Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_



**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

**End Semester Examination – Nov/Dec - 2017**

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| **Code :** | **16NT1001** | **Duration :** | **3hrs** |
| **Sub. Name :** | **EVOLUTION OF MATERIALS** | **Max. marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| Q. No. | Sub Div. | Questions | Course  Outcome | Marks |
| 1. | a. | Define metal smithing. Mention the different types of metal working involved in the smithing process. | CO1 | 2 |
| b. | Mention the different sources and types of fibers with suitable examples. | CO4 | 6 |
| c. | Explain the main functions of packaging material. What are the characteristics of an ideal packaging material? | CO4 | 12 |
| (OR) | | | | |
| 2. | a. | Write short notes on metallic implant materials. | CO4 | 2 |
| b. | Classify the different types of composites. | CO3 | 3 |
| c. | Mention the classification of materials? Explain with suitable examples. | CO1 | 15 |
| 3. | a. | Write short notes on carbon fibers? | CO5 | 5 |
|  | b. | With neat sketch, explain in detail the seven different crystal systems mentioning their lattice parameters and angles. | CO2 | 15 |
| (OR) | | | | |
| 4. | a. | Discuss the two main degradation processes of nylon. | CO5 | 2 |
|  | b. | Mention some applications and disadvantages of asbestos. | CO5 | 3 |
|  | c. | Define coordination number and atomic packaging factor. Determine the same for Body centered cubic and Face centered cubic systems. | CO2 | 15 |
| 5. | a. | Mention the applications of epoxy resin. | CO3 | 2 |
|  | b. | Define modulus. Differentiate Young’s modulus and rigidity modulus. Mention its unit. | CO2 | 3 |
|  | c. | Explain in detail the 1D, 2D and 3D reinforcements in fiber composites. | CO5 | 15 |
| (OR) | | | | |
| 6. | a. | What are I-beams? Why are they used in girders and as rails in railway tracks? | CO2 | 5 |
|  | b. | Explain in detail, the different types of defects in materials | CO5 | 15 |
| 7. | a. | Explain the process of preparing MR fluids. Mention their applications. | CO2 | 15 |
|  | b. | Explain the process of preparing an n-type Silicon ingot by Czochralski’s method. | CO5 | 5 |
| (OR) | | | | |
| 8. | a. | Describe the process of nanoindentation. Mention its applications. | CO5 | 10 |
|  | b. | Explain the working principle of scanning electron microscope. Mention its advantages and disadvantages. | CO6 | 10 |
|  | | **Compulsory**: |  |  |
| 9 | a. | Summarize the characteristics of a smart building. | CO2 | 5 |
|  | b. | Describe in detail, the various properties and applications of graphene. | CO5 | 15 |

ALL THE BEST