

ACHOLA – III (CBCS) : SUMMER- 2017
SUBJECT : VACCINES, ANTIBIOTICS AND THERAPEUTICS

Day : Tuesday
Date : 11/04/2017

Time : 02.00 PM TO 05.00 PM
Max. Marks : 60

N. B. :

- 1) **Q. No. 1 and Q. No. 5 are COMPULSORY.**
- 2) Attempt **ANY TWO** questions from the remaining questions of each Section – I and Section – II.
- 3) Answers to both the sections should be written in the **SEPARATE** answer books.
- 4) Draw neat and labeled diagram **WHEREVER** necessary.

SECTION – I

- Q. 1** Explain in detail: (10)
- a) Mechanism of action of chemotherapeutic agents acting on : nucleic acid synthesis and cell membrane synthesis.
 - b) Cloning of antibiotic biosynthesis genes by complementation.
- Q. 2** Answer the following: (10)
- a) What are different mechanisms of MDR in bacteria? Explain them in brief.
 - b) With the help of suitable example, explain in detail recombinant polypeptide vaccines.
- Q. 3** Explain in detail: (10)
- a) Different types of antiviral drugs with suitable examples.
 - b) Manufacturing procedure and in-process control of traditional bacterial vaccines.
- Q. 4** Write short notes: (10)
- a) Vaccines for cancer
 - b) Vaccinia virus
 - c) DNA vaccines
 - d) Production of penicillin

SECTION - II

- Q. 5** Explain in detail: (10)
- a) Recent advances in monoclonal antibody technique.
 - b) What is microbial limit test of pharmaceutical product? Explain in detail different methods to perform LAL test.
- Q. 6** Explain in brief (**ANY TWO**): (10)
- a) Advantages and limitations of yeasts to produce recombinant proteins.
 - b) Haematopoietic growth factors.
 - c) Applications of phytochemicals.
- Q. 7** Elaborate the following (**ANY TWO**): (10)
- a) Sterility testing.
 - b) QA, QC and QM in pharmaceutical industry.
 - c) Therapeutic enzymes with suitable examples.
- Q. 8** Write short notes: (10)
- a) Interleukins
 - b) Human growth hormone
 - c) Factor VIII
 - d) Immunological approaches to detect contaminants in pharmaceutical products

ACHOLA – IV (CBS): SUMMER- 2017
SUBJECT : NANOTECHNOLOGY IN MEDICINE

Day : Monday
Date : 10/04/2017

Time : 10.00 AM TO 01.00 PM
Max. Marks : 60

N.B.:

- 1) **Q.No.1 and Q.No.5 are COMPULSORY.** Out of remaining questions attempt **ANY TWO** questions from each section.
- 2) Answers to both the sections should be written in **SEPARATE** answer books.
- 3) Figures to the right indicate **FULL** marks.

SECTION – I

- Q.1** Answer **ANY FIVE** of the following: [10]
- a) Define nanobiotechnology.
 - b) Explain particle size distribution.
 - c) What are core shell nanoparticles?
 - d) What is a nanowire?
 - e) What is XRD? Explain its use in nanotechnology.
 - f) What is Atomic force microscopy? Explain its advantages.
- Q.2** Answer the following questions: [10]
- a) With the help of an example explain characteristics features of a nanomaterial used in drug delivery.
 - b) What is personalized medicine? Explain its role in nanomedicine.
- Q.3** Explain the following: [10]
- a) Explain the principle of FTIR spectroscopy. Write its applications in nanotechnology.
 - b) Explain the principle and working of X-ray photoelectron microscopy and its applications in characterization of nanomaterials.
- Q.4** Write short notes on **ANY TWO** of the following: [10]
- a) Use of fullerene in nano-medicine
 - b) Quantum dots
 - c) Liposomes

SECTION – II

- Q.5** Answer the following questions: [10]
- a) What are DNA micro arrays? Write their applications in biosensing.
 - b) Explain the use of polymer nano-carrier in gene therapy.
- Q.6** Answer **ANY TWO** of the following: [10]
- a) What are optical biosensors? Explain their advantages.
 - b) What are acoustic wave biosensors? Write their principle.
 - c) What is nuclear targeting?
- Q.7** Write short notes on: [10]
- a) Lab on a chip
 - b) Protein based biosensors
- Q.8** Write **ANY ONE** of the following: [10]
- a) How will you modify a nanoparticle to overcome bio-barriers during gene therapy?
 - b) What is a transgene? Explain the structure of transgene construct.

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ACHOLA - IV (CBCS): SUMMER- 2017
SUBJECT: BIOMEDICAL WASTE & ENVIRONMENT

Day: Saturday
Date: 08/04/2017

Time: 10.00 AM TO 01.00 PM
Max. Marks: 60

N.B.:

- 1) **Q. No. 1 and Q. No. 5 are COMPULSORY.**
- 2) Answer any **TWO** from Questions No. 2, 3 and 4 and from 6, 7 and 8.
- 3) Figures to the right indicate **FULL** marks.
- 4) Answer to both the sections should be written in **SEPARATE** answer book.

SECTION-I

- Q.1** Answer any **FIVE** of the following questions in brief: (10)
- a) Briefly describe different types of pollution.
 - b) Describe the classes of Environment.
 - c) Effect of cold on aquatic organisms.
 - d) Explain any three water borne diseases.
 - e) Briefly describe the effect of Environmental pollution on productivity.
 - f) Impact of infectious pollutants on human health.
- Q.2** Answer the following questions: (10)
- a) What is meant by Radioactive waste and its effects on human health?
 - b) Describe different pollutants present in the liquid biomedical waste.
- Q.3** Explain the following: (10)
- a) Metabolic responses of organisms to liquid waste discharge.
 - b) On site pre- treatment of waste.
- Q.4** Write short notes on any **TWO** of the following: (10)
- a) Thermophilic organisms
 - b) Control of radioactive waste
 - c) Incineration

SECTION - II

- Q.5** Answer the following: (10)
- a) What is biomedical waste and its impact on human health?
 - b) Describe the concept of recycling with suitable examples.
- Q.6** Answer any **TWO** of the following: (10)
- a) Describe the process of composting biodegradable waste.
 - b) Write the basic steps involved in waste management.
 - c) Discuss mechanical treatment and chemical disinfection.
- Q.7** Write short notes on the following: (10)
- a) Sharp disposal pit
 - b) Biochemical Oxygen Demand
- Q.8** Answer the following: (10)
- a) Describe the direct and indirect hazards of biomedical waste.
 - b) Discuss about common treatment facilities in-site and off-site.