BIOLOGY

BOOKS - HT Olympiad Previous Year Paper

NSO QUESTION PAPER 2016 SET B

Science

1. Which of the following statements are incorrect?

(i) Pupil gives the eye its distinctive colour.

(ii) Iris controls the amount of light entering into the eye.

(iii) Cones are sensitive to dim light and rods to bright light.

(iv) Near point for a normal eye is 25 m.

(v) Far point for a normal eye is infinity.

A. (i) and (iii) only

B. (i), (iii) and (iv) only

C. (i), (ii), (iv) and (v) only

D. (i), (ii), (iii), (iv) and (v)

Answer: A

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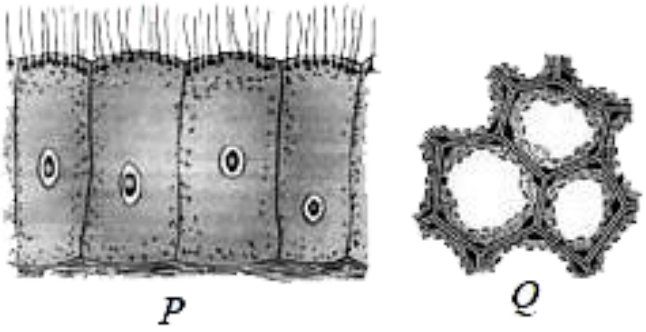
2. Shown below are the diagrammatic representations of two different types of tissues P and Q.



Which of the following holds true regarding tissues P and Q?

A. Tissue P helps in gaseous exchange in multicellular animals.

B. Tissue Q provides mechanical support, elasticity and tensile strength to the plant part where it is present.

C. Tissue P is the most widely distributed connective tissue in animal body.

D. Cells of tissue Q have extremely thick walls, which possess thickenings of pectin and lignin at corners.

Answer: B

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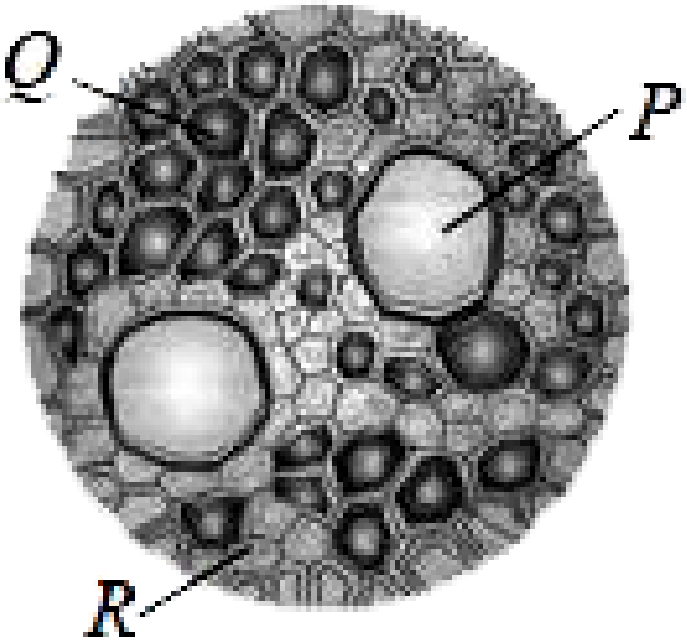
3. Refer to the given cross-section of conducting tissue of a plant and select the

correct option regarding P, Q and R.



A. P and R are non-living cells devoid of living protoplast at maturity.

B. P is present in all vascular plants whereas Q is confined to angiosperms

only.

C. Both P and Q take part in conduction of water but P possesses perforations whereas Q is imperforated cell.

D. None of these

Answer: C

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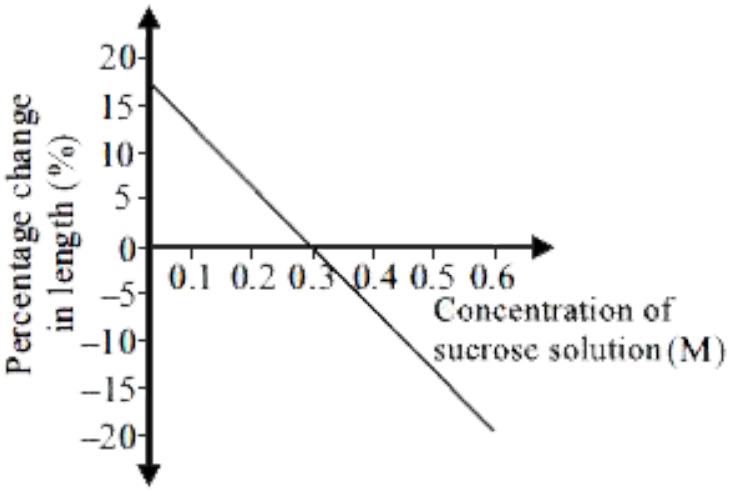
4. Potato tuber strips measuring 5 cm were prepared and placed in Petri dishes filled with varying concentrations of sucrose solution (0.0M to 0.6M). After 20 minutes, their final lengths were recorded and their percentage change in length calculated. The graph below shows the percentage change in length of potato strips in increasing concentrations of sucrose solution.



Which of the following can be correctly in ferred from the given graph?

A. 0.3 M sucrose solution is isotonic to cell sap of potato cells.

B. Negative percentage change in potato strip length is due to endosmosis.

C. Positive percentage change in potato strip length is due to exosmosis.

D. 0.6 M sucrose solution is hypotonic and 0.2 M sucrose solution is hypertonic to cell sap of potato cells.

Answer: A

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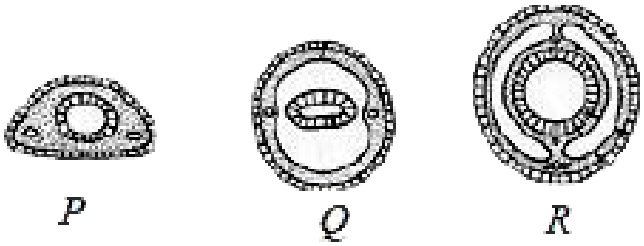
5. Shown below are cross sectional diagrams of three animals P, Q and R.



Which of the following is correct regarding organisms P, Q and R?

A. Organism P is always diploblastic whereas organisms Q and R are triploblastic.

B. Organism Q could be a flatworm or a roundworm.

C. Body cavity of organism Q arises from embryonic mesoderm.

D. Organism R could be an annelid or an echinoderm.

Answer: D

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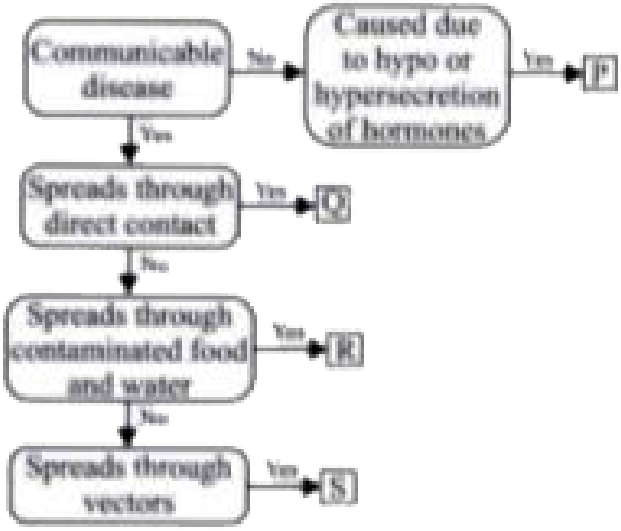
6. Refer to the given flow chart and select the correct option regarding P, Q, R and S.



A. Disease P is caused due to malfunctioning of exocrine glands while

diseases Q, R and S are caused by pathogenic microbes.

B. S is a contagious disease while Q and R are non contagious diseases.

C. Q could be hepatitis B while R could be Kala azar.

D. S could be sleeping sickness while R could be cholera.

Answer: D

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7. Match column I with column II and select the correct option from the codes given below.

	Column I		Column II
(a)	Particulate matter	(i)	Chemical water pollutants
(b)	Detergents	(ii)	Non-degradable soil pollutants
(c)	Plastics	(iii)	Degradable soil pollutants
(d)	Vegetable peels	(iv)	Air pollutants

A. (a) - (i), (b) - (iv), (c) - (ii), (d) - (iii)

B. (a) - (iv), (b) - (i), (c) - (ii), (d) - (iii)

C. (a) - (i), (b) - (iii), (c) - (iv), (d) - (ii)

D. (a) - (i), (b) - (iii), (c) - (ii), (d) - (iv)

Answer: B

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8. Refer to the given paragraph where few words have been italicised and select the correct option regarding this.

Animals used in agriculture and for transport are called milch animals whereas animals used for milk production are called draught animals. Production of good quality milk depends much on the type of breed e.g., exotic

breeds of cattle like Red Sindhi and Jersey produce on an average 60L milk in a day. On the other hand, local breeds such as Sahiwal and Brown Swiss produce on an average only 6 - 8L of milk per day. Cattle suffer from several diseases which may reduce the milk production. E.g., anthrax is a fatal viral disease, whereas foot and mouth disease is a bacterial disease which broadly affect the health of cattle thereby, reducing milk production.

A. The positions of Jersey and Sahiwal should be interchanged.

B. The positions of Red Sindhi and Brown Swiss should be interchanged.

C. Viral should be replaced with protozoan and bacterial should be replaced with fungal.

D. Milch and draught should not be replaced as they are correctly mentioned.

Answer: B

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9. X and Y are two systems of irrigation. X makes use of a simple machine, i.e., wheel and axle and is animal driven. Y, on the other hand, involves network of narrow pipes with small holes which run through the crop field that are supplied by water through electrical pumps. Identify X and Y systems of irrigation and select the correct option regarding them.

A. Y system of irrigation is a wasteful process as the crop field gets flooded

with excess water which is not required by the crop plants.

B. X irrigation system provides water to plants drop by drop so water is not wasted at all.

C. Y irrigation system is very useful in those regions where availability of water is very poor.

D. X irrigation system is best for watering fruit plants and trees.

Answer: C

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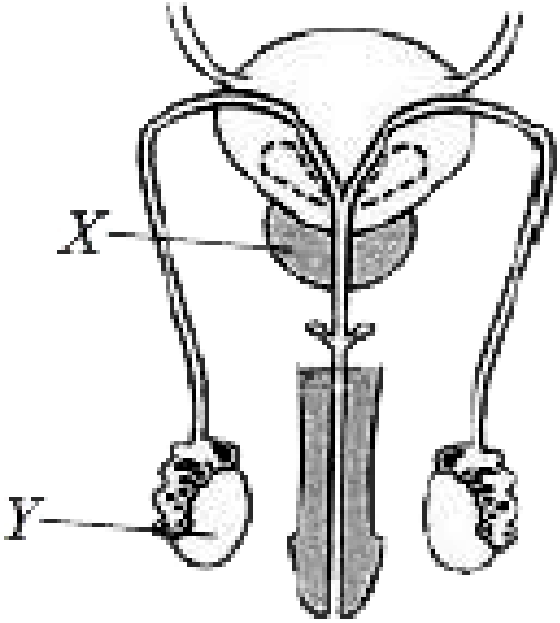
10. Refer to the given figure of male reproductive system.



Which of the following correctly describes difference between X and Y?

A. X is a gland but Y is not.

B. Both X and Y are glands but X is an endocrine gland while Y is an exocrine gland.

C. Y secretes male sex hormones but X does not.

D. X serves to produce sperms while Y serves to produce all other constituents

of semen.

Answer: C

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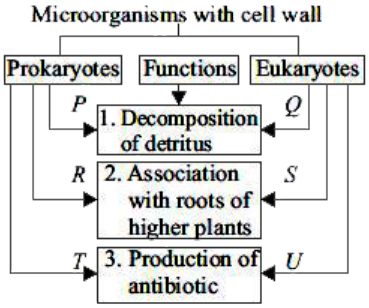
11. Refer to the given flow chart and identify P, Q, R, S, T and U.



	P	Q	R	S	T	U
A.	*Mycobacterium*	Yeast	*Vibrio*	*Aspergillus*	*Lactobacillus*	*Rhizopus*
B.	*Azotobacter*	*Agaricus*	*Salmonella*	*Puccinia*	*Diplococcus*	*Mucor*
C.	*Pseudomonas*	*Physarum*	*Rhizobium*	*Glomus*	*Streptococcus*	*Penicillium*
D.	*Vibrio*	*Mucor*	*Pseudomonas*	*Agaricius*	*Mycobacterium*	*Physarum*

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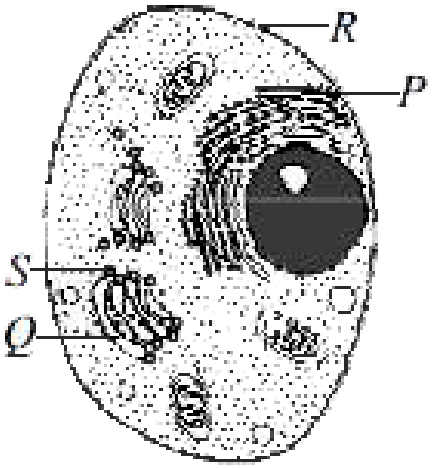
12. Study the given diagram of an animal cell. Which of the following statements are correct regarding P, Q, R and S?



(i) S fuses with R to release its content into the extracellular space.

(ii) Proteins formed in Q are modified into glycoproteins in P.

(iii) If radioactively labelled amino acids are provided to the cell then radioactivity will first appear in S.

(iv) Q is involved in the synthesis of R.

(v) S buds off from cis face of Q.

A. (i) and (iii) only

B. (ii), (iii) and (v) only

C. (i), (ii) and (iv) only

D. (i) and (iv) only

Answer: D

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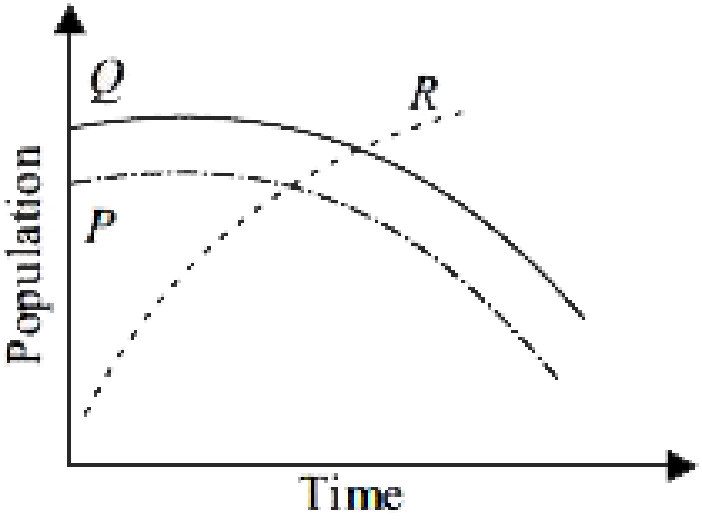
13. The given graph shows changes in populations of three species, P, Q and R in an ecosystem over time. Which of the following could not be inferred from the given graph?



A. Species R could be an alien species which may become invasive and drive

away species P in near future.

B. Species Q could be a parasite which is exclusively found on P.

C. P and Q might undergo coextinction in near future.

D. P and Q compete with each other for same available resources however the nutrient and resource requirements of P and R could be different.

Answer: D

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14. Which of the following is/are incorrectly matched?

(i)	To reduce harmful gases emitted by vehicles	–	Have the vehicles checked regularly to ensure that colourless and odourless gases are emitted
(ii)	To dispose off radioactive waste	–	Burn in an open area
(iii)	To prevent pollution of the sea	–	Educate the public not to throw litter or dump refuse into the sea
(iv)	To get rid of human faeces	–	Have pipes leading from homes to the river

A. (ii) only

B. (iii) only

C. (ii) and (iv) only

D. (i), (ii), (iii) and (iv)

Answer: C

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Achievers Section

1. Read the given paragraph and answer questions.

Raj contracted measles few days back and

soon recovered from the infection. He got immune to any subsequent infection of measles virus for sometime. Raj's mother got him vaccinated for polio when he was young. So, he is immune to polio disease also. Raj's younger brother Rohan is just two days old and is mother fed. He has received some immunity from his mother via milk.

Which of the following is correct regarding Raj's and Rohan's immunity?

A. Raj's immune system developed its own antibodies when encountered the

pathogen or antigen however, Rohan has received preformed antibodies from his mother.

B. Rohan's immunity is long lasting but Raj's immunity is for a brief period only.

C. Raj is immune to only few diseases like measles and polio however. Rohan is immune to most of the pathogenic diseases.

D. Rohan's immunity may cause some side effects in his body however Raj's immunity has no side effects.

Answer: A

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2. Read the given paragraph and answer questions.

Raj contracted measles few days back and soon recovered from the infection. He got

immune to any subsequent infection of measles virus for sometime. Raj's mother got him vaccinated for polio when he was young. So, he is immune to polio disease also. Raj's younger brother Rohan is just two days old and is mother fed. He has received some immunity from his mother via milk.

How Raj got immune to polio virus even though he never contracted the disease?

A. The vaccine given to Raj contained live attenuated pathogens which triggered production of antibodies and memory

cells that will recognise any subsequent pathogenic attack and prevent the infection.

B. The vaccine given to Raj contained preformed antibodies which will last throughout his life and prevent any further infection.

C. The vaccine given to Raj contained live/active pathogen in a very small amount that can generate primary

immune response but is insufficient to cause infection.

D. None of these

Answer: A

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