GURUDAS COLLEGE

INTERNAL EXAMINATION ,2020
B.Sc (SEMESTER IV) CBCS
MICROBIOLOGY
(HONOURS)
PAPER : CC 10

TIME : 2 HOURS **FULL MARKS 50**

GROUP A(THEORY)

Answer any five questions

Q1. A plasmid containing a single BamH1 site within an antibiotic resistant gene. The recognition sequence for BamH1 is 5'G↓GATCC3'. A fragment of DNA containing a gene of interest is to cloned into the BamH1 site of the plasmid described above. Unfortunately, the gene sequence contains a BamH1 site. The gene is flanked by Bgl II sites (5'A↓GATCT 3'). However as follows-

5'---------AGATCT---gene----AGATCT---------3'

a. Diagram the cuts made by Bam H1 on the plasmid DNA and the cuts made on the gene containing fragment by Bgl II. Show both strands and the cohesive end products.
b. Do you think that Bam H1 and Bgl II cohesive ends are compatible? If so, show the resulting construct.
c. Do you think that Bam H1 and /or Bgl II sites could be regenerated? (2 + 2 + 1)

Q2. a. Write down the functions of following enzymes:
i) Terminal transferase, ii) Polynucleotidal Kinases
b. What is isocaudomers?
c. What is polylinker? (2+2+1)

Q3. Describe how would you choose a suitable cloning vector based on the size of the recombinant gene to be cloned. How single stranded DNA can be cloned? (3+2)

Q4. a. Why IPTG is used to induce lac operon instead of allolactose?
b. What do you understand by a genomic library? How would you generate a genomic library and identify a known gene A in that library? (2+3)

Q5. a. How is the host genomic DNA protected from its own restriction endonuclease?
b. What are the causes of star activity?
c. What is the difference between minisatellite and microsatellite? (1.5+1.5+2)

Q6. a. What do you understand by PCR? Describe schematically how the gene of interest can be amplified?
b. What are the uses of linker and adapters? (1+2) +2

Q7. What are transgenic animals? How would you prepare insulin by use of RDT? 2+3

Q8. Write short notes on (any two): (2.5+2.5)
a. pUC vectors. b. YAC. c. cDNA library. d. Ti-plasmid

GROUP B (PRACTICAL)

Q1. How many fragments you'll get on treating lambda DNA and pUC digested with EcoRI ? 4
Q2. How will you prepare competent cell for transformation? 3
Q3. Draw the cutting site of SmaI and XmaI. 3
Q4. What do you mean by insertion inactivation? 3
Q5. How will you prevent self ligation of DNA after cutting with restriction endonuclease? 2

GROUP C (IA)

1. Number of restriction target site and produced fragment are same for a specific restriction enzyme of a circular DNA." True or False, justify. 5
2. How will you distinguish between a specific PCR product and non-specific PCR product? 5

Submit your answer scripts from your own email id to infomcbasem4@gmail.com