

ERRATA for
PE Industrial and Systems Practice Exam
ISBN 978-1-947801-05-9
Copyright 2020 (April 2020 First Printing)
Errata posted 04-18-2022

Revisions are shown in red.

Question 8, p. 12

Consider the following equation:

$$Y = 5 \times \frac{C_1}{C_2} - 3 \times \frac{C_3}{C_4}$$

Subject to the following constraints:

$$6 \leq C_1 \leq 12$$

$$15 \leq C_2 \leq 20$$

$$1 \leq C_3 \leq 4$$

$$-12 \leq C_4 \leq -3$$

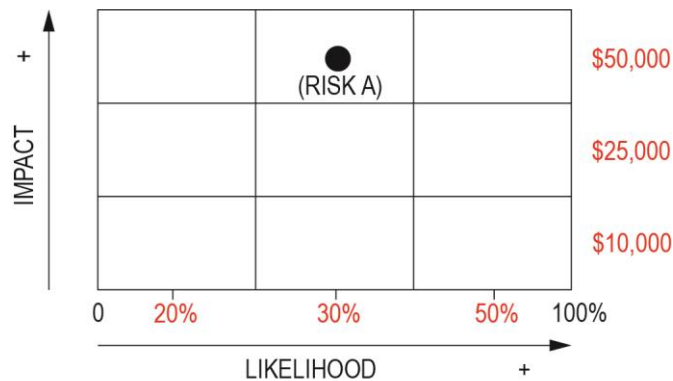
Match the values on the right to their corresponding variables on the left so that the value of Y is maximized:

C_1	<input type="text"/>		
C_2	<input type="text"/>	-12	6
		-3	8
C_3	<input type="text"/>	1.5	10
		1	12
C_4	<input type="text"/>	4	15
		4.25	22
Y	<input type="text"/>	5	40

ERRATA for
PE Industrial and Systems Practice Exam
ISBN 978-1-947801-05-9
Copyright 2020 (April 2020 First Printing)
Errata posted 04-18-2022

Question 15, p. 16

The risk management plan for your project defines impact levels 1, 2, and 3 as a cost impact of \$10,000, \$25,000, and \$50,000 and a schedule impact of 1 week, 3 weeks, and 6 weeks. An activity on your project is on the critical path and is represented in your risk matrix as shown. The amount of **risk contingency** you should request for this part of your project is most nearly:



NOT TO SCALE

Question 22, p. 19

The options should read as follows:

- A. 64,456
- B. 64,753
- C. 70,384
- D. 74,088

Question 32, p. 24

Option D should read as follows:

- D. Product marketing cost

ERRATA for
PE Industrial and Systems Practice Exam
ISBN 978-1-947801-05-9
Copyright 2020 (April 2020 First Printing)
Errata posted 04-18-2022

Question 42, p. 29

The options should read as follows:

- A. 0.16%
- B. 2.70%
- C. 5.26%
- D. 13.16%

Question 46, p. 31

The question should read as follows:

An industrial engineer needs to determine the proper freight class for an LTL shipment of a vacuum hose. The hose is in a carton, and 32 cartons make a full pallet load. Pallets are standard 48 in. × 40 in. × 45.5 in. **The cases** are double stacked for shipment, and the **resulting weight of the pallet** is 243.2 lb. The pcf value (lb/ft³) the engineer should use when determining the freight classification is most nearly:

Question 52, p. 34

Option D should read as follows:

- D. $\log (y) = a + \log (b) \times \log (x)$

ERRATA for
PE Industrial and Systems Practice Exam
ISBN 978-1-947801-05-9
Copyright 2020 (April 2020 First Printing)
Errata posted 04-18-2022

Question 80, p. 46

The question should read as follows:

A production facility is considering a new preventive maintenance policy. The engineering staff has collected the following data on a 250-hp electrical motor. The plant operates 8,760 hours a year. Cost of electricity is \$0.07 per kWh and 1 kW is equal to 1.341 hp.

Factor	New Policy (Preventive Maintenance)	Existing Policy (No Maintenance)
% Time motor is used	70%	75%
Motor load factor	55%	55%
Motor efficiency	92%	85%
Cost of maintenance	\$7,741.17	-

Compared to the annual cost to operate the motor without using preventive maintenance, the annual cost to operate the motor using preventive maintenance is:

- A. smaller
- B. larger
- C. equal
- D. not determinable with data given

ERRATA for
PE Industrial and Systems Practice Exam
ISBN 978-1-947801-05-9
Copyright 2020 (April 2020 First Printing)
Errata posted 04-18-2022

Solution 8, p. 53:

The solution should read as follows:

To maximize the value of Y , maximize the value of each half of the equation:

$$Y = 5 \times \frac{C_1}{C_2} - 3 \times \frac{C_3}{C_4}$$

For the first half of the equation this means selecting values for C_1 as large as possible, and for C_2 as small as possible, subject to the constraints. Therefore, $C_1 = 12$ and $C_2 = 15$.

The same logic is true for the second half of the equation, except the negative term means that the smallest absolute value should be selected. Therefore, $C_3 = 4$ and $C_4 = -3$.

Solving the equation for Y , $Y = 8$

C_1	12
C_2	15
C_3	4
C_4	-3
Y	8

ERRATA for
PE Industrial and Systems Practice Exam
ISBN 978-1-947801-05-9
Copyright 2020 (April 2020 First Printing)
Errata posted 04-18-2022

Solution 11, p. 54:

The solution should read as follows:

The critical path consists of activities B and E.

$$E_B = \frac{1 + 4(3) + 5}{6} = 3$$

$$E_E = \frac{3 + 4(4) + 5}{6} = 4$$

$$\text{Therefore, } E_{\text{critical path}} = 3 + 4 = 7$$

THE CORRECT ANSWER IS: A

Solution 22, p. 58:

The solution should read as follows:

24 hours × 7 days × 49 weeks × 9 machines = 74,088 total scheduled hours

74,088 × .95 = 70,384 available hours

70,384 × .92 = 64,753 machine hours available for processing

THE CORRECT ANSWER IS: B

Solution 32, p. 61:

THE CORRECT ANSWER IS: A, B, C

ERRATA for
PE Industrial and Systems Practice Exam
 ISBN 978-1-947801-05-9
 Copyright 2020 (April 2020 First Printing)
 Errata posted 04-18-2022

Solution 38, p. 64:

The solution should read as follows:

$$A = 500/20 = 25/\text{day}$$

$$B = 1,750/60 = 30/\text{day}$$

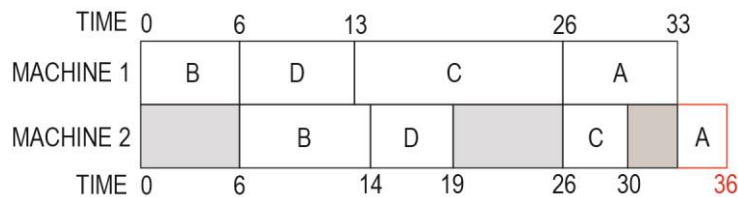
$$C = 2,750/120 = 23/\text{day}$$

$$\text{Sum is } 25 + 30 + 23 = 78/\text{day}$$

THE CORRECT ANSWER IS: 78

Solution 42, p. 65:

The solution should read as follows:



With B-D-C-A as the Johnson Rule solution, the elapsed time is 36 minutes. Therefore the total job completion time is reduced by $(38 - 36)/38 \times 100\% = 5.26\%$

THE CORRECT ANSWER IS: C

Solution 46, p. 67:

The solution should read as follows:

The phrase "the cases are double stacked for shipment" is only a distractor. That is why the question does not define the term "cases."

ERRATA for
PE Industrial and Systems Practice Exam
ISBN 978-1-947801-05-9
Copyright 2020 (April 2020 First Printing)
Errata posted 04-18-2022

Solution 55, p. 69:

The multiplier table was removed.

Solution 80, p. 76:

The solution should read as follows:

Using 8,760 hours in a year:

The annual cost for operating the motor using preventive maintenance would be:

$$[(250 \text{ hp} \times (1 \text{ kW}/1.341 \text{ hp}) \times 0.55 \times 8,760 \text{ hr/yr} \times 0.70 \times \$0.07/\text{kWh})]/0.92 + \$7,741.17 = \$55,580.63$$

The annual cost for operating the motor without using preventive maintenance would be:

$$[(250 \text{ hp} \times (1 \text{ kW}/1.341 \text{ hp}) \times 0.55 \times 8,760 \text{ hours/year} \times 0.75 \times \$0.07/\text{kWh})]/0.85 + \$0 = \$55,477.69$$

Therefore, the annual cost for operating the motor using preventive maintenance is **larger** than the annual cost for operating the motor without using preventive maintenance.

THE CORRECT ANSWER IS: B