



BIOLOGY

BOOKS - HT Olympiad Previous Year Paper

NSO QUESTION PAPER 2017 SET B

Science

1. Refer to the given dichotomous key. Identify K, L, M, N, O and P and select the incorrect

statement regarding them.

- I. (a) The cells of tissue have wall. – Go to II
(b) The cells of tissue lack wall. – Go to V
- II. (a) Tissue is made up of similar or only one type of cells. – Go to III
(b) Tissue is made up of more than one type of cells. – Go to IV
- III. (a) Wall thickening in tissue cells is uniform. – **K**
(b) Wall thickening in tissue cells is not uniform. – **L**
- IV. (a) Conducting elements are of two types. – **M**
(b) Conducting element is of one type. – **N**
- V. (a) It helps in gamete formation. – **O**
(b) It helps in absorption of water from digested food. – **P**

A. O could be cuboidal epithelium while P could be columnar epithelium.

B. In M conduction occurs only in one direction, i.e., upward while in N,

conduction occurs in both directions, i.e., upward and downward.

C. L provides mechanical support and flexibility to the plant body.

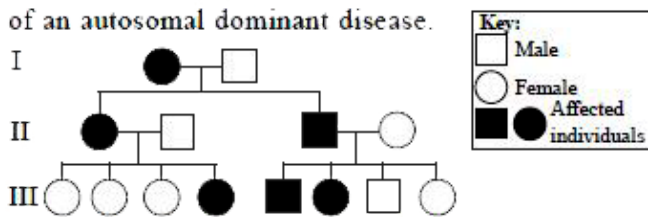
D. K could be parenchyma that occurs chiefly in leaf stalks, leaf midribs and herbaceous dicotyledonous stems but is usually absent in monocots.

Answer: D



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2. Refer to the given pedigree showing a case study of an autosomal dominant disease.



The genetic make-up of the first generation (female and male respectively) is

A. AA, aa

B. AA, Aa

C. Aa, AA

D. Aa, Aa.

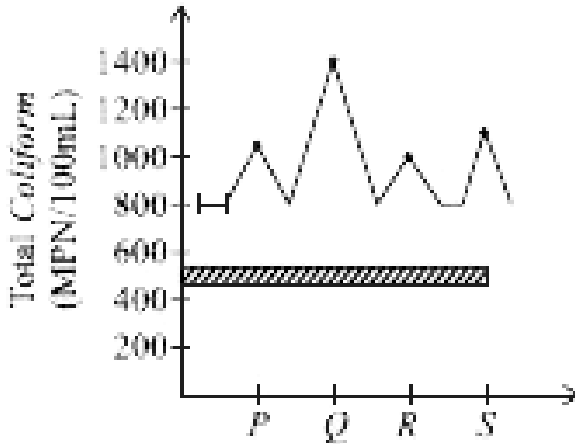
Answer: A



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3. In a study, water samples of Ganga river were collected from four different cities (P, Q, R and S) to check the presence of Coliform bacteria. The result obtained was plotted in the given graph.

Select the correct option regarding this.



- A. People living in city Q are more prone to water borne diseases like typhoid, cholera, etc.
- B. The river water of city P is most suitable for agriculture.

C. The biological oxygen demand in river of city R is more than that found in city S.

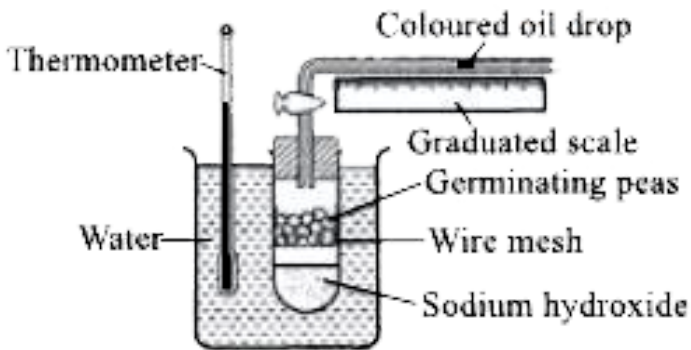
D. Dissolved oxygen content of river Q will be more than that of river R.

Answer: A



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4. Study the given experimental setup.



By measuring the movement of oil drop in the apparatus, what can be investigated?

- A. Carbon dioxide released during germination
- B. Heat released during germination
- C. Oxygen used during germination

D. Water produced during germination

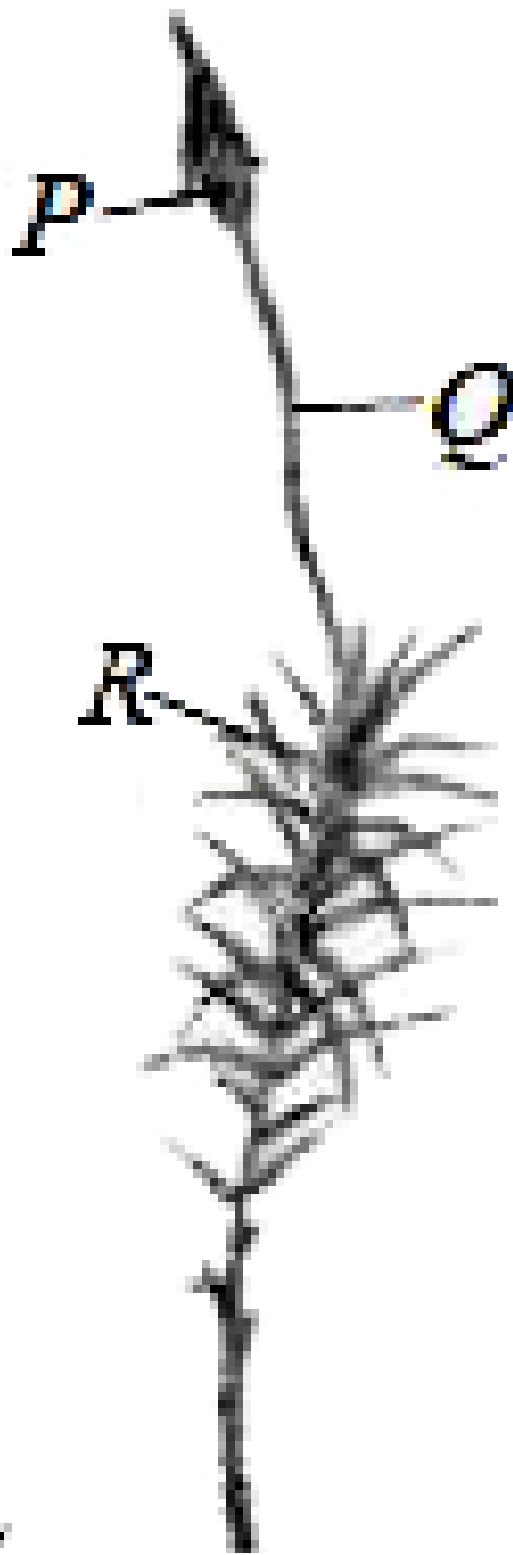
Answer: C



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5. Refer to the given figure of a bryophyte. Identify the labelled parts P, Q, R and S and select the option which represents the correct number of chromosome in these parts.

Note : [For the given plant, $2n = 24$]





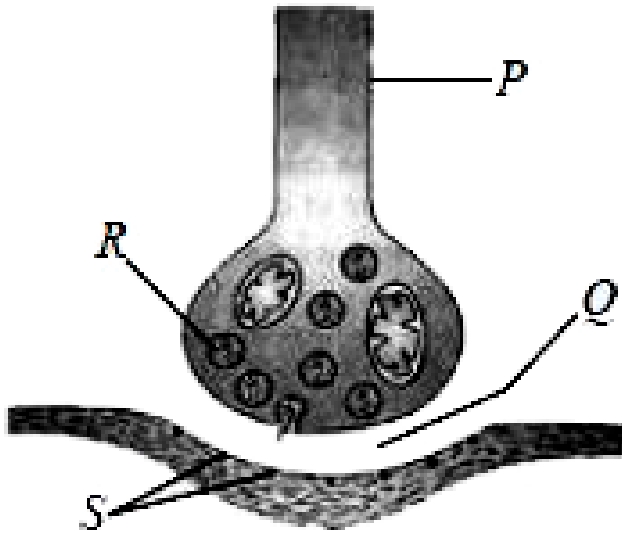
	<i>P</i>	<i>Q</i>	<i>R</i>	<i>S</i>
A.	12	24	12	24
B.	24	24	12	12
C.	24	24	8	8
D.	8	24	24	12



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6. Refer to the given figure. Identify labelled parts P-S and select the correct option

regarding them.



A. When nerve impulse reaches presynaptic knob, R releases a chemical called neurotransmitter.

B. P contains Nissl's granules and neurofibrils and conducts impulses away from the cell body.

C. Q is a narrow fluid filled space that lies between presynaptic and postsynaptic knobs formed by dendrite terminal of both neurons.

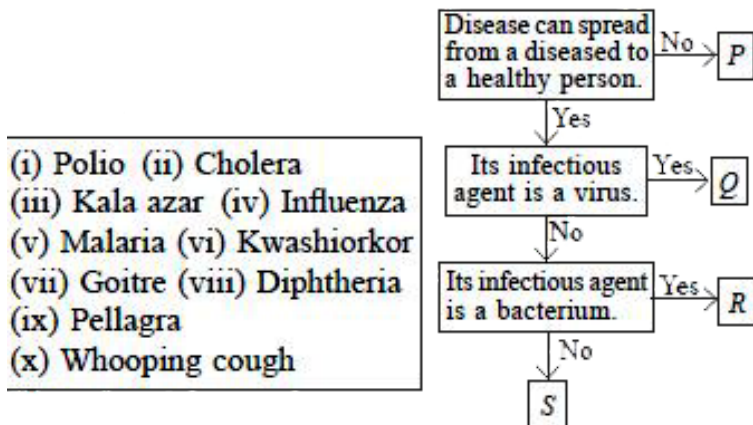
D. S are chemoreceptors present on axon terminal of postsynaptic membrane.

Answer: A



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7. Refer to the given flow chart and the following list of diseases.



Now , select the option that correctly categorises these diseases into P,Q,R and S.



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8. Ruby crossed a tall pea plant with white flowers and a dwarf pea plant with violet flowers. She performed a _____

- A. Test cross
- B. Dihybrid cross
- C. Natural selection
- D. Monohybrid cross

Answer: B

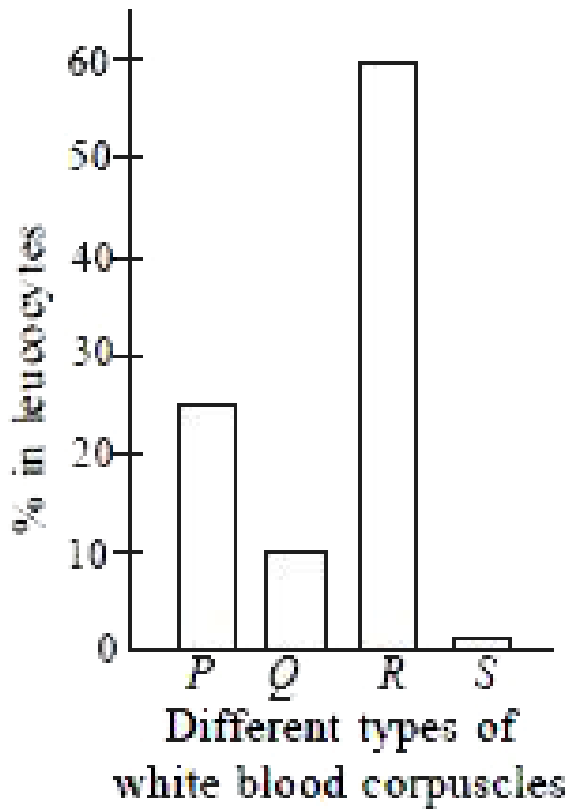


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9. Refer to the given graph showing different types of white blood corpuscles in a normal man.

Identify P, Q, R and S and select the incorrect

statement regarding them.



A. P produces antibodies to destroy microbes and their toxins, rejects grafts and kills tumour cells.

B. Q could be phagocytic in nature and is able to engulf bacteria and cellular debris.

C. Nucleus of R is many lobed whereas nucleus of S is usually two lobed.

D. Cytoplasm of P does not contain granules whereas that of R contains granules.

Answer: C



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10. Read the given paragraph where few words have been italicised.

Cytokinins are the natural substances which enhance growth of stem but in same concentration are incapable of causing growth of intact root. Naphthalene acetic acid is natural whereas indole-3 acetic acid is synthetic auxin. Gibberellins inhibit growth and cause bolting in rosette plants. Abscisic acid stimulates growth and causes abscission of flowers and fruits. Ethylene induces

ripening of climacteric fruits and formation of root hair.

Select the correct option regarding it.

A. Cytokinins should be replaced with ethylene.

B. Cytokinins should be replaced with auxins whereas naphthalene acetic acid and indole-3 acetic acid should be interchanged.

C. Inhibit and stimulates should not be interchanged as they are correctly mentioned.

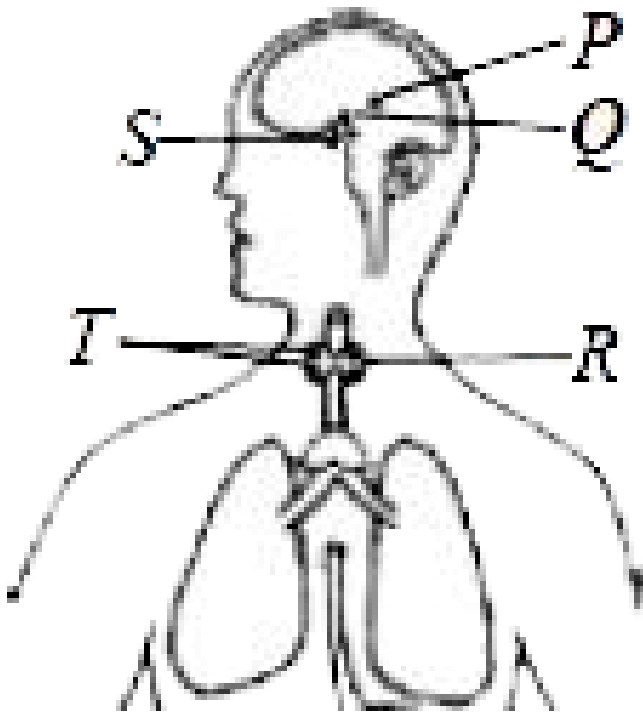
D. Ethylene should be replaced with cytokinin.

Answer: B



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11. Refer to the given figure. Identify P -T and select the correct statements regarding them.



(i) Gland P secretes a hormone which plays role in the development of immune system of body.

(ii) Gland Q transmits messages in the form of electrical impulses.

(iii) Hormone released by gland S, enhances blood pressure by stimulating contraction of smooth muscles of arterioles.

(iv) Hypersecretion of a hormone by gland R causes myxedema whereas its hyposecretion causes Graves' disease.

(v) Hormones secreted by gland T regulate the calcium and phosphate levels in blood.

A. (i) and (iv)

B. (iii) and (v) only

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

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

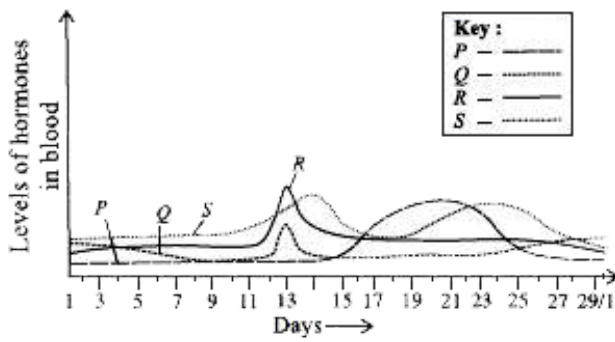
Answer: B



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Achievers Section

1. Refer to the given graph showing levels of different hormones (P-S) during menstrual cycle in a normal woman.



Identify the hormones P-S and select the incorrect statement regarding them.

A. R stimulates the ovarian follicles to produce estrogen during proliferative phase while stimulates the corpus luteum of the ovary to secrete progesterone.

B. Menstrual phase is caused by the reduction of P and S.

C. Proliferative phase is characterised by increased production of S whereas secretory phase is characterised by increased production of P.

D. In males, Q causes spermatogenesis whereas R stimulates Leydig's cells to secrete testosterone.

Answer: A



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2. Read the given statements each with one or two blanks. Select the option that correctly fills the blanks in any two statements.

(a) ___(i)___ is the process of aerobic burning whereas ___(ii)___ is anaerobic burning of combustible constituent of solid waste at high temperature.

(b) ___(i)___ secretes mucus and watery alkaline fluid that contains fructose.

(c) Tendrils of Cucurbita and thorns of

Bougainvillea are ___(i)___ organs while wings of birds and insects are ___(ii)___ organs.

(d) Rate of heart beat and breathing movements of human body are controlled by ___(i)___

A. (b) - (i) - Seminal vesicles,

(c) - (i) - Analogous, (ii) - Homologous

B. (c) - (i) - Homologous, (ii) - Analogous,

(d) - (i) - Medulla oblongata

C. (a) - (i) - Pyrolysis, (ii) - Incineration,

(b) - (i) - Cowper's gland

D. (a) - (i) - Incineration, (ii) Pyrolysis,

(d) - (i) - Diencephalon

Answer: B



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