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{ } SARDAR PATEL UNIVERSITY

T.Y B. Sc. (Genetics) – VIth Semester Examination (CBCS)

Friday, 6th April 2018

10:00 am to 01:00 pm

US06CGEN06: Biomedical Genetics

Total Marks: 70

Note: (1) Figures to the right indicate marks.
(2) Draw a neat and labelled diagram, wherever necessary.

Q1. Multiple Choice questions: **(1 x 10 = 10)**

1) Which of these gene/gene family is responsible for Apoptosis?
(A) P-53 (B) bcl-2 (C) RTK (D) c-jun

2) Genes which regulates the cell cycle are known as:
(A) Oncogenes (B) Mutagenes (C) Proto-oncogenes (D) Cyclins

3) Positional cloning is also known as?
(A) Forward genetics (B) Reverse genetics (C) Directed genetics (D) Both B & D

4) Which of these is a key characteristic of a molecular marker?
(A) It is located at a known site on the chromosome (B) It is a known gene
(C) It is only useful for linkage and physical mapping studies (D) None of these.

5) Candidate gene is likely to be a disease-associated gene if:
(A) Loss-of-function mutation causes the phenotype
(B) It is a pseudogene
(C) Multiple different mutations cause the phenotype
(D) The pattern of expression of the gene is inconsistent with the phenotype

6) Non Mendelian inheritance is shown by:
(A) Mitochondrial genes (B) Nuclear genes (C) chloroplast genes (D) Both A and C

7) Which of these also gives information about site of mutation?
(A) SSCP (B) TGGE (C) HA (D) DNA Sequencing

8) Heteroduplex analysis involves:
(A) Denaturation (B) Fragmentation (C) solublisation (D) None of these

9) Which of these stem cells are totipotent?
(A) Dental (B) Amniotic (C) Cord cells (D) Embryonic

10) Which cell type would not be a direct target for gene therapy?
(A) red blood (B) muscle (C) liver (D) endothelium

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Q2. Short Answer type questions (Attempt any TEN) **(10 x 2 = 20 marks)**

1. Mention three differences between benign and malignant tumor.
2. Mention any two chemotherapeutic drugs and their mode of action.
3. What is the significance of physical mapping?
4. What is forward genetics? Mention its significance.
5. Enumerate four techniques for detection of mutation.
6. What is the principle of SSCP?
7. Enumerate various approaches/strategies for cancer treatment.
8. Menion the principle of chemical cleavage method.
9. Define candidate gene and its importance.
10. Briefly mention various types of stem cells.
11. Mention two functions of nanoparticles.
12. What is substrate restriction diet-preventive therapy?

Q.3.A) Define Chemotherapy. Enumerate various chemotherapeutic drugs. **(05)**

Q.3.B) Give a comparative account of healthy and cancerous cell. **(05)**

OR

Q.3.A) Briefly explain various mechanisms for malignant transformation. **(05)**

Q.3.B) Write a note on Proto-oncogenes and their classes with example. **(05)**

Q.4.) Explain positional cloning in detail for the detection of disease causing gene with the help of relevant flow charts. **(10)**

OR

Q.4.A) Give a comparative account of Functional and Positional cloning. **(05)**

Q.4.B) Write a short note on Physical mapping. **(05)**

Q.5) Explain various important strategies for the detection of mutation with their applications and limitations **(10)**

OR

Q.5.A) What is the principle and advantages of multiplex PCR? **(05)**

Q.5.B) Explain Heteroduplex analysis with diagram. **(05)**

Q.6.A) Define Genetic counselling. Mention various situations where it plays a very significant role. **(05)**

Q.6.B) Write a short note on various strategies to manage genetic diseases. **(05)**

OR

Q.6.A) Briefly explain gene therapy and its types. **(05)**

Q.6.B) Define stem cells. Mention various applications of stem cells. **(05)**