



# BIOLOGY

## BOOKS - KVPY PREVIOUS YEAR

### MOCK TEST 2

#### Exercise

1. A person with unknown blood group under ABO system, has suffered much loss in an accident and needs immediate blood

trasfusion. His one friend who has a valid certifacte of his own blood type. What would have been the type of blood group of the donor friend

- A. Type B
- B. Type AB
- C. Type O
- D. Type A

**Answer:**



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2. Which of the following is an example of positive feedback control in the reproductive cycle of males or females?

A. The increased response of the hypothalamus and anterior pituitary gland in response to oestrogen

B. The decreased response of the hypothalamus and anterior pituitary gland in response to oestrogen

C. The inhibition of luteinising hormone by high levels of testosterone.

D. The stimulation of luteinising hormone by low levels of testosterone.

**Answer:**



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**3.** Human immuno deficiency virus (HIV) has a protein coat and a genetic material which is

A. Single stranded DNA

B. Single stranded RNA

C. Double stranded RNA

D. Double stranded DNA

**Answer:**



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4. Halophilic archaebacterium (*Halobacterium salinarum*) found in Great Salt Lake and Dead Sea cannot live in

- A. less than 3 M NaCl concentration
- B. less than 5 M NaCl concentration
- C. more than 4 M NaCl concentration
- D. more than 3 M NaCl concentration

**Answer:**



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5. During replication of a bacterial chromosome DNA synthesis starts from a replication origin site and

A. moves in bi-directional way

B. is facilitated by telomerase

C. moves in one direction of the site

D. None of these

**Answer:**



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6. Which one of the following conditions correctly describes the manner of determining the sex in the given example?

A. Homozygous sex chromosomes (ZZ)

determine female sex in birds

B. XO type of sex chromosomes determine

male sex in grasshopper

C. XO condition in human is found in

Turner syndrome, determines female sex

D. Homozygous sex chromosomes (XX)

produce male in *Drosophila*

**Answer:**



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7. Haploids are more suitable for mutation studies than the diploids. This is because

A. haploids are reproductively more stable than diploids

B. mutagens penetrate in haploids more effectively than diploids

C. haploids are more abundant in nature than diploids

D. all mutations, whether dominant or recessive are expressed in haploids

**Answer:**



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8. Which of the following is a pentameric immunoglobulin and is produced first in a primary response to an antigen

A. IgG

B. IgM

C. IgA

D. IgE

**Answer:**



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**9.** Consider the following statements about biomedical technologies,

(i) During open heart surgery blood is circulated in the heart-lung machine

(ii) Blockage in coronary arteries is removed by angiography

(iii) Computerised Axial Tomography (CAT) shows detailed internal structure as seen in a section of body.

(iv) X-ray provides clear and detailed images of organs like prostate glands and lungs

Which two of the above statements are correct?

A. (i) and (iv)

B. (iii) and (iv)

C. (i) and (iii)

D. (i) and (ii)

**Answer:**



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**10.** The first repair of mistakes made during DNA replication is made by

A. the mismatch repair system

B. DNA polymerase

C. excision repair

D. SOS repair

**Answer:**



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**11.** During translation , activated amino acids get linked to tRNA. This process is commonly called as

A. charging of tRNA

B. discharging of tRNA

C. aminoacylation of tRNA

D. both (a) and (c)

**Answer:**



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**12.** Protein on reaction with which yields Ruhemann's purple?

A. Ninhydrin

B.  $Cu^{2+}$

C.  $H_2O_2$

D. Benedict's solution

**Answer:**



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**13.** Which one of the following biomolecules is correctly characterised

A. Lecithin-A phosphorylated glyceride

found in cell membrane



- B. Palmitic acid- An unsaturated fatty acid with 18 carbon atoms
- C. Adenylic acid- Adenosine with a glucose phosphate molecule
- D. Alanine amino acid- Contains an amino group and an acidic group anywhere in the molecule

**Answer:**



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**14.** A small segment of DNA contains the base sequence CGT. If an mRNA transcript is made that includes this DNA sequence, what will be the anticodon on the tRNA that will bind to the corresponding mRNA codon for this DNA triplet?

A. CGT

B. GCA

C. CGU

D. GCT

**Answer:**



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**15.** The primary reason why the same basic techniques can be used to analyse the DNA from species as diverse as bacteria and humans is that

A. all cells are identical

B. every organism has the same amount of

DNA

C. the DNA sequences of all organisms are the same

D. DNA has a consistent structure in all organisms

**Answer:**



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**16. Percentage of (G+C) is**

$$\text{A. } \frac{G + C}{(A + G + T + C)} \times 100$$

B.  $\frac{100}{(A + T)} \times G + C$

C.  $\frac{G + C}{(A + T + G + C)}$

D.  $\frac{(G + C) \times (A + T)}{100}$

**Answer:**



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**17.** A person has 400 million alveoli per lung with an average radius of 0.1 mm for each alveolus. Considering the alveoli are spherical

in shape, the total respiratory surface of that person is closest to

A.  $50 \times 10^6 \text{ mm}^2$

B.  $200 \times 10^6 \text{ mm}^2$

C.  $100 \times 10^6 \text{ mm}^2$

D.  $1000 \times 10^6 \text{ mm}^2$

**Answer:**



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**18.** Given below are some characters of a cell organelle. (i) It is a membrane bound space found in the cytoplasm (ii) It is bound by a single membrane called tonoplast. (iii) It contains water, excretory products and other materials not useful to the cell. (iv) It has higher concentration of sap than the cytoplasm. Identify the correct organelle which shows all the characters described above

A. Golgi apparatus

B. Lysosomes

C. Endoplasmic reticulum

D. Vacuoles

**Answer:**



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**19.** A gene that was 5055 bp long resulted in three polypeptides-350 amino acids long, 450 amino acids long and 1500 amino acids long.

The most likely reason for this is



A. mRNA degradation

B. Alternate splicing

C. Gene amplification

D. Nonsense mutation

**Answer:**



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**20.** Instead of 3, if 2 bases code for an amino acid, the degeneracy of codons coding for the same amino acid would have :

A. Increased

B. Decreased

C. Remained the same

D. Been uncertain

**Answer:**



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**21.** In a nerve , is sodium pump is blocked ,  
which of the following is most likely to happen  
?

- A.  $Na^+$  and  $K^+$  will increase outside the cell.
- B.  $Na^+$  outside the nerve will increase
- C.  $Na^+$  inside the nerve will increase
- D.  $K^+$  inside the nerve will increase.

**Answer:**



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22. If a stock has  $2n=48$  and scion microspore mother cell has  $2n=24$ , then root cell and the microspores will have. . . . Chromosomes respectively

A. 12,48

B. 48,12

C. 24,12

D. 24,96

**Answer:**



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