



BIOLOGY

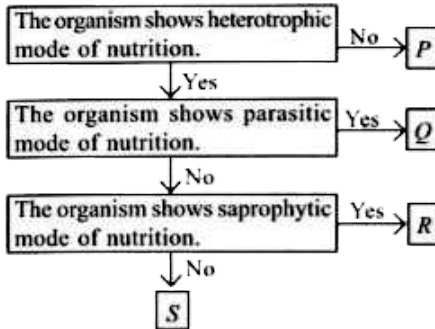
BOOKS - HT Olympiad Previous Year Paper

NSO QUESTION PAPER 2017-18 SET A

Science

1. Refer to the given flow chart and select the option that correctly identifies organisms P, Q,

R and S.



	P	Q	R	S
A.	<i>Hydrilla</i>	<i>Hydra</i>	<i>Dionaea</i>	<i>Amoeba</i>
B.	<i>Hibiscus</i>	<i>Taenia</i>	Bladderwort	<i>Croton</i>
C.	<i>Elodea</i>	<i>Cuscuta</i>	<i>Rhizopus</i>	<i>Gambusia</i>
D.	<i>Ocimum</i>	<i>Coleus</i>	Mistletoe	<i>Spirogyra</i>

A. P- Hydrilla, Q-Hydra, R- Dionaea, S- Amoeba

B. P- Hibiscus, Q-Taenia, R- Bladderwort, S- Croton

C. P- Elodea, Q-Cuscuta, R- Rhizopus, S-

Gambusia

D. P- Ocimum, Q-Coleus, R- Mistletoe, S-

Spirogyra

Answer: C



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2. Select the incorrect match.

(i) Ammonotelism - Sponges, Hydra,
Cartilaginous fish, Leech, Crocodile

(ii) Ureotelism - Frog, Toad, Bony fish, Turtle,
Man, Land Snail

(iii) Uricotelism - Cockroach, Pigeon, Tortoise,
Lizard, Snake

A. (i) and (ii) only

B. (ii) and (iii) only

C. (iii) only

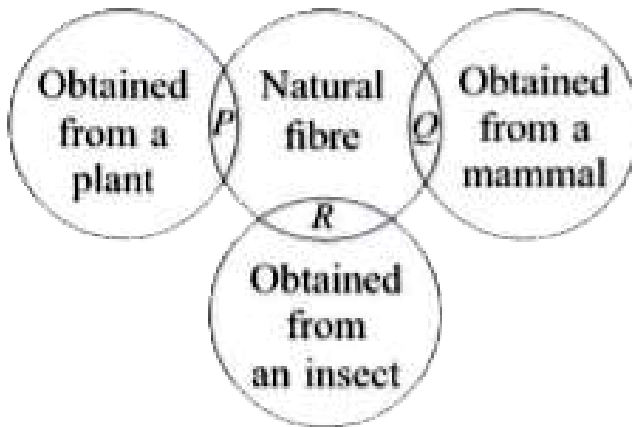
D. (i), (ii) and (iii)

Answer: A



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3. Refer to the given Venn diagram and select the incorrect option regarding P, Q and R.



A. P is a cellulosic fibre whereas Q and R are protein fibres.

B. P could be sisal, Q could be wool and R could be cotton.

C. Q could be obtained from the same animal repeatedly whereas R could be obtained from an animal only once in its lifetime.

D. Processing of fibres P, Q and R may involve retting, shearing and reeling steps, respectively.

Answer: B



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4. Read the given paragraph.

Pollination processes P, Q or R are requisite for accomplishment of sexual reproduction in plants. P does not require any external agent but Q and R do. P and help in producing purelines whereas R gives rise to offspring showing variations among themselves. Identify processes P, Q and R and select the correct option regarding these.

A. Process P is possible in both unisexual and bisexual flowers.

B. Sexual reproduction in papaya and cucurbit is accomplished through processes P and Q both.

C. In case of Maple and Dandelion, wind serves as an agent for completion of process R.

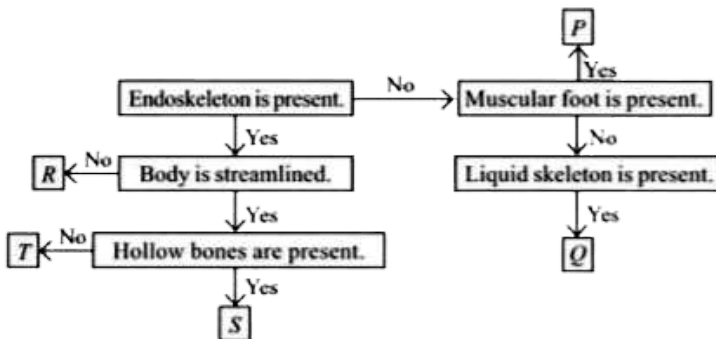
D. Sunflower and Rafflesia produce bright showy flowers with nectar and odour to attract bats for completion of process Q.

Answer: C



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5. Refer to the given flow chart and select the incorrect option regarding organisms P, Q, R, S and T.



A. P may have a pair of tentacles which bear simple eyes at the tip whereas body

of Q may be metamERICALLY segmented.

B. S could be a warm blooded stork
whereas T could be a cold blooded
arowana.

C. R may bear jointed appendages and
undergoes moulting during its growth
phase.

D. T may respire through gills whereas S
possesses lungs as its respiratory
organs.

Answer: C



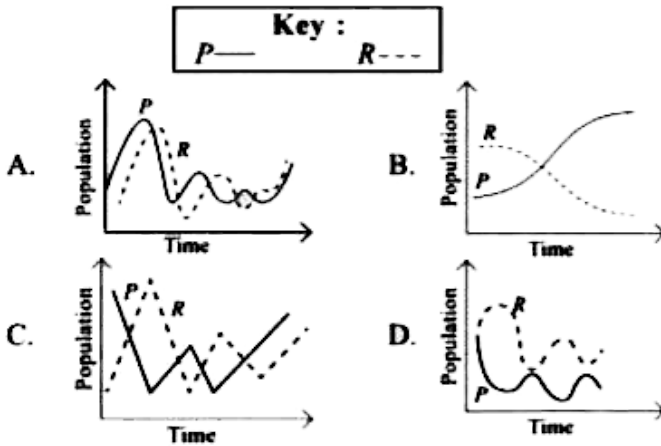
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6. Refer to the given food chain operating in an ecosystem.

Producer \longrightarrow P \longrightarrow Q \longrightarrow R

A population of organism X is introduced in this community which exclusively feeds on Q. Which of the following graphs correctly shows the changes in populations of P and R over

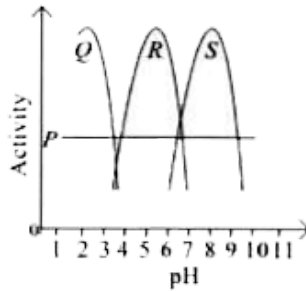
time?



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7. The given graph shows the effect of pH on the activity of four different enzymes (P, Q, R and S), Which of the following correctly identifies enzyme found in the stomach, small

intestine and one not affected by pH?

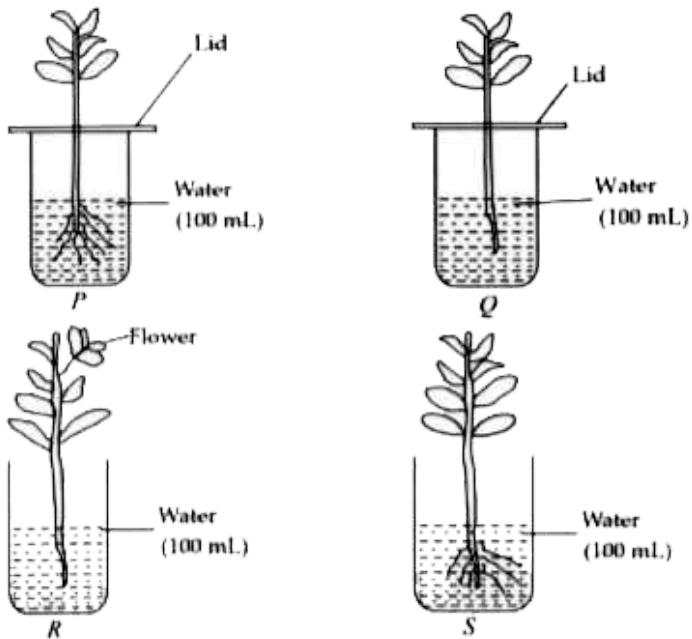


	Stomach	Small intestine	Unaffected by pH
A.	R	S	Q
B.	S	P	R
C.	P	R	Q
D.	Q	S	P

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8. Manya wanted to find out if plants absorb water through their roots, so she decided to conduct an experiment. Which of the following two set-ups should she choose to conduct a

fair test?



A. P and Q

B. Q and S

C. Q and R

D. None of these

Answer: A



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9. To prepare a blood smear slide a student placed a drop of blood on a glass slide and added a drop of distilled water to dilute the blood. He then added stain (a coloured chemical used to see the cells) to it before placing the coverslip over it. When viewed, under the microscope he could not see the

blood cells. Which of the following best explains this?

A. The blood cells had burst.

B. The blood had dried before the water was added.

C. The drop of water diluted the blood too much and cells dispersed too far away from each other.

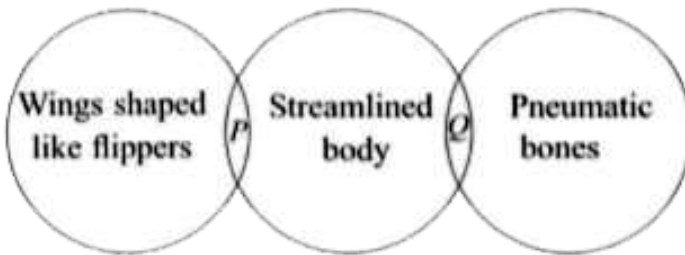
D. The water caused the cells to shrink.

Answer: A



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10. Refer to the given Venn diagram and select the incorrect option regarding P and Q.



A. P has thick layer of subcutaneous fat for effective insulation against cold.

B. P is cold blooded whereas Q is warm blooded.

C. P is penguin which is adapted to live in extremely cold regions whereas Q could be Siberian crane which escapes harsh winters by migrating to warmer lands.

D. Both P and Q may have webbed feet but P is adapted to swimming whereas Q may swim and fly both.

Answer: B



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11. If a person is unable to breathe on his own due to some medical illness, an iron lung may be employed to take over the role of the diaphragm and the intercostal muscles. The person is placed in a cylindrical chamber called iron lung while his head remains outside the cylinder. An airtight seal is placed around his neck. Changes in the air pressure within the iron lung allow the flow of air into and out of his lungs.

Which of the following statements about the iron lung is correct?

A. Breathing with an iron lung is still possible if the patient's trachea is completely blocked.

B. During exhalation, the iron lung causes the patient's lungs to expand.

C. During inhalation, the pressure in the patient's lungs is increased.

D. Inhalation and exhalation is possible even if the patient's lung is punctured.

Answer: D



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12. Which of the following is the most effective way to measure the effect of different carbon dioxide concentrations on the rate of photosynthesis?

A. Placing same amount of dry ice in similar bell jars kept in sunlight containing different plants.

B. Using different concentrations of sodium hydrogen carbonate solution with same type of immersed water plants in similar bell jars placed in sunlight.

C. Varying light intensity given to different well watered plants placed in similar bell

jars kept in sunlight.

D. Varying amount of air provided to different well watered plants placed in similar bell jars kept in sunlight.

Answer: B



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13. Saurashtra, a land with history of severe water scarcity, hostile climate and rocky land is now self sufficient in water availability due to

the efforts of ____ who taught the local people the importance of rainwater harvesting.

- A. Rajendra Singh
- B. Shamjibhai J. Antala
- C. Amla Ruia
- D. Aabid Surti

Answer: B



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14. Refer to the given dichotomous key.

I. (a) Food is obtained from plants. - Go to II

(b) Food is obtained from animals. - Go to III

II. (a) Food is obtained from roots of plants. - P

(b) Food is obtained from seeds of plants. - Q

III. (a) Food is categorised as energy giving food. - R

(b) Food is categorised as body building food.

- S

Now select the correct option regarding food

P, Q, R and S.

A. P could be fenugreek whereas Q could be corn or maize.

B. R could be egg whereas S could be honey.

C. R could be obtained from a flying insect whereas S could be obtained from both oviparous and viviparous animals.

D. P could be turmeric or ginger whereas Q could be rice or lentils.

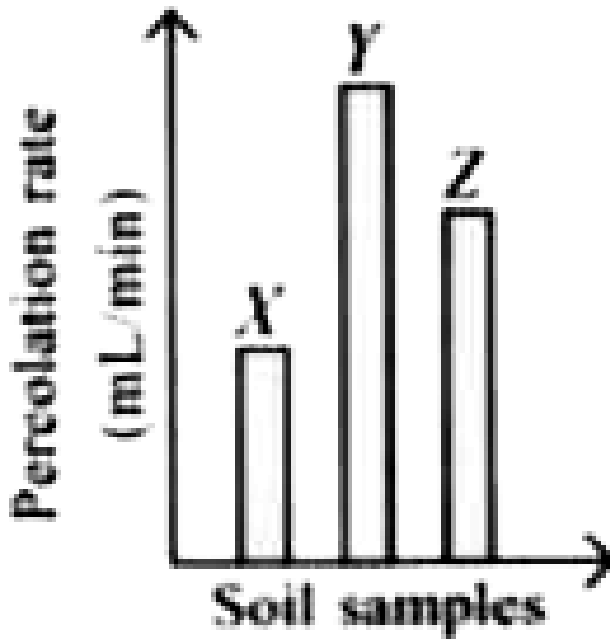
Answer: C



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15. Rahul took equal amount of three types of soil X, Y and Z in different vessels, each with pores at the bottom. He then poured equal amount of water over each sample one by one and tabulated the percolation rate of these three samples as represented by the given graph.

Select the correct option regarding this.



A. Soil Y shows highest water retention and is best suited for making the bottom of an artificial pond.

B. Soil Y is present in marshes whereas soil Z is abundantly found at sea shores.

C. Soil Y is well drained whereas soil X is not, hence is often water logged.

D. Soil X is well aerated hence ideal for growth of plant roots whereas plants growing in soil Z possess aerial roots or pneumatophores as it is water logged.

Answer: C



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16. Study the given relationship.

Fruit peel :: Used syringe :: Plastic tiffin

Select the option that satisfies the same relationship.

A. Chapati : : Used urine bag : : Glass bottles

B. Newspaper : : Blood sample : : Cooked beans

C. Spectacles : : Rotten vegetable : : Mirror

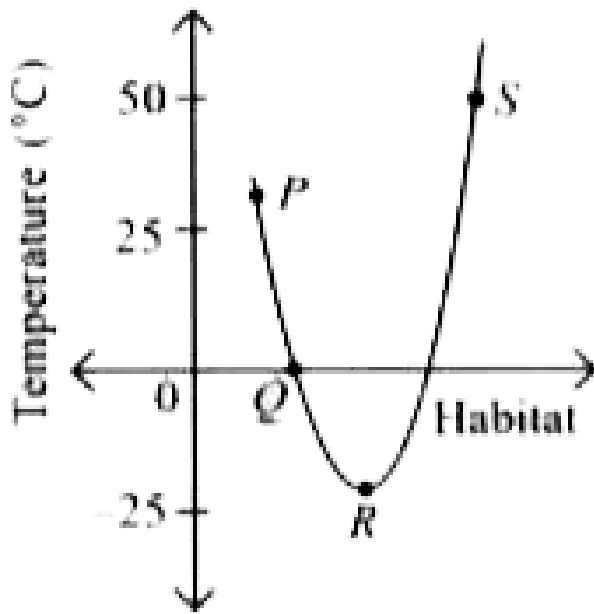
D. Metal keys : : Newspaper : : Animal
excreta

Answer: A



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17. Refer to the given graph and identify habitats P, Q, R and S.



Now, select the option that correctly matches the habitat with the type of adaptation shown

by organisms inhabiting them.

	<i>P</i>	<i>Q</i>	<i>R</i>	<i>S</i>
A.	Camouflage	Excretion of concentrated urine	Leaves with extensive lamina	Thick fur
B.	Startling colouration	Thick fur	Subcutaneous fat	Leaves modified into spines
C.	Mimicry	Leaves modified into spines	Aestivation	Roots reduced or absent
D.	Pneumatophores	Stem stores water and mucilage	Startling colouration	Blubber

A. P- Camouflage, Q- Excretion of concentrated urine, R- leaves with extensive lamina, S- Thick fur

B. P- Startling colour , Q- Thick fur, R- Subcutaneous fat, S- Leaves modified

into spines

C. P- mimicry, Q-Leaves modified into spines, R- Aestivation, S- Roots reduced or absent

D. P-Pneumatophores, Q-Stem stores water and mucilage, R- Startling colouration, S- Blubber

Answer: B



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18. Different respiratory organs are present in different organisms. X is the main respiratory organ in humans. Respiratory system of cockroach consists of small openings on the sides of its body called tracheoles which are connected to the tubes called tracheae that are further branched into spiracles. Scoliodon respire through y which is richly supplied with blood vessels. Z is the main site of gaseous exchange in plants. Each Z is guarded by two kidney shaped subsidiary cells which are further flanked by specialised epidermal

cells called guard cells.

Identify X, Y and Z in the given passage and select the incorrect option regarding them.

A. Whales and dolphins also have X as their respiratory organ where alveoli is the main site of gaseous exchange.

B. Y is the respiratory organ in tadpole larva and sea horse.

C. Z is absent in all hydrophytes but is abundantly present on the upper leaf

surface of all xerophytes.

D. When pressure inside X drops, inspiration occurs and when pressure inside X starts increasing the air contained in it is pushed out causing expiration.

Answer: C



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19. Different respiratory organs are present in different organisms. X is the main respiratory organ in humans. Respiratory system of cockroach consists of small openings on the sides of its body called tracheoles which are connected to the tubes called tracheae that are further branched into spiracles. Scoliodon respire through y which is richly supplied with blood vessels. Z is the main site of gaseous exchange in plants. Each Z is guarded by two kidney shaped subsidiary cells which are further flanked by specialised epidermal

cells called guard cells.

Select the correct option regarding the words italicised in the given passage.

A. The positions of spiracles and tracheoles should be interchanged.

B. The position of tracheoles and tracheae should be interchanged.

C. Subsidiary should not be replaced as it is correctly mentioned.

D. Guard should be replaced by lenticel.

Answer: A



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