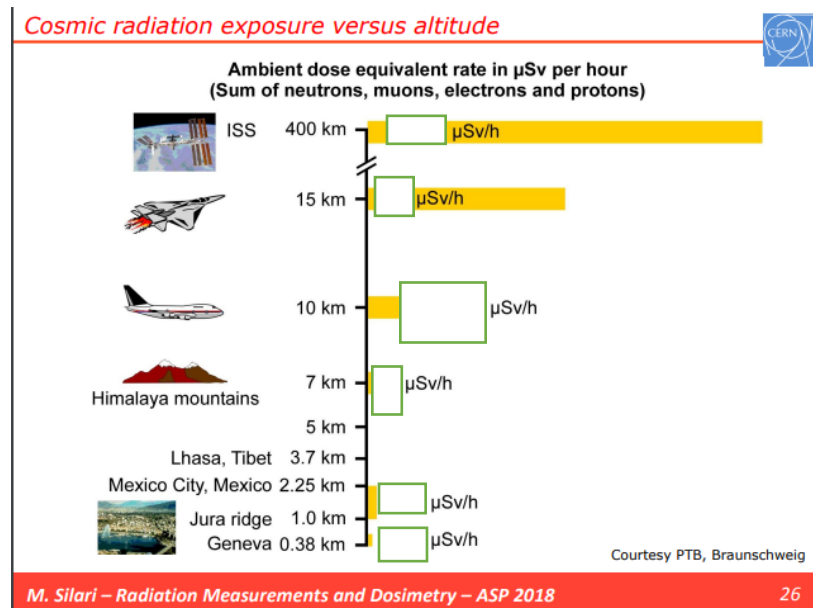


Bank Questions / Ch.5/ Environmental Radiation

Q1/ Point the value of dose equivalent rates in $\mu\text{Sv/h}$ in the follow boxes?



Q2/ Radioactive substances, like other toxic agents, may gain entry into the body by four processes, -----, -----, -----, ----- .

Q3/ The reciprocal of μ (the absorption coefficient) is defined as the mean free path, which is the average distance the photon travels in an absorber before an interaction takes place. **True or False**

Q4/ Neutrons are slowed to thermal energies with hydrogenous material: water, paraffin, plastic. **True or False**

Q5/ To slow down very fast neutrons, ----- or ----- might be used in front of the hydrogenous material.

Q6/ For low density materials, the range of 5.5 MeV alphas (from Am-241) is between ----- to ----- mg/cm^2 ; higher density materials give a range between -----, and ----- mg/cm^2 .

Q7/ The purpose of shielding is to block or attenuate the radiation field generated by a source. **True or False**

Q8/ The operation of personal radiation monitoring can be based on stimulated luminescence. Which of the following personal radiation monitors function(s) in that manner?

(a) OSL, (b) TLD, (c) Film dosimeter, (d) All of them.

Q9/ A useful dosimeter exhibits the following properties -----, -----, and -----.

Q10/ Gamma radiation can be shielded with -----.

Q11/ When **X-ray** enters the semiconductor detector it produces ion pair rather than electron-hole pair. **True or False**

Q12/ According to the **NCRP**, the annual occupational whole-body dose equivalent limit is 1000mSv. **True or False**

Q13/ In which type of monitoring device do photons release electrons by their interaction

with a (a) Film badge, (b) TLD, (c) Pocket dosimeter, (d) OSL

Q14/ Dosimeter is a device that measures directly or indirectly (a) Radiation exposure, (b) Radiation absorbed dose, (c) Radiation equivalent dose, (d) all of them.

Q15/ Which of the following is the main disadvantage of solid-state semiconductor detector?

(a) Low accuracy, (b) Low sensitivity, (c) It should be maintained at low temperature, (d) High pressure has to be produced.

Q16/ A device that is used to determine personnel exposure, using Al_2O_3 crystals and laser, is a Scintillation detector. **T or F**

Q17/ Because **alpha particles** are slow moving, they are not an internal exposure hazard.

Q18/ **Accuracy** describes how closely measurements are to each other and how carefully measurements were made while **Precision** specifies the proximity of the mean value of a measurement to the true value.

Q19/ Hand washing is a good work practice and an important final step after working with any radioactive material. T or False

Q20/ Describe the major characteristics of a useful dosimeter.

Q21/ Which type of nuclear radiation has the shortest range in tissue? (assume equal energy)
a) Gamma rays, b) Betas , c) Alphas, d) Neutrons.

Q22/ There are two ways for radioactive materials to be removed from the body:
----- ,-----

Q23/ What is the difference between TLD (thermoluminescence dosimeter) and OSL (Optically Stimulated Luminescence).

Q24/When nuclear radiations pass through, gas ionization is produced.' This is the principle of which of the following detectors?

- a) Film dosimetry
- b) thermoluminescence dosimeter
- c) Geiger Muller counter
- d) Scintillation counter

Q25/ Scintillation detector is a large flat crystal of which of the following materials?

- a) Sodium chloride
- b) Sodium iodide
- c) Sodium sulphate
- d) Sodium carbonate