WELDING INSPECTION TECHNOLOGY WORKBOOK

MODULE 7

METRIC PRACTICE FOR WELDING INSPECTION

For conversion Factors, refer to "Conversion Chart for Common Welding Terms" on page 10-9 of the workbook and for Formulae refer to page 10-8.

Q7-1 A 50.0 lb can of welding electrodes weighs how many kg?

a. 227 kg
b. 25 kg
c. 22.7 kg
d. 23,000 kg
e. none of the above

Q7-2 A weld joint is measured and found to be 345 mm long. How long is that joint in terms of inches?

a. 135 in.
b. 13.58 in.
c. 8760 in.
d. 876 in.
e. 13.0 in

Q7-3 What is the wire feed speed that is measured to be 175 in/min?

a. 0.070 m/s
b. 74.0 mm/s
c. 7.4 mm/s
d. 70 mm/s
e. 75 mm/s

Q7-4 Which of the following are the proper base unit(s) for linear measurement in the U.S. system?

a. yard
b. inch
c. foot
d. mile
e. all of the above

Q7-5 What is the base unit (according to AWS) for measuring mass in the SI system?

a. meter
b. kilogram
c. megapascal
d. liter
e. none of the above

Q7-6 A gas flow rate of 30 cfh is what in ℓ/min?

a. 1.4 ℓ/min
b. 14 ℓ/min
c. 140 ℓ/min
d. 64 ℓ/min
e. 640 ℓ/min

Q7-7 The metric system, or SI, is far more complicated than the U.S. system.
a. true
b. false

Q7-8 Many U.S. industries presently use the SI.
a. true
b. false

Q7-9 To be most effective, the U.S. worker must know which measurement system?
a. metric
b. SI
c. U.S. customary
d. all of the above

Q7-10 AWS has mandated the requirement that the metric system be used.
a. true
b. false

Q7-11 AWS has prepared a guide for aiding the transition to metrication. Its designation is:
a. D1.1
b. Section VIII
c. A3.0
d. A1.1
e. none of the above

Q7-12 Which of the following countries are not officially on the SI system?
a. Japan
b. Britain
c. Mexico
d. Australia
e. United States

Q7-13 In the U.S. customary system, what is the base unit ounce used to measure?
a. mass
b. volume
c. all of the above
d. distance

Q7-14 The U.S. system of measurement is based on powers of 10.
a. true
b. false

Q7-15 Pressure and tensile strength are measured in the SI using what as the base unit?
- a. liter
- b. meter
- c. pascal
- d. newton
- e. hertz

Q7-16 A regulator indicates 50 psi of gas pressure. What is this in kPa?
- a. 7.25 kPa
- b. 725 kPa
- c. 345 kPa
- d. 3.45 kPa
- e. 3,450 kPa

Q7-17 Deposition rate is measured in what units in the U.S. and SI systems?
- a. kg
- b. lb
- c. kg/hr
- d. lb/hr
- e. c and d above

Q7-18 When rounded to the nearest tenths, what is 4,532.182?
- a. 4,532.1
- b. 4,532.18
- c. 4,532
- d. 4,532.2
- e. 4,530

Q7-19 A material having a tensile strength of 8.5×10^4 psi has what value in megapascals?
- a. 5.9×10^6 MPa
- b. 5.86×10^3 MPa
- c. 58 MPa
- d. 586 MPa
- e. all of the above

Q7-20 A material having a tensile strength of 700 MPa has what value in psi?
- a. 10.150 psi
- b. 101.50 psi
- c. 1,015 psi
- d. 101,500 psi
- e. $1{,}015 \times 10^8$ psi

ANSWER KEY—MODULE 7 (Some Solutions Provided)

Q7-1 c (pg. 7-10, 11)
lbs to kg conversion factor is 0.454
$0.454 \times 50 = 22.7$

Q7-2 b (pg. 7-10, 11)
mm to inches conversion factor is 3.937×10^{-2}
$345 \times 3.937 \times 10^{-2} = 1358.265 \times 10^{-2}$ inches on calculator

Q7-3 b (pg. 7-10, 11)
inches/minute to mm/s conversion factor is 0.423
$175 \times 0.423 = 74.025$ mm/s on calculator

Q7-4 e (pg. 7-2)
Q7-5 b (pg. 7-3)
Q7-6 b (pg. 7-10, 11)
cfh to l/min conversion factor is 4.719×10^{-1}
$30 \times 4.719 \times 10^{-1} = 14.157$

Q7-7 b (pg. 7-3)
Q7-8 a (pg. 7-1)
Q7-9 d (pg. 7-1)
Q7-10 b (pg. 7-2)
Q7-11 d (pg. 7-1)
Q7-12 e (pg. 7-1)
Q7-13 c (pg. 7-2, 3)
Q7-14 b (pg. 7-2, 3)
Q7-15 c (pg. 7-4)
Q7-16 c (pg. 7-10, 11)
psi to kPa conversion factor is 6.895
$50 \times 6.895 = 345$

Q7-17 e (pg. 7-10, 11)
Q7-18 d (pg. 7-7)
Q7-19 d (pg. 7-10, 11)
conversion factor for psi to MPa is 6.895×10^{-3}
$8.5 \times 104 \times 6.895 \times 10^{-3} = 58.6075 \times 101$ on the calculator
= 586 MPa

Q7-20 d (pg. 7-10, 11)
conversion factor for MPa to psi is 1.450×10^{2}
$700 \text{ MPa} \times 1.45 \times 10^{2} = 1{,}015.00 \times 10^{2}$ on the calculator
= 101,500 psi