

## Sample paper 8

### Question: 1

**The cell wall of fungus is made up of**

- A. Peptidoglycan
- B. Chitin
- C. Cellulose
- D. Starch
- E. Glycogen

**Correct Answer: B. Chitin**

#### **Explanation:**

Chitin is a polymer of nitrogen containing polysaccharide. It is made up of N-acetyl-glucosamine and are linked by beta 1,4 linkage. Fungal cell wall is made up of chitin. Peptidoglycan and cellulose are the components of bacterial and plant cell wall respectively. Starch and glycogen are storage polysaccharides in plants and animals respectively.

### Question: 2

**The stimulated sensory receptors pass the information to**

- A. Excretory system
- B. Integumentary system
- C. Endocrine system
- D. Nervous system
- E. Circulatory system

**Correct Answer: D. Nervous system**

#### **Explanation:**

The human sensory system is a part of nervous system which is capable of responding to external stimuli such as sound, light, touch, smell etc. It consists of sensory receptors that are made up of neurons which transmit the stimuli in the form of nerve impulses to the central nervous system for response.

### Question: 3

**Intron containing genes are called**

- A. Silent genes
- B. Pseudogenes
- C. Structural genes
- D. Split genes
- E. Gap genes

**Correct Answer: D. Split genes**

#### **Explanation:**

Split genes are composed of exonic sequences separated by introns. They are found only in eukaryotes. Genes that don't have the capability to produce proteins are called pseudogenes. Gap genes are protein coding genes needed for the development of an organism.

**Question: 4**

**Which of the following cells have phagocytic activity?**

- A. Neutrophils
- B. Monocytes
- C. Basophils
- D. Macrophages
- E. A, B and D

**Correct Answer: E. A, B and D**

**Explanation:**

Phagocytes are any cells that ingest microorganisms or other cells and foreign particles in bloodstream and tissues. Neutrophils, monocytes and macrophage have phagocytic activity. Monocytes are the precursors of macrophages. Basophils secrete histamine, heparin, kinins and leukotrienes.

**Question: 5**

**Carrageenan, a thickening agent used in food products is extracted from**

- A. Red algae
- B. Green algae
- C. Blue green algae
- D. Golden algae
- E. String algae

**Correct Answer: A. Red algae**

**Explanation:**

Carrageenan is a polysaccharide which is extracted from the seaweed, a kind of red algae. Red algae contain phycoerythrins that emit red light upon absorbing blue light. Carrageenan is used as thickening, stabilizing and emulsifying agent in food products. It is also used in non- food products such as toothpaste, air freshener etc. for smoothening purpose.

**Question: 6**

**Placenta present in mammals can produce**

- A. Estrogen
- B. HCG
- C. Luteinizing hormone
- D. Testosterone
- E. Both A and B

**Correct Answer: E. Both A and B**

**Explanation:**

Placenta produces a variety of hormones and cytokines that influence the uterine, ovarian and fetal physiology. Estrogen, human chorionic gonadotropin and relaxin are some of the hormones produced by placenta.

**Question: 7**

**Polar bodies are formed during**

- A. Development of sperm
- B. Development of oocyte
- C. The fertilization of male and female gametes
- D. Implantation of the blastocyst
- E. Acrosome reaction of sperm

**Correct Answer: B. Development of oocyte**

**Explanation:**

Polar bodies are formed during the development of oocyte. Polar bodies are the cells which have a nuclei and little or no cytoplasm produced during first or second meiotic division of oocyte. They are discarded at the end of oocyte formation.

**Question: 8**

**Which of the following statements is true?**

- A. Nucleoside contains of a six carbon sugar
- B. Nucleoside is composed of nucleic acids
- C. Nucleoside is composed of nucleotides
- D. Nucleotide is composed of nucleic acids
- E. Nucleic acid is composed of nucleotides

**Correct Answer: E. Nucleic acid is composed of nucleotides**

**Explanation:**

Nucleic acid is made up of many nucleotides. Nucleoside combines with a phosphate group to form nucleotide. A nucleoside is made up of a five carbon sugar and a nitrogenous base.

**Question: 9**

**Which of the following is an example of an elastomer?**

- A. Aorta
- B. Bicuspid valve
- C. Synovial joint
- D. Renal vein
- E. None of these

**Correct Answer: A. Aorta**

**Explanation:**

An elastomer is anything that has a high degree of elasticity. Aorta through which blood is pumped to all parts of the body by the heart is an elastomer.

**Question: 10**

**Which of the following disorders occurs due to base substitution mutation?**

- A. Sickle cell anaemia
- B. Turner's syndrome
- C. Down's Syndrome
- D. Edward's syndrome
- E. Both B and C

**Correct Answer: A. Sickle cell anaemia**

**Explanation:**

Base substitution mutation is a mutation that causes the replacement of single base nucleotide with another nucleotide. In sickle cell anaemia, point mutation in the  $\beta$ -globin chain of haemoglobin occurs replacing glutamic acid by valine.

**Question: 11**

**The first living form that evolved from non-living substances is named as**

- A. Coacervate
- B. Precell
- C. Cell
- D. Microsphere
- E. All the above

**Correct Answer: B. Precell**

**Explanation:**

According to molecular evolution, precell (protocell or protobiont) is the first living form that originated from coacervates. The coacervates or microspheres are the structures formed by aggregation and precipitation of large molecules in the sea.

**Question: 12**

**Haemagglutinin spikes are found on the surface of**

- A. Fungi
- B. Cyanobacteria
- C. Virus
- D. Prions
- E. Diatoms

**Correct Answer: C. Virus**

**Explanation:**

Haemagglutinin spikes are virally coded integral membrane protein found on the surface of some viruses like influenza virus. They are needed for attachment of the virus to the target cell.

**Question: 13**

**The rock formed by solidification of molten magma is**

- A. Igneous rock
- B. Metamorphic rock
- C. Sedimentary rock
- D. Mudrock
- E. Both B and C

**Correct Answer: A. Igneous rocks**

**Explanation:**

Igneous rocks are formed by solidification of molten magma. They are found both in and above the ground. Inside the earth, they are formed when magma present deep inside the earth is trapped in small pockets. Igneous rocks are also formed as the lava of volcanoes cools above the ground.

**Question: 14**

**What was the name given by Mendel to genes?**

- A. Units
- B. Factors
- C. Orders
- D. Characters
- E. Genes

**Correct Answer: B. Factors**

**Explanation:**

Mendel through his experiments observed that something was passed on to successive generations through gametes and he named them as factors. Factors are the present day 'genes' and the contrasting traits he studied are the alleles.

**Question: 15**

**Which of the following is a peripheral protein?**

- A. Spectrin
- B. Ankyrin
- C. Aquaporins
- D. Calcium pump
- E. Both A and B

**Correct Answer: E. Both A and B**

**Explanation:**

Peripheral proteins are bonded to the inner or outer layer of the plasma membrane. They don't possess transmembrane domains. Spectrins and ankyrins are located at the cytosolic layer of the plasma membrane and they interact with the cytoskeletal proteins.