

**Answer for question (1):****(A) Choose the correct answer:**

- 1- The hormone that causes acromegaly is ..... hormone.  
a) Parathormone      b) Aldosterone      c) Aldosterone      d) Growth
- 2 - From the immunological substance that represent the second line of defense is the .....  
a) Interferons      b) Cerumen      c) Hydrochloric acid      d) Mucus
- 3- The male reproductive organ in ferns is known as .....  
a) genital processes      b) archegonia      c) ciliated sperms      d) antheridia
- 4- The chemical substances that act as mediate communication between different immune cells are called .....  
a) Chemokines      b) Interleukins      c) Complements      d) Interferons
- 5- The number of ribs that are connected with the sternum bone is.....  
a) 12      b) 24      c) 10      d) 20
- 6- The individuals produced as a result of parthenogenesis in bees are characterized by .....  
a) diploid chromosomal number  
b) identical to the queen's chromosomal number  
c) identical to the male's chromosomal structure  
d) identical to the workers 's chromosomal structure

**(B) Mention the site and function of each of the following: (by placing the suitable letter in front of the numbers that fit):****The Sentences:**

- a) They found in plants and stimulate the innate immune system in the plant.
- b) They secreted around the sites of injury or cuts to prevent the entry of microbes within the plant.
- c) It is located at the top of the sperm's head and secretes the hyaluronic enzyme.
- d) Finger - like projections grow from the chorion membrane to feed the fetus and secrete progesterone hormone.
- e) The link that connects the upper two limbs with the vertebral column.

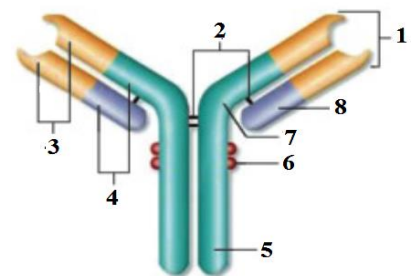
**Structures:**

- 1- The pectoral girdle (    )      2- The acrosome (    )      3- The Placenta (    )
- 4- The receptors (    )      5- The gums (    )

**(C) Study the opposite diagram, which represents the structure of the antibody.**

Then answer the following questions by choosing the correct answer:

- a) Statement No. (4) represents a variable region or the constant region.
- b) The disulphide bond is the structure of the number ..... (1 - 2 - 4 - 5)
- c) The structure No. (6) is .....  
(antigen-binding site – complement binding site –  
light chain – hinge region)



**Answer for question (2):**

**(A) Write the scientific term: (by putting the term number in front of the suitable Sentence):**

**The Terms:**

- 1- Amnion  
 2- Interstitial cells  
 3- Non histone  
 4- Acetabulum cavity  
 5- Sertoli cells

**The Sentences:**

- a) A structure where the head of the femur fit. ( )  
 b) Structures in the testis responsible for the secretion of male hormones. ( )  
 c) A group of cells inside the testis responsible for nourishing the sperms. ( )  
 d) Membrane surrounds the human embryo and contains liquid that protects the fetus from dryness and shocks. ( )  
 e) Regulatory proteins found within the nucleus of eukaryotes. ( )

**(B) Explain the importance of each of the following: (by placing the suitable letter in front of each sentence):**

- 1- Parthenocarpy  
 2- Tissue culture  
 3- Triple fusion

**The importance:**

- a) The formation of the endospermic nucleus, which is the tissue that feeds the embryo in its early stages of development. ( )  
 b) The formation of seedless fruit without pollination or fertilization. ( )  
 c) The propagation of rare plants and the production of strains resistant to diseases. ( )

**(C) Correct the underline wards: (by placing the suitable letter in front of the following phrases):**

**The Sentences:**

- a) In the DNA molecule, the number of adenine equals the number of guanine. ( )  
 b) DNA Polymerize enzyme repairs the defects of DNA. ( )  
 c) The ability of the ovum to develop into a new individual without fertilization is called regeneration. ( )  
 d) The infective stage causing malaria disease to the humans is the female anopheles mosquito. ( )  
 e) Hershy and Chase labeled the virus DNA with radioactive sulfur. ( )

**The Corrections:**

- 1- parthenogenesis  
 2- phosphorus  
 3- sporozoites  
 4- thymine  
 5- ligases

**Answer for question (3):****(A) Choose from column (A) what is suitable for column (B):**

Column (A)	Column (B)
1) Gastrin	a) converts glycogen to glucose. ( )
2) Insulin	b) converts glucose to glycogen. ( )
3) Glucagon	c) secreted from Graafian follicle . ( )
4) Thyroxin	d) secreted from interstitial cells in the testis. ( )
5) Estrogen	e) secreted from the cells of the stomach wall in the blood. ( )
	f) secreted from the thyroid gland. ( )

**(B) Name the chemical substance responsible for the following functions:****(Put the numbers of words in front of the correct sentence)****The functions:**

- a) They destroy microbes after the association of antibodies. ( )
- b) They produce antibodies. ( )
- c) They bind to toxins to detoxifying them. ( )
- d) They recruit of large circulating phagocyte cells towards the site of microbes to reduce its spreading and its multiplication. ( )
- e) They increase the permeability of arterioles and blood capillaries of fluids from the blood circulation. ( )

**The chemicals:**

1- Antibodies

2- Chemokines

3- Complements

4- Histamine

5- Plasma B cells

**(C) Select the odd word in the following:**

- 1- Calex – corolla – amnion – gynoecium .
- 2- The coil – surgical sterilization – condom – renucleation.
- 3- Female Anopheles mosquito – Merozite – Ookinete – male Anopheles mosquito.
- 4- Interstitial cells – spermatogonia – spermatids – the corpus luteum.
- 5- Binary fusion – conjugation – budding – regeneration.

**Answer for question (4):****(A) Put (Y) or (X) in front of each of the following expressions:**

- 1- The induced mutation is developed by man to produce desirable changes in the traits of the organisms. ( )
- 2- The deoxyribonuclease enzyme hydrolyses RNA completely. ( )
- 3- Hand wrist is considered as a wide-movable joint. ( )
- 4- The phosphate group is linked to carbon atom No. 5 in the pentagon sugar by a hydrogen bond. ( )
- 5- DNA wound in the form of double helix each turn containing 10 pairs of nucleotides. ( )

**(B) Complete the following sentences: (put the suitable number before each statement):**

- 1- The number of amino acids is. ( )
- 2- The number of DNA nucleotides is. ( )
- 3- The number of female gametes produced from each primary germ cell is. ( )
- 4- The number of eggs that mature from ovaries throughout the period of fertility. ( )
- 5- The number of days of pregnancy in man. ( )

**The numbers:** (400 – 270 – 20 – 4 – 1)

**(C) Give reason for each of the following: (by placing the suitable letter in front of the following sentences):****The Sentences:**

- 1- Spirogyra algae turn to reproduce by conjugation. ( )
- 2- Reproduction function ensures the continuation of the species after the individuals are eliminated. ( )
- 3- Fruits of apples and pears are known as false fruits. ( )
- 4- The absence of seeds in some fruits such as bananas, pineapple and seedless grapes. ( )
- 5- Removal of the corpus luteum before the fourth month of pregnancy leads to abortion. ( )

**The reasons:**

- a) because it is formed as the result of parthenogenesis, without pollination or fertilization.
- b) because it does not arise from the enlargement of the ovary, but from the receptacle enlargement.
- c) because if this function was disrupted completely that leads to the extinction of the species.
- d) to overcome the unsuitable conditions such as drought, change water temperature or purity.
- e) because this leads to stop the secretion of Progesterone hormone, so that remove the endometrium causing bleeding and the death of the fetus.

**Answer for question (5):****(A) What is meant by....? (put the suitable letter in front of each statement):****The term:**

1- sarcomere

2- lumber

3- rib cage

4- pubic symphysis

5- rib

**The Sentences:**

- a) A conical case, connected posteriorly to the vertebrae and anteriorly to the sternum. ( )
- b) A curved bone bends and attaches posteriorly to the centrum of a vertebra and its transverse process. ( )
- c) The region where the two halves of pelvic girdle fused ventrally. ( )
- d) The largest vertebrae of the vertebral column in the abdominal region. ( )
- e) The distance between the two successive (Z) lines at the middle of the light band. ( )

**(B) Give an example for each of the following: (Put the suitable letter in front of each statement):****The Sentences:**

- 1- A unicellular organism reproduces by budding.
- 2- Flatworm reproduce by regeneration.
- 3- Males produced from natural parthenogenesis.
- 4- Plants reproduce by spores and considered as a model of alternation of generations. phenomenon.
- 5- An apical solitary flower.

**Examples:**

- a) Ferns      b) Yeast      c) Tulip      d) Planaria      e) Bees

**(C) What happens....? (Put the suitable letter in front of each statement):**

- 1- Disappearance of interstitial cells from the testes. ( )
- 2- Polyploidy occurs in the plant gametes. ( )
- 3- The deficiency in the calcium level in the muscles. ( )
- 4- Frog eggs are exposed to thermal shock. ( )
- 5- Tie or cut the fallopian tubes in a woman. ( )

**What happens:**

- a) Produce plants with new traits as the large fruited plant.
- b) Does not form transvers links with no contraction of the fibers.
- c) Do not secrete male sex hormones (androgens.)
- d) No fertilization of ova that produced from the ovaries.
- e) Duplication of chromosomes takes place and produces individuals completely similar to their mothers.