Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VI (NEW) - EXAMINATION - SUMMER 2017

Subject Code: 2163903

Subject Name: Nanotechnology and Medicine

Time: 10:30 AM to 01:00 PM

Instructions:

Q.1

- 1. Attempt all questions.
- 2. Make suitable assumptions wherever necessary.
- 3. Figures to the right indicate full marks.

MARKS

Date: 03/05/2017

Total Marks: 70

14

- **Short Questions** 1 1905,.....published a paper that estimated the diameter of a sugar molecular as about 1 nm. (Einstein or Max Konll).
 - Nanoparticle-based drug delivery was published by (Kreuter 2 1994 or Iijima et al 1992).
 - 3 FDA approved AbraxaneTM, a taxane based ontechnology, for the treatment of breast cancer. (Nano or Bio).
 - Nano capsules can be obtained bypolymerization. 4 (interfacial or complex).
 - 5experiments have confirmed the localization of oligonucleotide in the aqueous core of the capsule (Zeta potential or XRD).
 - 6 are used in the preparation of nano capsules. (Surfactants or Acid).
 - In biomedical applications, the most commonly used magnetic 7 nanoparticle is superparamagnetic(Fe₃0₄ or MnO₂).
 - 8 Write down chemical formula of Maghemite.
 - 9 ^{99m}T_C used for treatment of (Cancer or Teeth related wound repair)
 - Magnetofection was first described in a..... Patent by Harata 10 et al. who used magnetic liposomes to transfect cells. (Japanese or Indian)
- Write down full form of FDA. 11
- 12 Micelles means.....
- 13 In Vivo means.....
- 14 Write down full form of PEG.
- (a) Define Nanomedicine. **Q.2**
 - Define Nano biotechnology in the vicinity of Medicine. **(b)** 04
 - Explain about the landmarks in the evolution of Nanomedicine (c) 07

OR

- (c) Explain oil containing Nano capsules. 07 (a) Define Nano capsule? Q.3 03 (b) Explain Nano capsules containing an aqueous core. 04 07
 - (c) Discuss characterization of Nano capsules.

03

OR

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Q.3	(a)	What are Magnetic Nanoparticles?	03
	(b)	Explain the properties of magnetic materials in the vicinity of medicine.	04
	(c)	Explain Magnetic chemotherapy.	07
Q.4	(a)	Give an idea about use of radioactive isotopes for cancer treatment.	03
	(b)	Write down few applications of magnetic nanoparticles as drug carriers.	04
	(c)	Explain magnetic hyperthermia.	07
		OR	
Q.4	(a)	Define magnetic gene transfer.	03
	(b)	Explain any one the application of Gold Nanoparticles in the field of medical.	04
	(c)	Write a short note on Cyclodextrin Nanoparticles for drug delivery.	07
Q.5	(a)	Define role of Maghemite (Fe ₂ O ₃) for the cancer treatment.	03
	(b)	Explain Bio- compatibility related issues associate with magnetic nanoparticles.	04
	(c)	Write short note on ceramic Nanoparticles in the vicinity of medicine and drugs delivery.	07
		OR	
Q.5	(a)	Define in short, relation of Nano biotechnology to Nanomedicine	03
	(b)	Explain role of nanoparticles bound together in spherical shapes for the drug delivery.	04
	(c)	Write short note on Dendrimers for drug delivery.	07
