N

(21216) Roll No. .....

M. Sc. (Biotech.)-III Sem.

NP-3339

M. Sc. (Biotechnology) Examination, Dec. 2016

CONCEPTS TO NANO-BIOTECHNOLOGY

[H-302 (M. Sc. Biotech.)]

Time : Three Hours] *[Maximum Marks : 50*

Note : Attempt questions from all Sections as per instructions.

Section-A

(Very Short Answer Questions)

Attempt all the *five* questions of this Section. Each question carries 2 marks. Very short answer is required not exceeding 75 words. 2×5=10

1. (a) How many gold atoms put side by side shall make one nanometer (n.m)?

   (b) Draw of figure showing comparison of nano scale objects with other physical entities.

2. Differentiate between 'top-down' and 'bottom-up' approaches for miniaturization.

3. Write eight examples of natural nanomaterials.

4. Explain the concept of self assembly.

5. Is there any change of colour of gold with reducing size of the gold cluster? Explain.

Section-B

(Short Answer Questions)

This Section contains three questions, attempt any *two* questions. Each question carries 5 marks. Short answer is required not exceeding 200 words. 5×2=10

6. Write a review of nanotechnology.

7. What do you understand by quantum confinement? Differentiate between quantum wells, quantum dots and quantum wires.

8. Discuss the discovery and structure of DNA.

Section-C

(Detailed Answer Questions)

This Section contains four questions, attempt any *three* questions. Each question carries 10 marks. Answer is required in detail. $10 \times 3 = 30$

9. Write the names of five techniques which may be used for characterization of nanomaterials. Explain the principle and working of STM/AFM.

10. Explain the role of blood brain barrier. Discuss the use of nanomaterials in the treatment of central nervous system diseases.

11. Explain the hybridization of atomic orbitals in carbon. Give examples of SP^1, SP^2 and SP^3 hybridization along with bond angles. Discuss the discoveries of C-60 and CNT.

12. Explain the mechanism of TDD. Discuss the advantages of using nanomaterials in the treatment of diseases like cancer.

13. What are biometric fabrication of DNA based metallic nanowires ? Explain its application in designing DNA as a biomolecular template.

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(201217)

M.Sc.(Biotech.)-III Sem.

Roll No. 69353811

NP-3339

M. Sc. (Biotechnology) Examination,

Dec. 2017

CONCEPTS TO NANO BIOTECHNOLOGY

[(H-302) M.Sc.(Biotech.)]

Time : Three Hours] *[Maximum Marks : 50*

Note : Attempt questions from all Sections as per instructions.

Section-A

(Very Short Answer Questions)

Answer all the *five* questions. Each question carries 2 marks. Very short answer is required not exceeding 75 words. 2×5=10

1. Assembly of DNA molecules.

2. Plasmid templates.

3. Define Nanobiotechnology.

4. TEM Grid.

5. Gold nanoparticles.

Section-B

(Short Answer Questions)

Answer any *two* questions out of the following three questions. Each question carries 5 marks. Short answer is required not exceeding 200 words. 5×2=10

6. Compare Bioinformatics with Nanobiotechnology.

7. How Nanobiotechnology is safe for drug delivery ?

8. Comment upon DNA nanochemical devices.

Section-C

(Detailed Answer Questions)

Answer any *three* questions out of the following five questions. Each question carries 10 marks. Answer is required in detail. 10×3=30

9. Explain nanoscale applications for delivery of drug into viable cells.

10. What is Nanobiotechnology ? Explain its scope and applications compitable with environment.

11. What are Gold nanoparticle conjugates ? How gold nanoparticles are used in intracellular imaging ?

12. Write notes on any two of the following :
    (a) Ultrathin coated TEN Grid
    (b) Quantum Dots
    (c) Drug delivery.

G (Printed Pages 3)

(21218) Roll No. 17013564444

M.Sc. (Biotech.)-III Sem.

NP-3339

M.Sc. (Biotechnology) Examination, Dec.-2018

CONCEPTS TO NANO-BIOTECHNOLOGY

(H-302)

(M.Sc. Biotech.)

Time : Three Hours] *[Maximum Marks : 50*

Note : Attempt questions from **all** Sections as per instructions.

Section-A

(Very Short Answer Questions)

Note : Attempt all the **five** questions. Each question carries 2 marks. Very short answer is required not exceeding 75 words.

2×5=10

1. Oligonucleotide Enzyme Conjugate.
2. D. N. A. directed immobilization.

P.T.O.

3. D. N. A. as functional template.
4. D. N. A. arrays
5. D. N. A. metalization.

Section-B

(Short Answer Type Questions)

Note : Attempt two questions. Each question carries equal marks. Answer these questions within 200 words. 5×2=10

6. Comment upon nanoparticle based DNA detection assay.
7. Explain nanoparticles for drug and gene targetting.
8. Space of Nanotechnology.

Section-C

(Detailed Answer Questions)

Note : Attempt **three** questions. All questions carries equal marks. 10×3=30

9. What quantum dots? Explain your views in application of integration of nanotechnology with biology in medical diagnosis.

10. Describe the Probe. Explain different methods for Probing DNA structure with nanoparticles.
11. What D.N.A. nanoparticle devices? Explain DNA based computation in brief.
12. What is Liposome? Do you agree that liposome is used for delivery of drug into viable cells are much useful rather than metal coating DNA.
13. What is Silica? How silica is used to enhance the DNA activity.

A Printed Pages : 2

(21119) Roll No. .....

M.Sc (Biotech). -III Sem.

NP-3339

M.Sc. (Biotechnology) Examination, November–2019

CONCEPTS TO NANO-BIOTECHNOLOGY

[H-302 (M.Sc. Biotech.)]

Time : Three Hours] *[Maximum Marks : 50*

Note : Attempt questions from **all** sections as per instructions.

Section–A

(Very Short Answer Questions)

Note : Attempt all of ***five*** questions. Each question carries 2 marks. Very short answer is required not exeeding 75 words. 5×2=10

1. Nano-scale
2. Green Nanotechnology
3. Nano-tubes
4. Nano-medicine
5. Quantum dots

Section–B

(Short Answer Questions)

Note : Attempt all the ***two*** out of the following three question.Each question carries 5 marks. Short answer is required not exceeding 200 words.

5×2=10

6. Methods in Synthetic Nanoscale Elements for delivery of material into the viable cell.

7. Applications of Nano-Particle in controlled drug delivery.

8. Fabrication and preparation of ultra thin carbon coated TEM grids.

Section–C

(Detailed Answer Questions)

Note : Attempt any ***three*** questions. Each question carries 10 marks. Answer required in detail.

3×10=30

9. What are Nano-materials ? Describe in brief the applications of Structural DNA Nanotechnology.

10. What are Biomolecules ? Describe in brief their characteristic features. Also mention their applications in nanotechnology.

11. What are probes ? Describe in brief various methods of probing DNA structure with nanoparticles.

12. Write a review on Regulations of nanotechnology.

D (Printed Pages 3)

(20221) Roll No. 19093522.7015

M.Sc.(Biotech.)-III Sem.

NP-3339

M.Sc. (Biotechnology)

Examination, Dec. - 2020

CONCEPTS TO NANO-BIOTECHNOLOGY

(H-302)

(M.Sc. Biotech.)

Time : Three Hours] *[Maximum Marks : 50*

Note : Attempt questions from all Sections as per instructions.

Section - A

(Very Short Answer Questions)

Note : Attempt all the **five** question. Each question carries 2 marks. Very short answer is required not exceeding 75 words. 2×5=10

1. Carbon Nanotechnology
2. Application of nanotechnology in food production and processing

P.T.O.

3. DNA arrays.

4. Nano-materials in biopharmaceuticals

5. Quantum dots

Section - B

(Short Answer Questions)

Note : Attempt any **two** out of the following three questions. Each question carries 5 marks. Short answer is required not exceeding 200 words. 5×2=10

6. Space of Nanotechnology.

7. DNA Nano-Particle based devices.

8. Elements of Synthetic Nanoscale.

Section - C

(Detailed Answer Questions)

Note : Attempt any **three** questions out of the following five questions. Each question carries 10 marks. Answer required in detail. 10×3=30

9. What is nano tube? Describe in brief chemical vapor deposition of carbon nanotubes.

10. Explain in detail Electrical, magnetic, optical, thermal, and mechanical properties of nano-structured materials.

11. What are biosensors? How do they function? How does nanotechnology support designing the biosensors?

12. Write an essay on the use of nanotechnology in space research.

13. Explain any two methods for the preparation of supported metal nanoparticles.

3. Write full form of SEM, STM and AFM.

4. Write about molecular motors and their use in nanoscience.

5. How quantum dots are useful in biology?

Section-B

(Short Answer Questions)

Note : Attempt any **one** question from this section. Each question carries 10 marks. Short answer is required not exceeding 200 words. 1×10=10

6. Discuss in brief the different applications of electrical manipulations of DNA on metal surface.

7. Explain the preparation and characterization of Q-cds/pUCLen^{4} samples.

8. Explain the methods of biosynthesis of nano-particles and their characterization.

Section-C

(Detailed Answer Questions)

Note : Attempt any **two** questions from this section. Each question carries 15 marks. Answer is required in detail. 2×15=30

9. What do you mean by nano-particles? Discuss the application of nano-particles in cancer therapy.

10. Describe the various types of nano-elements for the delivery of material into viable cells.

11. What is nano-biotechnology? Explain its scope and applications compatible with environment.