Practice Question Set For A-Level
Subject : Physics
Paper-1 Topic: Particle And Radiation

Name of the Student:_____
Max. Marks : 23 Marks **Time : 23 Minutes**

Q1.

(a) The table gives information about some fundamental particles.

Complete the table by filling in the missing information.

particle	quark structure	charge	strangeness	baryon number
	uud		0	
Sigma $^{+}$	uus	+ 1		
	$u\bar{d}$		0	0

(7)

(b) Each of the particles in the table has an antiparticle.

(i) Give **one** example of a baryon particle **and** its corresponding antiparticle.

particle _____

antiparticle _____

(1)

(ii) State the quark structure of an antibaryon.

_____

(1)

(iii) Give **one** property of an antiparticle that is the same for its corresponding particle and **one** property that is different.

Same _____

_____

Different _____

_____

(2)
(Total 11 marks)

Q2.

(a) When free electrons collide with atoms in their *ground state*, the atoms can be excited or ionised.

(i) State what is meant by ground state.

_____

_____

_____

(1)

(ii) Explain the difference between excitation and ionisation.

_____

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_____

_____

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_____

(3)

(b) An atom can also become excited by the absorption of photons. Explain why only photons of certain frequencies cause excitation in a particular atom.

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_____

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_____

(4)

(c) The ionisation energy of hydrogen is 13.6 eV. Calculate the minimum frequency necessary for a photon to cause the ionisation of a hydrogen atom. Give your answer to an appropriate number of significant figures.

answer _____Hz

(4)

(Total 12 marks)