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**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

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

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

**End Semester Examination – Nov/Dec – 2016**

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|  |  | **Semester :** | **2016-17 ODD** |
| **Code :** | **10NT307** | **Duration :** | **3 hrs** |
| **Sub. Name :** | **NANOCOMPOSITES AND QUANTUM COMPUTATION** | **Max. marks :** | **100** |

**Answer ALL questions (5 x 20 = 100 Marks)**

1. **Compulsory:**

Give a brief account of each of the following with suitable illustration:

(a) Maxwell demon (10)

(c) Quantum Turing machine (10)

1. Discuss the concept of biological pattern formation.

(OR)

1. Give a detailed account of (a) geometric frustration in pattern formation (b) cellular automata.
2. Explain in detail (a) ceramic–matrix nanocomposites (b) metal–matrix nanocomposites (c) poymer–matrix nanocomposites.

(OR)

1. Describe the following:
2. Direct mixing in polymerization. (10)
3. In–situ polymerization. (10)
4. Describe the following:
5. Newtonian and Non-Newtonian flow (10)
6. Low viscosity processing (10)

(OR)

1. Describe the following:
2. Melt processes with large deformation rate. (10)
3. Ceramic / polymer nanocomposites prepared starting from tetraethyl-o-silicate.

(10)

1. Give a detailed account of (a) anticorrosive nanocomposite coating and (b) antibacterial coatings.

(OR)

1. Discuss in detail (a) antibacterial coatings and (b) self-assembled nanophase coating.

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