Click to download more NOUN PQ from NounGeeks.com



NATIONAL OPEN UNIVERSITY OF NIGERIA 91 Cadastral zone, Nnamdi Azikiwe Expressway, Jabi, Abuja FACULTY OF EDUCATION DEPARTMENT OF SCIENCE EDUCATION

EXAMINATION:	2021_2
COURSE CODE:	SED323
COURSE TITLE:	PHYSICS FOR INTEGRATED SCIENCE III
CREDIT UNIT:	2
TIME ALLOWED:	2HOURS
INSTRUCTION:	ANSWER QUESTION ONE AND ANY OTHER TWO

1 (a) Briefly explain what would happen to a stable element if it is bombarded by α – particles. **(12 marks)**

b) Calculate the values of the magnetic flux density *B* and the magnetic flux Φ within an air-core solenoid of diameter 2.50 cm and 3000 turns per metre when a current of 0.20 A flows. How do these values change when the solenoid is filled with a material of relative permeability 4000? **(18 marks)**

TOTAL = 30 MARKS

2a) Explain how bombardment of Uranium with neutrons could lead to (i) nuclear fission, (ii) chain reaction, and (iii) followed by nuclear explosion.(12 marks)

2b. The count rate of radioactive material is 800 count/min. If the half-life of the material is 4 days, what would the count rate be in 16 days later? **(8 marks)**

TOTAL = 20 MARKS

3a) State the conditions under which the equations of general relativity would predict some phenomena. **(12 marks)**

3b. A coil rotates at a constant speed in a uniform magnetic field. The peak value of the induced e.m.f in the coil is 30V. Calculate the root mean square e.m.f. **(8 marks)**

TOTAL = 20 MARKS

4a. What are the findings of Faraday, that led to this assertion. 'The e.m.f induced in a coil increases with the rate of change of the magnetic flux through it'

(8 marks)

4b. A search coil which has 450 turns and an area of $2.5 \times 10^{-4} \text{ m}^2$ is connected to a galvanometer. The total resistance in the circuit is 250Ω . Initially, the coil is placed in between the poles of a horseshoe magnet, with its plane perpendicular to the field. Then the coil is removed to a point where the magnetic field is negligible. As a result, a charge of 7.5×10^{-6} C is found to flow in the circuit. Calculate the magnetic flux density between the poles of the magnet. (12 marks)

TOTAL = 20 MARKS