LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – **BIOTECHNOLOGY**

THIRD SEMESTER – NOVEMBER 2016

BT 3824 - NANOTECHNOLOGY & MEDICAL BIOTECHNOLOGY

Date: 05-11-2016 Dept. No. Max. : 100 Marks
Time: 09:00-12:00

PART – A

Answer ALL the Questions

I. Choose the correct answer **(5 x 1 = 5 Marks)**

1. Spherical fullerenes are called as
   a) Bucky tubes b) Bucky balls c) Nanotubes d) Nanoballs
2. Nanotubes of mussel adheseive protein can be used for
   a) Optical devices b) Nanocluster Synthesis c) Cell culture d) Drug delivery
3. Which disease is caused due to *CFTR* gene mutations?
   a) Alzhimer's b) Cancer c) Parkinson's d) Cystic fibrosis
4. Which of the following is called as selfish DNA?
   a) ESTs b) cDNA c) Repetitive DNA d) mtDNA
5. Which of the following is the most important domain of *p53* gene?
   a) DNA binding b) Oligomerization c) C- Terminal d) N-Terminal

II. State whether the following are true or false **(5 x 1 = 5 Marks)**

6. High- intensity ultrasound can be used to make hollow nanocrystals.
7. Protein Nanoparticles increase the half life of ophthalmic drugs.
8. Primary Congenital Glaucoma is an autosomal recessive disorder of the eye.
9. Arythymia can be corrected by fetal surgery.
10. *BRCA1* gene mutations can cause ovarian cancer.

III. Complete the following **(5 x 1= 5 Marks)**

11. Zeta sizer is used for measuring the _____ of Nanoparticle.
12. Dentrimer can be used for _____delivery.
13. MODY stands for_____ .
14. _____ disease is due to the mutations CFTR gene.
15. _____ gene is called as the "Gaurdian of the Genome".

IV. Answer the following, each within 50 words **(5 x 1 = 5 Marks)**

16. Mention two applications of gold Nanoparticle.
17. Comment on the use of protein Nanoparticles.
18. Define gene therapy.
19. What is Declaration of Helsinki?
20. Mention four alternative terms for *p53* gene.

PART – B

Answer the following, each within 500 words. Draw diagrams wherever necessary. (5 × 8 = 40 Marks)

21. (a) Give an account of Nanomachines and Nanodevices used in Medicine.

OR

b) Write notes on peptide Nanowires.

22. (a) Discuss various microscopic methods of measuring the properties of Nanoparticles.

OR

(b) Explain DNA double Nanowire.

23. (a) Discuss various types of Schizophrenia phenotypes.

OR

(b) Enumerate the various indicators of genetic counselling.

24. (a) Explain Chorionic Villus Sampling (CVS).

OR

(b) Describe DNA fingerprinting.

25. (a) Discuss three types of familial hereditary cancers.

OR

(b) Explain *In situ* hybridization.

PART – C

Answer any TWO of the following, each within 1500 words; Draw diagrams wherever necessary.

(2 × 20 = 40 Marks)

26. Describe Scanning tunneling Microscopy.

27. Explain Carbon Nanostuctures – clusters, nanotubes and polymers.

28. Explain various types of MODY and their genes. Which type of MODY is more common globally?

29. Discuss the following

i) Molecular basis of Breast cancer and Colon cancer.

ii) Fetal disorders and its available therapies.

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