Code: 15A56103 **R15**

B.Tech I Year I Semester (R15) Supplementary Examinations November/December 2019

BASIC PHYSICS

(Food Technology)

Time: 3 hours Max. Marks: 70

PART – A

(Compulsory Question)

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1 Answer the following: (10 X 02 = 20 Marks)

(a) What is polarization?
(b) Define gradient of a scalar field.
(c) What are electromagnetic waves?
(d) Define a non-inertial reference frame.
(e) What is Heisenberg uncertainty principle?
(f) What is population inversion?
(g) What is forbidden energy gap?
(h) Define Bravais Lattices.
(i) What is Fermi-energy?
(j) What is radioactive decay?

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

2 Write the differential equation for the damped oscillation of a particle and solve it. Also discuss various cases.

OR

3 State and explain Gauss divergence theorem.

UNIT – II

4 Derive Maxwell's equations and give their physical interpretation.

OR

5 What are Galilean transformations? Derive Galilean transformation equation for two inertial frames.

UNIT – III

6 (a) What are the failures of classical physics?
(b) Derive an expression for the wavelength of matter waves.

OR

7 How to construct and reconstruct a hologram?

UNIT – IV

8 State and explain Bragg's law. Mention its applications.

OR

9 Differentiate conductors, semiconductors and insulators.

UNIT – V

10 Discuss various models to explain the properties of nucleus.

OR

11 (a) What are the similarities and dissimilarities between nuclear fission and fusion?
(b) Write a note on elementary particles.

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