

Total No. of Question : [4]

Registration No. :

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Programme Name : F.Y.B.Tech  
Regular F.Y.B.Tech. Sem. II ESE (2022 - 23) July 2023  
II SEMESTER ( 2022 BATCH)  
221FYL102-Applied Physics

Duration : 2 Hours

Marks : 50

Instructions :

(Q1) All Questions are compulsory [20.0]

(1.1) Derive an expression for resolving power of diffraction Grating ? [6.0]

CO :- 102.1

Blooms Taxonomy :- Remember, Understand, Apply

(1.2) What do you mean by ultrasonic wave ? Explain how they are produced using the magnetostriction method. [7.0]

CO :- 102.2

Blooms Taxonomy :- Remember, Understand, Apply

(1.3) Explain the Fermi energy and Fermi level in intrinsic and p-type semiconductors with a neat labelled diagram ? [7.0]

CO :- 102.3

Blooms Taxonomy :- Remember, Understand, Apply

(Q2) All the following questions [10.0]

(2.1) What are the Physical significances of wave function ? [4.0]

CO :- 102.4

Blooms Taxonomy :- Remember, Understand, Apply

(2.2) Obtain the formula for the wavelength of matter wave in terms of potential difference to accelerate the particles ? [6.0]

CO :- 102.4

Blooms Taxonomy :- Remember, Understand, Apply

OR [ 2.2 / 2.3 ]

(2.3) Derive the time-independent Schrodinger's wave equation ? [6.0]

CO :- 102.4

Blooms Taxonomy :- Remember, Understand, Apply

(Q3) All the following questions

[10.0]

(3.1) State any four characteristics of LASER ?

[4.0]

CO :- 102.5

Blooms Taxonomy :- Remember, Understand

(3.2) Explain the industrial and medical applications of laser ?

[6.0]

CO :- 102.5

Blooms Taxonomy :- Remember, Understand

**OR [ 3.2 / 3.3 ]**

(3.3) Explain the following terms ?

[6.0]

i) Spontaneous emission

ii) Stimulated emission

iii) Population Inversion

(Q4) Attempt any two out of three questions

[10.0]

(4.1) State and discuss the applications of nanomaterials ?

[5.0]

CO :- 102.6

Blooms Taxonomy :- Remember, Understand

(4.2) Explain the top-down approach for the production of nanomaterials ?

[5.0]

CO :- 102.6

Blooms Taxonomy :- Remember, Understand

(4.3) Explain the different properties of nanomaterials ?

[5.0]

CO :- 102.6

Blooms Taxonomy :- Remember, Understand

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