LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

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

THIRD SEMESTER – APRIL 2017

BT 3824- NANOTECHNOLOGY & MEDICAL BIOTECHNOLOGY

Date: 28-04-2017 Dept. No. Max. : 100 Marks
01:00-04:00

PART – A
Answer ALL the Questions

I. Choose the correct answer **(5x1 = 5 Marks)**

1. Atomic Force microscopy was discovered by _____
   a) Knoll & Ruska b) Lederberg c) Watson d) Binning & Co
2. Which of the following is a protein carrier used for drug delivery?
   a) β gal b) β lactoglobulin c)ceramide d) Sepharose
3. What is the mode of inheritance of Haemophilia disease?
   a) X- linked recessive b) Autosomal recessive
   c) Autosomal dominant d) X- linked dominant
4. What % of fetal cells is present in maternal blood?
   a) 2 - 10 b) 20 c)25 d) 26 - 30
5. *Mdm2* is the negative regulator of which gene?
   a) *Mig1* b)*p53* c)*Mdm5* d) *Mig2*

II.State whether the following are true or false **(5x1=5 Marks)**

6. Size of nucleotide is 10 nm.
7. Gold Nanoparticles are toxic to human body.
8. Catatonic is a type of Muscular Dystrophy phenotype.
9. Fetal Blood Sampling (FBS) is a non - invasive procedure.
10. Fluorescent probes are used for *Insitu* hybridization.

III. Complete the following **(5x1= 5 Marks)**

11. _____is the Father of Nanotechnology.
12. Atomic Force Microscopy is used for _____
13. The number of exons present in DMD gene is _____.
14. The stem cells present in muscles are called _____ _____.
15. FACS stands for_____.

IV. Answer the following, each within 50 words **(5x1 = 5 Marks)**

16. Define Nanotube
17. What is a Nanocrystal?
18. What is criss-cross inheritance? Cite an example.
19. Define DNA Fingerprinting.
20. Expand ELSI.

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

21.(a) Distinguish between Zeta sizer and Zeta potential.

OR

b) Explain the medical properties of Nanoparticles.

22. (a) Enumerate the applications of DNA Nano wires, Peptide Nanotubes, Quantum dots and Gold Nanoshells

OR

(b) Write notes on Nanostructured crystals.

23. (a) Discuss the molecular basis of hemophilia.

OR

(b) Enumerate the autosomal and X-linked inheritances with one example each.

24. (a) Explain how repetitive DNA can be used in forensic science?

OR

(b) Discuss two invasive and non-invasive techniques used for pre-natal diagnosis.

25. (a) Explain the tenants of "Declaration of Helsinki" in Medical Biotechnology.

OR

(b) Give an account of *In situ* hybridization technique with.

PART – C (2 × 20 = 40 Marks)
Answer any TWO of the following, each within 1500 words. Draw diagrams wherever necessary.

26.Describe the use of Nanotechnology in cleaning environmental pollution.

27. Describe Atomic Force Microscopy.

28. What are embryonic stem cells? Discuss its characteristics and therapeutic potentials.

29. Describe Alfred Knudsen's hypothesis and add a note on sporadic and familial retinoblastoma.

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