



BIOLOGY

BOOKS - EDUCART PUBLICATION

SAMPLE PAPER 2

Section A

1. What could be the number of cells in a typical angiosperm embryo sac?

A. 5

B. 6

C. 7

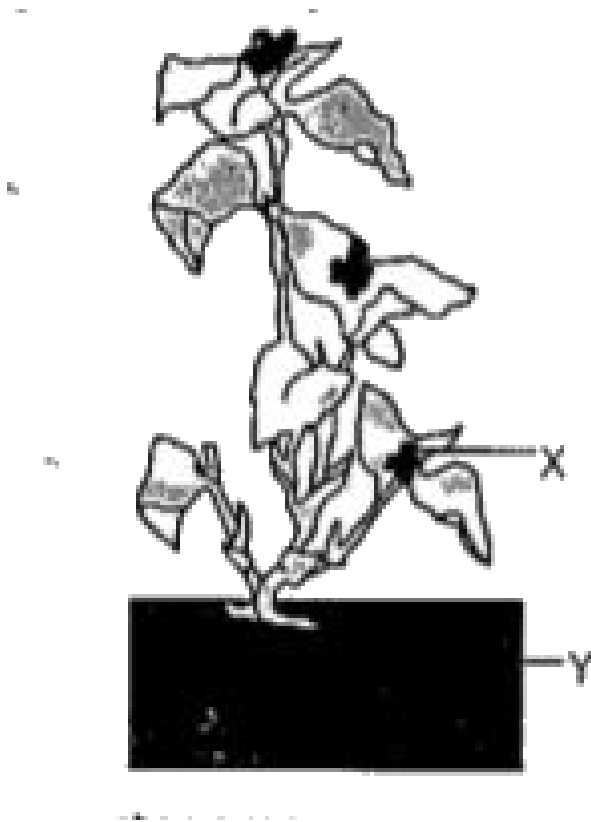
D. 8

Answer: C



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2. Identify X and Y, respectively:



A. X = Cleistogamous, Y = Chasmogamous

B. X = Chasmogamous, Y = Cleistogamous

C. X = Cleistogamous, Y = Cleistogamous

D. X = Chasmogamous, Y =

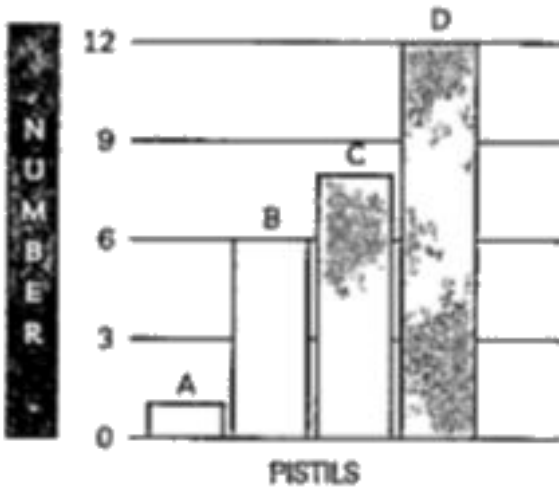
Chasmogamous

Answer: B



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3. Based on the given graph, what will be the type of Gynoecium in the B?



A. Monocarpellary

B. Bicarpellary

C. Tricarpellary

D. Multicarpellary

Answer: D



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4. Mention the number of cells in the following stages.

S.N.	Embryonic stage	No. of cells
(I)	Zygote	(A)
(II)	Morula	(B)
(III)	Blastocyst	(C)

A. (A) = 1, (B) = 8 -16,(C) = 64

B. (A) = 8, (B) = 22, (C) = 22

C. (A) = 18, (B) = 22, (C) = 22

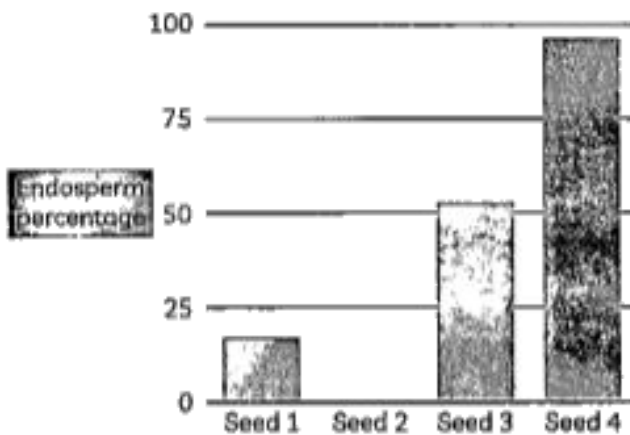
D. (A) = 18, (B) = 36, (C) = 36

Answer: A



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5. Based on the given graph, which one could be an albuminous seed/seeds?



A. Seed 1,2,3

B. Seed 1,4,2

C. Seed 1,3,4

D. Seed 3,4

Answer: C



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6. Choose the most appropriate option. The Leydig cells are present in:

A. Interstitial spaces between the seminiferous tubules.

B. Inside the seminiferous tubules.

C. Vas deferens

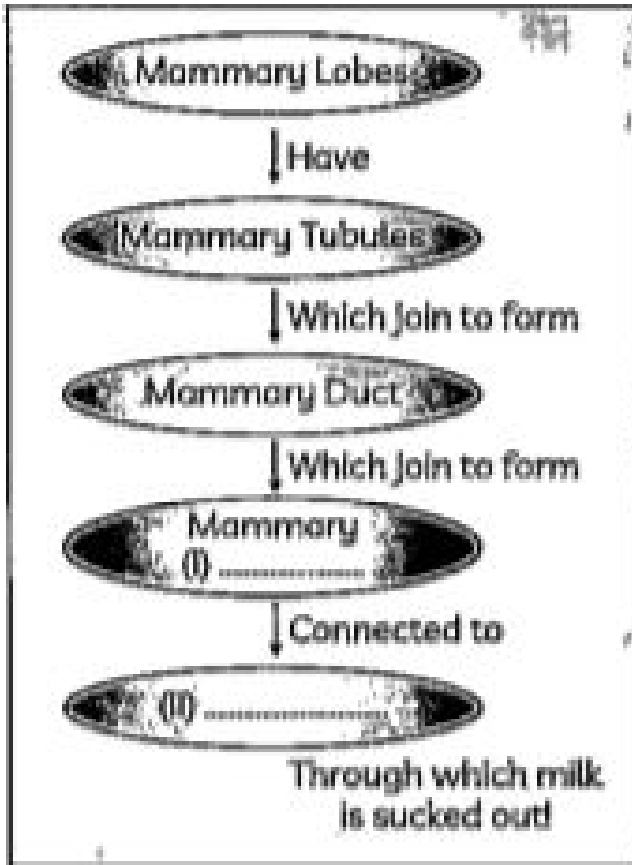
D. Epididymis.

Answer: A



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7. Fill in the blanks w.r.t. the mammary glands:



a) (I) Lactiferous duct, (II) Mammary ampulla

b) (I) Mammary ampulla, (II) Lactiferous duct

c) (I) Mammary tubes, (II) Lactiferous duct

d) (I) Lactiferous duct, (II) Mammary tubes

A. (I) Lactiferous duct, (II) Mammary ampulla

B. (I) Mammary ampulla, (II) Lactiferous duct

C. (I) Mammary tubes, (II) Lactiferous duct

D. (I) Lactiferous duct, (II) Mammary tubes

Answer: B



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8. Antrum is:

A. Interstitial space between Sertoli cells.

B. Fluid filled cavity in Graafian follicle.

C. Fluid filled cavity in tertiary follicle.

D. Fluid filled cavity in ovulating follicle.

Answer: C



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9. The outermost layer of a blastocyst is called?

a) ectoderm

b) mesoderm

c) endoderm

d) trophoblast

A. ectoderm

B. mesoderm

C. endoderm

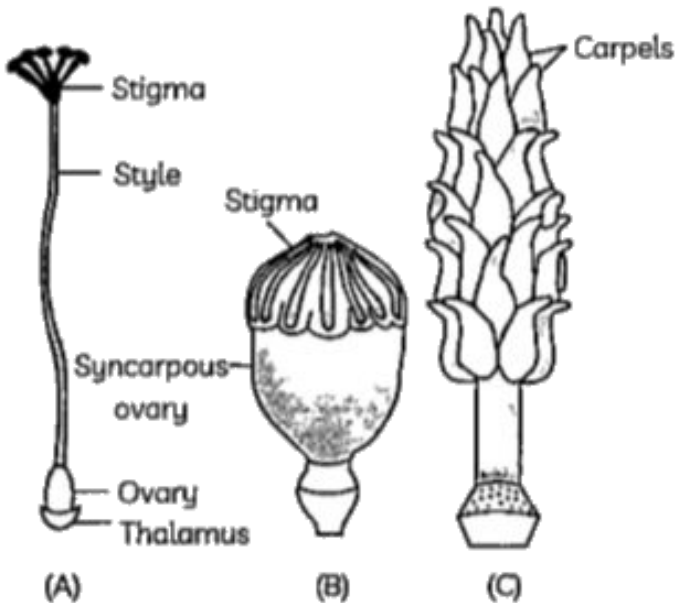
D. trophoblast

Answer: D



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10. Which of the following statements are true related to (A), (B) and (C)?



(I) Flower (C) is having a multicarpellary pistil.

(II) Flower (C) is having a syncarpous pistil.

(III) Flower (B) is having a apocarpous pistil

(IV) Flower (B) is having a multicarpellary pistil.

A. (I), (II)

B. (III), (IV)

C. (II), (III)

D. (I), (IV)

Answer: D



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11. Shyam is experiencing frequent respiratory allergies while John has been deprived of playing in a sports team due to some substances found in his blood report. Identify the most appropriate or fitting condition they might be involved in:

	Shyam	John
(a)	Sickle cell Anemia	Turner's Syndrome
(b)	Pollen Allergy	Pollen Supplement over Dose
(c)	Cardiac muscle dysfunctioning	Warts
(d)	Phenylketonuria	Diarrhoea.



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12. Predict the number of gametes that can be produced by a diploid individual which is heterozygous for 4 loci.

A. 256

B. 16

C. 64

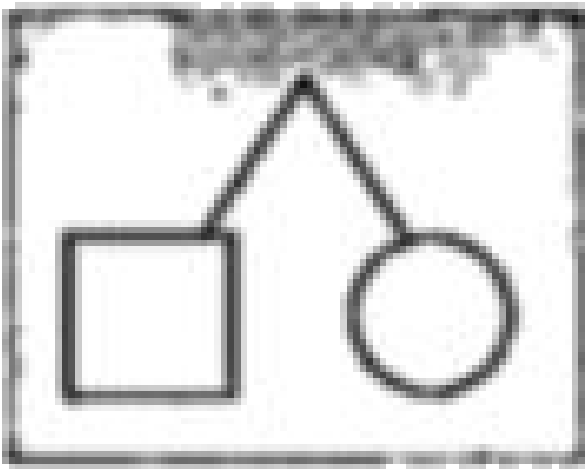
D. 92

Answer: A



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13. The given symbol represents:



A. Dizygotic twins

B. Monozygotic twins

C. Could represent any type of twins

D. Cannot say

Answer: A



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14. Arrange the following steps in correct order:

(DNA replication):

(I) Topoisomerase stabilises the helix in phases.

(II) Okazaki fragments are formed during DNA

replication.

(III) Helicase unwinds the helix in phases.

(IV) Ligase joins the Okazaki segments

A. (I), (II), (III), (IV)

B. (IV), (III), (II), (I)

C. (III), (I), (II), (IV)

D. (II), (III), (IV), (I)

Answer: A



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15. If the frequency of parental forms is higher than 25% in a dihybrid test-cross. What does that indicate about the two genes involved ?

A. The genes have no relation

B. The two genes are linked

C. The two genes might develop an affinity

D. Both (b) and (c)

Answer: B



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16. Which type of sex determination mechanism is followed in birds?

a) Female XX and Male XO

b) Female ZW and Male ZZ

c) Female XY and Male XY

d) No Mechanism occur in birds

A. Female XX and Male XO

B. Female ZW and Male ZZ

C. Female XY and Male XY

D. No Mechanism occur in birds

Answer: B



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17. Identify and write the correct statement:

A. *Drosophila* male has one X and one Y chromosome.

B. *Drosophila* male has two X chromosomes.

C. *Drosophila* male has one Z and one W chromosome.

D. *Drosophila* male has two Z chromosomes.

Answer: A



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18. Length of DNA can be calculated by:

A. multiplying the total number of base pairs with the distance between two consecutive base pairs.

B. multiplying the total number of base pairs with 0.34 nm

C. multiplying the total number of base pairs with 0.34×10^{-9}

D. All of these

Answer: D



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19. codons out of 64 codons, code for 20 amino acids.

A. 61

B. 70

C. 64

D. 80

Answer: C



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20. can be defined as a DNA sequence that serves as the binding site for RNA polymerase

- A. Terminator
- B. Promoter
- C. Structural gene
- D. Both (a) and (c)

Answer: B



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21. Post-transcriptional or primary transcript processing doesn't involve one of these.

Identify which is the odd one out:

A. hnRNA tailoring

B. tRNA silencing

C. Capping

D. Polyadenylation

Answer: B



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22. UUU would code for Phenylalanine (Phe) in

.....

A. Humans

B. Bacteria

C. Arthropods

D. All of these

Answer: D



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23. The DNA of E. coli has base pairs.

A. 6.6×10^6 bp

B. 4.6×10^6 bp

C. 4.6×10^7 bp

D. 4.6×10^{11} bp

Answer: B



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24. Which of these are true for DNA polymorphism:

A. They are inheritable.

B. Same degree of polymorphism is exhibited by every part of an individual

C. They are basically inheritable mutation observed in a population at a high frequency.

D. All of the above.

Answer: D



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Section B

1. Given below are two statements labelled as Assertion (A) and Reason (R):

Select the most appropriate answer from the

Options given below:

Assertion (A): Saheli is a non-steroidal preparation.

Reason (R): It is known to suppress sperm motility in males.

A. Both A and R are true and R is the correct explanation of A

B. Both A and R are true but R is not the correct explanation of A

C. A is true but R is false

D. A is false but R is true

Answer: C



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2. Given below are two statements labelled as Assertion (A) and Reason (R):

Select the most appropriate answer from the Options given below:

Assertion (A): Surgical contraception methods involve sterilisation and can be performed in both, males and females.

Reason (R): They are highly effective with poor reversibility.

- A. Both A and Rare true and R is the correct explanation of A
- B. Both A and Rare true but R is not the correct explanation of A
- C. A is true but R is false
- D. A is false but R is true

Answer: A



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3. Given below are two statements labelled as Assertion (A) and Reason (R):

Select the most appropriate answer from the Options given below:

Assertion (A): Isthmus is the widest part of fallopian tube.

Reason (R): Ampulla is a narrow, terminating part of the Oviduct.

A. Both A and R are true and R is the correct explanation of A

B. Both A and R are true but R is not the correct explanation of A

C. A is true but R is false

D. A is false but R is true

Answer: D



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4. Given below are two statements labelled as Assertion (A) and Reason (R):

Select the most appropriate answer from the

Options given below:

Assertion (A): Varied skin tones in F_2 generation can be a result of polygenic inheritance.

Reason (R): The phenotype, in case of polygenic trait, reflects the contribution of each allele and is also influenced by the environment.

A. Both A and R are true and R is the correct explanation of A

B. Both A and R are true but R is not the correct explanation of A

C. A is true but R is false

D. A is false but R is true

Answer: A



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5. The emergence of a mature Graafian follicle is evident around:

a) 18th day of menstrual cycle

b) 18 - 23rd day of menstrual cycle

c) 11 - 17th day of menstrual cycle

d) 20th day of menstrual cycle

A. 18th day of menstrual cycle

B. 18 - 23rd day of menstrual cycle

C. 11 - 17th day of menstrual cycle

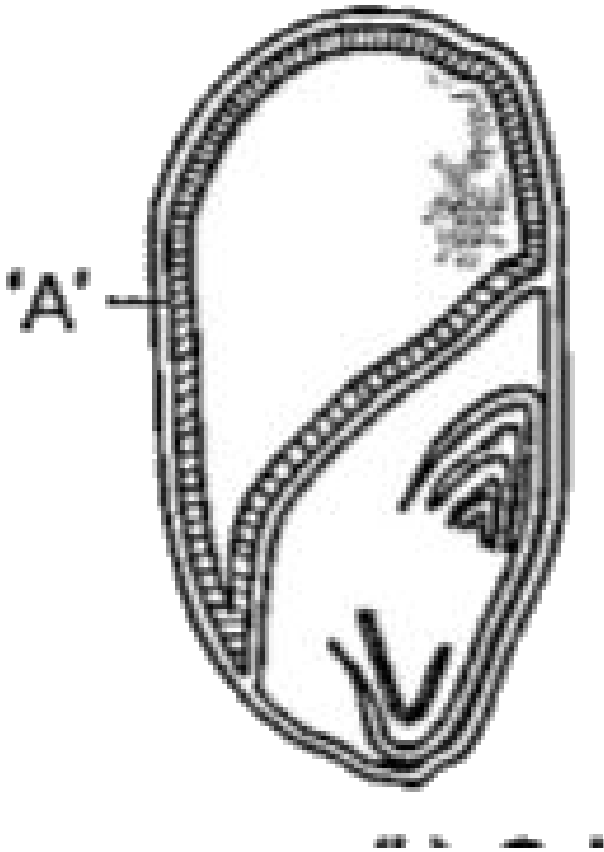
D. 20th day of menstrual cycle

Answer: C



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6. What is represented by 'A' in the following diagram:



- a) Scutellum
- b) Coleoptile

c) Coleorrhiza

d) Endosperm

A. Scutellum

B. Coleoptile

C. Coleorrhiza

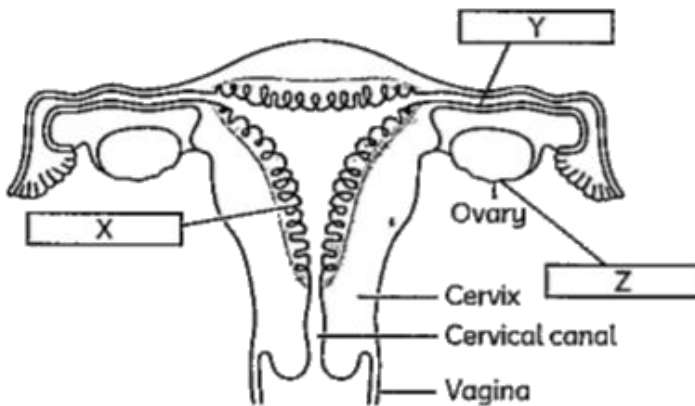
D. Endosperm

Answer: D



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7. Which among these is the site of implantation?



- a) X
- b) Y
- c) Z
- d) Both (b) and (c)

A. X

B. Y

C. Z

D. Both (b) and (c)

Answer: A



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8. Identify the contraceptive:



a) Copper T

b) Condom

c) Hormonal insertion device

d) Sterilised needle tag

A. Copper T

B. Condom

C. Hormonal insertion device

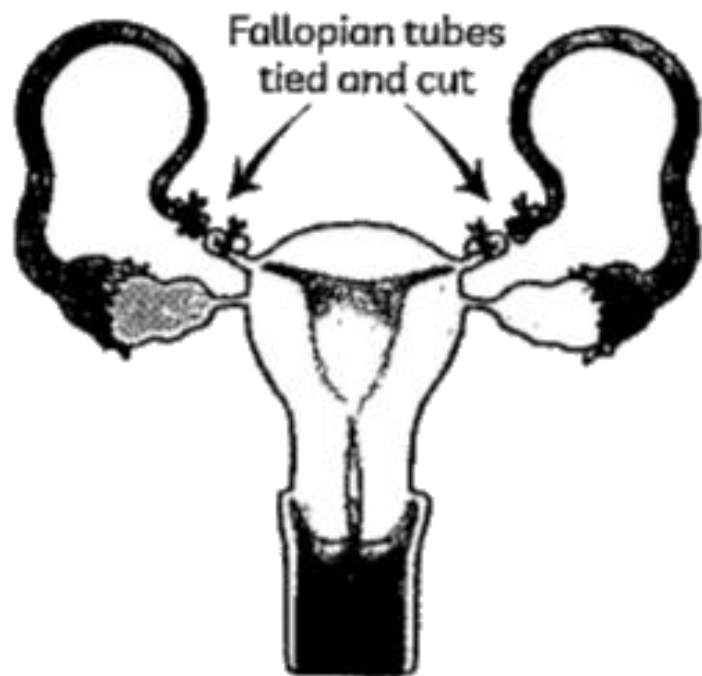
D. Sterilised needle tag

Answer: A

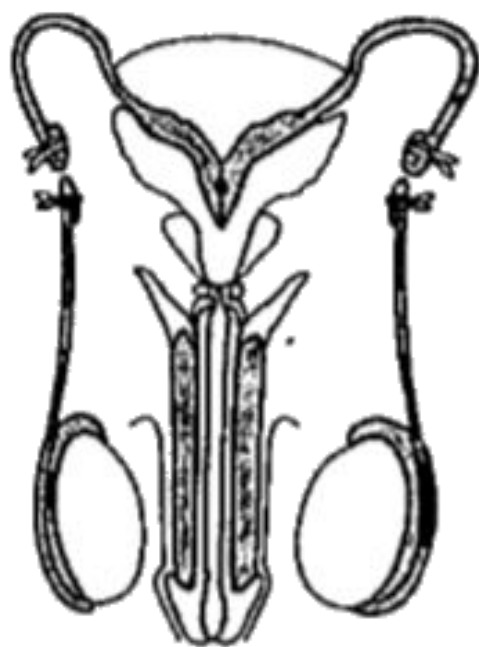


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9. Which of the following statements are true related to figure X and Y?



X



Y

(I) X represents vasectomy

(II) Y represents tubectomy

(III) X and Y are surgical procedures

(IV) X represents tubectomy

A. (I), (II)

B. (III), (IV)

C. (II), (III)

D. (I), (IV)

Answer: B



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10. Which option is most appropriate for A?

Time	Embryo development
1 Month	Heart is formed
2 Months	A
12 Weeks/3 Months/ First Trimester	Organ System Including Genitals
5 Months	—
24 Weeks/6 Months/ Second Trimester	—

- a) Foetus movements, hair growth on head.
- b) Body is covered with hair
- c) Limbs and digits develop.
- d) Eyelids separate.

A. Foetus movements, hair growth on head.

B. Body is covered with hair

C. Limbs and digits develop.

D. Eyelids separate.

Answer: C



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11. Four samples of plants were photographed by a group of researchers. Which of the following characteristics of the four samples

match with that of a wind pollinated flower?

(I)	Flowers are small, colourless, inconspicuous and nectarless.	Enormous amount of pollen grains are produced by flowers.
(II)	Flowers are large, colourful, fragrant and rich in nectar.	The flower provides nectar and pollen grains as floral rewards
(III)	The stigmas are long and sticky.	Flowers are not present.
(IV)	Flowers produce foul smell.	Flowers are brightly coloured.

A. (I)

B. (I) and (IV)

C. (III) and (IV)

D. (II)

Answer: A



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12. Percentage of the pea plants which would be homozygous recessive in F_1 generation when tall F_1 heterozygous pea plants are selfed will be:

A. 25 %

B. 50 %

C. 100 %

D. 60 %

Answer: A



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13. Huntington disease can be grouped under one of the following categories. Name it.

- a) Sex-linked dominant disorder
- b) Sex-linked recessive disorder
- c) Autosomal dominant disorder
- d) Autosomal recessive disorder

- A. Sex-linked dominant disorder
- B. Sex-linked recessive disorder
- C. Autosomal dominant disorder
- D. Autosomal recessive disorder

Answer: C



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14. Which one of them is the correct statement w.r.t a gene and an allele?

a) There is one allele for a given gene which is

located at a single loci in the homologous chromosome.

b) An allele is the unit of DNA responsible for the appearance and inheritance of a character.

c) An allele refers to section of DNA that controls certain traits, e.g., blood group type.

d) None of these.

A. There is one allele for a given gene which is located at a single loci in the homologous chromosome.

B. An allele is the unit of DNA responsible for the appearance and inheritance of a character.

C. An allele refers to section of DNA that controls certain traits, e.g., blood group type.

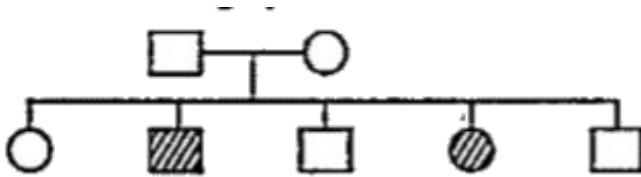
D. None of these.

Answer: D



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15. There is a pedigree chart given below. It shows a particular trait. It illustrates the inheritance of a trait. On the basis of your observation of the given diagram, answer the following question:



The given chart shows a:

- a) Autosomal dominant disorder
- b) Autosomal recessive disorder
- c) Sex-linked recessive disorder
- d) Sex-linked dominant disorder

A. Autosomal dominant disorder

B. Autosomal recessive disorder

C. Sex-linked recessive disorder

D. Sex-linked dominant disorder

Answer: B



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16. Give the karyotype of Klinefelter's syndrome:

a) XO, 45

b) XX, 46

c) XXY, 47

d) XYY, 47

A. XO, 45

B. XX, 46

C. XXY, 47

D. XYY, 47

Answer: C



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17. Chromosomal theory of inheritance was given by:

- A. Sutton and Boveri
- B. Avery, Mcleod, and McCarty
- C. Mendel
- D. Friedrich Miescher

Answer: A



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18. The tension in the DNA strands created by unwinding of DNA is release by:

- a) DNA polymerase II
- b) DNA polymerase III
- c) Helicase
- d) Topoisomerase

A. DNA polymerase II

B. DNA polymerase III

C. Helicase

D. Topoisomerase

Answer: D



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19. The reverse flow of the genetic information or central dogma was discovered by:

- a) Wilkins
- b) Francis Crick
- c) Temin and Baltimore
- d) James watson

A. Welkins

B. Francis Crick

C. Temin and Baltimore

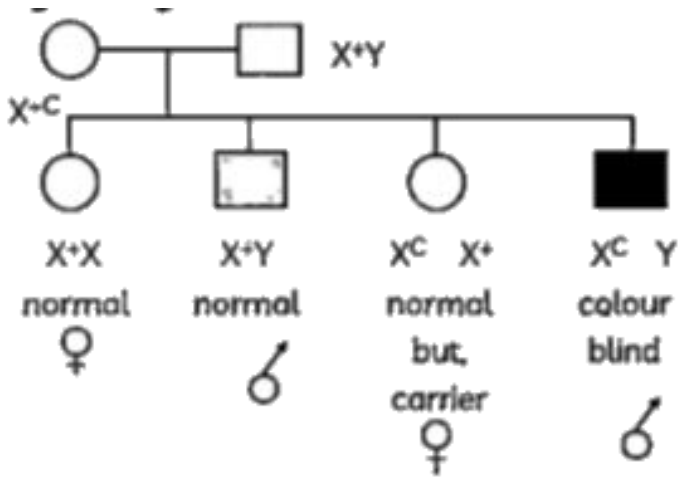
D. James watson

Answer: C



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20. The given figure shows:



- A. An X-LINKED recessive trait
- B. An X-LINKED dominant trait
- C. An autosomal recessive trait
- D. An autosomal dominant trait

Answer: B



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21. According to the Chargaff's rule, "The ratios between Adenine (A) and and Guanine (G) and are constant and equal to one in a double-stranded DNA."

- a) Thymine, Cytosine
- b) Cytosine, Thymine
- c) Lysine, Arginine
- d) Arginine, Lysine

A. Thymine, Cytosine

B. Cytosine, Thymine

C. Lysine, Arginine

D. Arginine, Lysine

Answer: A



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22. The synthesis of RNA primer complimentary to the DNA template strand is assisted by:

a) Primase

b) DNA polymerase III

c) Helicase

d) Ligase

A. Primase

B. DNA polymerase III

C. Helicase

D. Ligase

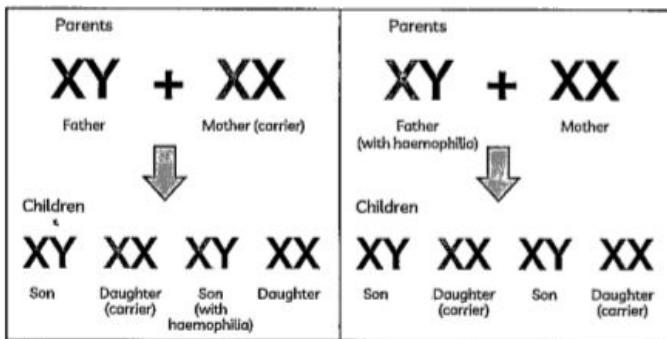
Answer: A



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23. Read the following excerpt. On the basis of your reading, answer the given question:

Females rarely become haemophilic. Mother of such a female has to be at least carrier and the father should be haemophilic (unviable in the later stage of life).



A heterozygous female acts as a carrier for

haemophilia and may transmit the disease to

.....

- A. Her sons
- B. Her daughters
- C. All her progeny
- D. None of them.

Answer: A



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24. The raid technique used to compare the DNA sequences of any two individuals is called as DNA fingerprinting.

The technique of DNA fingerprinting involves identifying differences in repetitive DNA sequences (in repetitive DNA sequences a small stretch of DNA is repeated many times).

The figure given below shows the banding pattern of the DNA obtained from the crime scene along with the DNA from the suspects.

C. ZK

D. YK

Answer: C



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Section C

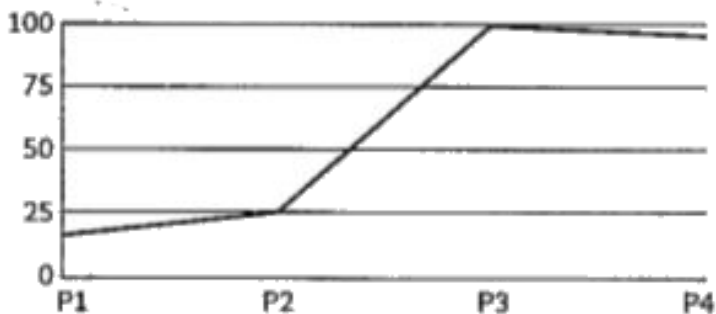
1. Rhythmic reproductive cycle in female primates (Monkeys, apes, humans etc.) is called menstrual cycle. The first menstrual

cycle (Menarche) that begins at puberty. It is repeated after an average interval of 28/29 days. Release of one ovum takes place in the middle of each menstrual cycle. The menstrual cycle ceases around post 50 years of age in humans and that stage is called Menopause. Proper understanding of the Menstrual cycle can be used to apply periodic abstinence which is a method of natural birth control. A couple can stay away from performing coitus/sexual intercourse between the 10th and 17th of the menstrual cycle. These are the days when ovulation takes place, resulting in higher

chances of fertilisation. This can help with a natural course of family planning.

The given graph shows the level of Luteinising hormone in various phases of menstrual cycle.

Which phase might be represented by P3?



A. Menstrual

B. Proliferative

C. Luteal

D. Ovulatory

Answer: D



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2. Rhythmic reproductive cycle in female primates (Monkeys, apes, humans etc.) is called menstrual cycle. The first menstrual cycle (Menarche) that begins at puberty. It is repeated after an average interval of 28/29 days. Release of one ovum takes place in the

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Menstrual phase can last for:

A. 24-48 hours

B. 28 or 29 days

C. 10-14 days

D. 3-5 days

Answer: A



View Text Solution

3. Rhythmic reproductive cycle in female primates (Monkeys, apes, humans etc.) is called menstrual cycle. The first menstrual

cycle (Menarche) that begins at puberty. It is repeated after an average interval of 28/29 days. Release of one ovum takes place in the middle of each menstrual cycle. The menstrual cycle ceases around post 50 years of age in humans and that stage is called Menopause. Proper understanding of the Menstrual cycle can be used to apply periodic abstinence which is a method of natural birth control. A couple can stay away from performing coitus/sexual intercourse between the 10th and 17th of the menstrual cycle. These are the days when ovulation takes place, resulting in higher

chances of fertilisation. This can help with a natural course of family planning.

During Luteal phase, corpus luteum secretes large amount of for endometrium maintenance.

- A. Progesterone
- B. Testosterone
- C. Luteinising hormone
- D. Estrogen

Answer: B



4. Rhythmic reproductive cycle in female primates (Monkeys, apes, humans etc.) is called menstrual cycle. The first menstrual cycle (Menarche) that begins at puberty. It is repeated after an average interval of 28/29 days. Release of one ovum takes place in the middle of each menstrual cycle. The menstrual cycle ceases around post 50 years of age in humans and that stage is called Menopause. Proper understanding of the Menstrual cycle

can be used to apply periodic abstinence which is a method of natural birth control. A couple can stay away from performing coitus/sexual intercourse between the 10th and 17th of the menstrual cycle. These are the days when ovulation takes place, resulting in higher chances of fertilisation. This can help with a natural course of family planning.

Primary follicle changes into Graafian follicle in phase.

A. Menstrual

B. Proliferative

C. Luteal

D. Ovulatory

Answer: B



[View Text Solution](#)

5. Rhythmic reproductive cycle in female primates (Monkeys, apes, humans etc.) is called menstrual cycle. The first menstrual cycle (Menarche) that begins at puberty. It is repeated after an average interval of 28/29

days. Release of one ovum takes place in the middle of each menstrual cycle. The menstrual cycle ceases around post 50 years of age in humans and that stage is called Menopause. Proper understanding of the Menstrual cycle can be used to apply periodic abstinence which is a method of natural birth control. A couple can stay away from performing coitus/sexual intercourse between the 10th and 17th of the menstrual cycle. These are the days when ovulation takes place, resulting in higher chances of fertilisation. This can help with a natural course of family planning.

In absence of fertilisation, corpus luteum

.....

A. Proliferates

B. Degenerates

C. Add new layers

D. Develops a fluidic cavity

Answer: A



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6. Rhythmic reproductive cycle in female primates (Monkeys, apes, humans etc.) is called menstrual cycle. The first menstrual cycle (Menarche) that begins at puberty. It is repeated after an average interval of 28/29 days. Release of one ovum takes place in the middle of each menstrual cycle. The menstrual cycle ceases around post 50 years of age in humans and that stage is called Menopause. Proper understanding of the Menstrual cycle can be used to apply periodic abstinence which is a method of natural birth control. A

couple can stay away from performing coitus/ sexual intercourse between the 10th and 17th of the menstrual cycle. These are the days when ovulation takes place, resulting in higher chances of fertilisation. This can help with a natural course of family planning.

The beginning of menstruation in human females is known as:

A. Menarche

B. Menopause

C. Menstrual kink

D. Luteal degeneration

Answer: C

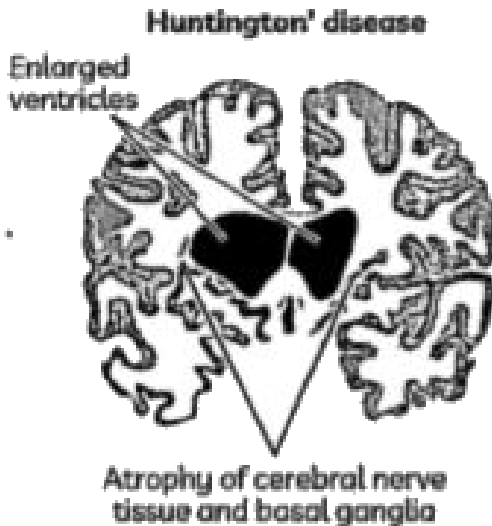
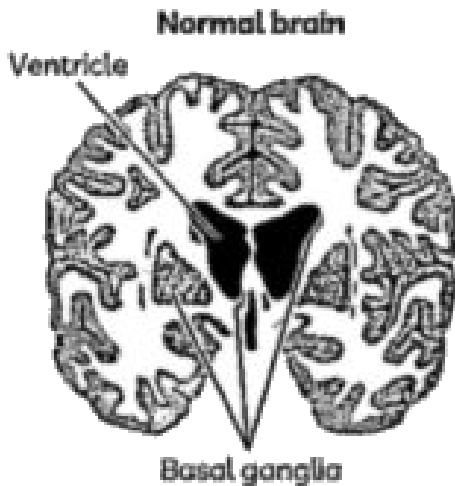


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7. Read the following excerpt. On the basis of your reading, answer the given question:

Huntington disease can lead to uncontrolled movements, emotional problems, and loss of thinking ability (cognition). It is a progressive brain disorder caused by a single defective

gene on chromosome number 4 - one of the 23 human chromosomes.



Its an autosomal dominant disorder

- A. Sex-linked dominant
- B. Autosomal recessive
- C. Autosomal dominant.
- D. Sex-linked recessive

Answer: B



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8. A cross was developed between 2 Rose plants. They showed contrasting traits w.r.t the height of the plant. The final result had 50

percent parental traits. This cross can be classified as:

- A. Cross exhibiting co-dominance
- B. Test cross
- C. Incomplete dominance
- D. Trihybrid cross

Answer: A



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9. The given figure is an example of:

Allele from Parent I	Allele from Parent II	Genotype of Offspring	Blood-types of Offspring
I^A	I^A	$I^A I^A$	A
I^A	I^B	$I^A I^B$	AB
I^A	i	$I^A i$	A
I^B	I^A	$I^A I^B$	AB
I^B	I^B	$I^B I^B$	B
I^B	i	$I^B i$	B
i	i	ii	O

A. Co-dominance

B. Incomplete dominance

C. Pleiotropism

D. Both (a) and (b)

Answer: B



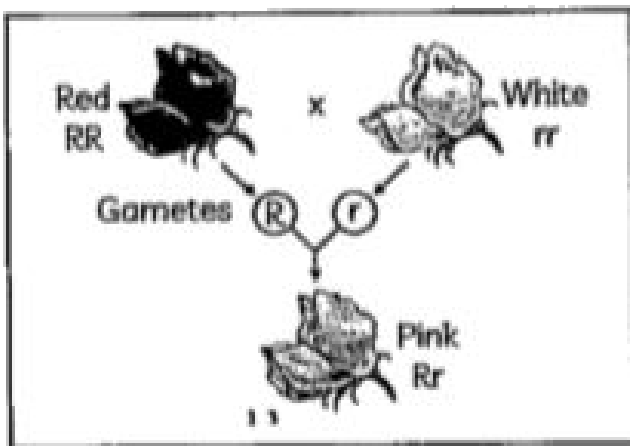
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10. Read the following statement. On the basis of your reading, answer the given question:

Vyom saw Snapdragon plant in a nursery and got curious about the colours of its flowers.

He discussed it with his botany professor and learnt about incomplete dominance.

Incomplete dominance is when a dominant allele, or form of a gene, does not completely mask or eliminate the effects of a recessive allele, and the organism's resulting phenotype shows a blending of both alleles. In case of dog flower, the cross breeding of red and flowered plants lead to the production of all intermediate pink coloured flowers in F generation.

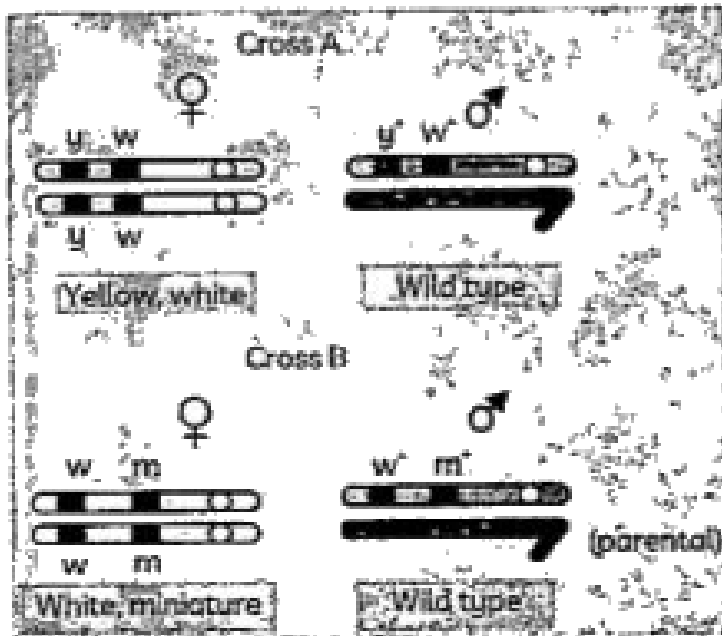


If we consider incomplete dominance, the intermediate colour appears in:

- A. homozygous dominant plant
- B. heterozygous dominant plant
- C. pureline dominant plant
- D. homozygous recessive plant

Answer: A

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11.

In the given figure, the strength of linkage will be higher in:

A. Cross A

B. Cross B

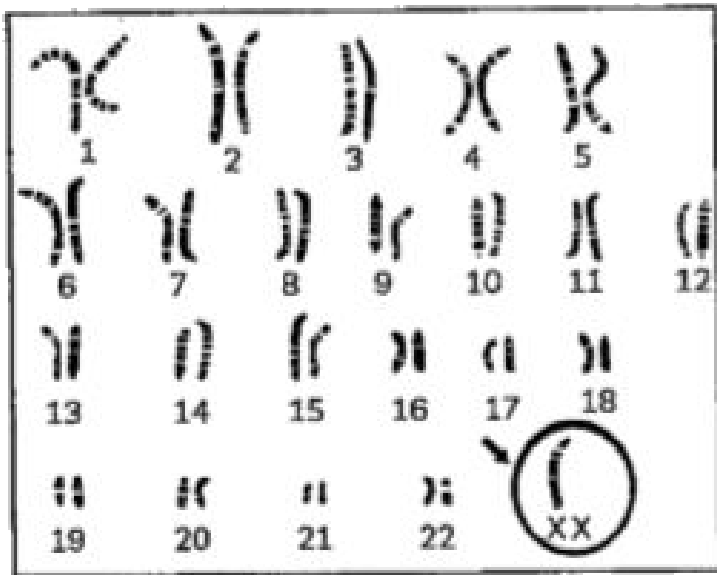
C. Both A and B

D. Neither A nor B

Answer: A



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12.

The above figure shows the karyotype of:

- A. Turner's syndrome
- B. Klinefelter's syndrome
- C. Down's syndrome
- D. Haemophilia

Answer: A



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