

NAME:..... Expectation.....

JANAN SS PHYSICS DEPARTMENT
S.3 PHYSICS CONTINUOUS ASSESEMENT EXAM (C.A.T 3)
2024 TERM 1
TIME ALLOWED: 80MINUTES

INSTRUCTIONS:

- ❖ ATTEMPT ALL ITEMS IN THE EXAM.

QUESTION ONE: PRESSURE AND THE ATMOSPHERE (15SCORES)

SCENARIO: There is an on-going argument in class, a very hot debate between two groups with competing ideas. Group A says mountainous tops are in the stratosphere of the earth's atmosphere and for that reason you can experience nose bleeding on a mountain top. Group B is saying nose bleeding is only experienced at sea level where there is a lot of atmospheric pressure and mountain tops are in mesosphere. They have given an example that *A mercury barometer can be used to measure atmospheric pressure and if there is a mountain about 2.5km tall and a mercury barometer is taken from sea level when its barometric height is 760mmHg to the top of the mountain, the barometric height becomes 750mmHg.*

Hint: The density of air is about 1.25kgm^{-3} and is constant from top to bottom of mountain

Density of mercury is 13600kgm^{-3}

Acceleration due to gravity = 10ms^{-2}

Task: After listening to the argument critically,

- a) i) Which of the two groups is right about which layer the mountain tops are found and where nose bleeding is more likely to occur? (3scores)
ii) Explain to them why that group is right. (3scores)
ii) Provide the groups with a simple abbreviation/mnemonic to make the two groups easily understand the layers of the atmosphere (3scores)
- b) Group A would want to know how a mercury barometer could be used to measure Atmospheric pressure, help them out (a diagram will help them understand even better) (6scores)
- c) Is the group B giving an accurate example? (5scores)