PRACTICE EXAM 19 — QUESTIONS 1–50

Format: Multi-Step Quantitative Word Problem Questions — each item presents a quantitative scenario requiring 2-3 calculation steps before arriving at a numerical answer. The four answer options each present plausible numerical results from different correct or incorrect calculation paths.

1. A contractor's project has direct costs of $180,000. The firm applies 12 percent overhead on direct cost, then targets a 20 percent profit margin on the final selling price. What is the required bid price?

A. $252,000

B. $241,920

C. $216,000

D. $225,792

2. A subcontractor's contract value is $480,000. Change orders during the project totaled +$60,000. The contract specifies 10 percent retainage withheld through substantial completion, then 50 percent of accumulated retainage released at substantial completion. All work including change orders has reached substantial completion. What amount of retainage is released at substantial completion?

A. $24,000

B. $25,500

C. $27,000

D. $54,000

3. A contractor's annual safety report shows 7 OSHA recordable injuries and 234,500 total hours worked across all employees during the calendar year. Using the standard TRIR formula of (Recordables × 200,000) ÷ Total hours worked, what is the firm's TRIR, rounded to two decimals?

A. 2.99

B. 5.50

C. 5.97

D. 11.94

4. A project task has the following PERT estimates: optimistic (a) = 8 days, most likely (m) = 14 days, pessimistic (b) = 26 days. What is the expected duration using the standard PERT formula, rounded to one decimal place?

A. 14.0 days

B. 15.0 days

C. 16.0 days

D. 16.3 days

5. An SC contractor purchases $42,000 of materials from an out-of-state supplier who does not collect SC sales tax. The SC state sales tax rate is 6 percent, and local option taxes in the project county add 2.5 percent. The contractor will self-remit use tax on the project materials. What is the total SC state plus local use tax owed?

A. $2,520

B. $1,050

C. $3,360

D. $3,570

6. A contractor's surety quotes a tiered bond rate: 1.8 percent on the first $500,000 of contract value, and 1.4 percent on the portion above $500,000. The contract value is $1,250,000. What is the total bond cost?

A. $17,500

B. $19,250

C. $22,500

D. $19,500

7. An employee earns $1,800 gross weekly. FICA total rate is 7.65 percent (Social Security 6.2 percent plus Medicare 1.45 percent), matched by the employer. The employer also pays FUTA at 0.6 percent on the first $7,000 of annual wages per employee. The employee has earned $5,800 year-to-date entering this week. What is the employer's total payroll tax cost for this week, rounded to two decimals?

A. $137.70

B. $148.50

C. $144.90

D. $147.30

8. A project task has the following schedule data: early start day 12, early finish day 30, late start day 18, late finish day 36. What is the total float for the task?

A. 6 days

B. 8 days

C. 12 days

D. 18 days

9. A project has an original contract value of $900,000. The contractor has incurred actual cost-to-date of $480,000 and projects $320,000 additional cost to complete. The contractor has billed $510,000 to date. What is the project's underbilled or overbilled position?

A. Underbilled by $20,000

B. Underbilled by $30,000

C. Overbilled by $20,000

D. Overbilled by $30,000

10. A contractor uses a 25 percent markup applied to direct cost. The direct cost of a project is $240,000. What is the bid price, and what profit margin does this represent on the bid price, rounded to one decimal place?

A. Bid $300,000; margin 25.0 percent

B. Bid $260,000; margin 7.7 percent

C. Bid $300,000; margin 20.0 percent

D. Bid $320,000; margin 25.0 percent

11. A contractor's CGL policy has a $1,000,000 per-occurrence limit and $2,000,000 aggregate limit. During the policy period, the contractor has paid claims of $450,000 and $680,000 from two separate prior occurrences. A third claim is now filed for $950,000. How much of the third claim will the policy pay?

A. $950,000

B. $870,000

C. $1,000,000

D. $80,000

12. A construction firm's balance sheet shows: Cash $150,000; Accounts Receivable $420,000; Inventory $180,000; Current Liabilities $500,000. What is the firm's quick ratio (acid-test ratio), rounded to two decimals?

A. 1.14

B. 1.50

C. 0.30

D. 0.84

13. A subcontractor filed an SC mechanic's lien on March 17, 2026. The SC enforcement deadline is 6 months from filing. On what calendar date does the enforcement deadline expire?

A. September 17, 2026

B. September 13, 2026

C. September 16, 2026

D. September 18, 2026

14. A contract has a 240-day schedule with liquidated damages of $850 per calendar day for late completion. The contractor finishes 35 calendar days late, with a documented 12-day owner-caused delay that the architect has agreed warrants a time extension. What are the net contractor LD damages?

A. $10,200

B. $19,550

C. $29,750

D. $40,800

15. An SC C-corporation has taxable income of $600,000 for the year. The SC corporate income tax rate is 5 percent, applied to taxable income. The federal corporate tax rate is 21 percent, applied to taxable income after deducting the state income tax (state tax is federally deductible). What is the corporation's combined federal plus state corporate income tax liability?

A. $126,000

B. $130,000

C. $156,000

D. $149,700

16. An ICE audit identifies 28 I-9 paperwork violations at a contractor's office. The penalty schedule assesses $275 per violation for the first 10 violations and $585 per violation for each violation beyond 10. The contractor is a first-time offender. What is the total penalty assessment?

A. $7,700

B. $16,380

C. $11,170

D. $13,280

17. A project's bid price was $720,000 with a budgeted 22 percent gross profit margin. During execution, actual direct costs were 8 percent over budget. What is the actual gross profit margin on the project, rounded to one decimal?

A. 14.0 percent

B. 15.0 percent

C. 15.8 percent

D. 22.0 percent

18. An SC contractor has 6 full-time employees plus 2 part-time employees who each work 25 hours per week. The SC workers compensation threshold counts part-time workers proportionally based on full-time equivalence at 40 hours. What is the contractor's FTE headcount, and does the firm exceed the SC 4-employee WC coverage threshold?

A. 7.25 FTE; threshold exceeded

B. 8.00 FTE; threshold exceeded

C. 6.00 FTE; threshold exceeded

D. 7.25 FTE; threshold not exceeded

19. A contractor's bid for a public project is $1,200,000 (lowest). The second-lowest bidder is at $1,350,000, and the third at $1,400,000. The bid documents specify bid verification is required if the lowest bid is more than 15 percent below the second-lowest bid. What is the contractor's bid percentage below the second-lowest, and is verification required?

A. 12.5 percent; verification required

B. 11.1 percent; verification not required

C. 15.0 percent; verification required

D. 16.7 percent; verification required

20. A contractor purchases $58,000 of materials for an SC commercial project from an SC supplier. SC state sales tax is 6 percent, with a local option tax of 1 percent applicable in the project county. The supplier charges sales tax on the full purchase. What is the total cost of materials including tax, and what amount of the tax goes to SC as the state portion only?

A. Total cost $61,480; state portion $3,480

B. Total cost $62,060; state portion $4,060

C. Total cost $62,060; state portion $3,480

D. Total cost $58,000; state portion $3,480

21. A federally funded project requires Davis-Bacon prevailing wages. A laborer's prevailing wage classification is $31.50 per hour cash wage plus $9.25 per hour fringe benefit. The laborer works 47 hours in a single workweek, with overtime at time-and-a-half on the cash wage portion only over 40 hours. What is the laborer's gross pay for the week under Davis-Bacon?

A. $1,590.75

B. $1,915.25

C. $2,025.50

D. $2,057.88

22. A 180-day project schedule is at day 120 with 75 days of work remaining, but only 60 calendar days remain until contract completion. The contractor can crash the schedule by adding shifts at $1,200 per day of compression. How many days of crashing are required, and what is the total crash cost?

A. 12 days; $14,400

B. 15 days; $18,000

C. 30 days; $36,000

D. 60 days; $72,000

23. A contractor's pay application for the current month shows $385,000 of work in place this month. Contract retainage is 10 percent. What is the net payment due the contractor for the current month (after retainage withholding)?

A. $307,500

B. $346,500

C. $385,000

D. $1,134,000

24. A subcontractor's last day of work on an SC commercial project was January 22, 2026 (a non-leap year). The SC mechanic's lien statute requires filing within 90 days of last work. What is the latest calendar date for a timely lien filing?

A. April 20, 2026

B. April 21, 2026

C. April 22, 2026

D. April 24, 2026

25. A firm's annual overhead is $720,000. The firm projects $4,800,000 in revenue for the year and uses revenue-based overhead allocation. A specific project has bid revenue of $390,000. What overhead amount should be allocated to this project?

A. $39,000

B. $48,750

C. $46,800

D. $58,500

26. A project shows: contract value $1,500,000; estimated total cost $1,200,000; actual cost incurred to date $720,000; amount billed to date $1,000,000. What is the percent complete by cost, and what is the billing position (over- or underbilled)?

A. 48 percent complete; underbilled $40,000

B. 60 percent complete; underbilled $100,000

C. 60 percent complete; overbilled $100,000

D. 67 percent complete; overbilled $200,000

27. A contractor has 47 employees. During the calendar year, the firm recorded 5 OSHA recordable injuries, of which 2 involved days away from work (DART cases). Total hours worked were 100,000. What is the firm's DART rate?

A. 2.00

B. 2.50

C. 4.00

D. 10.00

28. A contractor's monthly gross payroll is $84,000. The contractor matches FICA at 7.65 percent and is subject to SC SUI at 1.2 percent and FUTA at 0.6 percent. All 28 employees have already exceeded both the SUI cap and the FUTA $7,000 cap for the year. What is the contractor's total monthly payroll tax expense beyond gross wages?

A. $7,938

B. $7,434

C. $6,930

D. $6,426

29. A 4-month project has contract value $800,000 with monthly billings expected at 25 percent, 30 percent, 25 percent, and 20 percent respectively. Retainage is 10 percent on all billings, released at project completion. Monthly direct costs are 85 percent of monthly billings. Assuming all billings are paid the same month (less retainage), what is the contractor's cumulative cash position (cash received less direct costs paid) at the end of month 2?

A. $22,000

B. $44,000

C. $66,000

D. -$22,000

30. A project at month 5 shows: budget at completion (BAC) $1,500,000; actual cost (AC) $620,000; earned value (EV) $660,000; planned value (PV) $720,000. What are the cost performance index (CPI) and schedule performance index (SPI), rounded to two decimals?

A. CPI 0.94; SPI 1.09

B. CPI 1.16; SPI 1.09

C. CPI 1.06; SPI 1.09

D. CPI 1.06; SPI 0.92

31. A surety bond program has tiered rates: 2.0 percent on the first $250,000 of contract value; 1.5 percent on contract value from $250,000 to $1,000,000; and 1.0 percent on contract value above $1,000,000. The contract value is $1,600,000. What is the total bond cost?

A. $24,000

B. $22,250

C. $32,000

D. $16,000

32. A cost-plus contract with a guaranteed maximum price (GMP) of $750,000 specifies the contractor receives actual cost plus a 12 percent fee, capped at the GMP. Actual project cost at completion is $620,000. What amount does the contractor bill the owner?

A. $694,400

B. $750,000

C. $620,000

D. $784,000

33. A subcontractor's bid is $145,000. The GC marks up subcontractor bids by 8 percent and applies a 5 percent bond cost on the marked-up subcontract value. What total amount does the GC include in its prime bid for this subcontract?

A. $145,000

B. $156,600

C. $159,500

D. $164,430

34. A framing project requires 4,200 linear feet of wall framing. The labor productivity standard is 0.18 labor hours per linear foot. The labor rate is $32 per hour, and the contractor adds 25 percent for taxes, insurance, and labor burden. What is the total burdened labor cost for the framing scope?

A. $30,240

B. $24,192

C. $25,200

D. $37,800

35. A contractor's bid was $800,000 with budgeted direct cost $640,000 (20 percent gross margin). During execution, the contractor incurred $35,000 of additional unforeseen-condition costs with no approved change order. Material price escalation also added 4 percent to the budgeted material cost of $240,000. What is the actual gross profit margin on the project, rounded to one decimal?

A. 11.7 percent

B. 14.4 percent

C. 17.5 percent

D. 20.0 percent

36. An employee's bi-weekly gross pay is $3,200. The employee elects $250 pre-tax 401(k) contribution per pay period. Federal income tax withholding is calculated on taxable wages (gross minus 401(k)) at

an effective 14 percent rate. FICA (7.65 percent) is calculated on gross wages without 401(k) reduction. What is the total federal payroll deduction from this paycheck (FIT plus employee FICA)?

A. $638.68

B. $657.80

C. $692.80

D. $448.00

37. A contractor submits a bid of $2,400,000 on a public project. The bid documents require a bid bond equal to 5 percent of the bid price. The bond premium rate is 0.4 percent of the bond face value. What is the bond face value and the premium cost?

A. Face $120,000; premium $480

B. Face $96,000; premium $384

C. Face $120,000; premium $9,600

D. Face $480,000; premium $1,920

38. A change order proposal includes direct labor $18,000; direct material $24,000; equipment $8,000. The contract allows 10 percent overhead and 8 percent profit on direct cost. A 2 percent bond and insurance surcharge is then applied to the subtotal. What is the total change order price?

A. $59,000

B. $50,000

C. $58,800

D. $60,180

39. An SC contractor purchases materials from two sources during the year: $85,000 from an SC supplier (SC 6 percent sales tax collected at point of sale), and $48,000 from an out-of-state supplier (no tax collected). The contractor must self-remit SC use tax at 6 percent on out-of-state purchases. What is the total SC use tax owed?

A. $2,880

B. $5,100

C. $7,980

D. $0

40. A schedule has three paths to completion: Path 1 = 38 days; Path 2 = 42 days; Path 3 = 35 days. The contract completion date is 45 calendar days from project start. What is the total project float on the critical path?

A. 7 days

B. 10 days

C. 3 days

D. 0 days

41. A contractor wants to achieve $80,000 net profit on a project. Overhead is 12 percent of bid price. Project direct cost is $420,000. What bid price is required to achieve the profit target?

A. $568,182

B. $500,000

C. $540,800

D. $600,000

42. A contractor's workers compensation policy has an experience modification rate (mod) of 1.15. The base premium rate is $4.25 per $100 of annual payroll. Annual payroll is $1,800,000. What is the annual WC premium?

A. $76,500

B. $87,975

C. $93,150

D. $66,522

43. A 240-calendar-day schedule is at day 160 with 105 days of work remaining, but only 80 calendar days remain until contract completion. The crashing cost is $1,800 per day of schedule compression. To finish on time, how many days must be compressed, and what is the total crashing cost?

A. 20 days; $36,000

B. 25 days; $36,000

C. 80 days; $144,000

D. 25 days; $45,000

44. A contractor's surety bond program has bid bond at 0.4 percent of bid price, performance bond at 1.2 percent of contract value, and payment bond at 0.8 percent of contract value. The contractor is awarded a $3,200,000 project at its bid price. What is the total combined bond cost (bid plus performance plus payment)?

A. $51,200

B. $64,000

C. $89,600

D. $76,800

45. A foundation slab is 60 feet long by 40 feet wide by 6 inches thick. Concrete is priced at $145 per cubic yard delivered. The contractor adds 8 percent for waste. What is the total cost of concrete for the slab?

A. $6,440

B. $7,425

C. $6,960

D. $7,830

46. A subcontractor's contract is $360,000. Standard 10 percent retainage is withheld through final completion. At substantial completion (90 percent of contract value billed), the architect approves release of half the accumulated retainage. The remainder releases at final completion one month later. What is the subcontractor's cumulative cash receipts at the end of the substantial completion month?

A. $307,800

B. $291,600

C. $324,000

D. $340,200

47. A project at month 6 reports: budgeted cost of work performed (BCWP) $480,000; actual cost of work performed (ACWP) $545,000; budgeted cost of work scheduled (BCWS) $510,000. What are the cost variance (CV) and schedule variance (SV)?

A. CV +$65,000; SV +$30,000

B. CV -$65,000; SV +$30,000

C. CV +$30,000; SV -$65,000

D. CV -$65,000; SV -$30,000

48. A wall is 80 feet long by 9 feet high, built with 8-inch concrete masonry units sized 16 inches long by 8 inches high (nominal). The block-per-square-foot factor is 1.125. The contractor adds 5 percent for waste and breakage and rounds up to the next whole block. How many blocks are required?

A. 851 blocks

B. 810 blocks

C. 720 blocks

D. 891 blocks

49. A contractor's general aggregate is $2,000,000. Current paid claims this policy year total $850,000. A new claim of $1,200,000 has just been reported. The per-occurrence limit is $1,000,000. How much will the policy pay on the new $1,200,000 claim?

A. $1,200,000

B. $1,000,000

C. $1,150,000

D. $850,000

50. An SC sole proprietor has taxable income of $145,000 for the year. The SC income tax bracket structure (as stated in the contract licensing exam reference) calculates tax on amounts above $17,300 as $1,177 plus 6.5 percent of the amount over $17,300. What is the SC income tax liability based on this stated formula?

A. $8,300.50

B. $9,477.50

C. $9,425.00

D. $11,962.50

PRACTICE EXAM 19: ANSWER KEY AND EXPLANATIONS

1. A — $252,000 bid price. Direct cost plus overhead = $180,000 × 1.12 = $201,600. To achieve a 20 percent margin on the selling price, divide by (1 − margin): $201,600 ÷ 0.80 = $252,000. The markup-versus-margin distinction is critical: 20 percent margin requires dividing by 0.80, not multiplying by 1.20.

2. C — $27,000 released. Adjusted contract = $480,000 + $60,000 = $540,000. Total retainage at 10 percent = $54,000. Half released at substantial completion = $54,000 × 0.50 = $27,000. Change orders increase the retainage base proportionally, and the 50 percent release rule applies to the accumulated retainage at the milestone.

3. C — TRIR = 5.97. Applying the OSHA standard formula (Recordables × 200,000) ÷ Total hours: (7 × 200,000) ÷ 234,500 = 1,400,000 ÷ 234,500 ≈ 5.97. The 200,000 constant represents 100 full-time-equivalent employees over a full year and is fixed across all OSHA rate calculations.

4. B — 15.0 days. PERT expected duration uses the weighted formula (a + 4m + b) ÷ 6 to give the most likely estimate four times the weight: (8 + 4×14 + 26) ÷ 6 = 90 ÷ 6 = 15.0 days. The weighting captures asymmetric uncertainty better than a simple three-point average.

5. D — $3,570 total use tax. State portion = $42,000 × 0.06 = $2,520. Local portion = $42,000 × 0.025 = $1,050. Combined state plus local use tax = $2,520 + $1,050 = $3,570. SC contractors are end consumers of materials and bear the full combined-rate use tax when out-of-state suppliers fail to collect.

6. D — $19,500 total bond cost. Tier 1: $500,000 × 0.018 = $9,000. Tier 2: $750,000 × 0.014 = $10,500. Total = $19,500. Tiered bond pricing recognizes that marginal risk per dollar declines as contract size grows, so the upper tier carries a lower rate.

7. C — $144.90 total weekly employer cost. Employer FICA match = $1,800 × 0.0765 = $137.70. FUTA-taxable amount this week = $7,000 − $5,800 = $1,200 (the unused FUTA base); FUTA = $1,200 × 0.006 = $7.20. Total = $137.70 + $7.20 = $144.90. FUTA stops applying once the $7,000 annual cap per employee is reached.

8. A — 6 days total float. Total float equals late start minus early start: 18 − 12 = 6 days. Total float represents the amount by which an activity can be delayed without delaying project completion and is a fundamental scheduling metric for identifying critical-path activities (which have zero float).

9. B — Underbilled by $30,000. Total estimated cost = $480,000 + $320,000 = $800,000. Percent complete by cost = $480,000 ÷ $800,000 = 60 percent. Earned revenue = $900,000 × 0.60 = $540,000. Billed $510,000 versus earned $540,000 = underbilled by $30,000 (earned more than billed).

10. C — Bid $300,000; margin 20.0 percent. Markup applies to direct cost: $240,000 × 1.25 = $300,000 bid. Profit = $60,000; margin on bid = $60,000 ÷ $300,000 = 20.0 percent. A 25 percent markup on cost converts to a 20 percent margin on selling price — the classic relationship demonstrating that markup and margin are not interchangeable.

11. B — $870,000 paid. Aggregate already used = $450,000 + $680,000 = $1,130,000. Remaining aggregate = $2,000,000 − $1,130,000 = $870,000. Although the per-occurrence limit of $1,000,000 would otherwise cap the new claim, the remaining aggregate of $870,000 is the lower (and binding) constraint.

12. A — Quick ratio = 1.14. The quick (acid-test) ratio excludes inventory, recognizing that inventory cannot always be liquidated quickly: ($150,000 + $420,000) ÷ $500,000 = $570,000 ÷ $500,000 = 1.14. A quick ratio above 1.0 indicates the firm can cover current liabilities from cash and AR alone, without depending on inventory liquidation.

13. A — September 17, 2026. The SC mechanic's lien enforcement deadline runs 6 calendar months from the filing date; 6 months from March 17 is September 17. Missing this deadline dissolves the lien by operation of SC Code Title 29 Chapter 5, regardless of the underlying claim's merit.

14. B — $19,550 net LD damages. Net contractor-caused delay = 35 days late − 12 days excused (owner-caused) = 23 days. LD = 23 × $850 = $19,550. Documented owner-caused delays warrant time extensions that reduce LD-chargeable days; only the contractor's own portion of the delay generates damages.

15. D — $149,700 combined liability. State tax = $600,000 × 0.05 = $30,000. Federal taxable income after state deduction = $570,000. Federal tax = $570,000 × 0.21 = $119,700. Combined = $30,000 + $119,700 = $149,700. The federal deduction of state income tax reduces the federal tax base and the total combined liability accordingly.

16. D — $13,280 total penalty. First 10 violations × $275 = $2,750. Remaining 18 violations × $585 = $10,530. Total = $13,280. The tiered penalty structure escalates with the number of violations to incentivize compliance, and the contractor pays per form for each I-9 paperwork defect.

17. C — 15.8 percent actual margin. Budgeted direct cost = $720,000 × (1 − 0.22) = $561,600. Actual cost = $561,600 × 1.08 = $606,528. Actual profit = $720,000 − $606,528 = $113,472. Actual margin = $113,472 ÷ $720,000 ≈ 15.8 percent. An 8 percent cost overrun erodes the 22 percent budgeted margin by about 6.2 percentage points.

18. A — 7.25 FTE; threshold exceeded. Part-time FTE = 2 × (25 ÷ 40) = 1.25. Total FTE = 6 + 1.25 = 7.25. Since SC requires WC coverage at 4 or more employees, 7.25 FTE clearly exceeds the threshold. Operating without WC coverage exposes the firm to direct injury liability plus statutory penalties.

19. B — 11.1 percent below; verification not required. Percentage below = ($1,350,000 − $1,200,000) ÷ $1,350,000 = 11.1 percent. Since 11.1 percent is less than the 15 percent verification threshold, verification is not required. The denominator is the higher (second-lowest) bid, the standard public bidding convention.

20. C — Total cost $62,060; state portion $3,480. Total tax = $58,000 × 0.07 = $4,060 (combined 6 percent state + 1 percent local). Total cost = $58,000 + $4,060 = $62,060. SC state portion alone = $58,000 × 0.06 = $3,480; the 1 percent local portion goes to the county, not the state.

21. C — $2,025.50 gross weekly pay. Straight-time cash: 40 × $31.50 = $1,260. Overtime cash: 7 × $31.50 × 1.5 = $330.75. Fringe (straight rate × all hours): 47 × $9.25 = $434.75. Total = $1,260 + $330.75 + $434.75 = $2,025.50. Davis-Bacon overtime applies the time-and-a-half premium to the cash wage component only, not to the fringe portion.

22. B — 15 days; $18,000 crash cost. Schedule slip = 75 days of remaining work − 60 calendar days available = 15 days. Crash cost = 15 × $1,200 = $18,000. The contractor must compress the remaining work by 15 days through overtime, additional shifts, or added crews to meet the contractual completion date.

23. B — $346,500 net payment. Retainage withheld = $385,000 × 0.10 = $38,500. Net due = $385,000 − $38,500 = $346,500 (equivalently $385,000 × 0.90). The retainage withholding applies only to the current month's work in place, not to cumulative billings.

24. C — April 22, 2026. Counting 90 days from January 22 in a non-leap year: 9 days in January (Jan 23–31) + 28 days in February + 31 days in March = 68 days through March 31. Day 90 falls 22 days into April. Missing the 90-day SC statutory window permanently extinguishes the lien right.

25. D — $58,500 allocated overhead. Firmwide overhead rate = $720,000 ÷ $4,800,000 = 15 percent. Project allocation = $390,000 × 0.15 = $58,500. Revenue-based allocation distributes overhead proportionally to each project's expected revenue, ensuring each project absorbs its fair share of fixed firm-wide costs.

26. C — 60 percent complete; overbilled $100,000. Percent complete = $720,000 ÷ $1,200,000 = 60 percent. Earned revenue = $1,500,000 × 0.60 = $900,000. Billed $1,000,000 − earned $900,000 =

overbilled by $100,000. Overbilling appears as a liability on the WIP report representing unearned billings.

27. C — DART rate 4.00. Using only DART cases in the numerator: (2 × 200,000) ÷ 100,000 = 4.00. The DART rate is narrower than TRIR, measuring only the most serious injuries (days away, restriction, or transfer); it gives a more focused view of severe safety performance.

28. D — $6,426 total monthly payroll tax. Employer FICA match = $84,000 × 0.0765 = $6,426. SUI and FUTA both return $0 because all 28 employees have exceeded their annual wage caps. Cap-exceeded payrolls reduce employer tax burden significantly in the later months of the year.

29. A — $22,000 positive cash position. Cumulative billings months 1–2 = (25 + 30) percent × $800,000 = $440,000. Cash received less 10 percent retainage = $440,000 × 0.90 = $396,000. Direct costs paid = $440,000 × 0.85 = $374,000. Cash position = $396,000 − $374,000 = $22,000. Retainage withholding can suppress cash flow even when project margins look healthy on paper.

30. D — CPI 1.06; SPI 0.92. CPI = EV ÷ AC = $660,000 ÷ $620,000 = 1.06 (ahead on cost). SPI = EV ÷ PV = $660,000 ÷ $720,000 = 0.92 (behind schedule). Indices above 1.0 are favorable; below 1.0 unfavorable. This project is performing well on cost but lagging the planned schedule.

31. B — $22,250 total bond cost. Tier 1: $250,000 × 0.020 = $5,000. Tier 2: $750,000 × 0.015 = $11,250. Tier 3: $600,000 × 0.010 = $6,000. Total = $22,250. Tiered bond programs apply each rate only to the dollar amount falling within that band, not to the full contract value.

32. A — $694,400 billed. Cost plus fee = $620,000 × 1.12 = $694,400. Since $694,400 falls below the GMP cap of $750,000, the contractor bills the cost-plus-fee amount, not the cap. The GMP functions as a ceiling, not a floor: actual cost plus fee governs unless that calculation exceeds the GMP.

33. D — $164,430 included in prime bid. Sub with markup = $145,000 × 1.08 = $156,600. Bond cost on marked-up subcontract = $156,600 × 0.05 = $7,830. Total = $156,600 + $7,830 = $164,430. Layering bond cost on top of the marked-up sub value ensures the bond cost is fully recovered separately from the markup margin.

34. A — $30,240 burdened labor cost. Total labor hours = 4,200 × 0.18 = 756. Direct labor cost = 756 × $32 = $24,192. Burdened cost = $24,192 × 1.25 = $30,240. The 25 percent labor burden captures payroll taxes, workers compensation, and benefits beyond the base hourly rate.

35. B — 14.4 percent actual margin. Material escalation = $240,000 × 0.04 = $9,600. Total actual cost = $640,000 + $35,000 + $9,600 = $684,600. Profit = $800,000 − $684,600 = $115,400. Margin = $115,400 ÷ $800,000 ≈ 14.4 percent. Unforeseen-condition costs plus material escalation eroded the 20 percent budgeted margin by about 5.6 points.

36. B — $657.80 total deduction. Taxable wages for FIT = $3,200 − $250 = $2,950. FIT = $2,950 × 0.14 = $413. FICA = $3,200 × 0.0765 = $244.80 (computed on gross, not the reduced amount). Total = $413 + $244.80 = $657.80. Pre-tax 401(k) reduces the FIT base but not the FICA base — a critical payroll distinction.

37. A — Face $120,000; premium $480. Bond face value = $2,400,000 × 0.05 = $120,000. Premium cost = $120,000 × 0.004 = $480. The premium rate is applied to the bond face value (the bond's coverage amount), not to the underlying contract value, so the premium scales with the bid bond requirement rather than with the bid itself.

38. D — $60,180 total change order price. Direct cost = $18,000 + $24,000 + $8,000 = $50,000. Overhead = $5,000. Profit = $4,000. Subtotal = $59,000. Bond/insurance surcharge = $59,000 × 0.02 = $1,180. Total = $60,180. The bond/insurance surcharge typically applies last to capture the contractor's full risk-bearing cost on the change.

39. A — $2,880 use tax owed. SC supplier purchases ($85,000) already had SC sales tax collected, so no use tax is owed on those. Out-of-state purchases ($48,000) at 6 percent = $2,880. Use tax applies only when SC sales tax was not collected at the point of sale, ensuring SC receives tax revenue on materials consumed within the state.

40. C — 3 days total project float. The critical path is the longest path: Path 2 at 42 days. Total float = contract completion (45 days) − critical path (42 days) = 3 days. Float is the slack between the critical path and the contract deadline; the longest path drives total project float.

41. A — $568,182 required bid price. Setting up the back-solve: X × (1 − 0.12) = $420,000 + $80,000. X × 0.88 = $500,000. X = $568,182. When overhead is expressed as a percentage of bid price (not cost), the back-solve requires dividing by (1 − overhead rate) rather than multiplying by (1 + overhead rate).

42. B — $87,975 WC premium. Base premium = ($1,800,000 ÷ $100) × $4.25 = 18,000 × $4.25 = $76,500. Modified premium = $76,500 × 1.15 = $87,975. The experience modification factor adjusts the base premium for the firm's individual claims history; a mod above 1.00 raises the premium accordingly.

43. D — 25 days; $45,000. Days behind schedule = 105 days of work remaining − 80 calendar days available = 25 days. Crash cost = 25 × $1,800 = $45,000. The contractor must compress the schedule by 25 days through overtime or additional crews to meet the contractual completion date.

44. D — $76,800 total bond cost. Bid bond = $3,200,000 × 0.004 = $12,800. Performance bond = $3,200,000 × 0.012 = $38,400. Payment bond = $3,200,000 × 0.008 = $25,600. Total = $12,800 + $38,400 + $25,600 = $76,800. The three bonds collectively cover bid responsiveness, contract performance, and downstream payment obligations.

45. C — $6,960 concrete cost. Volume = 60 × 40 × 0.5 ft = 1,200 cubic feet ÷ 27 = 44.44 cubic yards. With 8 percent waste: 44.44 × 1.08 = 48 cubic yards. Cost = 48 × $145 = $6,960. The 27-cubic-feet-per-cubic-yard conversion is essential, and the waste factor covers spillage, over-pour, and consolidation losses.

46. A — $307,800 cumulative cash receipts. Billed at substantial completion = $360,000 × 0.90 = $324,000. Retainage withheld = $324,000 × 0.10 = $32,400. Cash from billings net of retainage = $291,600. Plus half of retainage released at SC = $16,200. Total = $291,600 + $16,200 = $307,800.

47. D — CV −$65,000; SV −$30,000. CV = BCWP − ACWP = $480,000 − $545,000 = −$65,000 (over budget). SV = BCWP − BCWS = $480,000 − $510,000 = −$30,000 (behind schedule). Both variances negative means the project is performing unfavorably on cost AND schedule simultaneously.

48. A — 851 blocks. Wall area = 80 × 9 = 720 sq ft. Blocks at 1.125 per sq ft = 810 blocks. With 5 percent waste: 810 × 1.05 = 850.5, rounded up to 851. The 1.125 block-per-sq-ft factor accounts for nominal block dimensions and mortar joints, and rounding up ensures sufficient material on site.

49. B — $1,000,000 paid. Remaining aggregate = $2,000,000 − $850,000 = $1,150,000 (sufficient to fund a full per-occurrence claim). Per-occurrence limit caps the new claim at $1,000,000. Since the per-occurrence limit ($1M) is lower than the remaining aggregate ($1.15M), the per-occurrence limit binds.

50. B — $9,477.50 SC income tax. Amount over the bracket threshold = $145,000 − $17,300 = $127,700. Tax on excess at 6.5 percent = $127,700 × 0.065 = $8,300.50. Plus the base bracket amount of $1,177 yields $1,177 + $8,300.50 = $9,477.50. Bracket-based progressive tax requires applying the marginal rate to the excess and adding the fixed base amount.