

(24)

No. of Printed Pages: 2

SARDAR PATEL UNIVERSITY
T.Y.B. Sc. (Genetics) – Fifth Semester Examination (CBCS)
Monday, 25th November 2013
10:30 a.m. to 1:30 p.m.
US05CGEN06: Human Genetics

Total Marks: 70

Note: (1) Figures to the right indicate marks.

(2) Draw a neat and labeled diagram, wherever necessary.

Q1. Choose the most appropriate answer from the four alternatives given: [10]

- i) The current estimate for the number of human genes is _____.
 - A. 30 000
 - B. 100 000
 - C. 1 000 000
 - D. 30 0000
- ii) Homologous repeats are involved _____.
 - A. Large deletions
 - B. Missense mutations
 - C. Frameshifts
 - D. Splicing mutations
- iii) Unit for genetic map is _____.
 - A. cM
 - B. Base-pairs
 - C. Map unit
 - D. Both A and C
- iv) Which of the following is not required in the whole-genome shotgun approach to genome sequencing?
 - A. PCR reaction
 - B. Physical map
 - C. BAC library
 - D. Plasmid library
- v) Which repetitive DNA includes an open reading frame for reverse transcriptase?
 - A. LINE
 - B. DNA transposon
 - C. SINE
 - D. VNTR
- vi) In human beings, multiple genes are involved in the inheritance of _____.
 - A. Skin colour
 - B. Sickle-cell anaemia
 - C. Colour blindness
 - D. Phenylketonuria
- vii) The most striking example of point mutation is found in a disease called _____.
 - A. Down's syndrome
 - B. Sickle cell anaemia
 - C. Thalassaemia
 - D. All of these
- viii) Male XX and female XY sometime occur due to _____.
 - A. Transfer of segments in X and Y chromosome
 - B. Deletion
 - C. Hormonal imbalance
 - D. None of these
- ix) Which of the following is not a hereditary disease?
 - A. Cretinism
 - B. Haemophilia
 - C. Cystic fibrosis
 - D. All of these
- x) Which of the following is a correct definition of genetics?
 - A. The study of genes and traits defined by genes
 - B. The study of variation between members of a species
 - C. The study of DNA
 - D. None of these

P.T.O.

- Q2. Answer any TEN from the following:** [20]
- i. Define low-copy repeats.
 - ii. What are coding sequences?
 - iii. Define physical map.
 - iv. What is quantitative inheritance?
 - v. Define chromosome walking.
 - vi. What is point mutation?
 - vii. Explain Tay Sach's Syndrome.
 - viii. What is haemophilia?
 - ix. Explain Ferric chloride test?
 - x. Define fetal chromosome.
 - xi. What is congenital disorder?
 - xii. Define overlapping DNA segments.
- Q3. Discuss the potential benefits and problems of human genome project.** [10]
- OR**
- Q3. Write notes on:**
- a. Coding and non-coding sequences [05]
 - b. Gene families [05]
- Q4. What is DNA construct? Discuss the applications of BACs library in genome projects.** [10]
- OR**
- Q4. Write notes on:**
- a. Physical mapping [05]
 - b. Positional cloning [05]
- Q5. What are multifactorial disorders? Discuss the genetic basis of diabetes mellitus.** [10]
- OR**
- Q5. Write notes on:**
- a. Monogenic diseases [05]
 - b. Obesity [05]
- Q6. What is SAGE and how would you produces a snapshot of the mRNA population in the sample of interest?** [10]
- OR**
- Q6. Describe genetic testing carried out at prenatal and neonatal stages of life with their significance.** [10]
