

DO NOT WRITE IN THIS AREA

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SECTION B

Answer ALL questions. Write your answers in the spaces provided.

- 11 In 2022, CERN announced the discovery of a new particle known as a pentaquark which is made of five quarks.

The table shows the charges on some quarks.

Quark	Charge / e
u	$+2/3$
d	$-1/3$
s	$-1/3$
c	$+2/3$

The five quarks in the pentaquark are c, \bar{c} , d, s and u.

Some scientists said the pentaquark is made of a meson and a baryon, held together by the attraction of their equal and opposite charges.

Determine the quark combination and charge of a meson and of a baryon that could make up the pentaquark.

Meson

.....

.....

Quark combination =

Charge =

Baryon

.....

.....

Quark combination =

Charge =

(Total for Question 11 = 5 marks)