

MANIPAL UNIVERSITY**FIRST YEAR M. PHARM. DEGREE EXAMINATION – MAY 2015****SUBJECT: MICROBIAL BIOCHEMISTRY AND IMMUNOLOGY (PBT 601T)
(SPECIALIZATION: PHARMACEUTICAL BIOTECHNOLOGY)
(2014 REGULATION)**

Wednesday, May 20, 2015

Time: 10:00 – 13:00 Hrs.

Max. Marks: 100

Answer ALL the questions.

1. Define and classify culture media. Explain briefly various physical requirements for bacterial growth. (10 marks)
2. Sketch the life cycle of malarial parasite. Add a note on diagnosis and treatment of malaria. (10 marks)
3. Explain TCA cycle and add a note on the intermediate step which links EMP pathway to TCA cycle. (10 marks)
4. Discuss steps involved in the synthesis and utilization of ketone bodies with a note on their significance. (10 marks)
5. Explain the structure of antibodies and add a note on various antigen- antibody interactions. (10 marks)
6. What is major histocompatibility complex? Discuss antigen processing and presentation. (10 marks)
7. What is precipitin reaction? With suitable examples, discuss its importance as a diagnostic technique. (10 marks)
8. Discuss the principle, steps and applications of immunoblotting technique. (10 marks)
- 9A. Explain the effect of pH and temperature on enzyme activity.
- 9B. Compare and contrast innate immunity with acquired immunity. (5+5 = 10 marks)
- 10A. Briefly describe different types of hypersensitive reactions.
- 10B. What is cancer immunotherapy? Add a note on tumour markers. (5+5 = 10 marks)



MANIPAL UNIVERSITY**FIRST YEAR M. PHARM. DEGREE EXAMINATION – MAY 2015****SUBJECT: BIOPROCESS ENGINEERING AND TECHNOLOGY (PBT 602T)****(SPECIALIZATION: PHARMACEUTICAL BIOTECHNOLOGY)****(2014 REGULATION)**

Friday, May 22, 2015

Time: 10:00 – 13:00 Hrs.

Max. Marks: 100

Answer ALL questions.

1. Discuss Industrial fermenter with respect to temperature control and agitator. (10 marks)
2. Define screening and differentiate primary screening from secondary screening. Discuss innovative screens with a note on the progress in molecular biology, genetics and immunology. (10 marks)
3. Explain the factors influencing the choice of nitrogen source for formulation of production medium in fermentations and give examples of commonly used nitrogen sources. (10 marks)
4. Explain the sulphite oxidation method for determination of K_{La} . (10 marks)
5. Discuss the scale up window and its implications for a fermentation process. (10 marks)
6. Describe the principle and application of membrane separation methods. (10 marks)
7. Explain the construction, working and application of a Swenson-Walker crystallizer. (10 marks)
8. Discuss the homo-fermentative production of Lactic acid. (10 marks)
- 9A. Give an account of pinch valves and diaphragm valves.
- 9B. Write short notes on process economics. (5+5 = 10 marks)
- 10A. Explain the biosynthesis of cephalosporin.
- 10B. Write a note on α -amylase production. (5+5 = 10 marks)



MANIPAL UNIVERSITY

FIRST YEAR M. PHARM. DEGREE EXAMINATION – MAY 2015

SUBJECT: MODERN PHARMACEUTICAL BIOTECHNOLOGY (PBT 603T)
(SPECIALIZATION: PHARMACEUTICAL BIOTECHNOLOGY)
(2014 REGULATION)

Monday, May 25, 2015

Time: 10:00 – 13:00 Hrs.

Max. Marks: 100

✍ Answer ALL questions.

1. Enlist major enzymes and discuss their role in the production of genetically engineered products. (10 marks)
2. Give the structure of insulin and explain the methods for the production of recombinant insulin. (10 marks)
3. Discuss the various types of vaccines and their characteristics. (10 marks)
4. Explain the design and significance of synthetic peptide based vaccines. (10 marks)
5. Define immobilization. Discuss in detail any three methods involved in immobilization of an enzyme. (10 marks)
6. Classify biological databases and discuss about any two protein databases in detail. (10 marks)
7. Discuss in detail about Sanger's method of gene sequencing. Mention the recent advances in the field of gene sequencing. (10 marks)
8. Differentiate between immortalized cells and normal cells. Explain the techniques used in animal cell culture. (10 marks)
- 9A. Write a note on microbial nanoparticle production.
- 9B. Explain the importance and controversies of stem cell therapy. (5+5 = 10 marks)
- 10A. Write short notes on ELISA.
- 10B. Explain the effect of temperature and substrate concentration on enzyme activity. (5+5 = 10 marks)



MANIPAL UNIVERSITY

FIRST YEAR M. PHARM. DEGREE EXAMINATION – MAY 2015

SUBJECT: MOLECULAR BIOLOGY AND DRUG DISCOVERY (PBT 604T)
(SPECIALIZATION: PHARMACEUTICAL BIOTECHNOLOGY)
(2014 REGULATION)

Wednesday, May 27, 2015

Time: 10:00 – 13:00 Hrs.

Max. Marks: 100

☞ Answer ALL the questions.

1. Explain protein synthesis with reference to polypeptide chain initiation, chain elongation and chain termination in prokaryotes. (10 marks)
2. Compare and contrast *ara* operon model with *trp* operon model. (10 marks)
3. Enlist and explain various important extracellular messengers and receptors involved in signalling process. (10 marks)
4. Discuss two important pathways leading to apoptosis. (10 marks)
5. Explain how the chromosome segregation and nuclear membrane assembly are regulated in the cell during cell cycle. (10 marks)
6. Enlist the common assay methods for quantification of proteins and write the principle involved in each. (10 marks)
7. Describe preclinical trials with special reference to pharmacokinetics and pharmacodynamics studies. (10 marks)
8. Describe the stages in differentiation of haemopoietic stem cells in production of erythrocytes. Add a note on therapeutic application of Erythropoietin. (10 marks)
- 9A. Explain *in vitro* approach of gene therapy.
- 9B. What are anti-sense oligonucleotides? Explain their function. (5+5 = 10 marks)
- 10A. Write a note on interferon applications and toxicity.
- 10B. Describe the experiment to prove that DNA replication is semi-conservative. (5+5 = 10 marks)

