

Unit 4 - Week 3

Course outline

How does an NPTEL online course work?

Week 1

Week 2

Week 3

● Acoustic Emission Inspection

● Radiography Inspection

● Leak Testing

○ Thermographic Nondestructive Testing

● Advanced Nondestructive Testing Techniques, NDT Standards, Safety in NDT

○ Quiz : Assignment 3

○ Solution for Assignment 3

Week 4

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Assignment 3

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment.

Due on 2020-03-18, 23:59 IST.

1) Which of the following inspection technique requires stress during inspection process and detects movement of defects during loading of a test component? 1 point

- Dye penetrant inspection
 Acoustic emission inspection
 Magnetic particle inspection
 None of these.

No, the answer is incorrect.
Score: 0
Accepted Answers:
Acoustic emission inspection

2) In acoustic emission inspection, the amplitude of acoustic emission (AE) signal increases due to: 1 point

- Mechanically induced twinning
 Plastic deformation
 Small grain size
 Ductile failure

No, the answer is incorrect.
Score: 0
Accepted Answers:
Mechanically induced twinning

3) Which of the following non-destructive inspection method is a passive method? 1 point

- Ultrasonic Inspection
 Acoustic Emission Inspection
 Ultrasonic Inspection and Acoustic Inspection Method
 None of these.

No, the answer is incorrect.
Score: 0
Accepted Answers:
Acoustic Emission Inspection

4) Radiological density of a material is determined by: 1 point

- density of the material
 atomic number of the material
 both density and atomic number of the material
 None of these.

No, the answer is incorrect.
Score: 0
Accepted Answers:
both density and atomic number of the material

5) What is the wavelength range for the X-rays? 1 point

- Less than 0.01 nm
 200 to 350 nm
 100 to 200 nm
 0.01 to 10 nm

No, the answer is incorrect.
Score: 0
Accepted Answers:
0.01 to 10 nm

6) Which of the following atomic processes produces higher intensity X-rays of a single wavelength? 1 point

- Bremsstrahlung
 K-shell Emission
 Braking radiation
 Both bremsstrahlung and braking radiation

No, the answer is incorrect.
Score: 0
Accepted Answers:
K-shell Emission

7) What is the SI unit of leakage rate? 1 point

- std.cm³/s
 atm.cm³/s
 torr l/s
 Pa m³/s

No, the answer is incorrect.
Score: 0
Accepted Answers:
Pa m³/s

8) What is the acceptable leakage of gas from pipelines? 1 point

- 1×10^3 std.cm³/s
 1×10^{-2} std.cm³/s
 1×10^{-5} std.cm³/s
 1×10^{-1} std.cm³/s

No, the answer is incorrect.
Score: 0
Accepted Answers:
 1×10^{-5} std.cm³/s

9) Which among the following is the correct formula for calculating the leak rate in pressure change leak testing? 1 point
The symbols used have the following meaning:

P_1 = Initial pressure,

P_2 = Final pressure,

V = Volume of test part,

t = Measurement time period.

- Leak rate $= Q_L = \frac{(P_1 + P_2) \times V}{t}$
 Leak rate $= Q_L = \frac{(P_1 - P_2)}{t \times V}$
 Leak rate $= Q_L = \frac{(P_1 - P_2) \times t}{V}$
 Leak rate $= Q_L = \frac{(P_1 - P_2) \times V}{t}$

No, the answer is incorrect.
Score: 0
Accepted Answers:

$$\text{Leak rate} = Q_L = \frac{(P_1 - P_2) \times V}{t}$$

10) Which of the following non-destructive inspection technique is based on the physical phenomenon that any body of a temperature above absolute zero (-273.15 °C) emits electromagnetic radiation? 1 point

- Magnetic particle inspection
 Eddy current inspection
 Radiography inspection
 Thermographic inspection

No, the answer is incorrect.
Score: 0
Accepted Answers:
Thermographic inspection

11) Focusing lenses of thermographic (IR) cameras are made of: 1 point

- Glass
 Germanium
 Neodymium
 All of these.

No, the answer is incorrect.
Score: 0
Accepted Answers:
Germanium

12) Which of the following inspection technique uses internal excitation to perform the inspection? 1 point

- Vibrothermography using vibration source
 Lock-in thermography using halogen lamps
 Pulsed thermography using photographic flashes
 All of these.

No, the answer is incorrect.
Score: 0
Accepted Answers:
Vibrothermography using vibration source

13) Terahertz (THz) waves are electromagnetic waves, whose frequencies range between _____ and infrared. 1 point

- X-rays
 Ultraviolet
 Microwaves
 None of these.

No, the answer is incorrect.
Score: 0
Accepted Answers:
Microwaves

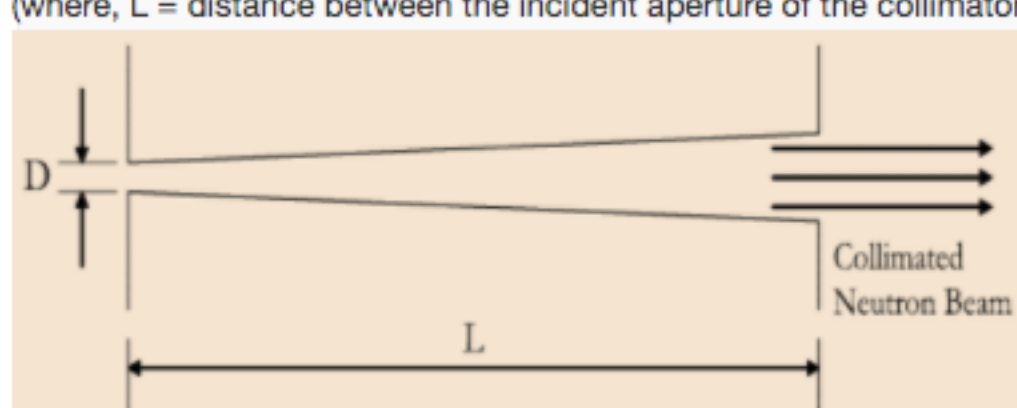
14) What is IRIS testing in non-destructive inspection? 1 point

- Internal Rotary Inspection System
 International Rotor Inspection Standard
 International Rolling Inspection System
 None of these.

No, the answer is incorrect.
Score: 0
Accepted Answers:
Internal Rotary Inspection System

15) Collimation ratio of neutron radiography facility is defined as: 1 point

(where, L = distance between the incident aperture of the collimator and the imaging plane, and D = diameter of the entrance aperture)



Divergent Collimator

- D/L
 $L + D$
 L/D
 $L - D$

No, the answer is incorrect.
Score: 0
Accepted Answers:

$$L/D$$