



BIOLOGY

BOOKS - HT Olympiad Previous Year Paper

NSO QUESTION PAPER 2016 SET A

Science

1. Read the following statements carefully.

P. I am extensively used in the healthcare

industry, but my one disadvantage is that I am non-biodegradable.

Q. I am very familiar form of polyester and used for making bottles, utensils, films, wires, etc.

R. I am synthetic fibre, having wool-like feel and cheaper than wool.

S. I am thermosetting plastics and poor conductor of heat and electricity. P, Q, R, and S are respectively

A. PET, Rayon, Petrochemical, Plastic

B. Terylene, Acrylic, Rayon, Melamine

C. PVC, PET, Nylon, Teflon

D. Plastic, PET, Acrylic, Bakelite.

Answer: D



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2. A strain of an animal exists in wild in which there is only one nucleolus in the nucleus of each cell instead of the usual two.

When such animals are mated, approximately one quarter of the offspring have two nucleoli

per nucleus, one half have one nucleolus per nucleus and one quarter have no nucleolus at all. Offspring without nucleoli die about four days after hatching.

These offspring die because they do not possess

A. Mitochondria and are unable to obtain energy

B. Centrioles and are unable to undergo cell division

C. Golgi apparatus and are unable to
remove dead cells

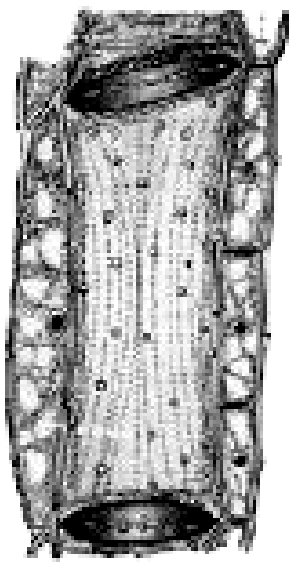
D. Ribosomes and are unable to
manufacture proteins.

Answer: D

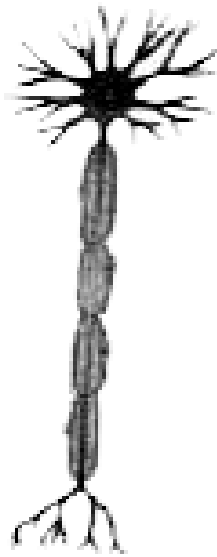


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3. Refer to the diagrammatic representations
of parts of two different tissues, X and Y.



X



Y

Now, read the following statements and select the correct ones regarding these tissues.

(i) X is an animal tissue whereas Y is a plant tissue.

(ii) X is the major water conducting tissue in vascular plants and gives mechanical strength to plant body.

(iii) X is composed of all dead cells whereas Y is composed of all living cells.

(iv) X conducts water in vascular plants in downward direction.

(v) In animals, Y helps in conduction of nerve impulses from various organs to brain and spinal cord and vice versa.

A. (i) and (ii) only

B. (iv) only

C. (v) only

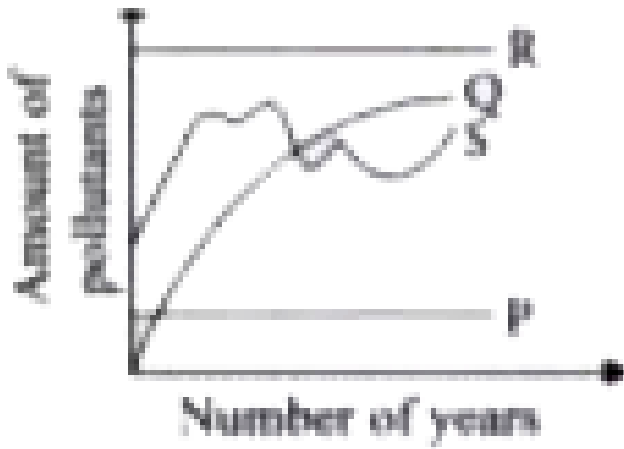
D. (iii), (iv) and (v) only

Answer: C



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4. The given graph shows the amount of pollutants in four rivers P, Q, R and S. The river that can continue to support the most number of aquatic plants and animals is



A. P

B. Q

C. R

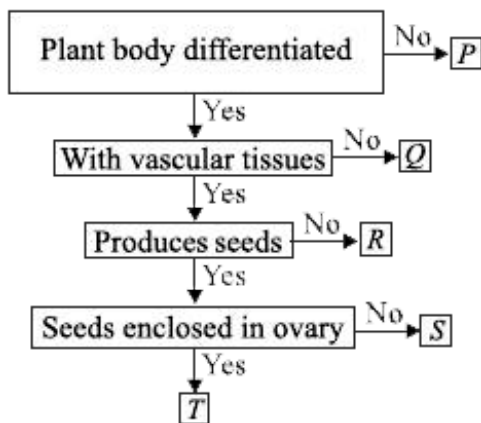
D. S

Answer: A



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5. Refer to the given flow chart and identify P, Q, R, S and T.



- | | <i>P</i> | <i>Q</i> | <i>R</i> | <i>S</i> | <i>T</i> |
|----|------------------|-------------------|-------------------|-----------------|------------------|
| A. | <i>Pinus</i> | <i>Funaria</i> | <i>Ulothrix</i> | <i>Brassica</i> | <i>Riccia</i> |
| B. | <i>Spirogyra</i> | <i>Funaria</i> | <i>Dryopteris</i> | <i>Cycas</i> | <i>Hibiscus</i> |
| C. | <i>Tagetes</i> | <i>Marchantia</i> | <i>Ginkgo</i> | <i>Salvia</i> | <i>Marsilea</i> |
| D. | <i>Volvox</i> | <i>Lycopodium</i> | <i>Cycas</i> | <i>Adiantum</i> | <i>Pteridium</i> |



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6. Read the given passage and answer the question.

Sukriti and Priya are good friends and study in I standard of a reputed school. On a hot summer day, while they both were playing in the school playground, Priya felt uncomfortable and sat down. After some time she developed acute headache and high fever. Her legs stopped moving and she also felt some stiffness in her neck. Soon she became unconscious.

Identify the disease which Priya has

contracted, along with its causative agent and mode of transmission

	Disease	Causative agent	Mode of transmission
(a)	Malaria	Protozoan	Bite of infected <i>Anopheles</i>
(b)	Tuberculosis	Bacteria	Contaminated water
(c)	Polio	Virus	Faecal oral route
(d)	Diphtheria	Fungus	Sharing of clothes

A. a

B. b

C. c

D. d

Answer: C



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7. Read the given passage and answer the question.

Sukriti and Priya are good friends and study in I standard of a reputed school. On a hot summer day, while they both were playing in the school playground, Priya felt uncomfortable and sat down. After some time she developed acute headache and high fever.

Her legs stopped moving and she also felt some stiffness in her neck. Soon she became unconscious.

What could be the probable reason for Sukriti not being affected by pathogen of this disease?

A. Sukriti's immune system has already encountered the weakened pathogens and developed memory cells, which produce antibodies whenever pathogen enters her body.

B. Sukriti had actually contracted the disease few months back and recovered, hence her immune system has developed memory cells, which prevent any subsequent pathogen attack.

C. Sukriti is taking antibiotics regularly, which kill the pathogens entering her body and prevent the actual disease.

D. Sukriti has received antibodies against the pathogen from her mother via

placenta so she is immune to the pathogen of this disease by birth.

Answer: A



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8. Read the given sentences, each with one or two blanks and select the option that correctly fills any four of these.

(i) P causes ulcers in stomach and duodenum.

(ii) diseases last for only short period of time

but are severe. (iii) R diseases are anatomical or physiological abnormalities present since birth, e.g. S (iv) Malaria causing microbes are transmitted through bite of infected T and move to U and then red blood cells of humans.

A. P-Salmonella typhi, R-Chronic, T-Sandfly,

U-Brain cells

B. Q-Acute, S-Kala azar, T-Tsetse fly, U-

Pancreas

C. P-Helicobacter pylori, R-Congenital, S-

Cleft palate, U- Liver

D. Q-Chronic, R-Acute, T-Aedes mosquito, U-

Spleen

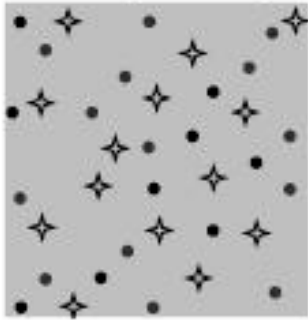
Answer: C



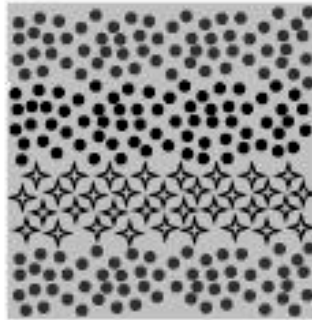
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9. The given diagrams show two different cropping patterns, X and Y. Identify these patterns and select the incorrect option

regarding them.



Pattern *X*



Pattern *Y*

A. In cropping pattern X, the crops should not have the same root pattern.

B. Crops selected for cropping pattern Y should have different type of nutrient requirement.

C. Crops selected for cropping pattern X must have different maturation time.

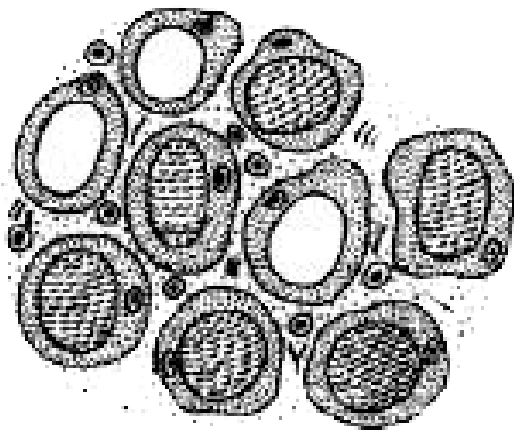
D. In cropping pattern Y, only two crops can be grown simultaneously at a time.

Answer: D



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10. Given below is the diagrammatic representation of an animal tissue, X.



Tissue X

Identify the tissue and select the correct option regarding it.

- A. Tissue X forms a shock absorbing cushion around kidneys and eyeballs.
- B. Tissue X fills the spaces inside the organs and fastens the peritoneum to

the body wall.

C. Tissue X connects skeletal muscles with bones.

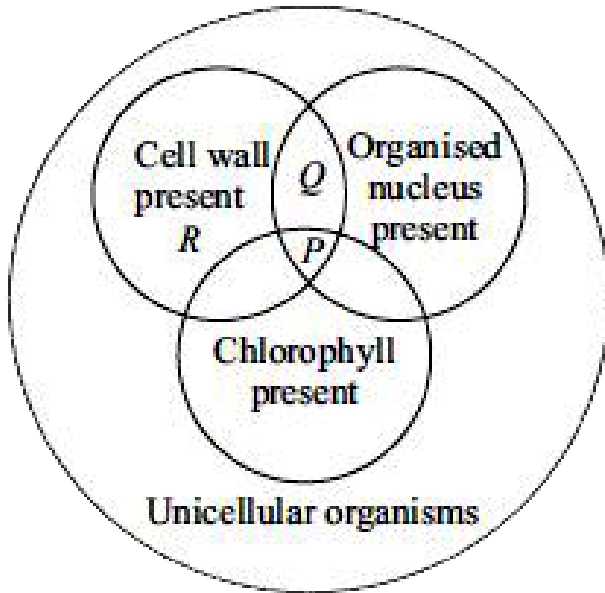
D. Tissue X is commonly called packaging tissue of the body.

Answer: A



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11. Refer to the given Venn diagram and select the correct option regarding P, Q and R.



A. P could be Chlamydomonas or

Aspergillus.

B. Q could be Volvox or Penicillium.

C. R could be Lactobacillus or Rhizobium.

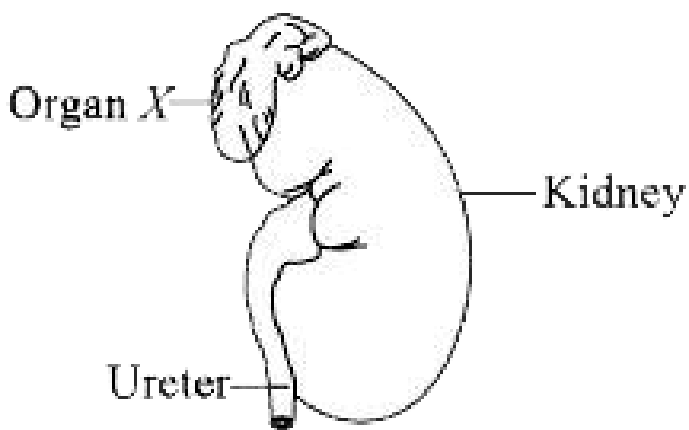
D. All of these

Answer: C



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12. Refer to the diagram showing organ X of the human body and read the following paragraph.



Organ X secretes two hormones P and Q. P prepares our body to function at maximum efficiency during emergency situations whereas Q maintains the correct salt balance in the blood.

Identify P and Q and select the correct option.

A. P-Aldosterone, Q-Thyroxine

B. P-Adrenaline, Q-Aldosterone

C. P-Insulin, Q-Adrenaline

D. P-Thyroxine, Q-Adrenaline

Answer: B



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13. Which of the following activities will lead to both air and water pollution?

A. Use of manures and fertilisers in a crop field

B. Use of cooling devices like air conditioners and refrigerators

C. Burning of fossil fuels and use of fuel operated transport vehicles.

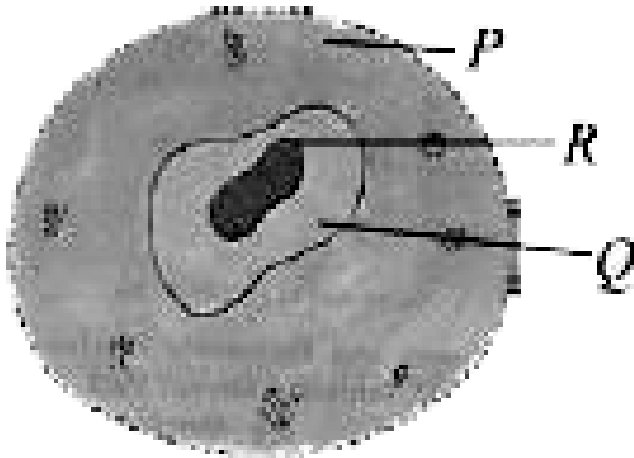
D. All of these

Answer: C



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14. Shown below is the diagrammatic representation of a biosphere reserve.



Select the correct statement regarding this.

A. Tourists can visit P and Q zones but are not allowed in the R zone.

B. Human settlement and cultivation of crops is allowed in P and Q zones only.

C. Human activities like research and environmental education are allowed in all P, Q and R zones.

D. Cutting of trees is allowed in all the zones but hunting of wild animals is allowed only in Q zone.

Answer: A



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Achievers Section

1. Refer to the given dichotomous key and select the incorrect option regarding organisms P, Q, R and S.

- I. (a) Animals with cellular level of body organisation. – **P**
(b) Animals with tissue/organ/organ system level of body organisation. – Go to II
- II. (a) Animals possessing bilateral symmetry. – Go to III (a)
(b) Animals possessing radial symmetry. – Go to III (b)
- III. (a) True coelom is present. – Go to IV (a)
(b) True coelom is absent. – Go to IV (b)
- IV. (a) Notochord is present. – **Q**
(b) Notochord is absent. – Go to V
- V. (a) It forms symbiotic association with hermit crab. – **R**
(b) It is commonly known as jelly fish. – **S**

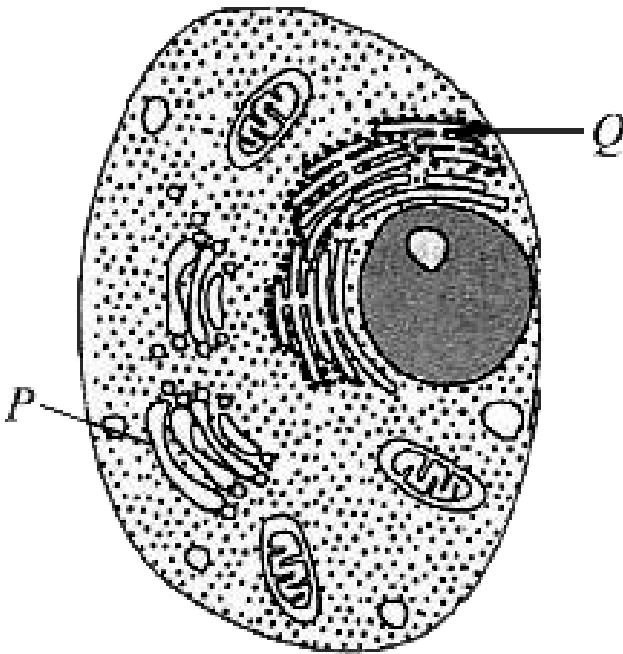
- A. Body of organism P contains numerous small pores called ostia and a single large opening called osculum on top.
- B. Organism Q possesses gill slits at some stage of its life.
- C. The body of organism R is differentiated into head, visceral mass and ventral foot.
- D. Organism S possesses nematocysts.

Answer: C



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2. Refer to the given diagram of an animal cell and select the option that correctly describes the functional relationship between organelles P and Q.



A. Polypeptides synthesised at Q are transported to P where they are stored for regular use in cytoplasm.

B. Polypeptides synthesised at Q are transported to P where they are modified into functional proteins for secretion.

C. Polypeptides synthesised at P are packaged into vesicles that move to Q for further modification.

D. Polypeptides synthesised at P are packaged without modification and move to Q where they are stored for regular use in cytoplasm.

Answer: B



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