[161/162/A-42]

SEAT No._____ No. of Printed Pages: 2

( ) SARDAR PATEL UNIVERSITY

M. Sc. Integrated Biotechnology, Eight Semester Examination

Day and Date: Monday, 25-03-2019

Time: 02:00 Pm to 5:00 pm

Paper Code and Subject: PS08CIGIB3/ PS08CIGMB3, 'O'mics

Total Marks: 70

Q-1 Multiple choice questions (**All are compulsory**). [8x1=8]

(i) In shotgun sequencing, the large cloned DNA is randomly broken up into a series of small fragments having size of _____.
(a) 1 kb (b) 1 kb - 1.5 kb (c) >1.5 kb (d) < 1 kb

(ii) During CpG mutation rate Methylation of Cytosine (mC) involves adding a methyl group (CH3) on to the
(a) C5 carbon (b) C4 carbon (c) C6 carbon (d) None

(iii) Which of the following is responsible for multiple protein synthesis from single gene?
(a) Alternative splicing (b) RNA editing
(c) Exon shuffling (d) All of the above

(iv) HGP was also focused on identifying.....
(a) SNPs (b) VNTRs
(c) Minisatellites (d) Junk DNA

(v) In the triple Quadrupole Mass analyser, _____ scans repeatedly over a mass range to detect the fragment ions, obtaining a spectrum.
(a) Q1 (b) Q2 (c) Q3 (d) Q4

(vi) Mass spectrometers are used to determine which of the following?
(a) Composition if sample (b) Concentration of elements in sample
(c) relative mass of atoms (d) properties of sample

(vii) Which of the statement hold true for Quantitative PCR?
(a) A fluorescent dye is used which binds on single stranded DNA molecules
(b) SYBR green is an example such type of dye
(c) The quantity of DNA is simply measured by measuring the amount of fluorescence
(d) This approach is useful if the products are non-specific in nature

(viii) Which of these questions could be answered using subtractive hybridization?
(a) What genes are required for basic cellular functions?
(b) What site is bound by a kidney specific transcription factor?
(c) What genes are expressed in cardiac but not skeletal muscle?
(d) All of these

Q-2 Answer the following questions in short. (**Any Seven**) [7x2=14]

(i) What is concatamer?

(ii) What do you mean by differential gene expression?

(iii) Define: Physical map, linkage map, STS and contig.

(iv) Why is *Arabidopsis* a Model Plant for genome study?

(v) Write basic principle of Shotgun sequencing

(vi) Explain principle of DIGE.

(vii) Explain proteome analysis in brief.

(viii) What do you understand by the term threshold value?

(ix) What is transcriptomics? Give different levels of study of transcriptome. (P.T.O)

Q-3	(A)	Discuss the Gene content of the human genome in detail.	[06]
	(B)	Write a note on codon bias and annotation of exon-intron boundary.	[06]
		OR	
	(B)	Discuss Maxam and Gilbert method of sequencing giving its advantages and disadvantageous.	[06]
Q-4	(A)	What is BAC? State an important application of BAC. Write down the procedure for BAC Library Preparation.	[06]
	(B)	Describe Human genome project in detail.	[06]
		OR	
	(B)	Explain the goals, consequences and accomplishments of the Human Genome Project.	[06]
Q-5	(A)	Write a note on 2D analysis of proteins.	[06]
	(B)	What is protein-protein interaction? Write a note on yeast two hybrid system.	[06]
		OR	
	(B)	Write a note on MALDI-TOF and explain the working principle in detail.	[06]
Q-6	(A)	Discuss the principle and method of SAGE technique for differential gene expression. Write the advantages and disadvantages of SAGE?	[06]
	(B)	Explain cDNA array and its significance in transcriptomics in detail.	[06]
		OR	
	(B)	Discuss Human metabolome project in detail.	[06]

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