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**National Open University of Nigeria**

**Plot 91, Cadastral Zone, Nnamdi Azikiwe Expressway, Jabi - Abuja**

**Faculty of Sciences**

**Department of Pure and Applied Science**

**JANUARY 2018 Examination**

**Course Code: Phy407 Course Title: Solid State Physics II Time: 3 Hours**

**Instruction:** Answer Question One and any other Four Questions.

**Question 1**

1(a). What is a dielectric?

(b). Define Crystal defect

(c). What is vacancy defect?

(d). Explain a ferrites

(e). What is dipole moment?

(f). What is Polarisation of a crystal?

(g). Define relaxation frequency

(h). Define Saturation Magnetisation

(i). List Impurities associated with defects of Crystal

(22 MARKS)

**Question 2**

(a). Enumerates five (5) major categories of crystalline defects.(7.5 MARKS)

(b). Discuss the Linear defect. (5.5 MARKS)

**Question 3**

(a). Explain the term ‘’antiferromagnetism’’. (6 MARKS)

(b). Discuss the Edge dislocation. (6 MARKS)

**Question 4**

(a) Discuss the Nuclear Magnetic Resonance. (6 MARKS)

(b) What are the unusual characteristics of ferromagnetic resonance? (6 MARKS)

**Question 5**

(a). Categorised the information that can be obtained about solids by resonance studies. (6 MARKS)

(b) What are the two sequential steps that the principle of Nuclear Magnetic Resonance usually involved? (6 MARKS)

**Question 6**

(a). State the properties of a dielectric. (6 MARKS)

(b). Discuss the Diamagnetism. (6 MARKS)