



BIOLOGY

BOOKS - SRIJAN BIOLOGY (ENGLISH)

SPECIMEN QUESTION PAPER (BIOLOGY)

Questions

1. Which of the following steps in transcription is catalysed by RNA polymerase?

A. Initiation

B. Elongation

C. Termination

D. All of these

Answer: D



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2. In a DNA strand the nucleotides are linked together by

A. glycosidic bonds

B. phosphodiester bonds

C. peptide bonds

D. hydrogen bonds

Answer: B



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3. If the sequence of nitrogen bases of the coding strand of DNA in a transcription unit is:

5' - ATGAATG-3', the sequence of bases in its RNA transcript would be

A. 5'- AUG AAUG-3'

B. 5'- UACUU AC-3'

C. 5'-CAUUCAU-3'

D. 5'-GUAAGUA-3'

Answer: B



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4. In *E. coli* the lac operon gets switched on when

A. lactose is present and it binds to the repressor

B. repressor binds to operator

C. RNA polymerase binds to the operator

D. lactose is present and it binds to RNA polymerase

Answer: A

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5. The amino acid attaches to the tRNA at its

A. 5'-end

B. 3'-end

C. anticodon site

D. DHU loop

Answer: B

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6. Which of the following provides the most satisfactory evidence in the favour of the organic evolution?

A. Fossils

B. Neoteny

C. Connecting links

D. None of above

Answer: A



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7. Which era is dubbed as the age of prokaryotic microbes?

A. Phanerozoic

B. Proterozoic

C. Precambrian

D. Archeozoic

Answer: B



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8. The presence of gill slits in the embryos of all vertebrates supports the theory of:

- A. Recapitulation
- B. Organic evolution
- C. Metamorphosis
- D. Biogenesis

Answer: A



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9. In Miller's experiment, the gaseous mixture in the flask contained:

A. Methane, ammonia, carbon dioxide and helium

B. Carbon dioxide, hydrogen, water vapour and ammonia

C. Ammonia, methane, hydrogen and water vapour

D. Hydrogen, ammonia and methane and helium

Answer: C



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10. Neo-Darwinism is:

- A. Natural selection theory
- B. Modern mutation theory
- C. Modern synthetic theory

D. Population theory

Answer: C



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11. Trichoderma, free living fungi, present in root ecosystem are useful as:

A. Biofertilizer

B. Biopesticides

C. Methanogens

D. Vector for genetic engineering

Answer: B



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12. During spermatogenesis, the second maturation division results in the formation of:

A. 8 haploid spermatids

B. 2 diploid spermatids

C. 4 haploid spermatids

D. 4 haploid spermatids

Answer: C



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13. What is the effect of high pH on sperm?

A. High activity leading to early death

B. Sluggish, longer life

C. High activity, longer life

D. No effect

Answer: C



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14. If temperature is reduced to $0^{\circ} C$, what will happen to spermatozoa?

A. All will die

B. No change

C. Shedding of tail

D. Temporary inactivation

Answer: D



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15. Select the incorrect statement about gametes:

A. Sperm begin developing before puberty

B. Sperm do not develop successfully at

$37^{\circ}C$

C. Sperm are made in the seminiferous tubules

D. Sperm are capable of movement

Answer: A



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16. In industries, citric acid is obtained from which of the following the microbe?

A. *Aspergillus niger*

B. Clostridium botulinum

C. Saccharomyces cerevisiae

D. Trichoderma polysporum

Answer: A



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17. Statins are used as:

A. Clot busters

B. Clearing of fruit juices

C. Blood cholesterol lowering agents

D. Meat tenderisers

Answer: C



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18. Biological name of the common yeast used in baking industry is:

A. *Saccharomyces cerevisiae*

B. *Clostridium butylicum*

C. *Trichoderma polysporum*

D. *Propionibacterium shermanii*

Answer: A



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19. Which of the following microbes is used in the production of Swiss cheese?

A. *Aspergillus niger*

B. *Mucor*

C. *Monascus purpureus*

D. *Penicillium notatum*

Answer:



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20. Which of the following can be used as biofertilizer?

A. *Anabaena*

B. *Nostoc*

C. Oscillatoria

D. All of these

Answer: D



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21. The abbreviation 'HIV' stands for:

A. Human immune virus

B. Hepatitis virus

C. Human Immunodeficiency virus

D. Highly infectious virus

Answer: C



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22. The abbreviation snRNA stands for:

- A. Small nuclear RNA
- B. Small nucleus and RNA
- C. Small nucleolar RNA
- D. Sub-nuclear RNA

Answer: A



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23. The fact that DNA is the genetic material was proved by:

- A. Meselson and Stahl
- B. Sutton and Boveri
- C. Watson and Crick
- D. Hershey and Chase

Answer: D



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24. The term biodiversity was coined by:

A. Wilson

B. R. Mishra

C. Rio de Janeiro

D. Oparin

Answer:



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25. Bt cotton is a/an ____ resistant variety of cotton.

A. insecticide

B. pest

C. insect

D. disease

Answer: C



26. Bt cotton has been produced by transferring genes of _____ into the cotton plant.

- A. *Escherichia coli*
- B. *Pseudomonas putida*
- C. *Bacillus tumorigenes*
- D. *Bacillus thuringiensis*

Answer: D



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27. The enzyme pectinase is obtained from:

A. *Bacillus aureus*

B. *Bacillus cereus*

C. *Trichoderma*

D. *Claviceps*

Answer: B



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28. The enzyme _____ is used to remove the turbidity and clear the fruit juices:

A. Zymase

B. Pectinase

C. Amylase

D. Papain

Answer: B



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29. Secondary sewage treatment is mainly a _____ process:

A. chemical

B. biological

C. mechanical

D. physical

Answer: B



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30. Corpus luteum has _____ function:

A. Reproductive

B. Endocrine

C. Excretory

D. All of these

Answer: B



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31. The hormone (A), released by (B) helps in the release of milk from the mammary glands.

A. Oxytocin, placenta

B. Prolactin, posterior pituitary

C. Prolactin, ovary

D. Oxytocin, posterior pituitary

Answer: B



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32. If the mother is homozygous for blood group B, and the father is heterozygous for blood group A, their offspring will be of ____ and __ blood groups:

A. A,B

B. O,B

C. B,AB

D. A,AB

Answer: B



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33. The vermiform appendix is _____ organ in humans.

- A. A homologous
- B. An analogous
- C. A vestigial
- D. An over-specialised

Answer: C



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34. The sperm of *Drosophila* contains ____ number of chromosomes:

A. 4

B. 46

C. 23

D. 8

Answer: D



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35. Which of the following is not correct regarding vasectomy?

A. It is irreversible

B. It causes loss of secondary sexual characters in males

C. It leads to absence of sperm in the semen

D. This process involves bilateral cutting and ligating of the sperm ducts

Answer: B



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36. Which of the following statements is correct?

A. Down's syndrome is caused due to trisomy of 22nd chromosome

B. Haemophilia is an autosomal recessive disorder

C. The life on the Earth appeared about 3.5 million years ago

D. In angiosperms, the endosperm is triploid

Answer: D



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37. Which of the following is odd one out with reference to evolution?

A	Leydig cells	p	Extra embryonic mesoderm	i.	ABP
B	Primordial germ cell	q	Interstitial space	ii.	Upto puberty no development
C	Spermatogonia	r	Germ cell of testis	iii.	During embryonic life
D	Sertoli cell of testis	s	Nurse cell	iv.	Testosterone

A. A-q-iv, B-p-iii, C-r-ii, D-s-i

B. A-s-iv, B-p-iii, C-q-ii, D-r-i

C. A-q-i,B-r-ii,C-s-iii,D-p-iv

D. A-q-iv,B-r-ii,C-p-i,D-s-iii

Answer: A



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38. Match Column-I with Column-II and select the correct option from the choices given below :

	Column – I (Microbe)	Column – II (Product)
(a)	<i>Saccharomyces cerevisiae</i>	Ethanol
(b)	<i>Monascus purpureus</i>	Lipase
(c)	<i>Clostridium</i>	Statins
(d)	<i>Penicillium</i>	Butyric acid

A. A-3,B-1,C-2,D-4

B. A-1,B-4,C-3,D-2

C. A-2,B-1,C-4,D-3

D. A-4,B-3,C-2,D-1

Answer: A



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39. Which of the following is odd one out with reference to evolution ?

- A. Flippers of whale
- B. Wings of pigeon
- C. Forelimbs of rabbit
- D. Wings of butterfly

Answer: C



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40. Which of the following is odd one out with reference to geological time scale?

A. Proterozoic

B. Mesozoic

C. Jurassic

D. Coenozoic

Answer: C



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41. Assertion: All the plants belonging to a single clone are phenotypically identical.

Reason: All the plants within a clone are derived from vegetative cells through mitosis and have the same genetic constitution.

A. Both assertion and reason are true, and reason is the correct explanation of

assertion.

B. Both assertion and reason are true, but reason is not the correct explanation of assertion.

C. Assertion is true, but reason is false.

D. Both assertion and reason are false.

Answer: A



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42. Assertion: Autosomal disease is transferred from father to both son and daughter.

Reason: Autosomes are transferred only from father to son.

A. Both assertion and reason are true, and reason is the correct explanation of assertion.

B. Both assertion and reason are true, but reason is not the correct explanation of

assertion.

C. Assertion is true, but reason is false.

D. Both assertion and reason are false.

Answer: C



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43. Assertion: Tropical latitudes have greater biological diversity temperate latitudes.

Reason: Tropical regions remain relatively undisturbed for millions of years.

A. Both assertion and reason are true, and reason is the correct explanation of assertion.

B. Both assertion and reason are true, but reason is not the correct explanation of assertion.

C. Assertion is true, but reason is false.

D. Both assertion and reason are false.

Answer: A



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44. Assertion: Methane component of greenhouse gases contributing to global warming is about 20%.

Reason: Introduction of multi-point fuel injection increase methane production engines in automobiles has decreased methane content in the exhausts.

A. Both assertion and reason are true, and reason is the correct explanation of assertion.

B. Both assertion and reason are true, but reason is not the correct explanation of assertion.

C. Assertion is true, but reason is false.

D. Both assertion and reason are false.

Answer: A



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45. Assertion: Mendel conducted his experiments on *Pisum sativum*.

Reason: *Pisum sativum* belongs to the family Solanaceae.

A. Both assertion and reason are true, and reason is the correct explanation of assertion.

B. Both assertion and reason are true, but reason is not the correct explanation of assertion.

C. Assertion is true, but reason is false.

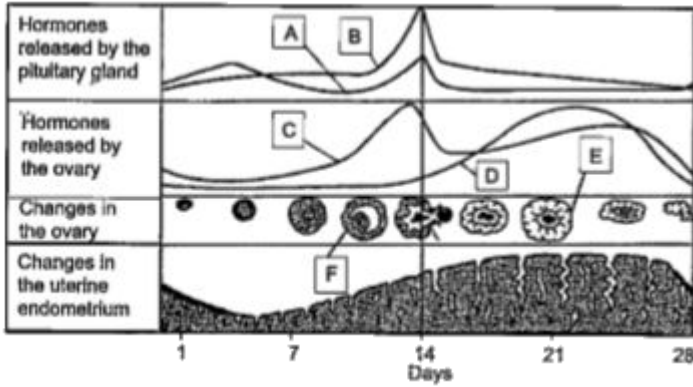
D. Both assertion and reason are false.

Answer: C



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46. Study the diagram given below and answer the questions that follow:



The alphabet 'A' represents _____ hormone.

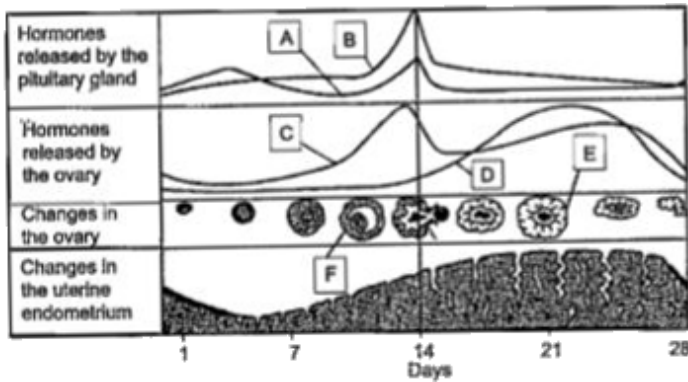
- A. Oestrogen
- B. Progesterone
- C. FSH
- D. LH

Answer: C



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47. Study the diagram given below and answer the questions that follow:



The alphabet 'D' represents _____ hormone.

A. Progesterone

B. Oestrogen

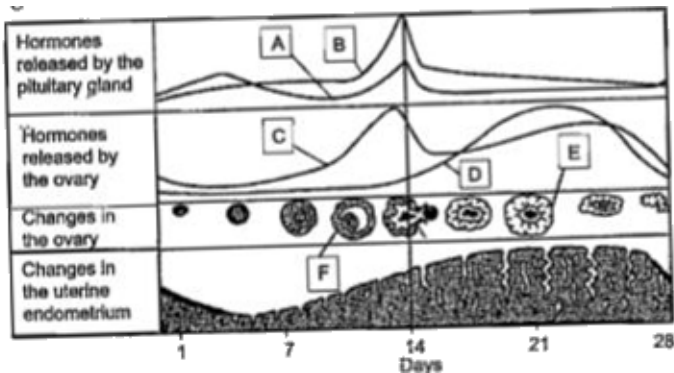
C. LH

D. FSH

Answer: A

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48. Study the diagram given below and answer the questions that follow:



The structure marked 'E' is _____

A. Corpus luteum

B. Secondary follicle

C. Graafian follicle

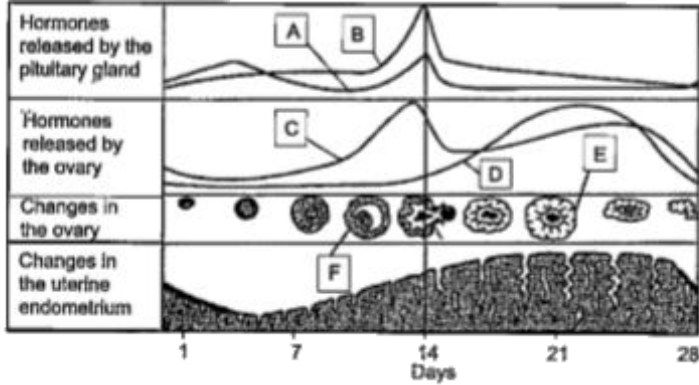
D. Corpus albicans

Answer: A



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49. Study the diagram given below and answer the questions that follow:



Ovulation occurs on day _____ of a typical menstrual cycle.

A. 12

B. 14

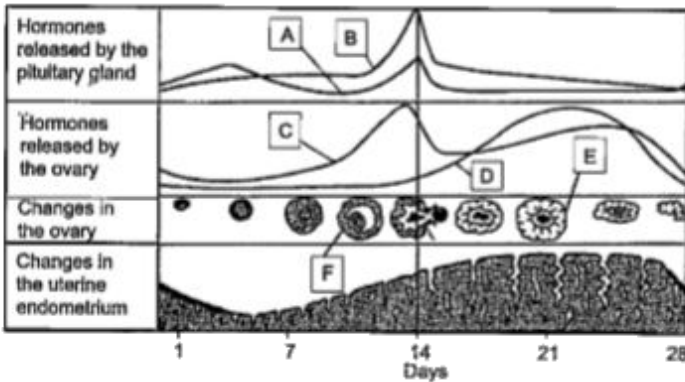
C. 22

D. 28

Answer: B



50. Study the diagram given below and answer the questions that follow:



Menstrual cycle operates in _____

A. All vertebrates

B. All mammals

C. Only primates

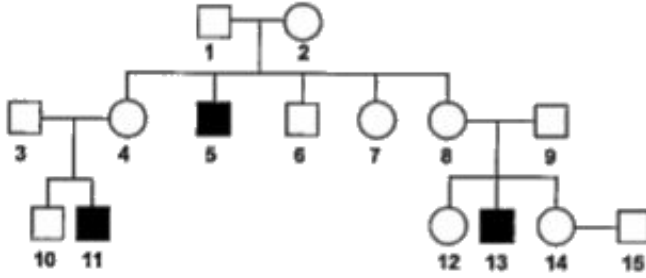
D. Only apes

Answer: C



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51. The pedigree chart given below represents the pattern of inheritance of haemophilia in a family. Study it carefully and answer the following questions:

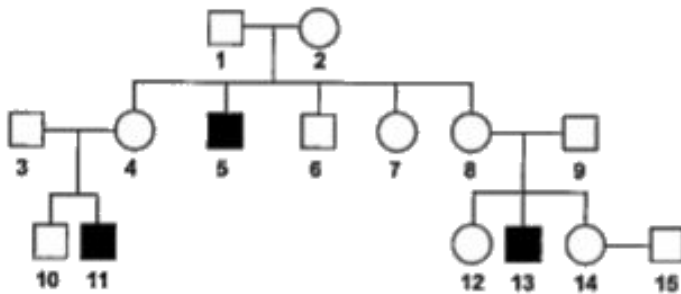


Identify the correct statement with respect to member '4':

- A. He is a carrier male
- B. She is a carrier female
- C. He is haemophilic
- D. She is a homozygous female

Answer: B

52. The pedigree chart given below represents the pattern of inheritance of haemophilia in a family. Study it carefully and answer the following questions:



The possible genotype of member '5' is:

A. $X^H X^H$

B. $X^H Y$

C. X^hY

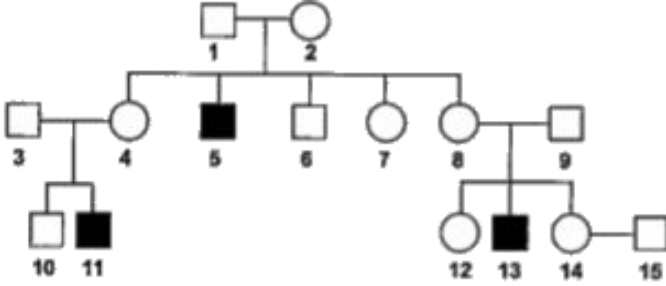
D. None of these

Answer: B



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53. The pedigree chart given below represents the pattern of inheritance of haemophilia in a family. Study it carefully and answer the following questions:



The possible genotype(s) of member '6' is/are:

A. $X^H X^H$, $X^H X^h$

B. $X^H Y$

C. $X^h X^h$

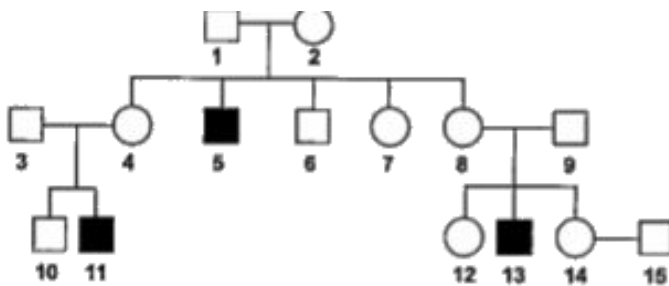
D. None of these

Answer: D



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54. The pedigree chart given below represents the pattern of inheritance of haemophilia in a family. Study it carefully and answer the following questions:



Haemophilia is a/an _____ trait

- A. Dominant
- B. Autosomal
- C. X-linked

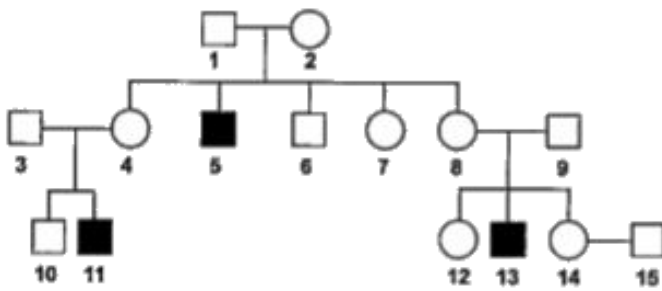
D. Y-linked

Answer: C



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55. The pedigree chart given below represents the pattern of inheritance of haemophilia in a family. Study it carefully and answer the following questions:



Assuming that member '14' is heterozygous for haemophilia, the probability of the son of this couple to be haemophilic is:

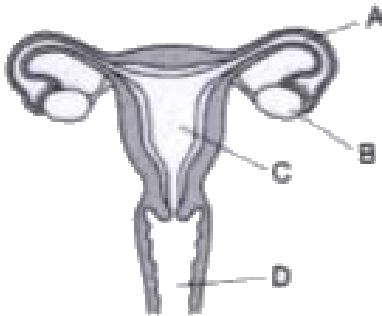
- A. 25 %
- B. 50 %
- C. 75 %
- D. 100 %

Answer: A



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56. The diagram of the organs of female reproductive system is given below. Study it carefully and answer the questions that follow:



The place where fertilisation takes place is:

A. A

B. B

C. C

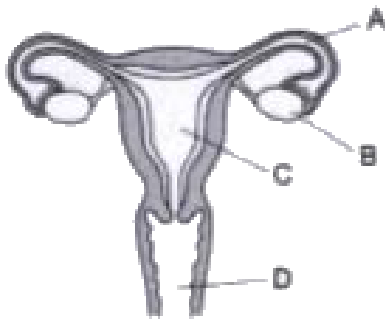
D. D

Answer: A



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57. The diagram of the organs of female reproductive system is given below. Study it carefully and answer the questions that follow:



The place where the embryo is implanted:

A. A

B. B

C. C

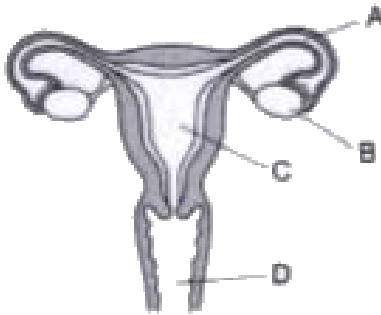
D. D

Answer: C



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58. The diagram of the organs of female reproductive system is given below. Study it carefully and answer the questions that follow:



The ovum is released by:

A. A

B. B

C. C

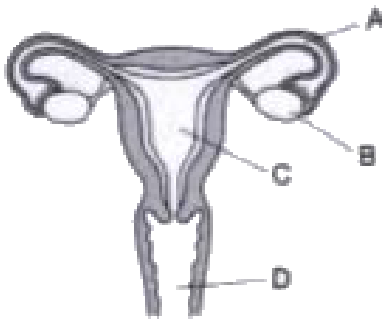
D. D

Answer: B



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59. The diagram of the organs of female reproductive system is given below. Study it carefully and answer the questions that follow:



The hormone testosterone is released by:

A. A

B. B

C. C

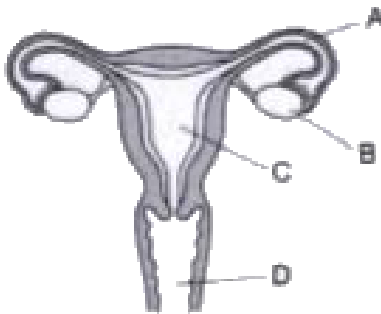
D. D

Answer: B



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60. The diagram of the organs of female reproductive system is given below. Study it carefully and answer the questions that follow:



The _____ layer of the organ 'C' undergoes a cyclic change every month:

A. Outermost

B. Innermost

C. Middle

D. Both (b) and (c)

Answer: B



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61. Read the passage given below, and answer the questions that follow:

The cotton bollworm is considered a major pest, all over the world. Due to its destructive

feeding nature and continuous consumption of the same chemicals, it evolved resistant against many insecticides. To overcome this problem, scientists introduced a virus which selectively infects and kills the bollworm.

The virus used in this process was:

- A. Baculovirus
- B. Tobacco mosaic virus
- C. Bacteriophage
- D. All of these

Answer: A



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62. Read the passage given below, and answer the questions that follow:

The cotton bollworm is considered a major pest, all over the world. Due to its destructive feeding nature and continuous consumption of the same chemicals, it evolved resistant against many insecticides. To overcome this problem, scientists introduced a virus which selectively infects and kills the bollworm.

In scientific terms, this method of pest control is an example of:

- A. Bioremediation
- B. Chemical control
- C. Biological control
- D. All of these

Answer: C



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63. Read the passage given below, and answer the questions that follow:

The cotton bollworm is considered a major pest, all over the world. Due to its destructive feeding nature and continuous consumption of the same chemicals, it evolved resistant against many insecticides. To overcome this problem, scientists introduced a virus which selectively infects and kills the bollworm.

The advantage of this process is that it helps in:

- A. Controlling pollution
- B. Evolution of new chemicals
- C. Improving the quality of cotton
- D. None of these

Answer: C



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64. Read the passage given below, and answer the questions that follow:

The cotton bollworm is considered a major

pest, all over the world. Due to its destructive feeding nature and continuous consumption of the same chemicals, it evolved resistant against many insecticides. To overcome this problem, scientists introduced a virus which selectively infects and kills the bollworm.

The virus used in this process can also be used to control some mosquito-borne diseases like:

A. Malaria

B. Filaria

C. Dengue

D. None of these

Answer: C



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65. Read the passage given below, and answer the questions that follow:

The cotton bollworm is considered a major pest, all over the world. Due to its destructive feeding nature and continuous consumption of the same chemicals, it evolved resistant

against many insecticides. To overcome this problem, scientists introduced a virus which selectively infects and kills the bollworm.

From the statements given below, select the correct statement with respect to this process:

A. The viruses are specific to insect host species

B. The viruses are not specific to individual insect host species

C. The same virus can be used to control
corn-borer also

D. The insect host never develops
resistance against the virus

Answer: A



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66. Read the passage given below, and answer
the questions that follow:

Some students wanted to investigate the

pattern of inheritance of flower colour in snapdragon. They selected some plants which were homozygous for red flowers and some other plants which were homozygous for white flowers. These plants were labelled as Parental Plants (P_1). These plants (red-flowered and white flowered), were cross-pollinated. The seeds obtained from these plants were planted in a separate field. These seeds germinated to produce the plants which were labelled as the plants of F_1 -generation.

Based on the above experiment, answer the following questions:

Select the statement which correctly predicts the phenotype of the plants of F_1 generation.

- A. All the plants will bear red flowers
- B. All the plants will bear white flowers
- C. 50% plants will bear red flowers and 50% will bear white flowers
- D. 100% plants will bear pink flowers.

Answer: D



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67. Read the passage given below, and answer the questions that follow:

Some students wanted to investigate the pattern of inheritance of flower colour in snapdragon. They selected some plants which were homozygous for red flowers and some other plants which were homozygous for white flowers. These plants were labelled as Parental Plants (P_1). These plants (red-flowered and white flowered), were cross-pollinated. The seeds obtained from these plants were planted in a separate field. These

seeds germinated to produce the plants which were labelled as the plants of F_1 -generation.

Based on the above experiment, answer the following questions:

If the plants of F_1 -generation are allowed to self-pollinate, then in F_2 -generation.

A. All of the resulting plants will have pink flowers.

B. 75% plants will have red flowers and the remaining 25% plants will have white flowers.

C. 25% plants will have red flowers, 25% plants will have pink flowers and 25% will have white flowers.

D. 25% plants will have red flowers and the remaining 75% plants will have white flowers.

Answer:



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68. Read the passage given below, and answer the questions that follow:

Some students wanted to investigate the pattern of inheritance of flower colour in snapdragon. They selected some plants which were homozygous for red flowers and some other plants which were homozygous for white flowers. These plants were labelled as Parental Plants (P_1). These plants (red-flowered and white flowered), were cross-pollinated. The seeds obtained from these plants were planted in a separate field. These

seeds germinated to produce the plants which were labelled as the plants of F_1 -generation.

Based on the above experiment, answer the following questions:

The genotypic ratio of the plants of F_2 -generation will be:

A. 1 : 2 : 3

B. 9 : 3 : 3 : 1

C. 1 : 2 : 1

D. 3 : 1

Answer: C



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69. Read the passage given below, and answer the questions that follow:

Some students wanted to investigate the pattern of inheritance of flower colour in snapdragon. They selected some plants which were homozygous for red flowers and some other plants which were homozygous for white flowers. These plants were labelled as Parental Plants (P_1). These plants (red-flowered and white flowered), were cross-

pollinated. The seeds obtained from these plants were planted in a separate field. These seeds germinated to produce the plants which were labelled as the plants of F_1 -generation.

Based on the above experiment, answer the following questions:

This type of inheritance can be described as:

- A. Polygenic inheritance
- B. Incomplete dominance
- C. Co-dominance
- D. Pleiotropism

Answer: B



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70. Read the passage given below, and answer the questions that follow:

Some students wanted to investigate the pattern of inheritance of flower colour in snapdragon. They selected some plants which were homozygous for red flowers and some other plants which were homozygous for white flowers. These plants were labelled as

Parental Plants (P_1). These plants (red-flowered and white flowered), were cross-pollinated. The seeds obtained from these plants were planted in a separate field. These seeds germinated to produce the plants which were labelled as the plants of F_1 -generation.

Based on the above experiment, answer the following questions:

The biological name of snapdragon is:

- A. *Antirrhinum majus*
- B. *Pisum sativum*
- C. *Lathyrus odoratus*

D. *Rhizobium leguminosarum*

Answer: A



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