

## Question 1

ERISA regulation 2520.101-5(j) states that there is no requirement to provide the annual funding notice to the PBGC if plan liabilities do not exceed plan assets by more than \$50,000,000 for the notice year. There is no requirement to combine plans that are part of a controlled group, so each plan in this question can be treated separately.

Plan A: Funding target of \$850,000,000 is less than the actuarial value of assets of \$870,000,000, so the annual funding notice does not need to be provided to the PBGC.

Plan B: Funding target of \$950,000,000 exceeds the actuarial value of assets of \$890,000,000 by \$60,000,000 so the annual funding notice must be provided to the PBGC.

Plan C: Funding target of \$50,000,000 exceeds the actuarial value of assets of \$45,000,000 by only \$5,000,000, so the annual funding notice does not need to be provided to the PBGC.

The statement is false.

Answer is B.

## Question 2

ERISA regulation 4043.29(a)(1) states that a reportable event occurs when there is a transaction that results in one or more entities ceasing to be a member of a plan's controlled group. In this question, Company B is sold to Company C, and is no longer a member of Company A's controlled group. As a result, a reportable event has occurred due to the sale of Company B. It is irrelevant that Company B is not a contributing sponsor of the plan.

The statement is true.

Answer is A.

## Question 3

Treasury regulation 1.410(b)-2(b)(6) states that a plan passes the 410(b) coverage requirement if it only benefits non-highly compensated employees. There is no similar rule if the plan only benefits highly compensated employees. The statement is false.

Answer is B.

## Question 4

Treasury regulation 1.401(a)(4)-3(b)(6)(xi)(D)(2) states that a formula does not fail to be a safe harbor for purposes of the nondiscrimination requirements if it is not available to any HCEs but is available to some or all NHCEs. Each formula in this question satisfies the 133⅓% rule of IRC section 411(b), and so is a safe harbor for purposes of the nondiscrimination requirements under Treasury regulation 1.401(a)(4)-3(b)(3)(i). Therefore, each of the formulas for Group A and Group B satisfy the nondiscrimination requirements.

The statement is true.

Answer is A.

## Question 5

IRC section 417(g)(2)(A) describes the applicable percent for the qualified optional survivor annuity (QOSA). According to that section, if the qualified joint and survivor annuity (QJSA) percent is less than 75%, then the QOSA percent is 75%. (The QOSA percent is never equal to 100%.)

The statement is false.

Answer is B.

## Question 6

ERISA regulation 4007.9(a) states that the failure to pay premiums will not result in a loss of PBGC coverage for basic benefits guaranteed under ERISA section 4022.

The statement is false.

Answer is B.

## Question 7

PBGC Form 500 for a standard termination is due to the PBGC within 180 days after the proposed termination date, not 120 days. PBGC Form 600 for a distress termination is due to the PBGC within 120 days after the proposed termination date, so that part of the statement is correct. See the instructions for forms 500 and 600.

The statement is false.

Answer is B.

## Question 8

IRC section 4980(d)(2)(B)(i)(I) provides that as long as at least 25% of the amount eligible for employer reversion is transferred to a qualified replacement plan, then the excise tax on the amount that reverts to the employer is taxed at a 20% rate. The minimum amount required to be transferred to the qualified replacement plan in this question is \$37,500 (25% of \$150,000). With \$100,000 being transferred to the qualified replacement plan, the 25% requirement is satisfied. The excise tax paid on the actual employer reversion is:

$$20\% \times (\$150,000 - \$100,000) = \$10,000$$

The statement is true.

Answer is A.

## Question 9

ERISA section 4022A(b)(1)(A) provides that a benefit or benefit increase in effect for less than 60 months is not eligible to be guaranteed by the PBGC upon plan termination, in the case of a multiemployer plan.

The statement is true.

Answer is A.

### **Question 10**

ERISA section 4211(b)(2)(E)(ii) provides that only employer contributions are used in the fraction that allocates a proportional share of unfunded vested benefits to a withdrawing employer. Employee contributions are not used for this purpose.

The statement is false.

Answer is B.

### **Question 11**

ERISA regulation 2550.408c-2(b)(2) does not allow payment of “reasonable compensation” to a fiduciary who is also being paid as a full-time employee of the employer

The statement is false.

Answer is B.

### **Question 12**

The statement in this question is essentially a direct quote from section 10.3(d)(1) of Treasury Circular 230.

The statement is true.

Answer is A.

### **Question 13**

Joint Board regulation 901.20(j)(1) requires that an enrolled actuary return all records to a client needed to comply with the client's legal obligations. This would include records related to minimum funding determinations. This is a requirement even if there is a dispute over unpaid fees.

The statement is true.

Answer is A.

### **Question 14**

When a range certification is made, the specific AFTAP certification must be made by the end of the plan year. Otherwise, the AFTAP is deemed to be less than 60% as of October 1 of that year. So for a range certification issued on 3/31/2021 of at least 80%, the specific certification must be made by 12/31/2021 (not 9/30/2021) in order to avoid benefit restrictions for 2021. See Treasury regulation 1.436-1(h)(4)(ii)(B).

The statement is false.

Answer is B.

### **Question 15**

IRC section 415(b)(2)(E)(ii) provides that in the case of a benefit payable in a form of benefit subject to IRC section 417(e)(3), such as a lump sum, the interest rate used to convert the benefit is the greatest of 5.5%, the interest rate specified in the plan, or a rate that provides a benefit equal to the 105% of the benefit using the applicable interest rate under IRC section 417(e)(3) .

The statement is false.

Answer is B.

## Question 16

Treasury regulation 1.416-1, Q&A T-6 requires that if plans are aggregated for purposes of IRC section 410(b) (as well as IRC section 401(a)(4)), then they must be part of the required aggregation group for purposes of top heavy determination.

The statement is true.

Answer is A.

## Question 17

- I. ERISA section 101(d) requires a 60 day notice to plan participants if there is a failure to make a timely minimum required contribution. This includes late quarterly contributions. The statement is true.
- II. ERISA regulation 4043.25(c) provides a waiver of a reportable event notice upon failure to satisfy minimum funding (or failure to timely make a quarterly contribution) if the plan has no more than 100 participants (not the case in this question) or if the quarterly contribution is made within 30 days of the due date (not 60 days, as the statement indicates). The statement is false.

Only statement I is true.

Answer is B.

## Question 18

Regulation 54.4980F-1, Q&A 1, states that an ERISA 204(h) notice must be provided to affected participants when there is a plan amendment that results in a significant reduction in the rate of future benefit accrual, or that eliminates or significantly reduces an early retirement benefit or retirement subsidy.

- I. This proposed amendment increases the rate of future benefit accrual from \$120 per year of service to \$125. This is not a reduction in the rate of future benefit accruals but rather an increase, so no ERISA 204(h) notice is required.
- II. This proposed amendment increases the early retirement reduction from 3% per year to 5% per year, thus reducing the early retirement benefit. This amendment does require that Smith receive an ERISA 204(h) notice.
- III. Smith's status is changed to hourly, resulting in a decrease in future benefit accruals to \$100 from \$120. However, this reduction is not a result of a plan amendment, so no ERISA 204(h) notice is required.

Only event number II would require Smith to receive an ERISA 204(h) notice.

Answer is E.

## Question 19

- I. Regulation 54.4980F-1, Q&A 9, states that an ERISA 204(h) notice must be provided to affected participants at least 15 days before the effective date of the amendment for plans with fewer than 100 participants (not 45 days). The statement is false.
- II. Regulation 54.4980F-1, Q&A 3, states that an ERISA 204(h) notice does not need to be provided if the plan is a government plan, a church plan, or a non-qualified plan. There is no exemption for a multiemployer plan. The statement is false.
- III. Regulation 54.4980F-1, Q&A 3, states that an ERISA 204(h) notice does not need to be provided if the plan is a government plan, a church plan, or a non-qualified plan. There is no exemption for a collectively bargained plan. The statement is false.

None of the statements are true.

Answer is A.

## Question 20

Treasury regulation 1.410(b)-6(b)(2) states that when plans are aggregated for purposes of satisfying the minimum coverage requirement, the determination of non-excludable employees is based upon the shortest eligibility period of the two aggregated plans. In this question, the hourly plan eligibility requirements of age 18 and 6 months of service would be a shorter requirement than the salaried plan eligibility of age 21 and 1 year of service. So for purposes of determining the non-excludable employees for purposes of the ratio percentage for the aggregated plan, only the hourly plan eligibility requirements are considered (even though there are more strict requirements for purposes of the salaried plan). For purposes of determining the participants who are benefiting, the actual eligibility requirements are applied. The following chart illustrates the number of employees deemed non-excludable as well as those deemed to be benefiting.

	<u>Salaried</u>		<u>Hourly</u>	
	<u>HCEs</u>	<u>NHCEs</u>	<u>HCEs</u>	<u>NHCEs</u>
(1) Total employees	40	200	10	800
(2) Under age 18 and/or less than 6 months of service	3	25	1	350
(3) Nonexcludable employees [(1) – (2)]	37	175	9	450
(4) Other statutory excludable*	7	70	0	0
(5) Excluded by classification	0	25	0	50
(6) Benefiting [(3) – (4) – (5)]	30	80	9	400

\* These are the salaried employees who worked between 6 months and a year and/or are between the ages of 18 and 21, who are actually excluded from the salaried plan.

Treasury regulation 1.410(b)-9 defines the ratio percentage as the ratio of the percentage of non-highly compensated employees benefiting under the plan to the percentage of highly compensated employees benefiting under the plan. Only nonexcludable employees are considered for this purpose.

$$\text{Ratio percentage} = \frac{\frac{80 + 400}{30 + 9}}{\frac{175 + 450}{37 + 9}} = 90.58\%$$

Answer is C.

## Question 21

The regulations under IRC section 410(b) require that for purposes of the average benefit percentage, benefits from all plans of the employer (including accrued benefits from defined benefit plans, salary deferrals in 401(k) plans, matching contributions and profit sharing plan contributions) be aggregated (the entire accrued benefit is used, so the vested percentages can be ignored). In this question, the average benefit percentage is determined by testing on an allocations basis, so the defined benefit accruals must be taken as present values, using the testing assumptions. As of 12/31/2020, Smith is age 63.

The present value (using testing assumptions) of the defined benefit accrual for Smith is:

$$12,000 \times \ddot{a}_{63}^{(12)} \times v_{7.5\%}^2 = 12,000 \times 11.19 \times 0.865333 = 116,197$$

The benefit percentage is equal to the ratio of the present value of the defined benefit accrual plus the sum of the salary deferral and matching contribution (there is no profit sharing contribution in this question) to the 2020 salary paid (limited, if necessary, to the 2020 IRC section 401(a)(17) compensation limit of \$285,000).

$$\text{Benefit percentage as of 12/31/2020} = \frac{116,197 + (19,500 + 11,400)}{285,000} = 51.61\%$$

Answer is E.

## Question 22

IRC section 417(a)(1) requires a defined benefit plan to offer a qualified joint and survivor annuity (QJSA) option to married participants, with a minimum survivor annuity for the spouse of 50% and a maximum survivor annuity of 100% of the benefit that would be payable over the joint lives of the participant and the spouse.

IRC section 417(c)(1)(A) states that the qualified preretirement survivor annuity (QPSA) percentage cannot be less than the qualified joint and survivor annuity percentage. The QJSA percentage is given to be 50% in this question, so the minimum QPSA percentage that could be provided in this plan is equal to 50%.

The preretirement death benefit payable to a spouse as a QPSA upon the death of the participant is payable at the earliest possible retirement age had the participant not died (IRC section 417(c)(1)(A)(ii)). The benefit payable to the spouse is the spousal benefit that would have been paid if the participant had elected to retire at that earliest retirement age and then died.

Note that no QPSA benefit is required to be paid if the participant and spouse have been married for less than one year as of the date of death (IRC section 417(d)). The question states that the participant and spouse had been married for over one year at the time of death.

Smith has died at age 61 and had 9 years of service, so the earliest retirement age at which Smith could have retired had Smith not died is age 65 (Smith did not satisfy the 10 years of service requirement for early retirement and future service with the employer had Smith not died cannot be assumed for purposes of the QPSA). The accrued benefit as of the date of death, payable beginning at age 65, is \$1,225.

Equivalent joint and 50% survivor annuity benefit =  $\$1,225 \times 0.868 = \$1,063.30$

50% of this amount is the QPSA benefit payable to Smith's spouse.

$\$X = 50\% \times \$1,063.30 = \$531.65$

Answer is C.

### Question 23

The accrued benefit is equal to the greater of the plan accrued benefit or the top heavy minimum benefit.

Smith has 2 years of plan participation as of 12/31/2020.

$$\begin{aligned}\text{Plan accrued benefit} &= 5\% \times \$80,000 \times 2 \text{ years of plan participation} \\ &= \$8,000\end{aligned}$$

The top heavy minimum benefit under IRC section 416(c)(1) is equal to 2% of the high consecutive 5-year average salary per year of top heavy plan participation (participation during years in which the plan was top heavy), up to a maximum of 10 years. The question does not state when (if ever) the plan has been top heavy. However, with the plan's benefit formula providing a benefit of 5% of average compensation per year of plan participation, the top heavy minimum benefit would be less than the plan benefit.

Smith is age 65 (normal retirement age), so the vested percentage using the vesting schedule does not need to be determined, as Smith must become fully vested at normal retirement.

$$\text{Vested accrued benefit} = \$8,000$$

Answer is E.

Note: The section 415(b) limit can also be considered in this question, as it is in the next question, question 24. However, the \$8,000 plan accrued benefit in this question is small enough that it should be intuitive that this will not be limited by IRC section 415(b). For that reason, this solution does not go through the process of determining the IRC section 415(b) limit.

## Question 24

Smith has 8 years of service and 7 years of plan participation on 12/31/2020. The plan benefit is based upon the average of the final 5 years of salary. Note that each salary must be limited to the IRC section 401(a)(17) compensation limit (the salary is limited to \$265,000 for 2016 and \$270,000 for 2017).

12/31/2020 final 5-year average compensation

$$= \frac{\$265,000 + \$270,000 + \$250,000 + \$260,000 + \$250,000}{5} = \$259,000$$

12/31/2020 plan accrued benefit =  $10\% \times \$259,000 \times 8$  years of service = \$207,200

The accrued benefit payable to a participant must be limited under IRC section 415(b) to the smaller of the IRC section 415 dollar limit or the IRC section 415 compensation limit. The IRC section 415 compensation limit is equal to 100% of the high consecutive 3-year average compensation (reduced pro-rata for years of service less than 10). The highest consecutive 3-year average, as limited under IRC section 401(a)(17), is from the years 2015 through 2017 (with the 2016 and 2017 salaries limited by 401(a)(17)).

12/31/2020 high consecutive 3-year average compensation

$$= \frac{\$265,000 + \$265,000 + \$270,000}{3} = \$266,667$$

12/31/2020 IRC section 415(b) compensation limit =  $\$266,667 \times (8/10)$  = \$213,333

The IRC section 415(b) dollar limit in effect for 2020 is \$230,000. The dollar limit must be reduced pro-rata for years of plan participation less than 10.

12/31/2020 IRC section 415(b) dollar limit =  $\$230,000 \times (7/10)$  = \$161,000

The smaller of the IRC section 415(b) dollar limit and compensation limit is the dollar limit of \$161,000.

Smith's annual accrued benefit as of 12/31/2020 must be limited to \$161,000.

Answer is B.

## Question 25

Smith has died and was married for at least a year as of the date of death. Smith's spouse must receive a qualified pre-retirement survivor annuity under IRC section 417. Statement C is the true statement.

Answer is C.

## Question 26

The total PBGC premium under ERISA section 4006 consists of a flat-rate premium and a variable-rate premium. For 2020, the flat-rate premium is equal to \$83 per participant. The participant count is based on the number of plan participants as of the last day of the prior plan year (12/31/2019). Participants include vested and non-vested active participants, terminated vested participants, and retired participants. Beneficiaries of deceased participants are included in the count because there is no other category to define deceased participants. Alternate payees of vested active participants are not included because that count is already included in the vested active participant count (when a participant's benefit is split between more than one individual, the benefit is only counted once for purposes of PBGC premiums). The non-participating employees are not included in the participant count.

The plan has 21 active participants (19 vested + 2 non-vested), 2 retirees, and 2 beneficiaries of deceased participants, for a total of 25 participants to be counted for the flat-rate premium.

$$\text{Flat-rate premium} = 25 \times \$83 = \$2,075$$

The PBGC variable-rate premium for 2020 is equal to 4.5% of the unfunded vested benefits. The standard premium funding target is used in this question. Market value of assets is used for premium purposes.

Note that a small plan (no more than 100 participants as of the first day of the year) generally uses the prior year valuation results for purposes of the variable premium. This plan has opted out of the Small Plan Lookback Rule.

$$\text{2020 variable premium unfunded liability} = \$600,000 - \$500,000 = \$100,000$$

$$\text{2020 variable-rate premium} = \$100,000 \times 0.045 = \$4,500$$

In 2020, there is a variable premium cap of \$561 per plan participant.

$$\text{Variable premium cap} = \$561 \times 25 \text{ participants} = \$14,025$$

The variable-rate premium is not limited by this cap.

Additionally, for small employers (no more than 25 employees), there is also a cap on the variable premium equal to the number of participants squared, multiplied by \$5. The employer in this question has 23 employees (the 21 active participants and 2 non-participating employees), so the small employer cap applies.

$$\text{Small employer cap} = \$5 \times 25^2 = \$3,125$$

The variable rate premium is limited by the small employer cap, and is \$3,125.

$$\text{Total 2020 PBGC premium} = \$2,075 + \$3,125 = \$5,200$$

Answer is C.

## Question 27

The total PBGC premium under ERISA section 4006 consists of a flat-rate premium and a variable-rate premium. For 2020, the flat-rate premium is equal to \$83 per participant. The participant count is based on the number of plan participants as of the last day of the prior plan year (12/31/2019). Participants include active participants, terminated vested participants, beneficiaries of deceased participants, and retired participants. Beneficiaries of deceased participants are included in the count because there is no other category to define deceased participants. Alternate payees of retired participants are not included because that count is already included in the retired participant count (when a participant's benefit is split between more than one individual, the benefit is only counted once for purposes of PBGC premiums).

The plan has 40 active participants, 15 terminated vested participants, 30 retirees, and 10 beneficiaries of deceased participants, for a total of 95 participants to be counted for the flat-rate premium.

$$\text{Flat-rate premium} = 95 \times \$83 = \$7,885$$

The PBGC variable-rate premium for 2020 is equal to 4.5% of the unfunded vested benefits. The standard premium funding target is used in this question. The standard premium funding target is always based on segment rates from the month before the beginning of the premium year, so the segment rates from December, 2019 are used in this question. Market value of assets is used for premium purposes.

Note that a small plan (no more than 100 participants as of the first day of the year) generally uses the prior year valuation results for purposes of the variable premium. This plan has opted out of the Small Plan Lookback Rule.

$$\text{2020 variable premium unfunded liability} = \$6,000,000 - \$5,400,400 = \$599,600$$

The unfunded liability used for the variable rate premium must be a multiple of \$1,000, so this is rounded up to \$600,000.

$$\text{2020 variable-rate premium} = \$600,000 \times 0.045 = \$27,000$$

In 2020, there is a variable premium cap of \$561 per plan participant.

$$\text{Variable premium cap} = \$561 \times 95 \text{ participants} = \$53,295$$

The variable-rate premium is not limited by this cap.

Additionally, for small employers (no more than 25 employees), there is also a cap on the variable premium equal to the number of participants squared, multiplied by \$5. The employer in this question has at least 40 employees (the 40 active participants), so the small employer cap does not apply.

$$\text{Total 2020 PBGC premium} = \$7,885 + \$27,000 = \$34,885$$

Answer is A.

## Question 28

The total PBGC premium under ERISA section 4006 consists of a flat-rate premium and a variable-rate premium. For 2020, the flat-rate premium is equal to \$83 per participant. The participant count is based on the number of plan participants as of the last day of the prior plan year (12/31/2019). Participants include active participants, terminated vested participants, and retired participants.

The plan has 26 active participants, 20 terminated vested participants, and 4 retirees, for a total of 50 participants to be counted for the flat-rate premium.

$$\text{Flat-rate premium} = 50 \times \$83 = \$4,150$$

The PBGC variable-rate premium for 2020 is equal to 4.5% of the unfunded vested benefits. The standard premium funding target is used in this question. Market value of assets is used for premium purposes.

Note that a small plan (no more than 100 participants as of the first day of the year) generally uses the prior year valuation results for purposes of the variable premium. This plan has opted out of the Small Plan Lookback Rule.

$$\text{2020 variable premium unfunded liability} = \$1,475,000 - \$805,000 = \$670,000$$

$$\text{2020 variable-rate premium} = \$670,000 \times 0.045 = \$30,150$$

In 2020, there is a variable premium cap of \$561 per plan participant.

$$\text{Variable premium cap} = \$561 \times 50 \text{ participants} = \$28,050$$

The variable-rate premium is limited by this cap.

Additionally, for small employers (no more than 25 employees), there is also a cap on the variable premium equal to the number of participants squared, multiplied by \$5. The employer in this question has at least 26 employees (the 26 active participants), so the small employer cap does not apply.

$$\text{Total 2020 PBGC premium} = \$4,150 + \$28,050 = \$32,200$$

Answer is C.

## Question 29

The vested accrued benefit attributable to the benefit structure in place exactly 5 years before the plan termination date is fully guaranteed (up to the PBGC maximum guaranteeable monthly benefit of \$5,812.50 for 2020). The plan was only in effect for 4 years and 4 months as of the plan termination date, so there was no benefit structure in effect 5 years before the plan termination date, and therefore no fully guaranteed vested accrued benefit.

The vested accrued benefit under the original 9/1/2016 plan is phased in under the rules of ERISA section 4022 at the rate of 20% (or \$20, if greater) for each full 12-month period that the plan was in effect through the plan termination date. The amendment was effective for 4 full years (fractional years do not count under PBGC rules), so the phase-in percentage is 80% ( $20\% \times 4$ ). Note that if the benefit being phased in is less than \$100, then the \$20 benefit is used for the phase in (as 20% of \$100 is equal to \$20).

Smith is in Division 1, and has 4 years of service as of the plan termination date of 12/31/2020. Jones is in Division 2 and has 3 years of service as of the plan termination date. The vesting is 100% immediate, so the accrued benefit is also the vested accrued benefit.

Smith monthly accrued benefit =  $2\% \times \$22,000/12 \times 4$  years of service = \$146.67  
\$X = Phase-in =  $80\% \times \$146.67 = \$117.33$

Jones monthly accrued benefit =  $0.5\% \times \$70,000/12 \times 3$  years of service = \$87.50  
\$Y = Phase-in =  $\$20 \times 4$  years = \$80.00

Note that for Jones, who has only 3 years of service, the phase in is based upon 4 years rather than 3 years, because it is the benefit formula that is being phased in, not Jones' service.

$\$X + \$Y = \$117.33 + \$80.00 = \$197.33$

Answer is D.

### Question 30

Under the presumptive method, the unfunded vested benefits must be determined for each year from 1979 and later, with a share assigned to withdrawing Employer A. In this case, the first year that there are unfunded vested benefits is 2018 (it is given that there were no unfunded vested benefits prior to 2018). The unfunded vested benefits as of 12/31/2018 are multiplied by the ratio of the contributions by Employer A over the 5-year period ending on 12/31/2018 to the contributions for the same period by all employers (excluding any previously withdrawn employers that had withdrawn as of 12/31/2018 – Employer B previously withdrew in 2020, so Employer B’s 5-year contribution total is included as part of the contributions for all employers as of 12/31/2018). This is the unfunded vested liability attributable to Employer A as of 12/31/2018:

$$\$2,000,000 \times \frac{1,650,000}{1,650,000 + 2,175,000 + 11,625,000} = \$213,592$$

Since Employer A withdrew in 2021, the withdrawal liability is determined as of 12/31/2020 (the last day of the year prior to the complete withdrawal). The share of unfunded vested benefits allocated to Employer A as of 12/31/2018 must be adjusted to an outstanding balance as of 12/31/2020. Under the presumptive method, it is assumed that the liability is paid off at the rate of 5% per year, leaving 90% of the 12/31/2018 unfunded vested liability remaining as of 12/31/2020. So, the outstanding balance on 12/31/2020 is:

$$\$213,592 \times 90\% = \$192,233$$

Next, the gain or loss in the total unfunded vested benefits must be determined as of 12/31/2019.

The expected unfunded vested benefits as of 12/31/2019 (assuming a 5% per year reduction from 12/31/2018) are:

$$\$2,000,000 \times 95\% = \$1,900,000$$

The actual unfunded vested benefits is \$1,100,000, resulting in a gain (the unfunded vested benefits are smaller than expected).

The 2019 gain in the unfunded vested benefits is:

$$\$1,900,000 - \$1,100,000 = \$800,000$$

This amount is multiplied by the ratio of the contributions by Employer A over the 5-year period ending on 12/31/2019 to the contributions for the same period by all employers (again, the contributions for Employer B are included as Employer B did not withdraw until 2020).

The allocation attributable to Employer A as of 12/31/2019 is:

$$\$800,000 \times \frac{1,725,000}{1,725,000 + 2,050,000 + 11,775,000} = \$88,746$$

This allocation must be adjusted to an outstanding balance as of 12/31/2020 (using the 5% reduction rule). The outstanding balance of this on 12/31/2020 is:

$$\$88,746 \times 95\% = \$84,309$$

Finally, the gain or loss in the total unfunded vested benefits must be determined as of 12/31/2020.

The expected unfunded vested benefits (using the 5% reduction rule) are:

$$[\$2,000,000 \times 90\%] - [(\$800,000) \times 95\%] = \$1,040,000$$

Note that the 2019 gain is used to determine the expected liability.

The actual unfunded vested benefits is \$2,500,000, resulting in a loss.

The 2020 loss in the unfunded vested benefits is:

$$\$2,500,000 - \$1,040,000 = \$1,460,000$$

The 2020 loss must be allocated to Employer A. The gain in the unfunded vested benefits is multiplied by the ratio of the contributions by Employer A over the 5-year period ending on 12/31/2020 to the contributions for the same period by all employers (excluding Employer B, which withdrew during 2020).

$$\$1,460,000 \times \frac{1,675,000}{1,675,000 + 11,775,000} = \$181,822$$

The total share of unfunded vested benefits allocated to Employer A is:

$$\$192,233 - \$84,309 + \$181,822 = \$289,746$$

The allocated share of unfunded vested benefits is potentially reduced by the de minimis credit under ERISA section 4209. The de minimis credit is intended as a credit for withdrawing employers with a relatively small amount of allocated unfunded vested benefits, and is phased out when that amount is larger. The mandatory de minimis credit must be fully phased out once the share of unfunded vested benefits exceeds \$150,000. Therefore, the complete withdrawal liability for Employer B is \$289,746.

Answer is B.

### Question 31

The withdrawal liability for Employer A is determined as of the end of the year prior to the complete withdrawal. The value of the unfunded vested benefits is multiplied by the ratio of the contributions made by Employer A over the 5-year period ending on 12/31/2019 to the contributions made by all employers.

The unfunded vested benefit liability attributable to Employer A under the Rolling 5 method is:

$$\$5,510,000 \times \frac{250,000}{10,000,000} = \$137,750$$

The mandatory de minimis rule under ERISA section 4209(a) states that the allocation to a withdrawing employer of the plan's unfunded vested benefit obligations are generally reduced by the smaller of:

- (1)  $\frac{3}{4}\%$  of the total unfunded vested benefits for the entire plan, or
- (2) \$50,000

$$\frac{3}{4}\% \text{ of the total unfunded vested benefits} = \frac{3}{4}\% \times \$5,510,000 = \$41,325$$

The smaller of \$41,325 and \$50,000 is \$41,325.

The de minimis credit is reduced by one dollar for every dollar that the withdrawing employer's share of unfunded vested benefit obligations exceeds \$100,000. The reduction in the de minimis credit is:

$$\$137,750 - \$100,000 = \$37,750$$

The de minimis credit is:

$$\$41,325 - \$37,750 = \$3,575$$

$$\text{Complete withdrawal liability} = \$137,750 - \$3,575 = \$134,175$$

Answer is D.

## Question 32

The excise tax with regard to a prohibited transaction is equal to 15% of the amount involved (IRC section 4975(a)). When the prohibited transaction is a prohibited loan, the amount involved is equal to the interest paid or accrued with respect to the loan (the interest rate must be at least as large as the fair market interest rate). The determination of the excise tax in this situation is described in Revenue Ruling 2002-43.

The prohibited loan was established on 7/1/2018, and still exists on 12/31/2020. Interest only payments have been made each 6/30, so the entire principal balance of \$150,000 still exists. The prohibited amount includes both interest paid (\$7,500 on each of 6/30/2019 and 6/30/2020) and accrued (another \$3,750 for the last half of 2020).

Total interest paid or accrued through 2020:

$$\$7,500 + \$7,500 + \$3,750 = \$18,750$$

The 15% excise tax is:

$$15\% \times \$18,750 = \$2,812.50$$

Answer is C.

Alternative (and possibly the more correct) solution:

Revenue Ruling 2002-43 states that the excise tax is due for each tax year of the disqualified person (the employer in this question), with the principal of the loan being re-determined as of the first day of each tax year (the calendar year, per the exam general conditions).

The prohibited loan was established on 7/1/2018, and still exists on 12/31/2020. Interest only payments have been made each 6/30, so the entire principal balance of \$150,000 still exists. However, since the principal balance of the loan is re-determined each 1/1 for purposes of the excise tax, the outstanding balance of the loan as of 1/1/2019 and 1/1/2020 must be determined.

$$1/1/2019 \text{ outstanding balance} = \$150,000 \times 1.05^{6/12} = \$153,704.26$$

As there is an interest payment of \$7,500 on 6/30/2019, the outstanding balance would revert back to \$150,000 on 6/30/2019. Therefore, with another 6 months of accrued interest as of 1/1/2020, the outstanding balance on that date will again be \$153,704.26.

Note that interest has been compounded in the determination of the outstanding balance. This is not specifically a requirement in the regulation, but is the method used in the example provided in the ruling.

The prohibited amount (on which the excise tax applies) would be equal to the outstanding balance of the loan on the date it was established (7/1/2018) and then each subsequent January 1<sup>st</sup>, multiplied by the 5% interest rate for that year (prorated for 6 months in 2018).

Prohibited amount for 2018:  $\$150,000 \times 0.05 \times (6/12) = \$3,750$

Prohibited amount for 2019:  $\$153,704.26 \times 0.05 = \$7,685.21$

Prohibited amount for 2020:  $\$153,704.26 \times 0.05 = \$7,685.21$

The 15% excise tax is:

$15\% \times (\$3,750 + \$7,685.21 + \$7,685.21) = \$2,868.06$

Note that the example in the regulation is not really quite like this one – in the regulation there are no interest payments made along the way, reducing the principal back to the original amount. As a result it is not clear whether the interest payment made on 6/30 each year can be used to “erase” the increase in the principal as of the first day of the year, reverting it back to \$150,000. This is what I did in my original solution above.

In any case, either solution is in the same answer range, choice C.

### Question 33

- I. A plan fiduciary is a disqualified person under IRC section 4975(e)(2)(A).
- II. A person providing services to a plan is a disqualified person under IRC section 4975(e)(2)(B).
- III. A person who is an indirect owner of at least 50% of the plan sponsor is a disqualified person under IRC section 4975(e)(2)(E) and (F). As a result, the indirect owner of only 49% of the plan sponsor is not a disqualified person.
- IV. A spouse of a parent, child, or grandchild of a direct owner of at least 50% of the plan sponsor is a disqualified person under IRC section 4975(e)(2)(E) and (F). As a result, the spouse of a grandchild of a 51% owner is a disqualified person.
- V. A officer of the plan sponsor is a disqualified person under IRC section 4975(e)(2)(H).

The 4 individuals described in I, II, IV, and V are all disqualified persons.

Answer is D.

### Question 34

ERISA regulation 901.20(d) provides rules with regard to conflicts of interest and the ability for an enrolled actuary to perform service in such situations.

- I. An enrolled actuary may not represent both Company A and Company B if they believe that they are unable to provide competent and diligent service. See ERISA regulation 901.20(d)(2)(i).
- II. Common ownership between two companies is not a reason that would prohibit an enrolled actuary from performing services in situations where there is a conflict of interest.
- III. ERISA regulation 901.20(d)(2)(iii) requires that in order to be able to provide services when a conflict of interest exists, the client must provide the enrolled actuary with informed consent at the time that the enrolled actuary first learns of the conflict. If that is not until a few months after the commencement of services, it is not a problem that the enrolled actuary did not inform the plan sponsors at the time that services were first provided (the enrolled actuary did not know of the conflict at that time).

Only statement I is a reason why the enrolled actuary may not represent both Company A and Company B.

Answer is E.

### Question 35

Treasury regulation 1.436-1(f)(2)(iv)(A) states that for a plan in which the certified adjusted funding target attainment percentage (AFTAP) is less than 80%, an IRC section 436 contribution may be made in order to allow a plan amendment increasing liabilities to take effect. In addition, Treasury regulation 1.436-1(f)(2)(iv)(B) states that for a plan in which the certified adjusted funding target attainment percentage (AFTAP) is at least 80% but would be less than 80% if the increase in the funding target due to the plan amendment were included as part of the funding target in the denominator of the AFTAP, an IRC section 436 contribution may be made in order to allow that ratio to be exactly 80% if the contribution were included in the numerator. Regulation 1.436-1(f)(2)(i)(A)(2) states that if the IRC section 436 contribution is made on a date other than the valuation date for the year, then the required contribution must be interest adjusted from the valuation date to the date of the contribution using the plan effective rate for that plan year. This question is asking for the additional contribution that could be made on 8/31/2020 that would allow the amendment increasing the funding target to take effect.

The amount of the IRC section 436 contribution is dependent on the AFTAP. The AFTAP, as defined in IRC section 436(j)(1) and determined on the plan valuation date, is equal to the ratio of the actuarial value of assets (reduced by the funding balances) to the funding target, with both the numerator and denominator increased by the total purchases of annuities for the NHCEs during the last 2 years (2018 and 2019 in this question).

$$2020 \text{ AFTAP} = \frac{(6,550,000 - 135,000) + 60,000 + 25,000}{7,775,000 + 60,000 + 25,000} = 82.70\%$$

If the increase in the funding target due to the plan amendment is included as part of the funding target in the denominator of the AFTAP:

$$\frac{(6,550,000 - 135,000) + 60,000 + 25,000}{7,775,000 + 60,000 + 25,000 + 345,000} = 79.22\%$$

In order to increase this ratio to 80%, a contribution of \$X is deposited on 8/31/2020, and is interest adjusted using the 2020 plan effective rate of 4.5% for 8 months to the 1/1/2020 valuation date.

$$\frac{(6,550,000 - 135,000) + 60,000 + 25,000 + (\$X / 1.045^{8/12})}{7,775,000 + 60,000 + 25,000 + 345,000} = 80.00\% \quad \rightarrow \quad \$X = \$65,906$$

The answer is B.

## Question 36

Accrued benefits must be frozen under IRC section 436(e) when the AFTAP is less than 60%. However, the restrictions on benefit accruals do not apply during the first 5 plan years (IRC section 436(g)). With the plan having a 1/1/2002 effective date, IRC section 436(e) does not apply until 2007, the 6<sup>th</sup> year of the plan. Given the statement that all certifications were made timely with a value of at least 60% prior to 2013, the restrictions on benefit accruals could only apply for years from 2013 on.

As of January 1 of any plan year, the AFTAP is presumed to be equal to the prior year AFTAP until the current year AFTAP is certified (IRC section 436(h)(1)). As of April 1 of any plan year, if the current year AFTAP has not yet been certified, then the AFTAP is presumed to be 10 percentage points less than the prior year AFTAP until the current year AFTAP is certified (IRC section 436(h)(3)). As of October 1 of any plan year, if the current year AFTAP has not yet been certified, then the AFTAP is presumed to be less than 60% for the remainder of the plan year (IRC section 436(h)(2)), regardless of when the current year AFTAP is certified.

A range certification can be relied upon provided the final (specific) AFTAP certification is within that range and is certified by the end of the plan year (Treasury regulation 1.436-1(h)(4)(ii)(B)). If the final AFTAP certification is made after the end of the plan year, then the AFTAP is presumed to be less than 60% for the last 3 months of the year (as the final certification is late). In 2014 and 2018 range certifications are made. However, there is no information provided about when the specific certification was made for 2014 and 2018 (previous exam questions always included that information). In order to answer this question, it has been assumed that the specific certification for 2014 and 2018 was made on the same date that the specific certification for each of the following years was made (that would appear to be the intent of the question writers in order to get in the answer range indicated by the answer key).

Smith is hired on 1/1/2010, and has 12 months of accrual service in each of 2010 through 2012.

Based upon the presumed underfunding rules, the plan has no presumed or actual underfunding in 2013 (the presumed AFTAP as of 1/1/2013 is equal to the 2012 certified AFTAP of at least 60%, and as of 3/31/2013 is 63% when the 2013 AFTAP certification is issued). Smith has 12 months of accrual service in 2013.

In 2014, the presumed AFTAP as of 1/1/2014 is equal to 63%. The range certification of 60% to 80% made on 3/31/2014 is assumed not to be substantiated by a specific 2014 certification until the 2015 specific certification is made on 2/28/2015. That means that the final AFTAP for 2014 was certified after the end of the year, so the presumed AFTAP as of 10/1/2014 is less than 60%. Smith does not receive accrual service for the last 3 months of 2014, so Smith has 9 months of accrual service in 2014.

With the 2015 AFTAP certified on 2/28/2015 (as 76%) and the presumed AFTAP from the end of 2014 being less than 60%, Smith does not receive accrual service for the first two months of 2015. The plan has no other presumed or actual underfunding in 2015. Smith has 10 months of accrual service in 2015.

The plan has no presumed or actual underfunding in 2016 (the presumed AFTAP as of 1/1/2016 is 76%, as of 4/1/2016 is 66%, and the 2016 AFTAP certification of 72% is issued on 9/30/2016). Smith has 12 months of accrual service in 2016.

The plan has no presumed or actual underfunding in 2017 (the presumed AFTAP as of 1/1/2017 is 72%, as of 4/1/2017 is 62%, and the 2017 AFTAP certification of 68% is issued on 5/31/2017). Smith has 12 months of accrual service in 2017.

In 2018, the presumed AFTAP as of 1/1/2018 is equal to 68%. The range certification of 60% to 80% made on 3/31/2018 is assumed not to be substantiated by a specific 2018 certification until the 2019 specific certification is made on 3/31/2019. That means that the final AFTAP for 2018 was certified after the end of the year, so the presumed AFTAP as of 10/1/2018 is less than 60%. Smith does not receive accrual service for the last 3 months of 2018, so Smith has 9 months of accrual service in 2018.

With the 2019 AFTAP certified on 3/31/2019 (as 75%) and the presumed AFTAP from the end of 2018 being less than 60%, Smith does not receive accrual service for the first three months of 2019. The plan has no other presumed or actual underfunding in 2019. Smith has 9 months of accrual service in 2019.

The plan has no presumed or actual underfunding in 2020 (the presumed AFTAP as of 1/1/2020 is 75%, as of 4/1/2020 is 65%, and the 2020 AFTAP certification of 82% is issued on 9/30/2020). Smith has 12 months of accrual service in 2020.

The total number of months of service for Smith through the end of 2020 is equal to:

$$12 + 12 + 12 + 12 + 9 + 10 + 12 + 12 + 9 + 9 + 12 = 121$$

$$\text{Monthly accrued benefit on 12/31/2020} = \frac{1}{12}\% \times (\$65,000/12) \times 121 \text{ months of service} = \$546.18$$

Answer is B.

### Question 37

The benefit payable to a participant must be limited under IRC section 415(b) to the smaller of the IRC section 415 dollar limit or the IRC section 415 compensation limit. The IRC section 415 compensation limit is equal to 100% of the high consecutive 3-year average compensation (reduced pro-rata for years of service less than 10). Smith has 6 years of service as of 1/1/2020 (having terminated employment one year earlier).

$$1/1/2020 \text{ IRC section 415(b) compensation limit} = \$105,000 \times (6/10) = \$63,000$$

The IRC section 415(b) dollar limit in effect for 2020 is \$230,000. This must be reduced pro-rata for years of plan participation less than 10. With the plan effective on 1/1/2015, Smith has only 4 years of plan participation as of 1/1/2020 (no years of plan participation is granted after Smith's termination of employment).

$$\text{Pro-rated dollar limit} = \$230,000 \times (4/10) = \$92,000$$

The dollar limit is reduced for retirement before age 62. Smith is age 57 on 1/1/2020. Note that for purposes of IRC section 415, that age as of the date of benefit commencement is used to adjust the dollar limit, not the age of termination of employment. Similarly, the dollar limit is the one in effect for the year in which actual benefit commencement occurs, which is why the 2020 dollar limit is being used rather than the 2018 dollar limit that would have been used had Smith retired on the date of termination of employment.

The reduced dollar limit at age 57 is the smaller of the limit reduced using plan actuarial equivalence or the limit decreased using actuarial equivalence based upon 5% interest and the applicable mortality table. Plan equivalence in this question uses 4% interest and the applicable mortality table. Reducing a benefit from age 62 to age 57 will provide for a smaller benefit using 5% interest rather than 4% interest (the discount is larger when the interest rate is larger). So, the smaller of the two actuarial equivalence benefits is the one at 5% interest. (Note that in questions of this type, it is generally given whether there is a pre-retirement death benefit – when there is a pre-retirement death benefit then the actuarial reduction from age 62 to the earlier actual retirement age is determined without any pre-retirement mortality decrements. This question does not indicate whether there is a pre-retirement death benefit. However, based upon the factors provided, the question can only be solved by discounting from age 62 to age 57 on an interest-only basis, so it must be assumed that there is a pre-retirement death benefit.)

Using the life annuity factors provided at 5% interest:

$$\text{Adjusted dollar limit at age 57} = \$92,000 \times 13.90 \times v_{5\%}^5 \div 15.20 = \$65,919$$

The smaller of the IRC section 415 compensation limit and dollar limit is \$63,000.

The maximum lump sum under IRC section 415(b)(2)(E) is equal to the maximum annual IRC section 415 benefit multiplied by the smallest of the following factors:

- (1) Lump sum factor using plan equivalence
- (2) 105% of lump sum factor using IRC section 417(e) assumptions
- (3) Lump sum factor using applicable mortality table and 5.5%

In situations where the employee has no more than 100 employees earning more than \$5,000 in the prior year, the second of the two factors is ignored. It is stated in this question that there have always been fewer than 100 plan participants. The general conditions of the exam state that, unless specific information is provided in the question, the terms “participants” and “employees” are synonymous, so it can be assumed that there have always been fewer than 100 employees. As a result, only the first and third of the factors need to be considered.

The smallest of the given lump sum factors at age 57 is the factor using the applicable mortality table and 5.5% interest.

$$\text{\$X} = \$63,000 \times 14.45 = \$910,350$$

Answer is A.

### Question 38

The maximum benefit payable to Smith is determined using the rules of IRC section 415(b). Under IRC section 415(b), the single life annuity cannot exceed the smaller of the 415(b) dollar maximum or the 415(b) compensation maximum.

The dollar maximum for 2020 is equal to \$230,000, reduced by 10% for each year of plan participation less than 10 years. Smith has 6 years of plan participation.

$$\text{Pro-rated 415(b) dollar maximum} = \$230,000 \times 6/10 = \$138,000$$

In addition, the dollar maximum is adjusted from age 62 to Smith's early retirement age of 60 using the smaller of the factor based upon plan actuarial equivalence (the tabular early retirement reduction factors) or statutory equivalence (applicable mortality and 5%). The smaller of these factors is the one using statutory equivalence (a factor of 0.88). Note that the plan tabular reduction factor is 0.94, a reduction of 3% per year from age 62 to age 60.

$$\text{415(b) dollar maximum} = \$138,000 \times 0.88 = \$121,440$$

The compensation maximum under 415(b) is equal to the high consecutive 3-year average salary, reduced by 10% for each year of service less than 10 years. Smith has 7 years of service with the employer. There is no additional adjustment to the compensation maximum for Smith's early retirement age of 60.

Smith's high consecutive 3 years of salary occurred in 2016 through 2018.

$$\text{High consecutive 3-year average salary} = \frac{\$175,000 + \$185,000 + \$190,000}{3} = \$183,333$$

$$\text{Pro-rated for service less than 10 years} = \$183,333 \times 7/10 = \$128,333$$

The smaller of the dollar maximum and the compensation maximum is the dollar maximum of \$121,440.

Answer is C.

### Question 39

The top heavy ratio is based upon the valuation results for the valuation date during the 12-month period ending on the determination date. The determination date is the last day of the prior year. For the defined benefit plan calendar year beginning 1/1/2021, the determination date is 12/31/2020. The valuation date for that year is 1/1/2020. Therefore, the 1/1/2020 valuation results are used for the defined benefit plan for purposes of the top heavy ratio. (Note that the valuation dates are not given for the two plans, as has been the case in past exam questions. However, based upon the information provided, it must be assumed that the defined benefit plan uses a 1/1 valuation date, and that the profit sharing plan uses a 3/31 valuation date.)

The profit sharing plan is not a calendar year plan, as it begins on 4/1 and ends on 3/31 each year. Each 3/31 is a determination date for the profit sharing plan, and the determination date that falls within the same calendar year as the determination date for the defined benefit plan is 3/31/2020. The valuation date for the profit sharing plan is 3/31/2020 for the plan year ending 3/31/2020. Therefore, the 3/31/2020 account balances are used for the profit sharing plan for purposes of the top heavy ratio.

Treasury regulation 1.416-1, Q&A T-23 describes the determination of the top heavy ratio when plans are aggregated with different plan years.

The top heavy ratio is equal to the present value of the accrued benefits for key employees (account balances from the profit sharing plan) divided by the present value of accrued benefits for all employees. It is given that Smith is the only key employee. Brown terminated employment on 1/20/2019, which is more than a year prior to the defined benefit plan determination date of 12/31/2020. As a result, Brown is ignored for purposes of the top heavy ratio (see IRC section 416(g)(4)(E)).

$$\begin{aligned}\text{Top heavy ratio} &= \frac{400,000 + 225,000}{400,000 + 225,000 + 100,000 + 100,000} \\ &= 75.76\%\end{aligned}$$

Answer is D.

## Question 40

The top heavy ratio is based upon the valuation results for the valuation date during the 12-month period ending on the determination date. The determination date is the last day of the prior year. For the 2021 plan year, the determination date is 12/31/2020. The valuation date for that year is 12/31/2020. Therefore, the 12/31/2020 valuation results are used for purposes of the 2021 top heavy ratio.

Treasury regulation 1.416-1, Q&A T-6 provides rules for the determination of the required aggregation group for purposes of the top heavy ratio. Each plan of the employer that has at least one key employee must be aggregated (Plan B, Plan C, and Plan D in this question). In addition, any plans aggregated for purposes of either coverage or nondiscrimination testing are part of the required aggregation group. In this question, plans A and D have been aggregated for coverage and nondiscrimination testing, so Plan A must also be included in the top heavy ratio. Therefore, all 4 plans are included, with the 12/31/2020 valuation results being used.

The top heavy ratio is equal to the present value of the accrued benefits for key employees divided by the present value of accrued benefits for all employees.

Top heavy ratio

$$\begin{aligned} &= \frac{14,500,000 + 17,000,000 + 2,200,000}{14,500,000 + 17,000,000 + 2,200,000 + 2,200,000 + 11,500,000 + 11,500,000 + 2,350,000} \\ &= 55.02\% \end{aligned}$$

Answer is B.

## Question 41

The top heavy minimum benefit under IRC section 416(c)(1) is equal to 2% of the high consecutive 5-year average salary per year of top heavy plan participation (participation during years in which the plan was top heavy), up to a maximum of 10 years. The plan was top heavy from 2016 through 2019, for a total of 4 years (Smith was a participant for all 4 years, having been hired on 1/1/2016). The plan is not currently top heavy for 2020, so salary paid since 2019 (the last top heavy year) is ignored for purposes of the 5-year average salary, essentially freezing the top heavy minimum at the 2019 level. The average will be a 4-year average as Smith only has 4 years of salary to average.

Top heavy minimum benefit

$$\begin{aligned} &= 2\% \times \frac{\$45,000 + \$50,000 + \$55,000 + \$65,000}{4} \times 4 \text{ years} \\ &= \$4,300 \end{aligned}$$

Smith has 5 years of service as of 12/31/2020. All years of service must be used for vesting, regardless of whether the plan is currently top heavy. Under the 6-year graded vesting schedule of IRC section 416(b)(1)(B), a participant with 5 years of service is 80% vested.

$$\text{\$X} = \$4,300 \times 80\% = \$3,440$$

Answer is B.

## Question 42

IRC section 4975(c)(1)(A) states that the “sale or exchange, or leasing, of any property between the plan and a disqualified person” is a prohibited transaction. IRC section 4975(e)(2)(E) describes a 50% or more owner as a disqualified person.

The participant is a 100% owner, so clearly is a disqualified person. The participant pays rent to the plan for the use of the real estate, so this is a prohibited transaction. The statement is true.

Answer is A.

### Question 43

IRC section 417(g)(2)(A) defines the qualified optional survivor annuity (QOSA) percentage to be 50% when the qualified joint and survivor annuity (QJSA) percentage is at least 75%. With the QJSA percentage being 75%, the QOSA percentage for this plan is 50%.

Smith will reach 10 years of service on 1/1/2022, at which time Smith will be age 62. That is the first date on which Smith will satisfy the requirements for early retirement, so that is the earliest date that Smith could retire.

The given annual accrued benefit as of 1/1/2022 (the annuity start date), is \$36,000. Note that it is not clear whether this is the accrued benefit payable beginning at age 65, or if it has already been reduced to age 62. With the 2% early retirement reduction factor per year that the benefit begins before age 65 being provided in the data, it makes the most sense to assume that the \$36,000 accrued benefit is payable beginning at age 65. This must be reduced by 6% (2% for 3 years) to find the benefit payable at age 62.

Reduced early retirement benefit at age 62 =  $\$36,000 \times 0.94 = \$33,840$

This must be converted from a life annuity to a joint and 50% survivor annuity, using the given factor.

$\$X = (\$33,840/12) \times 0.93 = \$2,622.60$

Answer is C.