(20) SEAT No._____

SARDAR PATEL UNIVERSITY
BACHELOR OF SCIENCE (B.Sc.)
VI[TH] SEMESTER EXAMINATION MARCH/APRIL – 2019
THURSDAY, 4[TH] APRIL 2019
10:00 AM TO 01:00 PM
SUBJECT: GENETICS
COURSE: US06CGEN06
(BIOMEDICAL GENETICS)

No. of Printed Pages : 02

TOTAL MARKS: 70

Figures to the right indicate marks:

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

i) Movement of cells from tumor to newer sites is called:

A) Transformation B) Metastasis C) Transition D) Transversion

ii) Genes which regulates the cell cycle are known as:

A) Oncogenes B) Mutagenes C) Protoncogenes D) Cyclins

iii) Which strategy requires prior functional relevance to the disease in question?

A) Positional cloning B) Candidate gene approach

C) Sequencing D) Multiplex PCR

iv) Maxam and Gilbert method of DNA sequencing requires:

A) Base specific degradation chemical B) Radiolabelling of end of DNA

C) Autoradiography D) All of the above

v) Non mendelian inheritance is shown by:

A) Mitochondrial genes B) Nuclear genes C) chloroplast genes D) Both A and C

vi) 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.

vii) Which of the following component are essential for PCR?

A) Primer B) DNA template C) Taq-DNA polymerase D) All of these

viii) Which of these stem cells are totipotent?

A) Dental cells B) Amniotic cells C) Cord cells D) Embryonic Stem Cells

ix) Germ-line therapy is:

A) Heritable B) Not heritable

C) Sometimes heritable D) Unrelated to heritability.

x) The Gene therapy in which cells are altered outside the recipient's body before their administration /injection in the body, is called ?

A) in situ B) in vivo C) ex vivo D) in silico

(P.T.O.)

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

I. Define cancer and metastasis.
II. Mention any two chemotherapeutic drug and its mode of action.
III. Define chemical cleavage methods. Mention one examples.
IV. What is the principal of Heteroduplex analysis.
V. Mention two major differences between classical and multiplex PCR.
VI. What do you mean by genetic mapping?
VII. How mitochondrial mutations are detected?
VIII. Mention the significance of sequencing for mutation detection.
IX. Explain totipotency with an example.
X. Define pedigree analysis and mention its importance.
XI. What is the difference between in-vivo and ex-vivo gene therapy.
XII. What do you mean by Genetic Counseling.

Q.3.A) Enumerate four cancer treatment approaches. Explain anyone in detail. (05)
Q.3.B) Write a note on Proto-oncogenes and their classes (05)

OR

Q.3.A) Write a note on molecular mechanisms for malignant transformation. (05)
Q.3.B) Write a note on chemotherapeutic drugs. (05)

Q.4.A) With the help of flowchart explain strategy employed for positional cloning. (04)
Q.4.B) Write a short note on Physical mapping. (06)

OR

Q.4.A) How functional cloning is different from positional cloning. (04)
Q.4.B) Write brief notes on: (06)
i) Pedigree analysis
ii) Candidate gene approach

Q.5.) Enumerate various strategies for detection of mutant gene. Explain any one in detail. (10)

OR

Q.5.A) Briefly explain Heteroduplex analysis and its significance. (05)
Q.5.B) Explain any technique based on chemical cleavage method. (05)

Q.6.A) Enumerate situations where genetic counselling plays a very significant and crucial role. (05)
Q.6.B) Briefly explain gene therapy and its types. (05)

OR

Q.6.A) Write a short note on various strategies to manage genetic diseases. (05)
Q.6.B) Define stem cells. Mention various applications of stem cells. (05)

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