**NEW HORIZON COLLEGE OF ENGINEERING, Bengaluru**

**(Autonomous College affiliated to VTU, Accredited by NAAC with “A” grade, Accredited by NBA)**

**Department of Basic Sciences & Humanities**

**CIE – I (AY: 2020-21)**

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| Department: **BSH** |  | Semester: **I Sem ( Physics Cycle)** |
| Course Name: **Engineering Physics** |  | Course Code:**19PHY12** |
| Date: **07-11-2020** |  | Duration: **1 Hour** |
| Internal Test: **I** |  | Max. Marks: **25** |

**Answer all questions. Each question carries 05marks 5X 5 = 25**

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| **Q.No** | **Question** | **Marks** | **COs** | **RBT Levels** |
| **1A** | Describe Top down and Bottom up approach for the synthesis of nanomaterials. | **05M** | **CO5**  **CO6** | **L1** |
|  | **OR** |  |  |  |
| **1B** | List out any five properties of composite materials. | **05M** | **CO5**  **CO6** | **L1** |
| **2A** | Describe the SEM-Principle, construction and working with a neat diagram | **05M** | **CO5**  **CO6** | **L1** |
|  | **OR** |  |  |  |
| **2B** | Describe the TEM-Principle, construction and working with a neat diagram | **05M** | **CO5**  **CO6** | **L1** |
| **3A** | First order Bragg reflection occurs when a monochromatic beam of X-rays of wavelength 0.567Å is incident on a crystal at a glancing angle of 5o50’. What is the glancing angle for fourth order Bragg reflection to occur. | **05M** | **CO5**  **CO6** | **L3** |
|  | **OR** |  |  |  |
| **3B** | A beam of monochromatic X-rays is diffracted by NaCl with a glancing angle of 15o for first order. Calculate the wavelength of X-rays if d-spacing of the crystal is 3.82 Å. | **05M** | **CO5CO6** | **L3** |
| **4A** | What are Biomaterials and explain any 4 applications of the same. | **05M** | **CO5**  **CO6** | **L1** |
|  | **OR** |  |  |  |
| **4B** | Describe the construction and working of Bragg’s X-ray spectrometer. | **05M** | **CO5**  **CO6** | **L1** |
| **5A** | Derive an expression for the Bragg’s Law and mention the uses of Bragg’s Law | **05M** | **CO5**  **CO6** | **L3** |
|  | **OR** |  |  |  |
| **5B** | First order spectrum is formed when X-rays of wavelength 1.5Å is incident on a crystal at 12o.Calculate the interplanar spacing of the crystal. | **05M** | **CO5CO6** | **L3** |

***NHCE/IQP/009***