRC section 410(b)		
Nonhighly compensated employee concentration percentage	Safe harbor percentage	Unsafe harbor percentage
0-60	50.00	40.00
61	49.25	39.25
62	48.50	38.50
63	47.75	37.75
64	47.00	37.00
65	46.25	36.25
66	45.50	35.50
67	44.75	34.75
68	44.00	34.00
69	43.25	33.25
70	42.50	32.50
71	41.75	31.75
72	41.00	31.00
73	40.25	30.25
74	39.50	29.50
75	38.75	28.75
76	38.00	28.00
77	37.25	27.25
78	36.50	26.50
79	35.75	25.75
80	35.00	25.00
81	34.25	24.25
82	33.50	23.50
83	32.75	22.75
84	32.00	22.00
85	31.25	21.25
86	30.50	20.50
87	29.75	20.00
88	29.00	20.00
89	28.25	20.00
90	27.50	20.00
91	26.75	20.00
92	26.00	20.00
93	25.25	20.00
94	24.50	20.00
95	23.75	20.00
96	23.00	20.00
97	22.25	20.00
98	21.50	20.00
99	20.75	20.00

LIMITS AND TABLES
(Included with the 2018 EA-2 (Segment L) examination)

Permitted Disparity Tables IRC section 401(*l*)

Age at benefit Commencement	SSRA 65	SSRA 66	SSRA 67	Simplified Table
	Annual factor in maximum excess allowance and maximum offset allowance percent			
70	1.209	1.101	1.002	1.048
69	1.096	0.998	0.908	0.950
68	0.996	0.907	0.825	0.863
67	0.905	0.824	0.750	0.784
66	0.824	0.750	0.700	0.714
65	0.750	0.700	0.650	0.650
64	0.700	0.650	0.600	0.607
63	0.650	0.600	0.550	0.563
62	0.600	0.550	0.500	0.520
61	0.550	0.500	0.475	0.477
60	0.500	0.475	0.450	0.433
59	0.475	0.450	0.425	0.412
58	0.450	0.425	0.400	0.390
57	0.425	0.400	0.375	0.368
56	0.400	0.375	0.344	0.347
55	0.375	0.344	0.316	0.325

FICA Taxable Wage Base

Year	Limit
2000	76,200
2001	80,400
2002	84,900
2003	87,000
2004	87,900
2005	90,000
2006	94,200
2007	97,500
2008	102,000
2009-2011	106,800
2012	110,100
2013	113,700
2014	117,000
2015-2016	118,500
2017	127,200
2018	128,700

Key Employee Compensation IRC section 416

Year	Officer	1% owner
2003	130,000	150,000
2004	130,000	150,000
2005	135,000	150,000
2006	140,000	150,000
2007	145,000	150,000
2008	150,000	150,000
2009-2011	160,000	150,000
2012-2013	165,000	150,000
2014-2016	170,000	150,000
2017-2018	175,000	150,000

Highly Compensated Employee Compensation IRC section 414(q)

Year	Limit
2000-2001	85,000
2002-2004	90,000
2005	95,000
2006	100,000
2007	100,000
2008	105,000
2009-2011	110,000
2012-2014	115,000
2015-2018	120,000

LIMITS AND TABLES (Included with the 2018 EA-2 (Segment L) examination)

Maximum PBGC Guaranteed Life-Only Annuity at Age 65	
Year	Monthly Benefit
2001	3,392.05
2002	3,579.55
2003	3,664.77
2004	3,698.86
2005	3,801.14
2006	3,971.59
2007	4,125.00
2008	4,312.50
2009-2011	4,500.00
2012	4,653.41
2013	4,789.77
2014	4,943.18
2015-2016	5,011.36
2017	5,369.32
2018	5,420.45

FACTORS USED TO ADJUST MAXIMUM PBGC GUARANTEED BENEFITS FOR PAYMENTS OTHER THAN AS A SINGLE LIFE ANNUITY AT AGE 65

Commencement Age	
Age	Factor
75	3.04
74	2.76
73	2.48
72	2.21
71	1.93
70	1.66
69	1.49
68	1.34
67	1.21
66	1.10
65	1.00
64	0.93
63	0.86
62	0.79
61	0.72
60	0.65
59	0.61
58	0.57
57	0.53
56	0.49
55	0.45
54	0.43
53	0.41
52	0.39
51	0.37
50	0.35
49	0.33
48	0.31
47	0.29
46	0.27
45	0.25

Form of Payment Certain & Life*	
Years	Factor
1	0.995
2	0.990
3	0.985
4	0.980
5	0.975
6	0.965
7	0.955
8	0.945
9	0.935
10	0.925

*Reduction decreases by 0.01 per year in excess of 10.

Age Difference For J&S and J&C Beneficiary		
Difference	Younger	Older
1	0.99	1.005
2	0.98	1.010
3	0.97	1.015
4	0.96	1.020
5	0.95	1.025
6	0.94	1.030
7	0.93	1.035
8	0.92	1.040
9	0.91	1.045
10	0.90	1.050

Form of Payment Joint & Contingent (J&C)		
Percent	Factor	with 10 yr Certain
50%	0.900	×0.960
66 2/3 %	0.867	×0.970
75%	0.850	×0.975
100%	0.800	×0.990

Form of Payment Joint & Survivor (J&S)	
Percent	Factor
50%	1.00
66 2/3 %	0.93
75%	0.90
100%	0.80

PBGC Premium Rates				
	Single Employer Plans			Multiemployer Plans
		Variable-Rate Premium		
Plan Years Beginning in:	Per Participant Rate for Flat-rate Premium	Rate per $1,000 UVBs	Per Participant Cap	Per Participant Rate for Flat-rate Premium
2008	33.00	9.00	N/A	9.00
2009	34.00	9.00	N/A	9.00
2010	35.00	9.00	N/A	9.00
2011	35.00	9.00	N/A	9.00
2012	35.00	9.00	N/A	9.00
2013	42.00	9.00	400.00	12.00
2014	49.00	14.00	412.00	12.00
2015	57.00	24.00	418.00	26.00
2016	64.00	30.00	500.00	27.00
2017	69.00	34.00	517.00	28.00
2018	74.00	38.00	523.00	28.00

PENSION EA-2 (SEGMENT F) EXAMINATION
NOVEMBER 2018

The EA-2 (Segment F) examination is four hours in length and covers the calculation of minimum required contributions and deductible limits under current pension law for both single-employer and multiemployer plans, along with related topics including actuarial mathematics, assumption selection, and excise taxes.

Please note that EA-2 (Segment F) presupposes knowledge of the topics covered in the EA-1 examination and in the EA-2 (Segment L) examination. Therefore, a candidate taking the EA-2 (Segment F) examination is responsible for all topics covered on the EA-2 (Segment L) examination, even if a particular topic does not appear in the syllabus or the reading list for EA-2 (Segment F). Questions on the EA-2 (Segment F) examination will focus on the effect of the law on funding requirements. Questions on the EA-2 (Segment L) examination will focus on the effect of the law on non-funding aspects.

Questions on the Pension EA-2 (Segment F) examination may contain commutation functions. **Candidates are expected to understand and be able to use commutation functions**. Candidates who are not familiar with commutation functions may wish to read the SOA Study Note "Commutation Functions".

SYLLABUS

Actuarial cost methods, including unit credit, projected unit credit, entry age normal, individual level premium, aggregate, individual aggregate, attained age normal, frozen initial liability, shortfall, one-year term, and variations thereof.

Determination of the actuarial (i.e. smoothed) value of assets.

Valuation of ancillary benefits.

Selection of assumptions.

Valuation techniques for handling employee contributions.

Effect on valuation results of various patterns of experience, including experience with respect to investment earnings, changes in asset value, mortality, disability, employee turnover, changes in compensation, retirement, choice of retirement options, and Social Security.

Effect on valuation results of changes in plan provisions, actuarial cost methods, asset valuation methods, and actuarial assumptions.

Minimum funding requirements including, but not limited to:

> For single employer plans (including multiple employer plans), determination of the minimum required contribution, including calculation of funding target and target normal cost, at-risk provisions, transition rules, effects of IRC section 436 on plan funding, PRA funding relief and interest stabilization provisions, funding balance(s), and waivers of minimum required contributions.
>
> For multiemployer plans, the basics of the minimum funding standards including those for plans in critical, endangered, or critical and declining status, amortization periods, credit balance, funding standard account, amortization period extensions, and waivers of funding deficiencies.
>
> Required quarterly contributions and liquidity shortfall.

Deductible limits for federal income tax purposes.

Penalty taxes for failures to meet minimum funding standards.

SUGGESTED READINGS FOR EA-2 (SEGMENT F)

The Advisory Committee on Actuarial Examinations believes that most (if not all) of the topics in the syllabus are covered in one or more of the following sources. There is a great deal of overlap among the books listed below. Candidates do not need to use them all. The references listed below are to identify available resources from which the candidate may select. This list is not meant to describe or modify the syllabus listed above. Pension law and IRS promulgations can be found in publications of Warren, Gorham & Lamont, Commerce Clearing House, Maxwell Macmillan, Research Institute of America, and similar organizations.

Please note that EA-2 (Segment F) presupposes knowledge of the topics covered in the EA-1 examination and in the EA-2 (Segment L) examination. Therefore, a candidate taking the EA-2 (Segment F) examination is responsible for all topics covered on the EA-2 (Segment L) examination, even if a particular topic does not appear in the syllabus or the reading list for EA-2 (Segment F).

Aitken, W.H., *A Problem-Solving Approach to Pension Funding and Valuation*, (2nd Edition–1996); ACTEX Publications, P.O. Box 974, Winsted, CT 06098

Anderson, A.W., *Pension Mathematics for Actuaries*, (3rd Edition–2006);
ACTEX Publications, P.O. Box 974, Winsted, CT 06098

Berin, B. N., *Fundamentals of Pension Mathematics*, (1989);
Society of Actuaries, 475 N. Martingale Road, Suite 600, Schaumburg, IL 60173-2226

Farrimond, W., Mayer, D., Farber, D., and Matray, G., *Actuarial Cost Methods, A Review (3rd Edition–1999)*; ASPPA Book Order Department, Department 417, P.O. Box 753, Waldorf, MD 02604

Actuarial Standard of Practice No. 4, “Measuring Pension Obligations and Determining Pension Plan Cost or Contributions”

Actuarial Standard of Practice No. 27, “Selection of Economic Assumptions for Measuring Pension Obligations”

Actuarial Standard of Practice No. 35, “Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations”

Actuarial Standard of Practice No. 51, “Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Plan Contributions”

Employee Retirement Income Security Act of 1974 (ERISA) sections 206(g), 302, 303, 304, and 305, as amended through May 31, 2016

Current Schedules SB and MB of Form 5500, including instructions

Current IRS Form 5330, including instructions

- Line 1 / Schedule A – Tax on nondeductible contributions (Section 4972)
- Line 8 / Schedule D – Tax on failure to meet minimum funding standards (Sections 4971(a) and (b))
- Line 9 / Schedule E – Tax on failure to pay liquidity shortfall (Sections 4971(f)(1) and (2))
- Line 10 / Schedule F – Tax on multiemployer plans in endangered or critical status (Sections 4971(g)(2), (3) and (4))

INTERNAL REVENUE CODE SECTIONS, AS AMENDED THROUGH MAY 31, 2018

404	Deductible employer contributions to a deferred-payment plan
412	Minimum funding standards
413	Collectively bargained plans, etc.
414(*l*)	Mergers and consolidations of plans or transfers of plan assets
417(e)	Restrictions on cash outs
418	Multiemployer plan reorganization rules
430	Minimum funding requirements for single-employer defined benefit pension plans
431	Minimum funding requirements for multiemployer defined benefit plans
432	Additional funding rules for multiemployer plans in endangered status or critical status
436	Funding-based limits on benefits and benefit accruals under single-employer defined benefit plans
4971	Taxes on failure to meet minimum funding standards
4972	Tax on nondeductible contributions to qualified employer plans
6059	Periodic report of actuary

REGULATIONS

1.401(a)(2)-1	Refund of mistaken contributions and withdrawal liability payments to multiemployer plans
1.404(a)-14	Special rules in connection with ERISA – Deductible Limits
11.412(c)-12	Extension of time to make contributions
1.412(c)(1)-1	Determinations to be made under funding method
1.412(c)(1)-2	Shortfall method
1.412(c)(2)-1	Valuation of plan assets; reasonable actuarial methods
1.412(c)(3)-1	Reasonable funding methods
1.414(*l*)-1	Mergers and consolidations of plans or transfers of plan assets
1.417(e)-1	Restrictions and valuations of distributions from plans subject to sections 401(a)(11) and 417
1.430(a)-1	Determination of minimum required contribution
1.430(d)-1	Determination of target normal cost and funding target
1.430(f)-1	Effect of prefunding balance and funding standard carryover balance
1.430(g)-1	Valuation date and valuation of plan assets
1.430(h)(2)-1	Interest rates used to determine present value
1.430(h)(3)-1	Mortality tables used to determine present value
1.430(i)-1	Special rules for plans in at-risk status
1.430(j)-1	Payment of minimum required contributions
1.431(c)(6)-1	Mortality tables used to determine current liability
1.436-1(a)	General rules
1.436-1(f)	Methods to avoid or terminate benefit limitations
1.436-1(j)	Definitions
301.6059-1	Periodic report of actuary
54.4971(c)-1	Taxes on failure to meet minimum funding standards

PROPOSED REGULATIONS

1.432(a)-1	General rules relating to section 432
1.432(b)-1	Determination of status and adoption of a plan

REVENUE RULINGS

77-2	Change in benefit structure after valuation date
78-48	Assumptions & methods specified in plan
78-331	Assumption that employees retire at normal retirement date
79-237	Terminating plan – funding standard account and penalty taxes
80-315	Supplementary benefits
81-13	Full funding limitation
81-136	Election to receive benefits less than plan provides
81-137	Separate funding account for separate plans
81-195	Effect of 415 limits on minimum and maximum contribution levels, and inability to project future increases in limits for funding purposes
81-213	Experience gains & losses, amortizations
81-214	Interest charges in funding standard account
81-215	Effect of 415 limits after valuation date but within plan year
82-125	Full funding limitation and deductible limit
84-62	Deductible limit under 404(a)(1)(A)
85-131	Reasonable allocation of past and future liabilities under unit credit method when 415 limit is involved
86-48	Determining "Benefits on a Termination Basis" for the purpose of a spin-off. (i.e. early retirement benefits, optional forms, …)
96-7	Disability mortality tables
2000-20	Minimum funding standards – funding standard account – amortization bases
2001-51	Limitations on benefits and contributions under qualified plans
2003-83	Entry age normal funding method
2007-67	Calculation of minimum present value under IRC section 417(e)(3)

NOTICES

2009-22	Asset valuation methods for single employer defined benefit plans under WRERA
2010-83	Funding relief for multiemployer defined benefit plans under PRA 2010
2011-3	Funding relief for single-employer plans under PRA 2010
2011-96	Model amendment, benefit restrictions under section 436
2012-61	Guidance on pension stabilization under the Moving Ahead for Progress in the 21st Century Act (MAP-21), Exclude sections III.H, T and E
2016-50	Updated static mortality tables for defined benefit pension plans for 2017
2017-44	417(e) model language

REVENUE PROCEDURES

87-27	Plan year changes
90-49	Recovery of excess contributions
2000-40	Automatic approval for change of funding method (plans <u>not</u> subject to IRC section 430, as modified by Rev. Proc. 2017-56)
2017-56	Automatic approval for change of funding method (plans subject to IRC section 430)
2017-57	Changes in funding method

SOCIETY OF ACTUARIES STUDY MATERIAL

The Society of Actuaries has developed various study notes for the use of students preparing for its examinations on these subjects. These study notes are revised periodically, and new study notes may be added.

Excerpt on Plan Qualification

Assessment and Selection of Actuarial Assumptions for Measuring Pension Obligations

Penalty Taxes Under the U.S. Internal Revenue Code

Commutation Functions

It should be realized, however, that such material was not necessarily drawn up with the particular nature of the Joint Board examinations in mind.

The Society of Actuaries also suggests the following text:

> McGinn, Daniel F., *Multi-employer Retirement Plans: Handbook for the 21st Century (2003)*; International Foundation of Employee Benefits; P.O. Box 69, Brookfield, WI 53008

AMERICAN SOCIETY OF PENSION PROFESSIONALS AND ACTUARIES STUDY MATERIAL

The American Society of Pension Professionals and Actuaries (ASPPA) suggests the following books. These books, while not designed specifically for the examination, cover much of the syllabus and more.

> McGhie, G. N., *The Defined Benefit Answer Book* (Current Edition), Aspen Publishers; 7201 McKinney Circle; P.O. Box 990; Frederick, MD 21701

> Tripodi, Sal L., *The ERISA Outline Book*, (Current Edition)

The ERISA Outline Book is available from ASPPA.

CONDITIONS GENERALLY APPLICABLE TO ALL EA-2 (SEGMENT F) EXAMINATION QUESTIONS

If applicable, the following conditions should be considered a part of the data for each question, unless otherwise stated or implied.

For purposes of this examination, IRS, Treasury and PBGC releases granting disaster relief should be ignored.

GENERAL CONDITIONS REGARDING PLAN PROVISIONS

(1) "Plan" or "pension plan" means a defined benefit pension plan.

(2) The plan is qualified under IRC section 401. Thus, for example, any benefit formulas should be understood to be limited by other plan provisions required by the Code.

(3) The normal retirement age is 65.

(4) Retirement pensions commence at normal retirement age and are paid monthly for the life of the retiree at the beginning of each month.

(5) The plan covers all active employees of the employer; there is no age or service requirement for participation. Thus, when referring to active employees, the terms "employee" and "participant" are synonymous.

(6) There are no, and never have been any, mandatory or voluntary employee contributions.

(7) Service for purposes of vesting and benefit accrual is credited on the basis of time elapsed since date of hire.

(8) When the normal retirement benefit is computed as a dollar amount, or as a percentage of compensation, for each year of service, the accrued benefit is defined likewise.

(9) Actuarial equivalence is based on the mortality table and interest rate assumed for funding purposes.

(10) Qualified joint and survivor annuities, qualified pre-retirement survivor annuities, and any other specified forms of payment are provided in such manner that they result in no cost to the employer.

(11) The plan has not been amended since its effective date.

(12) The adoption date of any plan or amendment is the same as its effective date.

(13) The terms "applicable mortality (table)" and "applicable interest (rate)" are as defined in IRC section 417(e)(3).

(14) The plan is not an applicable defined benefit plan described in IRC section 411(a)(13)(C).

GENERAL CONDITIONS REGARDING FUNDING

(15) Any actuarial valuation includes not only all active employees but also retired employees, beneficiaries, alternate payees, and former employees entitled to vested deferred pensions.

(16) The valuation date is the first day of the plan year; i.e., participant data, present values, asset values, etc. are as of that date. Also, normal costs and target normal costs are payable annually, the first being due on the valuation date.

(17) The assumed retirement age is the normal retirement age.

(18) There are no pre-retirement decrements.

(19) All actuarial assumptions are deemed "reasonable" and meet the "best estimate" criterion.

(20) The actuarial cost method, or funding method, is "reasonable" within the meaning of all relevant IRC sections and the regulations thereunder.

(21) Where the normal cost under an actuarial cost method may be computed as either a level percentage of compensation or a level dollar amount, the level percentage approach is used if the plan benefits are based on compensation, and the level dollar approach is used if they are not.

(22) Under the frozen initial liability method, whenever there is a change in the plan, actuarial assumptions, or asset valuation method, the unfunded liability is adjusted by adding to it the resulting change (positive or negative) in the unfunded entry age normal accrued liability due to the change. Likewise, under the attained age normal method, the unfunded liability is adjusted by adding to it the change in the unfunded unit credit accrued liability.

(23) For multiemployer plans, all funding method changes after 1999 were made in accordance with Rev. Proc. 2000-40. Bases established because of funding method changes prior to 2000 are amortized over 10 years from the date established.

(24) The unit credit funding method is as defined in Rev. Proc. 2000-40.

(25) Ancillary benefits are funded using the same method as the retirement benefits. They are not funded on a term cost basis.

(26) For purposes of spreading future normal costs under spread-gain methods, the present value of future compensation is not limited by IRC section 401(a)(17).

(27) The terms "value of plan assets", "actuarial value of assets" and "market value of assets" mean the values developed for purposes of IRC section 412, 430, and 431 before being adjusted for items such as the existing credit balance, funding standard carryover balance, prefunding balance, or the outstanding balances of certain bases.

(28) The plan sponsor does not elect to reduce the amount of the funding standard carryover balance and/or prefunding balance pursuant to IRC section 430(f)(5) prior to the determination of the value of plan assets for the plan year or prior to the application of the balances in reducing the minimum required contribution for the plan year.

(29) The plan sponsor elects to add the maximum amount permitted to the prefunding balance.

(30) The plan has no funding standard carryover balance.

(31) Where a prefunding or funding standard carryover balance exists, the plan was at least 80% funded in the prior year and is therefore eligible to credit the balance(s) against the otherwise-applicable minimum required contribution.

(32) If eligible, the plan sponsor elects to credit the prefunding and funding standard carryover balances against the otherwise-applicable minimum required contribution.

(33) The actuarial cost method, asset valuation method, and actuarial assumptions have not been changed since the plan effective date except as required by PPA.

(34) The term **"<u>minimum required contribution</u>"** means the smallest contribution for a plan year which will prevent a funding deficiency or unpaid minimum for that plan year, without regard to the alternative minimum funding standard account, and **<u>before</u>** reflecting items such as the existing credit balance, funding standard carryover balance, or prefunding balance, as applicable. Amounts to be amortized are not combined or offset against one another.

(35) The term **"<u>smallest amount that satisfies the minimum funding standard</u>"** means the same as "minimum required contribution" **<u>except</u>** that it is determined **<u>after</u>** reflecting items such as the existing credit balance, funding standard carryover balance, or prefunding balance, as applicable. Amounts to be amortized are not combined or offset against one another.

(36) No waivers of funding deficiencies or extensions of amortization periods have been granted.

(37) The interest rate used for amortizing waivers and for extensions of amortization periods is the same as the valuation interest rate.

(38) The employer is taxable, and all employer contributions for each prior plan year have been deducted by the employer for its tax year coincident with such plan year.

(39) For purposes of determining the deductible limit for any year, the employer does not use (and has never used) the fresh-start alternative and does not combine (and has never combined) amortization bases.

(40) The full funding limitation has never applied and there has been no early deemed amortization of shortfall amortization bases.

(41) Expenses are paid directly by the employer, rather than from the assets of the plan, and therefore do not affect the funding of the plan.

(42) Assumed compensation increases first apply to the year immediately following the latest year for which valuation compensation is shown.

(43) The full funding limitations based on current liability shall be disregarded if sufficient information to determine such limitations is not provided.

(44) For purposes of determining the deductible limit, the unfunded current liability shall be disregarded if sufficient information to determine such liability is not provided.

(45) The plan is not currently in at-risk status nor has it ever been in at-risk status.

(46) The terms “at-risk funding target” and “at-risk target normal cost” mean the funding target and target normal cost calculated reflecting additional actuarial assumptions and loading factors (if applicable) for a plan in at-risk status prior to the application of any five-year transition as described in IRC section 430(i)(5).

(47) There have been no late quarterly contributions (and thus no associated interest penalties), and there is no liquidity shortfall, unless sufficient information to determine such amounts is provided.

GENERAL CONDITIONS REGARDING BENEFIT RESTRICTIONS

(48) AFTAPs have been certified on a timely basis.

(49) The plan has provisions for automatically restoring accruals ceased due to the application of IRC section 436, to the extent permitted by regulations, and the plan’s actuary has provided the required certification to permit such restoration.

MISCELLANEOUS GENERAL CONDITIONS

(50) All plan provisions and funding calculations comply with all temporary and final regulations under the Internal Revenue Code and ERISA, as amended through May 31, 2017, and proposed regulations as listed in the Suggested Readings.

(51) The plan is sponsored by a single employer; the sponsoring employer is a taxable entity and is not a member of a controlled group.

(52) The plan is not established or maintained in connection with a collective bargaining agreement.

(53) Employees subject to a collective bargaining agreement are non-professional. If employees covered by a collective bargaining agreement are covered by the plan, their coverage is pursuant to that collective bargaining agreement.

(54) The plan year, the employer's limitation year, and the employer's tax year are all the calendar year.

(55) The employer has never maintained a defined contribution plan or another defined benefit plan. No employee has been covered by a defined contribution or defined benefit plan that is required to be aggregated with his employer’s plans for purposes of IRC section 415.

(56) Where IRC section 401(a)(17) applies, compensation does not exceed these limits unless sufficient information to apply the limits is provided.

(57) Benefits do not exceed IRC section 415 limits unless sufficient information to apply these limits is provided.

(58) The plan is covered by the PBGC.

(59) All union plans are collectively bargained and all union employees are subject to collective bargaining.

(60) The plan sponsor is not now, and never has been, in bankruptcy.

(61) References to law and regulation section numbers are for clarity and can be assumed to be correct.

(62) Even if not so, assume all due dates are NOT Saturdays, Sundays, or holidays.

(63) Disregard any industry-specific rules. Furthermore, plans are not CSEC plans nor are they eligible for PPA delayed effective dates (PPA sections 104-106).

(64) The plan has not been top-heavy in any year.

(65) The plan sponsor did not elect funding relief under the Pension Relief Act of 2010 for any plan year.

(66) A multiemployer plan has never applied for approval to suspend benefits as provided in IRC section 432(e)(9).

If applicable, the preceding conditions should be considered a part of the data for each question, unless otherwise stated or implied.

IMPORTANT

THESE FACTORS MAY BE USED FOR ALL QUESTIONS UNLESS OTHER FACTORS ARE PROVIDED, FOR BOTH SINGLE EMPLOYER AND MULTIEMPLOYER PLANS

2018 EA-2 (Segment F) Examination - Selected Commutation Factors
Interest Rates: 3.0%, 4.0%, and 5.0%

MALES	Interest Rate = 3.0%		Interest Rate = 4.0%		Interest Rate = 5.0%		MALES
Age	D_x	$N_x^{(12)}$	D_x	$N_x^{(12)}$	D_x	$N_x^{(12)}$	Age
60	162,274	2,677,973	90,883	1,348,952	51,183	688,061	60
61	156,842	2,518,189	86,996	1,259,850	48,527	638,095	61
62	151,473	2,363,808	83,210	1,174,590	45,973	590,739	62
63	146,171	2,214,765	79,526	1,093,068	43,519	545,890	63
64	140,901	2,071,009	75,921	1,015,195	41,151	503,456	64
65	135,694	1,932,494	72,412	940,882	38,875	463,348	65
66	130,537	1,799,164	68,991	870,037	36,686	425,476	66
67	125,389	1,670,986	65,633	802,586	34,568	389,761	67
68	120,292	1,547,933	62,360	738,453	32,531	356,127	68
69	115,283	1,429,936	59,188	677,547	30,582	324,489	69
70	110,325	1,316,926	56,098	619,776	28,710	294,765	70
71	105,458	1,208,832	53,107	565,049	26,920	266,875	71
72	100,634	1,105,585	50,191	513,278	25,200	240,744	72
73	95,841	1,007,148	47,341	464,394	23,542	216,304	73
74	91,070	913,493	44,552	418,331	21,944	193,494	74
75	86,314	824,603	41,819	375,032	20,402	172,256	75
76	81,517	740,488	39,115	334,453	18,901	152,542	76
77	76,735	661,163	36,467	296,551	17,454	134,304	77
78	71,917	586,635	33,848	261,285	16,046	117,496	78
79	67,067	516,941	31,262	228,622	14,679	102,076	79
80	62,189	452,109	28,710	198,530	13,352	88,005	80
81	57,294	392,164	26,195	170,973	12,067	75,242	81
82	52,370	337,127	23,714	145,915	10,820	63,747	82
83	47,443	287,015	21,276	123,318	9,615	53,480	83
84	42,626	241,780	18,932	103,116	8,474	44,387	84
85	37,871	201,334	16,658	85,226	7,385	36,412	85

FEMALES	Interest Rate = 3.0%		Interest Rate = 4.0%		Interest Rate = 5.0%		FEMALES
Age	D_x	$N_x^{(12)}$	D_x	$N_x^{(12)}$	D_x	$N_x^{(12)}$	Age
60	163,808	2,824,169	91,742	1,413,464	51,667	717,030	60
61	158,332	2,662,871	87,822	1,323,519	48,988	666,591	61
62	152,933	2,507,013	84,012	1,237,443	46,417	618,781	62
63	147,606	2,356,521	80,306	1,155,129	43,947	573,497	63
64	142,337	2,211,330	76,695	1,076,478	41,570	530,639	64
65	137,135	2,071,378	73,181	1,001,393	39,288	490,115	65
66	131,993	1,936,599	69,760	929,780	37,095	451,832	66
67	126,900	1,806,941	66,424	861,549	34,984	415,704	67
68	121,871	1,682,346	63,178	796,613	32,958	381,649	68
69	116,905	1,562,751	60,021	734,883	31,013	349,582	69
70	111,998	1,448,095	56,948	676,270	29,145	319,426	70
71	107,145	1,338,322	53,957	620,693	27,351	291,103	71
72	102,370	1,233,366	51,057	568,065	25,634	264,539	72
73	97,626	1,133,170	48,222	518,308	23,981	239,662	73
74	92,951	1,037,687	45,472	471,346	22,398	216,407	74
75	88,306	946,864	42,784	427,106	20,873	194,708	75
76	83,743	860,649	40,183	385,514	19,417	174,502	76
77	79,218	778,980	37,646	346,493	18,018	155,726	77
78	74,684	701,840	35,150	309,991	16,663	138,329	78
79	70,191	629,215	32,718	275,955	15,363	122,261	79
80	65,741	561,064	30,349	244,323	14,115	107,471	80
81	61,335	497,342	28,043	215,031	12,918	93,905	81
82	56,976	438,006	25,799	188,016	11,771	81,512	82
83	52,667	383,005	23,619	163,216	10,674	70,244	83
84	48,413	332,288	21,503	140,567	9,625	60,051	84
85	44,223	285,795	19,453	120,004	8,624	50,885	85

IMPORTANT

THESE FACTORS MAY BE USED FOR ALL QUESTIONS UNLESS OTHER FACTORS ARE PROVIDED, FOR BOTH SINGLE EMPLOYER AND MULTIEMPLOYER PLANS

2018 EA-2 (Segment F) Examination - Selected Commutation Factors
Interest Rates: 5.0%, 6.0%, and 7.0%

MALES	Interest Rate = 5.0%		Interest Rate = 6.0%		Interest Rate = 7.0%		MALES
Age	D_x	$N_x^{(12)}$	D_x	$N_x^{(12)}$	D_x	$N_x^{(12)}$	Age
60	51,183	688,061	28,982	355,155	16,499	185,398	60
61	48,527	638,095	27,219	326,981	15,351	169,425	61
62	45,973	590,739	25,543	300,530	14,271	154,569	62
63	43,519	545,890	23,952	275,716	13,257	140,764	63
64	41,151	503,456	22,435	252,459	12,301	127,945	64
65	38,875	463,348	20,994	230,685	11,403	116,056	65
66	36,686	425,476	19,625	210,318	10,560	105,039	66
67	34,568	389,761	18,317	191,293	9,764	94,843	67
68	32,531	356,127	17,075	173,545	9,017	85,422	68
69	30,582	324,489	15,901	157,008	8,319	76,724	69
70	28,710	294,765	14,787	141,617	7,663	68,706	70
71	26,920	266,875	13,734	127,313	7,051	61,323	71
72	25,200	240,744	12,735	114,037	6,477	54,535	72
73	23,542	216,304	11,785	101,737	5,938	48,305	73
74	21,944	193,494	10,882	90,366	5,432	42,599	74
75	20,402	172,256	10,021	79,878	4,956	37,386	75
76	18,901	152,542	9,197	70,235	4,505	32,636	76
77	17,454	134,304	8,412	61,398	4,082	28,325	77
78	16,046	117,496	7,661	53,330	3,683	24,426	78
79	14,679	102,076	6,942	45,998	3,306	20,915	79
80	13,352	88,005	6,255	39,371	2,951	17,772	80
81	12,067	75,242	5,599	33,417	2,617	14,974	81
82	10,820	63,747	4,973	28,104	2,303	12,501	82
83	9,615	53,480	4,378	23,404	2,008	10,333	83
84	8,474	44,387	3,822	19,281	1,737	8,449	84
85	7,385	36,412	3,300	15,698	1,485	6,827	85

FEMALES	Interest Rate = 5.0%		Interest Rate = 6.0%		Interest Rate = 7.0%		FEMALES
Age	D_x	$N_x^{(12)}$	D_x	$N_x^{(12)}$	D_x	$N_x^{(12)}$	Age
60	51,667	717,030	29,256	368,392	16,655	191,553	60
61	48,988	666,591	27,478	339,951	15,496	175,429	61
62	46,417	618,781	25,790	313,247	14,408	160,431	62
63	43,947	573,497	24,187	288,192	13,387	146,491	63
64	41,570	530,639	22,663	264,703	12,426	133,545	64
65	39,288	490,115	21,217	242,703	11,524	121,532	65
66	37,095	451,832	19,844	222,115	10,678	110,395	66
67	34,984	415,704	18,538	202,870	9,882	100,082	67
68	32,958	381,649	17,299	184,900	9,136	90,542	68
69	31,013	349,582	16,125	168,139	8,436	81,728	69
70	29,145	319,426	15,011	152,525	7,779	73,593	70
71	27,351	291,103	13,954	137,998	7,164	66,095	71
72	25,634	264,539	12,955	124,502	6,589	59,195	72
73	23,981	239,662	12,005	111,983	6,049	52,853	73
74	22,398	216,407	11,106	100,390	5,544	47,036	74
75	20,873	194,708	10,253	89,674	5,070	41,709	75
76	19,417	174,502	9,448	79,791	4,628	36,842	76
77	18,018	155,726	8,684	70,693	4,214	32,403	77
78	16,663	138,329	7,956	62,342	3,825	28,368	78
79	15,363	122,261	7,265	54,703	3,460	24,710	79
80	14,115	107,471	6,612	47,737	3,120	21,406	80
81	12,918	93,905	5,994	41,408	2,802	18,432	81
82	11,771	81,512	5,411	35,681	2,505	15,766	82
83	10,674	70,244	4,860	30,523	2,229	13,387	83
84	9,625	60,051	4,341	25,900	1,973	11,275	84
85	8,624	50,885	3,853	21,783	1,735	9,412	85

2018 EA-2 (Segment F) Examination - Selected Amortization Factors

Segment Rates = {3.0%, 4.0%, 5.0%}

Remaining Period	Amortization Factor
7 years	6.3293
6 years	5.5390
5 years	4.7171
4 years	3.8286
3 years	2.9135
2 years	1.9709

Segment Rates = {5.0%, 6.0%, 7.0%}

Remaining Period	Amortization Factor
7 years	5.9982
6 years	5.2932
5 years	4.5460
4 years	3.7232
3 years	2.8594
2 years	1.9524

LIMITS AND TABLES

(Included with the 2018 EA-2 (Segment F) examination)

Maximum Benefit Limit IRC section 415(b)	
Year	Limit at SSRA
2000	135,000
2001	140,000
Year	Limit at 65
2002-2003	160,000
2004	165,000
2005	170,000
2006	175,000
2007	180,000
2008	185,000
2009-2011	195,000
2012	200,000
2013	205,000
2014-2016	210,000
2017	215,000
2018	220,000

Compensation Limit IRC section 401(a)(17)	
Year	Limit
2000-2001	170,000
2002-2003	200,000
2004	205,000
2005	210,000
2006	220,000
2007	225,000
2008	230,000
2009-2011	245,000
2012	250,000
2013	255,000
2014	260,000
2015-2016	265,000
2017	270,000
2018	275,000

Key Employee Compensation IRC section 416		
Year	Officer	1% owner
2003	130,000	150,000
2004	130,000	150,000
2005	135,000	150,000
2006	140,000	150,000
2007	145,000	150,000
2008	150,000	150,000
2009-2011	160,000	150,000
2012-2013	165,000	150,000
2014-2016	170,000	150,000
2017-2018	175,000	150,000

Highly Compensated Employee Compensation IRC section 414(q)	
Year	Limit
2000-2001	85,000
2002-2004	90,000
2005	95,000
2006	100,000
2007	100,000
2008	105,000
2009-2011	110,000
2012-2014	115,000
2015-2018	120,000