TASKS FOR USING QC DATA AND CALCULATING QC PARAMETERS [FOR RADIOGRAPHY]

DATA: ***X-RAY GENERATOR AND TUBE MEASUREMENTS***

These measurements were made with a keithley kVp divider s/n xxxxx, digital storage oscilloscope Gould 450 s/n zzzzz, and an MDH electrometer s/n yyyy with 6 cc chamber .

							FDD(cm)=	100
Focus	Set kV (kV)	Set mA (mA)	Set Time (ms)	Set mAs (mAs)	Meas kV (kV)	Meas T (ms)	Meas exp (mR)	Air kerma (mGy)
B	60	200	100	20	62	101	59	0.51
B	80	200	100	20	83	105	98.5	0.86
B	100	200	100	20	104	103	151	1.31
B	120	200	100	20	123	103	224	1.95
F	50	100	200	20	50	202	46	0.40
F	70	100	200	20	73	205	101	0.88
F	90	100	200	20	88	202	167	1.45
F	110	100	200	20	111	204	221	1.92
B	80	200	100	20	82	105	104	0.90
B	80	200	100	20	83	105	106	0.92
B	80	200	100	20	83	105	105	0.91
B	80	25	100	2.5	83	107	18.4	0.16
B	80	300	100	30	84.7	105	198	1.72
B	80	500	100	50	90	103	305	2.65
B	80	200	20	4	83	19	20.5	0.18
B	80	200	400	80	83	411	440	3.82
B	80	200	800	160	83	780	814	7.07
		Half Value Layer Measurements are shown below						
B+0mm Al	80	200	100	20			114	0.99
B+0mm Al	80	200	100	20			110	0.96
B+1mm Al	80	200	100	20			83.5	0.73
B+2mm Al	80	200	100	20			67.1	0.58
B+3mm Al	80	200	100	20			50.9	0.44
B+4mm Al	80	200	100	20				#VALUE!

CALCULATE THE FOLLOWING PARAMETRES USING THE DATA FROM THE TABLE

1 X-ray beam filtration (HVL) - plot the graph

2 Dose Output Consistency % [100*(st.dev)/(average)] for BF

3 kVp Consistency % [100*(st.dev)/(average)] for BF

4 Timer Consistency % [100*(st.dev)/(average)] for BF

5 kVp accuracy [100*(mean error)/(real value)] for BF and FF

6 kVp Linearity [plot the graph mGy/mAs against kVp2] for BF and FF

7 Timer accuracy [100*(mean error)/(real value)] for BF

8 Dose Output variation with mA [100*st.dev/average] for BF

9 kVp variation with mA [100*st.dev/average] for BF

10 TASK:

Calculate with how many kV will drop the HV, if the Exposure is 100 kV and 100 mA

USING PARAMETERS:

X-ray generator high voltage (HV) Transformer ratio ~ 1:500

Hospital voltage input from main - 200 V

Hospital main cables resistance - 0.2 ohms