

M.Sc. (Phy) Semester - 3 (CBCS) Examination**DEC/JAN. - 2020****Physics and Chemistry of Nanomaterials (Core)****Time: 1:30 Hours****Marks: 42****Instructions:**

1. Figure to the right indicate marks.
 2. There are five questions in the question paper.
 3. Answer any three of the following questions.
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- Que 1. Answer in detail: 14**
- (a) Write notes on graphite and diamond. 07
 - (b) Discuss in detail the structure, types and properties of carbon nanotubes. 07
- Que 2. Answer in detail: 14**
- (a) Write notes on zinc oxide and titanium dioxide nanoparticles. 07
 - (b) Discuss in detail the silver and gold nanoparticles. Write a short note on biomaterials with their applications. 07
- Que 3. Answer in detail: 14**
- (a) Write a note on top down methods: (i) arc discharge and (ii) laser ablation. 07
 - (b) Discuss in detail chemical vapor deposition method with well clear diagram. 07
- Que 4. Answer in detail: 14**
- (a) Discuss in detail XRD and SAXS techniques for nanomaterials characterizations. 07
 - (b) Write notes on SPM and AFM. 07
- Que 5. Answer in detail: 14**
- (a) What are sensors? Describe the nanosensors based on the quantum size effects. 07
 - (b) Define nanomedicine and discuss various approaches in developing nanomedicines. 07
