

A.U. INSTITUTE OF NUCLEAR SCIENCES

ENTRANCE EXAM FOR HEALTH PHYSICS MSc PROGRAM

Q1.	Write at least 5 types of the known detectors used for measuring ionizing radiation	
Q2.	Explain operation principle of a photomultiplier tube (PMT) connected to a scintillator.	
Q3.	Write operation modes of ion chambers and then explain direct current (d.c.) and alternative current (a.c.) coupling ion chambers with an electrometer?	
Q4.	Write advantages and disadvantages of ion chambers.	
Q5.	Explain the regions of operation of Gas-Filled Detectors.	
Q6.	What is the difference between sensor and detector? Explain.	
Q7.	For a typical energy X-ray energy of 170 keV, what is the pulse amplitude in units of mV of an air filled ion chamber? Where detector capacitance is $C=2$ pF, and W-value is 34 eV for air.	
	<p>Note: Bluetooth, wireless data transmission devices, smart watches, mobile phones and all types of cameras are strictly prohibited during the exam but you can freely use the standalone dedicated calculator.</p>	<p>Prof. Dr. Haluk Yücel Instructor</p>