JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST -3 EXAMINATION - 2024
B.Tech - VIII Semester (BT)

COURSE CODE (CREDITS): 18B1WBT833 (3)

COURSE NAME: DIAGNOSTICS AND VACCINE MANUFACTURE

COURSE INSTRUCTORS: Dr. Rahul Shrivastava & Dr. Tyson

MAX. MARKS: 35

MAX. TIME: 2 Hours

Note: Note: (a) All questions are compulsory.

(b)Marks are indicated against each question in square brackets.

Q1. Write about the different available HPV vaccines in terms of their composition, the strains of HPV they protect against, and their recommended age and gender for vaccination.

(CO-3) [3 Marks]

Q2. Describe the differences between the PCV13 and PPSV23 vaccines, including their target populations, the types of pneumococcal diseases they prevent, and the recommended vaccination schedules.

(CO-3) [3 Marks]

Q3. Explain the pathogenesis of poliovirus infection, and the differences between the inactivated polio vaccine (IPV) and the oral polio vaccine (OPV) in terms of their immunological mechanisms, administration methods, and associated risks.

(CO-3) [4 Marks]

Q4. Discuss the recommended vaccination schedule for rotavirus vaccines in infants. Include the names of he available vaccines. Explain why adhering to this schedule is crucial for effective immunization.

(CO-3) [4 Marks]

Q5. Explain the pathogenesis of malaria parasite that evades the immune system and causes disease symptoms. Also discuss the current status of malarial vaccine development, including the types of vaccines available, their mechanisms of action, and the challenges associated with developing an effective malaria vaccine.

(CO-4) [6 Marks]

Q6. **A.** Provided is a gel pattern obtained after RAPD analysis of eight rice varieties. Interpret the given data, predicting the similarity / dissimilarity of the varieties. (M = Marker / Ladder).   (CO-1) **[2 Marks]**
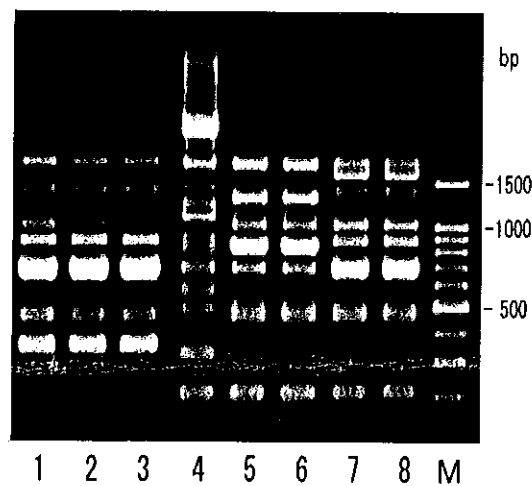
B. Differentiate between VNTR and SSR and describe their applications in diagnostics. (CO-1) **[3 Marks]**

Q7. Sketch the recommended laboratory set-up for diagnostic real-time PCR, explaining usage of each confinement section. Discuss the utility of positive and negative controls in the process (CO-4) **[5 Marks]**

Q8. A Kirby-Bauer Method of disk diffusion was used for antibiotic sensitivity testing of Staphylococcus aureus. Analyze the effect of each factor given below on result and interpretation of Sensitivity or Resistance of the organism against the antibiotic Methicillin used: (CO-5) **[2+1+1+1=5 Marks]**

a. Temperature of incubation
b. Inoculum density
c. Timing of disk application
d. Potency of antibiotic disks