Exam.Code:0040
Sub. Code: 1365

1059
B.Sc. (Hons.) Bio-Informatics
Second Semester
BIN-2006: Physics
(Old Syllabus 2016)

Time allowed: 3 Hours **Max. Marks: 60**

***NOTE**: Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Unit.*

x-x-x

I. Write short notes on the following:-

a) Explain the term electric flux.

b) Write S.I. units and ranges of time.

c) Explain Ohm's law in vector form.

d) Explain the Heisenberg's uncertainty principle.

e) What is plane polarised light?

f) What do you mean by half life and mean life of a radioactive substance? (6x2)

UNIT – I

II. a) Discuss about the-interrelation between physics and life sciences by giving an example.

b) Derive the continuity equation. (2x6)

III. a) State Gauss's law and use it to find the electric field due to infinite plane sheet.

b) Show that electrostatic field is conservative in nature. (8,4)

IV. a) Define electric potential. Find the expression for electric potential due to point charge located at origin.

b) Two point charges +4μC and 6μC are separated by a distance of 20 cm in air. At what points on the line joining these charges the electric potential will be zero. (8,4)

UNIT – II

V. a) What is meant by coherent sources of light? Why is it impossible to observe an interference pattern with two independent bulbs?

b) In Young's double slit experiment, slit width is 0.1 nm and screen is placed at a distance 20 cm away from slits. If the wavelength of coherent source is 500nm, determine fringe width and position of 1st order maxima on the screen. (6,6)

P.T.O.

VI. a) Deduce the expressions for resolving power of telescope and microscope.

b) Write the difference between interference and diffraction. (8,4)

VII. a) Define x-ray diffraction. State and derive Bragg law. What is its significance?

b) Calculate the half life period of a radioactive substance, if its activity drops to of its initial value in 30 years, [use logic 16 = 1.2041] (8,4)

x-x-x