Lab 12 - Radiation

Due Nov 15 at 8am   **Points** 10   **Questions** 10   **Time Limit** None

Attempt History

	Attempt	Time	Score
LATEST	[Attempt 1](#)	3,532 minutes	10 out of 10

⚠ Correct answers are hidden.

Score for this quiz: **10** out of 10
Submitted Nov 11 at 8:41pm
This attempt took 3,532 minutes.

Question 1   1 / 1 pts

A patient is given 2.00 mCi of Gallium 67 for a radiography procedure. If Ga 67 has a half life of 78.3 hours and a biological half life of 12.0 years, what is the activity, in milicuries, remaining in the patient after exactly one week?

- ○ 1.45

- ○ 0.94

- ○ 1.98

- ● 0.452

- ○ 0.00E+00

Question 2   1 / 1 pts

If a welding arc, 500 mm away from a bystander produces 12.9 mW/cm^2 of UV light centered around 30<u>0</u> nm and given the blink reflex of 0.250 seconds, what percent of the TLV of 10 mJ/cm^2 is the eye of a person be exposed to if they accidentally looked at the arc?

- ○ 310%

- ○ 78.4%

- ◉ 32.3%

- ○ 516%

Question 3   1 / 1 pts

What is the safe distance (for the general public) in meters from an 802.11 g wireless router operating at 2.4 GHz using 1.0 watt of power through a 6.0 dBi antenna (maximum allowable EiRP by the FCC). (Ignore any near-field effects)

- ○ 5.6

- ◉ 0.18

- ○ 0.56

- ○ 0.22

- ○ 1.8

Question 4   1 / 1 pts

An automatic door opener using X-band radar operates at 10.5 GHz using 3.5 watts of power and broadcasting through a 6.0 dB antenna.

What is the power density, in mW/cm^2, 2 meters away where pedestrians walk through the beam? (Ignore any near-field effects)

- ○ 0.28

- ○ 0.42

- ◉ 0.028

- ○ 0.042

Question 5   1 / 1 pts

An oil drilling and exploration company uses a Cobalt 60 source for well logging. If the logger was purchased on June 1, 2005 and had an original activity of 49.987 kBq and was disposed of in September 21, 2019, what was the activity, in kilobecquerels, at the time of disposal if the half-life of Co 60 is 5.2713 years?

- ○ 7.6126

- ○ 38.729

- ○ 38.721

- ◉ 7.6224

Question 6   1 / 1 pts

How far, in cm, does the near field extend for an 802.11j wireless router operating at 5.0 GHz from a double wavelength dipole antenna of 12 cm?

- ○ 24

○ 0.048

◉ 48

○ 4.0

Question 7

1 / 1 pts

An ionizing smoke detector contains 0.90 microcuries of Americium 241 that has a half-life of 432 years. If the smoke detector is removed from a building after 50 years of service, what is the activity of the Americium, in microcuries, at that time?

○ 0.0023

○ 0.98

◉ 0.83

○ 0.77

Question 8

1 / 1 pts

An 802.11g wireless router operates at 2.40 GHz. What is the broadcast wavelength in cm?

○ 12,500

○ 0.125

○ 125

◉ 12.5

Question 9

1 / 1 pts

What thickness of lead, in millimeters, is the half value layer for a dental x-ray operating at 88.0 keV if the absorption coefficient is 87.1?

- ◉ 0.0788
- ○ 0.227
- ○ 0.0227
- ○ 127
- ○ 0.00788

Question 10

1 / 1 pts

Your business licensed radio system for your plant security and emergency staff broadcasts at 350 MHz with an ERP of 100 watts. If the antenna has a vertical dispersion angle of -30 degrees from horizontal, how high above the roof, in meters, must you place the antenna in order to keep facilities workers on the roof below the MPE for the general public?

- ○ 3.16
- ◉ 3.00
- ○ 5.16
- ○ 1.00

Quiz Score: **10** out of 10