JAYPEE UNIVERSITY OF INFORMATRION TECHNOLOGY, WAKNAGHAT

END SEMESTER EXAMINATION-MAY-2015

Dr. Rahul Shrivastava

B.Tech/ VI Semester

COURSE CODE: 10B11BT615 **MAX. MARKS: 45**

COURSE NAME: DIAGNOSTICS AND VACCINE MANUFACTURE TECHNOLOGIES

COURSE CREDITS: 04 **MAX. TIME: 3 HRS**

***Note:** All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.*

Section A

Q1. Answer the following Very Short Answer Questions: **[9 X 1 = 9]**

i. List major limitations of blood based immunological assay for lung cancer diagnosis?

ii. What is the difference between HPV2 and HPV4 vaccines with respect to their function?

iii. Why is rabies transmitted to human being only by animal bite?

iv. If we get a seasonal flu vaccine, will it protect us from H1N1?

v. What are the limitations of antigen specific vaccines for protection against Breast Cancer?

vi. Why are the major challenges in development of a vaccine against Dengue?

vii. On what factors does the treatment of Kaposi's sarcoma depend?

viii. Do old people over 65 years need pneumococcal vaccination?

ix. If grandfather of a child has Alzheimer's disease, what are the chances that the child would also get the disease?

Section B

Q2. A set of PCR reactions were performed for diagnosis of a bacterial infection using human urine samples. Proper positive and negative controls along with test samples were used for obtaining PCR products. The PCR products thus obtained were run on agarose gel. Provide suitable explanation and reasons for the following results obtained. **[5 X 1.5 = 7.5]**

a. Negative control, Positive control and test samples - all showed bands of amplified product. DNA ladder loaded in the gel was visible.

b. Positive control and negative control show no band/amplification, but test samples show bands. DNA ladder loaded in the gel was visible.

c. Positive control shows no band/amplification, but negative control and test samples show bands. DNA ladder loaded in the gel was visible.

MAY 2015 END SEMESTER EXAM

d. Negative control, test samples and positive control show no band/amplification. DNA ladder loaded in the gel was visible.

e. Negative control, test samples and positive control show no band/amplification. DNA ladder loaded in the gel was also not visible.

Q3. Describe the 'Biosafety Levels' recommended for working on microorganisms in a laboratory. Explain the practices, and safety equipments which should be used under each level. Give two examples of microorganisms which should be handled under each level. [4]

Q4. Illustrate the significance of the following in diagnostic method using a Real-Time PCR: [1 X 2 = 2]

a. Standards
b. No-reverse transcriptase control

Section C (22.5 Marks)

Q5. Malaria is one of the oldest diseases known to mankind yet no vaccine is available to tackle the disease. A. Discuss the probable reasons why efforts towards vaccine development against malaria have largely been unsuccessful.

B. Discuss important stages of the parasite life cycle which can be targeted for vaccine development approaches, advantages and limitations of each stage. [2.5 + 5 = 7.5]

Q6. A. Why BCG is not recommended for use in most developed countries, but is included in the vaccination regimen of countries like India?

B. List and describe various reasons for ineffectiveness of BCG in protecting against tuberculosis infection.

C. Discuss important strategies with examples, in clinical trial stage which are being tested for effective control of tuberculosis. [1.5 + 3 + 3 = 7.5]

Q7. A person is suffering from an infection with symptoms of 'hydrophobia' and 'hallucinations'.

A. Describe the transmission and pathogenesis of the infection.

B. Why are pre- and post exposure both vaccine types are required for such and infection. Give details of recommended groups for these vaccines.

C. How are nerve tissue and culture based vaccines produced? Give advantages and disadvantages of each. [2.5+2.5 + 2.5 = 7.5]

JUNE 2019 SUPPLEMENTARY EXAMINATION QP