Genetics

(Lecture 1&2)

1-The number of human chromosomes by the end of anaphase of meiosis II is :

a. 69

b. 23

c. 46

d. 115

e. 92

Answer : C

2-Imagine if the humans' diploid chromosomal complement is 10 instead of 46. What would the number of possible combinations of meiosis be :

a. 64

b. 32

c. 16

d. 4

e. 8

Answer :B

3-This chromosome is:

a. Metacentric

b. Acrocentric

c. Submetacentric

d. Interphase chromosome

e. Telocentric

Answer : C

4-Which P arm of the following chromosomes carries rDNA genes?

a. 3

b. 15

c. 6

d. 12

e. 9

Answer : B

5-The karyotype where euchromatic regions stain more darkly and the light regions are heretochromatin is:

a. Q-banding

b. C-banding

c. G-banding

d. T-banding

e. R-banding

Answer : E

6- Which of the following fetal tissues are used for studying the fetal chromosomes :

a. Lymphocytes

b. Check swap

c. Amniotic fluid

d. Skin biopsy

e. Bone marrow

Answer : C

7-How many double stranded DNA molecules are in a somatic human cell that is in present G2 phase:

a. 46

b. 23

c. 92

d. There are no double stranded DNA molecules in G2

e. 69

Answer : C

8-The practical way to visualize a karyotype of a suspected very large chromosomal deletion, is to:

a. Arrest the cells at anaphase

b. Arrest the cells at metaphase

c. Arrest the cells at S phase

d. Arrest the cells at telophase

e. Arrest the cells at prometaphase

Answer :B

9-All of the following regarding telomeres is true EXCEPT :

a. Telomeres consist of a repeated sequence of TTAGGG

b. Telomeres are shortened by each cycle of DNA replication

c. It codes for important genes .

d. Prevents end-to-end fusion of chromosomes

e. Cancer cells are characterized by high telomerase activity

Answer : C

10-One of the following is true about telomerase :

a. inactivation of telomerase contributes for the extended lifespan of cancer cells .

b. it uses DNA template

c. it extends the daughter DNA strand to become longer than the parental DNA

d. whole telomere has the same sequence

e. activity of telomerase increases with age

Answer : D

11-A cell is in G0 phase. How many chromosomes does it have ?

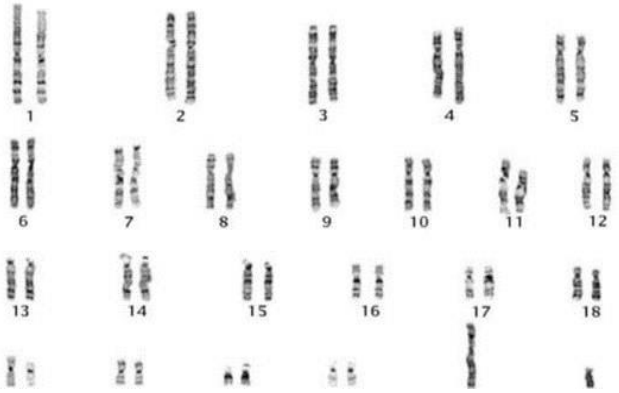
a. 46

b. 23

c. 92

Answer : A

12-What is the karyotype shown in the figure ?



a. 46 XX

b. 47 XY

c. 46 XY

Answer : C

13-The most commonly used stain for metaphase chromosomes is _____

a. Quinacrine stain

b. Giemsa stain

c. Trypsin

Answer : B

14-The study of chromosomes and cell division is called :

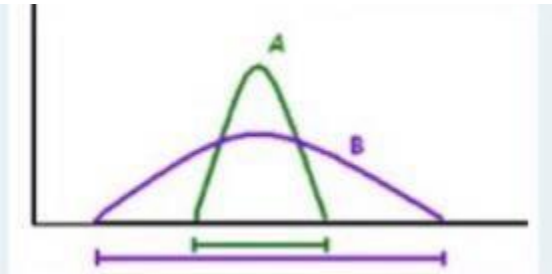
a. Cytogenetics

b. Cytology

c. Pedigree

Answer : A

15-The figure depicts two possible graphs of an assumed population genetic diversity. In comparison to each other:



a. Crossing over occurs during mitosis not meiosis. Therefore, the population genetic diversity is irrelevant and graphs A and B are equally possible to occur whether crossing over happens or not

b. The crossing over does not influence the genetic diversity of the population, therefore the graphs A and B are equally possible to occur regardless whether crossing over occurs or not

c. If crossing over does not occur at all during meiosis, the population will favor graph B

d. If crossing over does occur during meiosis, the population will favor graph B

e. If crossing over does occur during meiosis, the population will favor graph A.

Answer :D