GAYAZA HIGH SCHOOL

S.4 TERM 1-PHYSICS TEST

TIME : 1 Hr

INSTRUCTIONS:

Questions 1-5 are compulsory. Question 6 and 7 are optional, choose one of them.

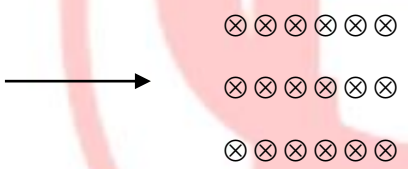
Assume, specific heat capacity of water = $4200\,JKg^{-1}K^{-1}$

1.(a)(i)Define ***nuclear fusion***. (1)

(ii) State two conditions necessary for nuclear fusion to occur. (1)

(iii) Give two uses of nuclear energy. (1)

(iv) The figure below shows alpha and beta particles entering a magnetic field. Complete the diagram showing how they are deflected. (1)



(v) Determine the value of x and y in the nuclear fission reaction shown below. (2)

$$^{235}_{92}U + ^{1}_{0}n \rightarrow ^{138}_{y}Ba + ^{x}_{36}Kr + 3(^{1}_{0}n) + energy$$

2.(a) What are ***X-rays?*** (1)

(b)(i) Give two differences between ***soft X-rays*** and ***hard X-rays?*** (2)

(ii) State two medical uses of X-rays. (2)

(iii) State one danger of X-rays. (1)

3.(a) Define ***secondary cells***. (1)

(b) State ***two advantages*** alkaline batteries have over lead acid cells. (2)

(iii) State and explain one defect of a simple cell. (3)

(4)(a) Define ***heat capacity.*** **(1)**

(b) An electric heater rated 1500W is used to heat water in an insulated container of negligible heat capacity for 10minutes.The temperature of water rises from 20^{o}C to 40^{o}C.Calculate the mass of water heated. (3)

(c) Explain why water is used as a coolant in motor vehicle engines. (2)

5.(a) Define ***specific latent heat of fusion*** of ice. (1)

(b) Explain why ice cubes are more effective in cooling a drink than cold water at the same temperature. (2)

© Calculate the amount of heat required to raise the temperature of 4.5kg of ice at $-10^{o}C$ to water at $80^{0}C$. (3)

6.(a)(i)State ***Boyle's law.*** (1)

(ii) Explain what you understand by the term ***absolute zero temperature***.(2)

(b) A gas whose volume is $100cm^{3}$ at $27^{0}C$ is heated at constant pressure to $177^{0}C$.Calculate its new volume. (3)

(c) State three useful applications of thermal expansion in solids. (3)

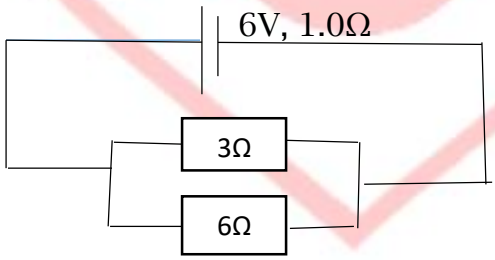
(d) Draw a graph to show variation of volume with temperature for water between 0°C and 15°C. (1)

7.(a) Define the term ***electromotive force*** *and* ***resistance.*** (2)

(b) State and explain the factors upon which resistance of a conductor depends. (3)

(b) A cell having e.m.f 6V and internal resistance of 1.0Ω is connected to two resistors as shown below:

Calculate the current flowing through each resistor. (5)



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