



BIOLOGY

BOOKS - EDUCART PUBLICATION

SAMPLE PAPER 1

Section A

1. The structure of bilobed anther consists of

A. 2 thecae, 2 sporangia

B. 4 thecae, 4 sporangia

C. 4 thecae, 2 sporangia

D. 2 thecae, 4 sporangia

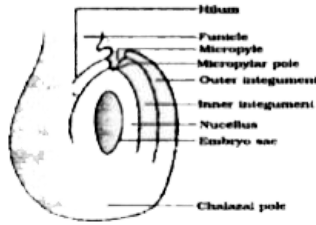
Answer: D



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2. In the figure of anatropous ovule given below, choose the correct option for the characteristic distribution of cells within the

typical embryo sac



	Number of cells at chalazal end	Number of cells at micropylar end	Number of nuclei left in central cell
A	3	2	3
B	3	3	2
C	2	3	3
D	2	2	4



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3. The coconut water from tender coconut is

A. Cellular endosperm.

B. Free nuclear endosperm.

C. Both cellular and nuclear endosperm.

D. Free nuclear embryo.

Answer: B



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4. Pollen grains are well preserved as fossils

because of presence of

A. Sporopollenin

B. Cellulose

C. Lignocellulose

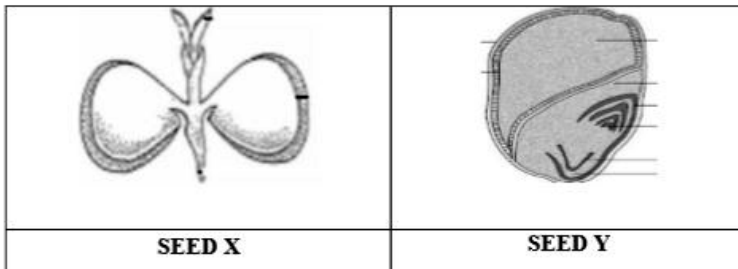
D. Pectocellulose

Answer: A



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5. Which of the following statements are true related to Seed X and Y?



(i) Seed X is dicot and endospermic or albuminous.

(ii) Seed X is dicot and non-endospermic or non-albuminous.

(iii) Seed Y is monocot and endospermic or albuminous.

(iv) Seed Y is monocot and non-endospermic or non-albuminous.

Choose the correct option with the respect to the nature of the seed

A. (I), (III)

B. (II), (III)

C. (I), (IV)

D. (II), (IV)

Answer: B



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6. Which of the following statements are correct with respect to hormones secreted by placenta?

(i) Placenta secretes relaxin during later stage of pregnancy.

(ii) Placenta secretes high amount of FSH during pregnancy.

(iii) Placenta secretes relaxin during initial stage of pregnancy.

(iv) Placenta secretes hCG and hPL during pregnancy.

A. (I) and (IV)

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

C. (III) and (IV)

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

Answer: A



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7. Figure A shows the front view of the human female reproductive system and Figure B shows the development of a fertilized human egg cell

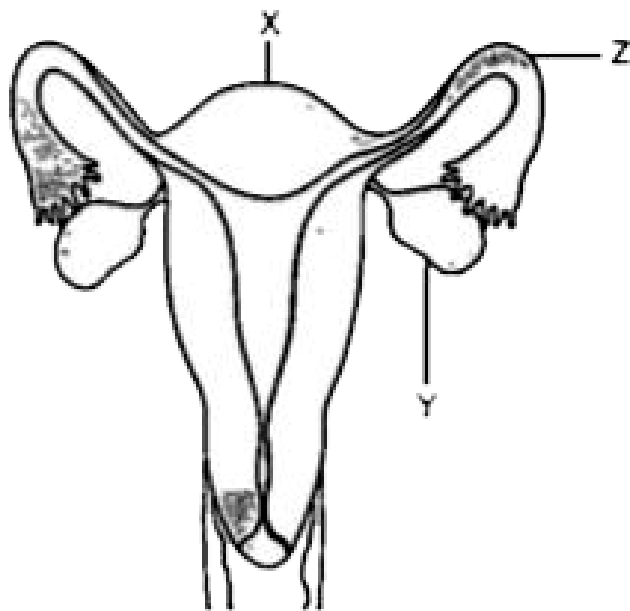


Figure A

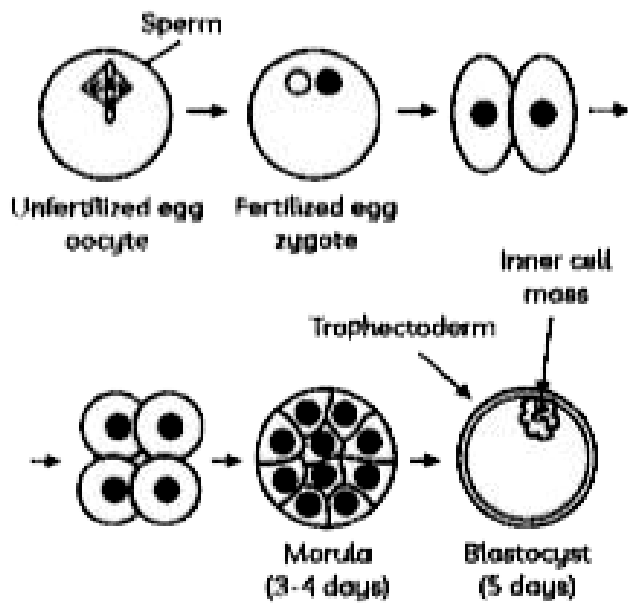


Figure B

Identify the correct stage of development of human embryo (Figure B) that takes place at the site X, Y and Z respectively in the human female reproductive system (Figure A).

Choose the correct option from the table below:

	X	Y	Z
(a)	Morula	Fertilized egg	Blastocyst
(b)	Unfertilized egg	Fertilized egg	Morula
(c)	Blastocyst	Fertilized egg	Unfertilized egg
(d)	Fertilized egg	Morula	Blastocyst



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8. Penetration of the sperm in the ovum is followed by

- A. Formation of first polar body.
- B. Completion of meiosis II.
- C. First meiosis.
- D. Dissolution of zona pellucida

Answer: B



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9. Correct sequence of hormone secretion from beginning of menstruation is

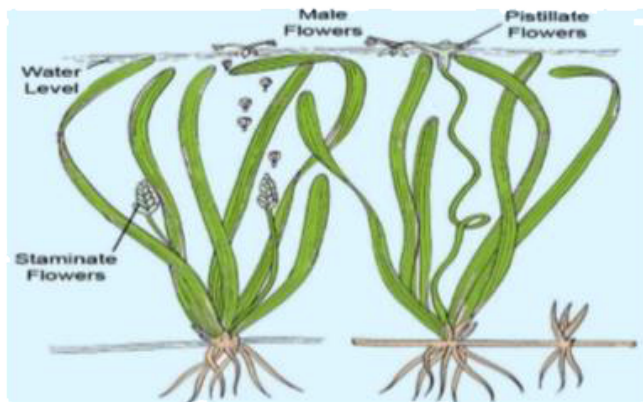
- A. FSH, progesterone, estrogen.
- B. Estrogen, FSH, progesterone.
- C. FSH, estrogen, progesterone.
- D. Estrogen, progesterone, FSH.

Answer: C



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10. In the dioecious aquatic plant shown, identify the characteristics of the male flowers that reach the female flowers for pollination:



	Size of the flower	Colour of flower	Characteristic feature of pollengrain
A	small	brightly coloured	Light weight and non-sticky
B	large	colourless	large and sticky
C	small	white	small, covered with mucilage
D	large	colourless	non sticky



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11. The thalamus also contributes to fruit formation in

A. Banana

B. Orange

C. Strawberry

D. Guava

Answer: C



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12. How many types of gametes would be produced if the genotype of a parent is AaBB?

A. 1

B. 2

C. 3

D. 4

Answer: B



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13. Which of the following statements indicates parallelism in genes and chromosomes?

(i) They occur in pairs

(ii) They segregate during gamete formation

(iii) They show linkage

(iv) Independent pairs segregate independently

A. (I) and (III)

B. (II) and (III)

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

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

Answer: D



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14. Which of the following amino acid substitution is responsible for causing sickle cell anemia?

A. Valine is substituted by Glutamic acid in the α -globin chain at the sixth position

B. Valine is substituted by Glutamic acid in the β -globin chain at seventh position

C. Glutamic acid is substituted by Valine in the α -globin chain at the sixth position

D. Glutamic acid is substituted by Valine in the β -globin chain at the sixth position

Answer: D



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15. In human beings, where genotype AABBCc represents dark skin colour, aabbcc represents light skin colour and AaBbCc represents intermediate skin colour, the pattern of genetic inheritance can be termed as:

- a) Pleiotropy and codominance
- b) Pleiotropy and incomplete dominance
- c) Polygenic and qualitative inheritance
- d) Polygenic and quantitative inheritance

A. Pleiotropy and codominance

B. Pleiotropy and incomplete dominance

C. Polygenic and qualitative inheritance

D. Polygenic and quantitative inheritance

Answer: D



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16. Which of the following combination of chromosome numbers represents the correct sex determination pattern in honey bees?

A. Male 32, Female 16

B. Male 16, Female 32

C. Male 31, Female 32

D. Female 32, Male 31

Answer: B



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17. Rajesh and Mahesh have defective haemoglobin due to genetic disorders. Rajesh has too few globin molecules while Mahesh has incorrectly functioning globin molecules.

Identify the disorder they are suffering from.

	Rajesh	Mahesh
(a)	Sickle cell anaemia - an autosome linked recessive trait	Thalassemia - an autosome linked dominant trait
(b)	Thalassemia - an autosome linked recessive blood disorder	Sickle cell anaemia - an autosome linked recessive trait
(c)	Sickle cell anaemia - an autosome linked recessive trait	Thalassemia - an autosome linked recessive blood disorder
(d)	Thalassemia - an autosome linked recessive blood disorder	Sickle cell anaemia - an autosome linked dominant trait



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18. Which of the following criteria must a molecule fulfil to act as a genetic material?

(I) It should not be able to generate its replica

(II) It should chemically and structurally be stable

(III) It should not allow slow mutation

(IV) It should be able to express itself in the form of Mendelian Characters

A. (I) and (II)

B. (II) and (III)

C. (III) and (IV)

D. (II) and (V)

Answer: D



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19. The promoter site and the terminator site for transcription are located at:

A. 3' (downstream) end and 5' (upstream)

end, respectively of the transcription unit

B. 5' (upstream) end and 3' (downstream)

end, respectively of the transcription unit

C. the 5' (upstream) end of the transcription unit

D. the 3' (downstream) end of the transcription unit

Answer: B



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20. Which of the following is correct about mature RNA in eukaryotes?

A. Exons and introns do not appear in the mature RNA

B. Exons appear, but introns do not appear in the mature RNA

C. Introns appear, but exons do not appear in the mature RNA

D. Both exons and introns appear in the mature RNA

Answer: B



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21. 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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22. Oswald Avery, Colin MacLeod and Maclyn McCarty used enzymes to purify biochemicals such as proteins, DNA and RNA from the heat-killed S cells to see which ones could transform live R cells into S cells in Griffith's experiment. They observed that

A. Proteases and RNases affected transformation.

B. DNase inhibited transformation.

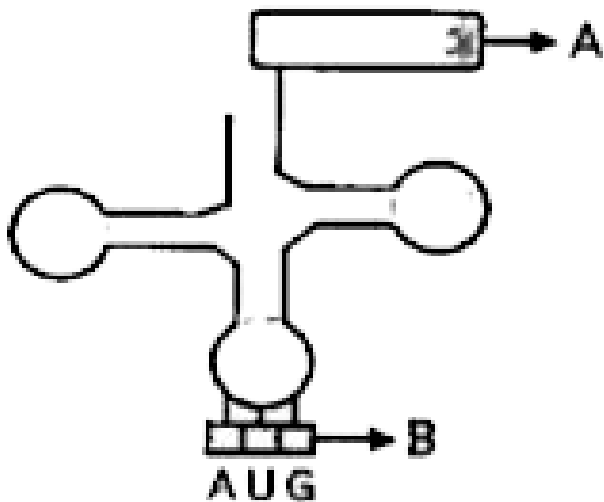
C. Proteases and Lipases affected transformation.

D. RNases inhibited transformation.

Answer: B



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23.

AUG on the mRNA will result in the activation of which of the following RNA having correct combination of amino acids:

	Site A	Site B
(a)	UAC	Methionine
(b)	Methionine	UAC
(c)	Methionine	AUG
(d)	AUG	Methionine



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24. Short stretches of DNA used to identify complementary sequence in a sample are called:

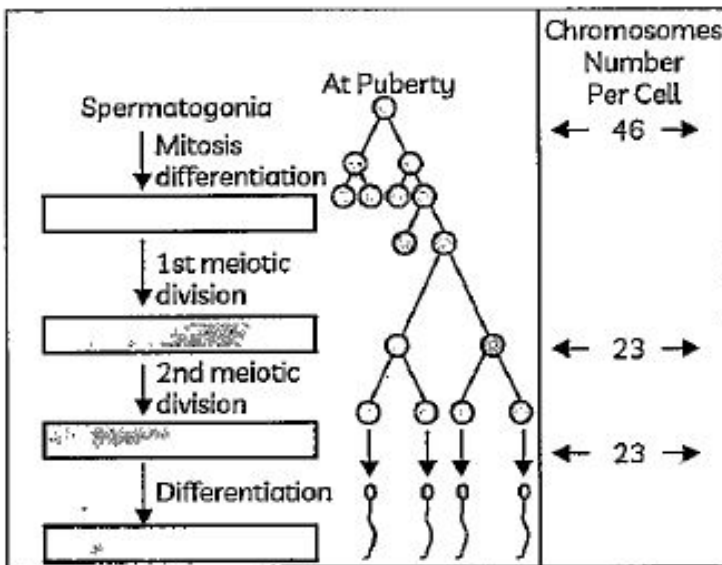
- A. Probes
- B. Markers
- C. VNTRs
- D. Primers

Answer: A



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25. Identify X and Y in the given figure.



A. X = Primary Spermatocyte, Y = Secondary

Spermatocyte

B. X = Spermatozoa, Y = Spermatid

C. X = Spermatid, Y = Spermatozoa

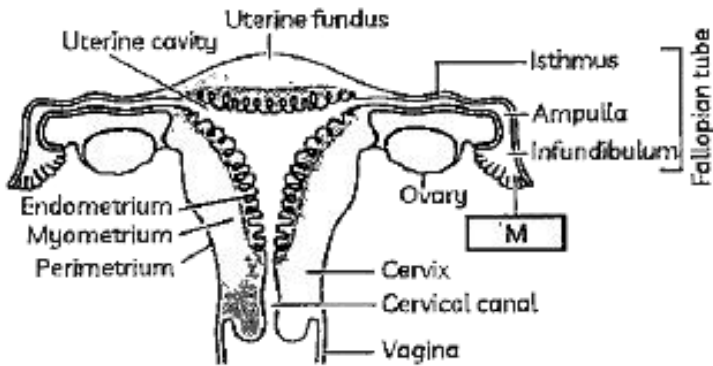
D. X = Primary Spermatocyte, Y =
Spermatozoa

Answer:



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26. Which among these is true about M?



A. M helps in collection of ovum after ovulation.

B. M helps in oestrogen production.

C. M elongates to attach to the cervix after ovulation.

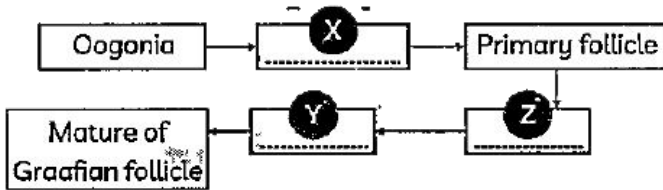
D. M forms the core of the cervical canal.

Answer:



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27. Find the correct option:



	X	Y	Z
(A)	Primary oocyte	Tertiary Follicle	Secondary Follicle
(B)	Primary oocyte	Secondary Follicle	Tertiary Follicle
(C)	Secondary Follicle	Tertiary Follicle	Primary oocyte
(D)	Tertiary Follicle	Primary oocyte	Secondary Follicle

A. A

B. B

C. C

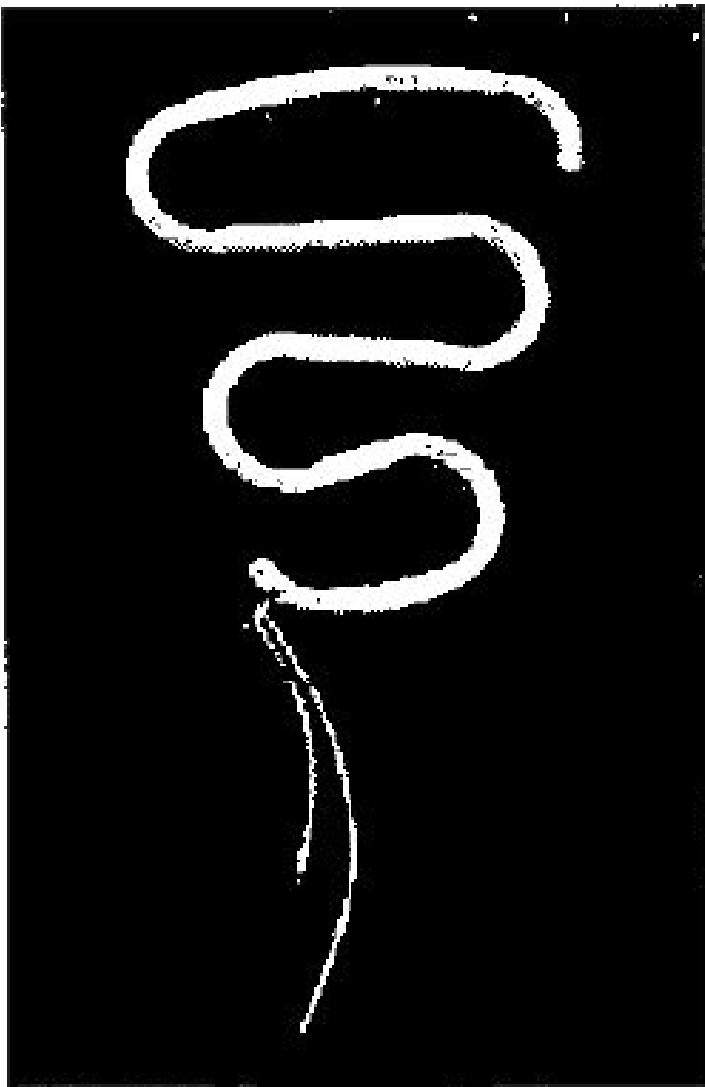
D. D

Answer:



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28. The given figure represents a non-medicated IUD. It is:



A. Cu-T

B. Condom

C. Lippe's loop

D. Oral contraceptive

Answer:



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29. W.r.t. the changes observed in an angiosperm flower subsequent to pollination and fertilisation, which of the following options is correct:

	X	Y
(A)	Ovary wall	Fruit wall (Pericarp)
(B)	Outer Integument	Testa
(C)	Inner Integument	Tegmen
(D)	Micropyle	Degenerate

The correct option will be:

A. A

B. B

C. C

D. D

Answer:



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30. Which among these methods promise a side effect and pregnancy free sexual intercourse?

- A. Periodic abstinence
- B. Lactational amenorrhoea
- C. Coitus interruptus
- D. All of them

Answer:



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31. When an orange seed is squeezed, many embryos of different shapes and sizes are revealed. Which phenomenon is responsible for this occurrence?

- A. Apomixis
- B. Polyembryony
- C. Pathenocarp
- D. Both (a) and (b)

Answer:



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32. During embryo development, the eyelids separate at:

- A. 12 weeks
- B. 24 weeks
- C. 1 month
- D. First trimester

Answer:



33. Which type of sex determination mechanism will be shown by the following cross?

Female XX with male XO

- A. Male heterogamety
- B. Female heterogamety
- C. Male homogamety
- D. Female homogamety

Answer:



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34. Dry pericarp is present in:

A. Pea

B. Cucumber

C. Tomato

D. Guava

Answer:



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35. In the embryos of a typical dicot and a grass, true homologous structures are

- A. Coleorhiza and coleoptile
- B. Coleoptile and scutellum
- C. Cotyledons and scutellum
- D. Hypocotyl and radicle

Answer:



36. Luteinising hormone in human males is responsible for:

- A. Regulating the levels of prolactin.
- B. Secretion of prostaglandins.
- C. Acting on the Leydig's cells of the testes to secrete testosterone.
- D. All of these

Answer:



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37. Which of the following statements correctly describes eukaryotic histones in a nucleosome structure ?

A. A core histone heptamer plus a linker histone.

B. A core histone octamer plus a linker histone.

C. A core histone plus a linker histone octamer.

D. A core histone octamer plus three linker histones.

Answer:



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38. Which of the following are arranged in a tetrahedral fashion ?

A. Megaspores

B. Microspores

C. Polyembryonic seeds

D. All of them

Answer:



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39. In Elephants, the sex-determination mechanism is of :

A. XX-XX Type

B. XX-XY Type

C. ZZ-ZO Type

D. ZZ-ZW Type

Answer:



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40. Which among these are reversible contraceptive methods:

A. Intra-uterine devices

B. Condoms

C. Oral contraceptives

D. All of these

Answer:



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41. Feminine development including development of breast, i.e., Gynaecomastia, feminine-pitched voice and poor beard

growth, Sterility are the symptoms of which syndrome:

- A. Turner's
- B. Asperger's
- C. Klinefelter's
- D. Down's

Answer:



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42. If a genetic disease is transferred from a phenotypically normal but carrier female to only some of the male progeny, the disease is

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

Answer:



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Section B

1. Assertion: Lactational amenorrhea is the natural method of contraception.

Reason: It increases the phagocytosis of sperm.

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

B. Both A and R are true and 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. Assertion: Saheli, an oral contraceptive for females, contains a steroidal preparation.

Reason: It is a "once a week" pill with very few side effects.

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

B. Both A and R are true and 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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3. Assertion (A): Parturition is induced by a complex neuro endocrine mechanism.

Reason (R): At the end of gestation period, the maternal pituitary releases prolactin which causes uterine contractions.

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

B. Both A and R are true and 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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4. Assertion: When the two genes in a dihybrid cross are situated on the same chromosome, the proportion of parental gene combinations is much higher than nonparental type.

Reason: Higher parental gene combinations

can be attributed to crossing over between two genes.

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

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

C. A is true but R is false

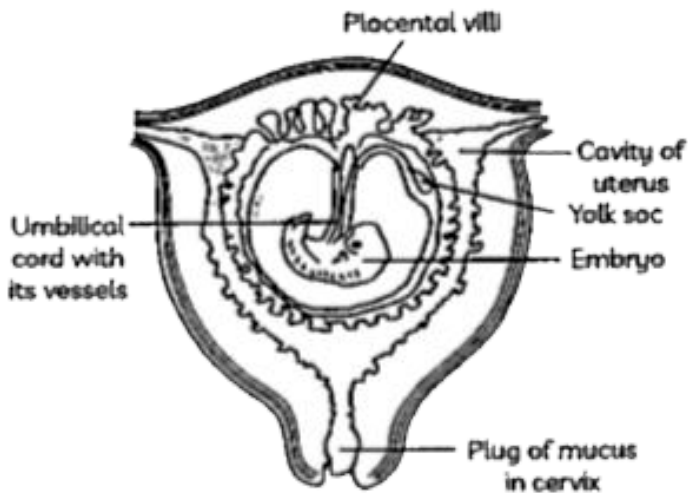
D. A is False but R is true

Answer: C



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5. Concentration of which of the following substances will decrease in the maternal blood as it flows from embryo to placenta through the umbilical cord?



The Human foetus within the uterus

(I) Oxygen

(II) Amino Acids

(III) Carbon dioxide

(IV) Urea

A. (I) and (II)

B. (II) and (IV)

C. (III) and (IV)

D. (I) and (IV)

Answer: A



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6. In a fertilized ovule, n , $2n$ and $3n$ conditions occur respectively in:

- a) Antipodal, zygote and endosperm
- b) Zygote, nucellus and endosperm
- c) Endosperm, nucellus and zygote
- d) Antipodals, synergids and integuments

A. Antipodal, zygote and endosperm

B. Zygote, nucellus and endosperm

C. Endosperm, nucellus and zygote

D. Antipodals, synergids and integuments

Answer: A



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7. A botanist studying *Viola* (common pansy) noticed that one of the two flower types withered and developed no further due to some unfavorable condition, but the other flower type on the same plant survived and it resulted in an assured seed set. Which of the following will be correct?

A. The flower type which survived is Cleistogamous and it always exhibits autogamy

B. The flower type which survived is Chasmogamous and it always exhibits geitonogamy.

C. The flower type which survived is Cleistogamous and it exhibits both autogamy and geitonogamy

D. The flower type which survived is Chasmogamous and it never exhibits autogamy.

Answer: A



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8. During parturition, a pregnant woman is having prolonged labour pains and child birth has to be fastened. It is advisable to administer a hormone that can:

- A. Increase the metabolic rate.
- B. Release glucose in the blood
- C. Stimulate the ovary.
- D. Activate smooth muscles.

Answer: D



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9. A female undergoing IVF treatment has blocked fallopian tubes. The technique by which the embryo with more than 8

blastomeres will be transferred into the female for further development is:

a) ZIFT

b) GIFT

c) IUT

d) AI

A. ZIFT

B. GIFT

C. IUT

D. AI

Answer: C



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10. The mode of action of the copper ions in an IUD is to

- A. Increase the movement of sperms.
- B. Decrease the movement of the sperms.
- C. Make the uterus unsuitable for implantation.
- D. Make the cervix hostile to the sperms.

Answer: B



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11. To produce 400 seeds, the number of meiotic divisions required will be

A. 400

B. 200

C. 500

D. 800

Answer: C



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12. A cross is made between tall pea plants having green pods and dwarf pea plants having yellow pods. In the F_2 generation, out of 80 plants how many are likely to be tall plants?

A. 15

B. 20

C. 45

D. 60

Answer: D



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13. In *Antirrhinum*, RR is phenotypically red flowers, rr is white and Rr is pink. Select the correct phenotypic ratio in F1 generation when a cross is performed between RR X Rr:

A. 1 red: 2 Pink: 1 white

B. 2 Pink 1 white

C. 2 Red: 2 Pink

D. All Pink

Answer: C



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14. What would be the genotype of the parents if the offspring have the phenotypes in 1:1 proportion?

A. $Aa \times Aa$

B. $AA \times AA$

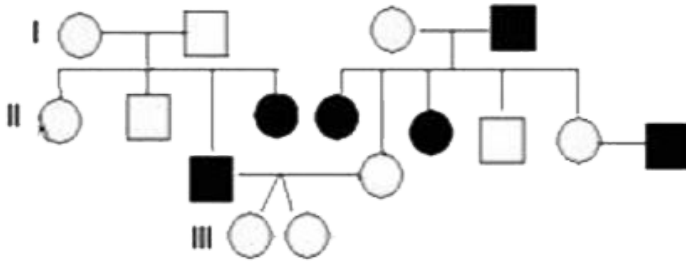
C. $Aa \times AA$

D. $Aa \times aa$

Answer: D



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15.

What is the pattern of inheritance in the above pedigree chart?

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

Answer: B



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16. A couple has two daughters. What is the probability that the third child will also be a female?

A. 25 %

B. 50 %

C. 75 %

D. 100 %

Answer: B



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17. Genotypic ratio of 1:2:1 is obtained in a cross between

A. $AB \times AB$

B. $Ab \times Ab$

C. $Ab \times ab$

D. $ab \times ab$

Answer: B



18. Total number of nucleotide sequences of DNA that codes for a hormone is 1530. The proportion of different bases in the sequence is found to be Adenine = 34%, Guanine = 19%, Cytosine = 23%, Thymine = 19%.

Applying Chargaff's rule, what conclusion can be drawn?

- A. It is a double stranded circular DNA
- B. It is a single stranded DNA

C. It is a double stranded linear DNA

D. It is a single stranded DNA coiled on
Histones.

Answer: B



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19. A stretch of an euchromatin has 200 nucleosomes. How many bp will there be in the stretch and what would be the length of the typical euchromatin?

A. 20,000 bp and $13,000 \times 10^{-9}$ m

B. 10,000 bp and $10,000 \times 10^{-9}$ m

C. 40,000 bp and $13,600 \times 10^{-9}$ m

D. 40,000 bp and $13,900 \times 10^{-9}$ m

Answer: C

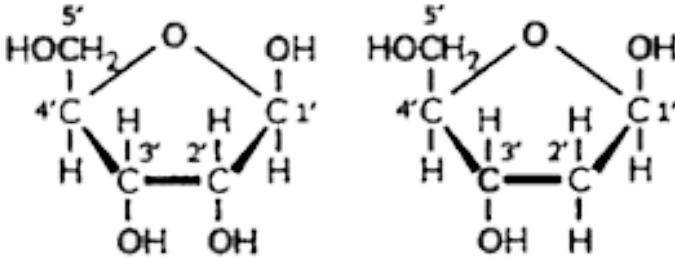


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20. Observe structures A and B given below.

Which of the following statements are

correct?



A. A is having 2'-OH group which makes it less reactive and structurally stable, whereas B is having 2'-H group which makes it more reactive and unstable.

B. A is having 2'-OH group which makes it more reactive and structurally unstable, whereas B is having 2'-H group which

makes it less reactive and structurally stable.

C. A and B both have -OH groups which make it more reactive and structurally stable.

D. A and B both are having -OH groups which make it less reactive and structurally stable

Answer: B



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21. If Meselson and Stahl's experiment is continued for sixth generations in bacteria, the ratio of Heavy strands $^{15}\text{N}/^{15}\text{N}$: Hybrid $^{15}\text{N}/^{14}\text{N}$: light $^{14}\text{N}/^{14}\text{N}$ containing DNA in the sixth generation would be

A. 1:1:1

B. 0:1:7

C. 0:1:15

D. 0:1:31

Answer: D



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22. Two important RNA processing events lead to specialized end sequences in most human mRNAs: _____ (i) _____ at the 5' end, and _____ (ii) _____ at the 3' end. At the 5' end the most distinctive specialized end nucleotide, _____ (iii) _____ is added and a sequence of about 200 _____ (iv) _____ is added to the 3' end.

A. (I) Initiator codon (II) Promotor (III)

Terminator codon (IV) Release factors

B. (I) Promotor (II) Elongation (III)

Regulation (IV) Termination.

C. (I) Capping (II) Polyadenylation (III)

mG_{ppp} (IV) Poly(A).

D. (I) Repressor (II) Co-repressor (III)

Operon (IV) sRelease factors

Answer: C



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23. What are minisatellites?

A. 10-40 bp sized small sequences within the genes

B. Short coding repetitive region on the eukaryotic genome

C. Short non-coding repetitive sequence forming larger portion of eukaryotic genome.

D. Regions of coding strands of the DNA

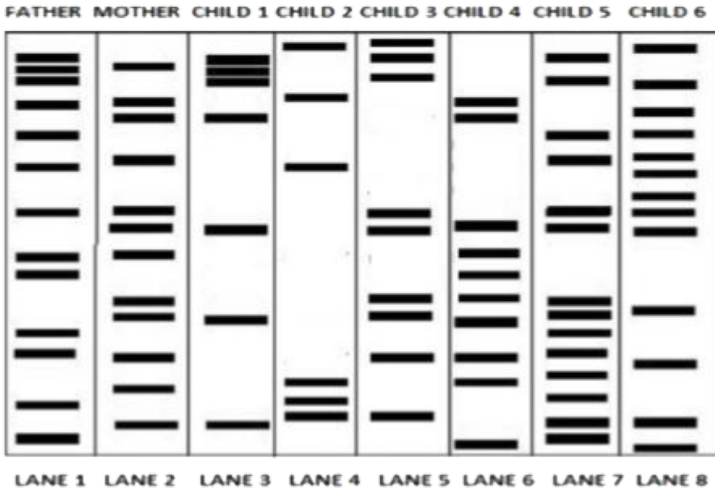
Answer: C



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24. There was a mix-up at the hospital after a fire accident in the nursery division. Which of

these children belong to the parents?



A. All of the children

B. Children 2, 3 & 6

C. Children 1 & 3

D. Children 2 & 4

Answer: C



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25. Assertion (A): Inheritance of genes in which genes present on a particular chromosome show a tendency to get inherited together is termed as Linkage.

Reason (R): Very low recombination frequency or strong linkage is shown by the genes grouped on the same chromosome.

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

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

C. A is true but R is false

D. A is false but R is true

Answer:



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26. Assertion(A): Gamete disseminated by the male determines whether the child produced will be male or female in Homo sapiens.

Reason (R): Some genes on X-chromosome and Y-chromosomes determine the gender of the progeny. Its a polygenic trait.

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

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

C. A is true but R is false

D. A is false but R is true

Answer:





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27. Assertion (A): Absence of the X chromosome leads to the Turner's syndrome.

Reason (R): People suffering from it have rudimentary ovaries and secondary sexual characteristics are absent.

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:



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28. Assertion (A): Both chromosomes and genes occur in pairs.

Reason (R): In both, independent pairs segregate independently.

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

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

C. A is true but R is false

D. A is false but R is true

Answer:



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29. Which among these are involved in unwinding and stabilisation of the DNA helix during DNA replication?

A. DNA Ligase and Topoisomerase

B. Helicase and Topoisomerase

C. DNA polymerase I

D. All of them

Answer:



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30. Oral contraceptives:

A. Oral pills prevent conception by inhibiting ovulation.

B. Oral pills prevent conception by inhibiting implantation.

C. They also alter the quality of cervical mucus to prevent or retard entry of sperms.

D. All of them

Answer:



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31. Blocking of vas deferens will lead to:

A. Block in urine transport

B. Blocking of sperm transport

C. Blocking of waste transport

D. Blocking of gaseous exchange

Answer:



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32. Inheritance of flower colour in *Mirabilis jalapa* is an example of:

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

Answer:



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33. Cystic fibrosis is a/ an

- A. Sex-linked dominant
- B. Sex-linked recessive
- C. Autosome-linked recessive
- D. Autosome-Linked dominant

Answer:



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34. Which of these conditions might be a result of the late detection of STD's?

- A. Pelvic Inflammatory Diseases (PID)
- B. Abortions
- C. Still births, ectopic pregnancies
- D. All of them

Answer:



35. Morula divides further to form X =
,moving further in order to get implanted into
the Y =

A. X = Blastocyst, Y = Uterus

B. X = Blastomeres, Y = Uterus

C. X = Blastomeres, Y = Cervix

D. X = Blastocyst, Y = Ampullary- Isthmus

Junction.

Answer:



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36. The total number of enzymes required for the breakdown of Lactose in E.coli:

A. 1

B. 2

C. 3

D. 4

Answer:



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37. RNA-dependent RNA polymerase catalyzes the replication of from an template.

A. DNA, RNA

B. RNA, DNA

C. DNA, DNA

D. RNA, RNA

Answer:



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38. Which one of the following is not an application of DNA fingerprinting ?

A. As a tool in forensic science

B. Paternity testing to settle paternity disputes.

C. Studying evolution

D. Creating anti-malware database

Answer:



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39. In a Blueberry, contributes to the fruit formation.

A. Thalamus

B. Accessory floral parts

C. Ovary

D. Both (b) and (c)

Answer:



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40. What forms the basis of segregation and independent assortment ?

A. Homologous chromosomes join to pass into the same cell.

B. Homologous chromosomes synapse and get separated to pass into different cells.

C. Homologous chromosomes are sequentially denatured

D. (b) and (c) are correct.

Answer:



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41. Number of linkage group in an organism is

$X = \dots\dots\dots$ their number of haploid chromosomes

A. X - Greater than

B. $X =$ Equal to

C. $X =$ Less than

D. Can't say

Answer:



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42. Multiple allelism occurs when more than two alleles govern the:

- A. Same character
- B. Two characters
- C. Multiple characters
- D. (b) and (c) are correct.

Answer:



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43. Which of the following DNA Polymerases are found in eukaryotes?

A. α

B. β

C. δ

D. All of them

Answer:



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44. Identify the correct statement about the role of regulatory proteins in transcription in prokaryotes?

A. Regulatory proteins can act both as activators and as repressors.

B. Decrease in expression

C. No effect on expression

D. Increase in expression

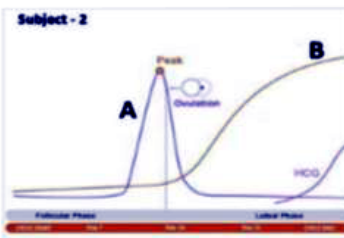
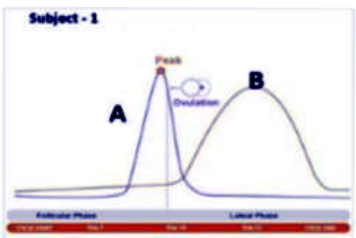
Answer:





Section C

1. To answer the questions, study the graphs below for Subject 1 and 2 showing different levels of certain hormones.



The peak observed in Subject 1 and 2 is due to

A. Estrogen

B. Progesterone

C. Luteinizing hormone

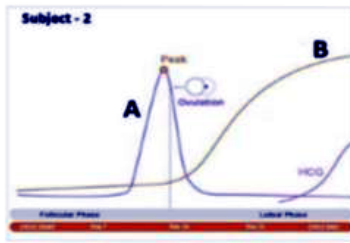
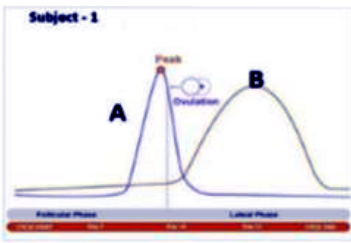
D. Follicle stimulating hormone

Answer: C



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2. To answer the questions, study the graphs below for Subject 1 and 2 showing different levels of certain hormones.



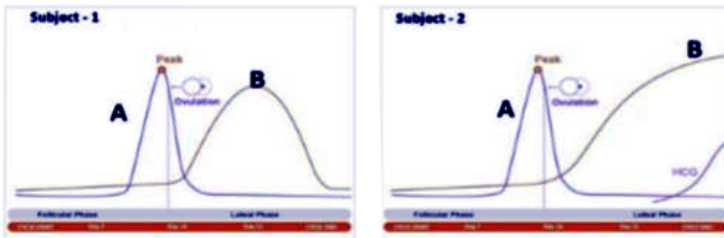
Subject 2 has higher level of hormone B, which is

- A. Estrogen
- B. Progesterone
- C. Luteinizing hormone
- D. Follicle stimulating hormone

Answer: B

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3. To answer the questions, study the graphs below for Subject 1 and 2 showing different levels of certain hormones.



If the peak of Hormone A does not appear in the study for Subject 1, which of the following statement is true?

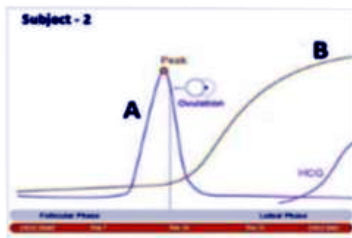
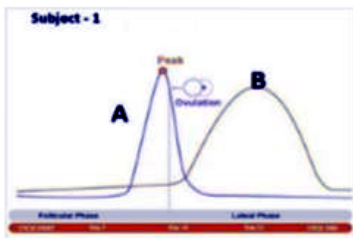
- A. Peak of Hormone B will be observed at a higher point in the graph
- B. Peak of Hormone B will be observed at a point lower than what is given in the graph
- C. There will be no observed data for Hormone B
- D. The graph for Hormone B will be a sharp rise followed by a plateau

Answer: C



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4. To answer the questions, study the graphs below for Subject 1 and 2 showing different levels of certain hormones.



Which structure in the ovary will remain functional in subject 2?

A. Corpus luteum

B. Tertiary follicle

C. Graafian follicle

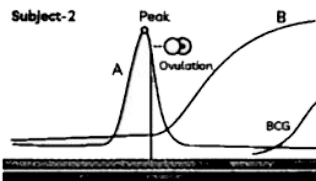
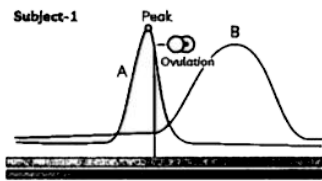
D. Primary follicle

Answer: A



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5. Case ! To answer the questions, study the graphs below for Subject 1 and 2 showing different levels of certain hormones.



For subject 2 it is observed that the peak for hormone B has reached the plateau stage. After approximately how much time will the curve for hormone B descend?

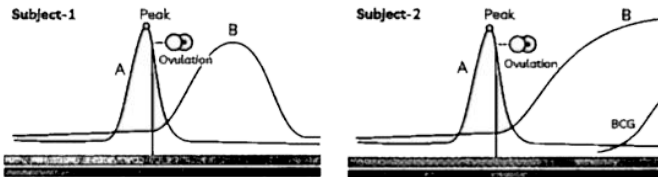
- A. 28 days
- B. 42 days
- C. 180 days
- D. 280 days

Answer: D



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6. Case ! To answer the questions, study the graphs below for Subject 1 and 2 showing different levels of certain hormones.



Which of the following statements is true about the subjects?

A. Subject 1 is pregnant

B. Subject 2 is pregnant

C. Both subject 1 and 2 are pregnant

D. Both subject 1 and 2 are not pregnant

Answer: B



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7. The gene that controls the ABO blood group system in human beings has three alleles- I^A , I^B and i . A child has blood group O. His

father has blood group A and mother has blood group (B) Genotypes of other offspring can be:

(I) $I^B I^B$

(II) $I^A i$

(III) $I^B i$

(IV) $I^A I^B$

(V) ii

A. I, II, III, IV

B. II, III, IV, V

C. III, IV, V

D. IV, III, I

Answer: B



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8. Placed below is a karyotype of a human being..



On the basis of this karyotype, which of the following conclusions can be drawn:

A. Normal human female

B. Person is suffering from Colour
Blindness

C. Affected individual is a female with
Down's syndrome

D. Affected individual is a female with
Turner's syndrome

Answer: C



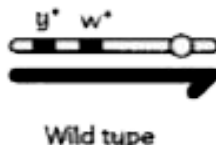
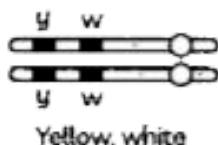
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9. Given below is a dihybrid cross performed on *Drosophila*

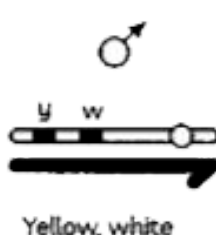
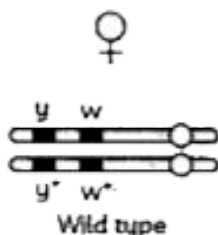
Cross A



Parental

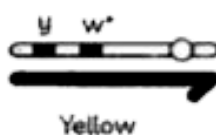
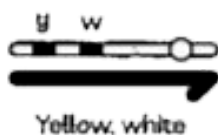
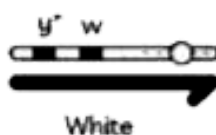
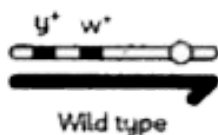


F₁ generation

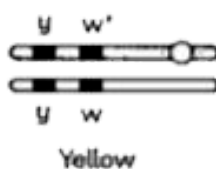
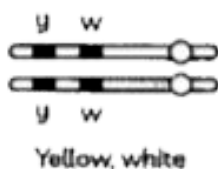
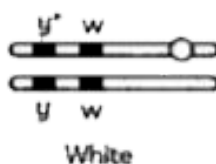
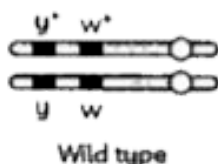


Parental
type (98.7%)

Recombinant
type (1.3%)



F₂ generation



Which of the following conclusions can be drawn on the basis of this cross?

When yellow bodied (y), white eyed (w) *Drosophila* females were hybridized with brown bodied (y^+), red eyed males (w^+) and F_1 progenies were intercrossed. F_2 generation would have shown the following ratio:

A. 1 : 2 : 1 because of linkage of genes

B. 9 : 3 : 3 : 1 because of recombination of genes

C. Deviation from 9:3:3:1 ratio because of segregation of genes

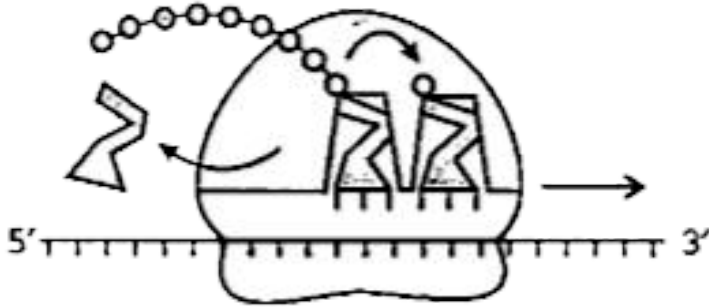
D. Deviation from 9:3:3:1 ratio because of linkage of genes

Answer: D



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10. Which cellular process is shown below?

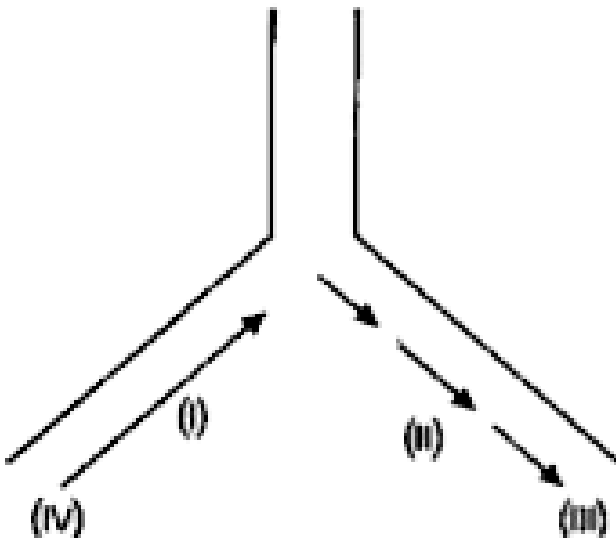


- A. DNA Replication
- B. Translation - Initiation
- C. Translation - Elongation
- D. Translation - Termination

Answer: C



11. Origin of replication of DNA in *E. coli* is shown below, Identify the labelled parts (i), (ii), (iii) and (iv)



A. (I)-discontinuous synthesis, (II)

continuous synthesis (III) 3' end (IV)

5'end

B. (I)- continuous synthesis, (II)-

discontinuous synthesis (III) 5' end (IV)

3'end

C. (I)- discontinuous synthesis, (II)-

continuous synthesis (III) 5' end (IV)

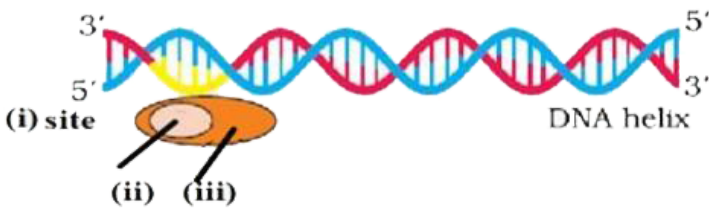
3'end

D. (I)- continuous synthesis, (II)-
discontinuous synthesis (III) 3' end (IV) 5'
end

Answer: D

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12. Transcription unit is represented in the diagram given below.



Identify site (i), factor (ii) and Enzyme (iii) responsible for carrying out the process.

A. (I) Promoter Site, (II) Rho factor (III) RNA polymerase

B. (I) Terminator Site, (II) Sigma factor (III) RNA polymerase

C. (I) Promoter Site, (II) Sigma factor (III) RNA polymerase

D. (I) Promoter Site, (II) Sigma factor (III)

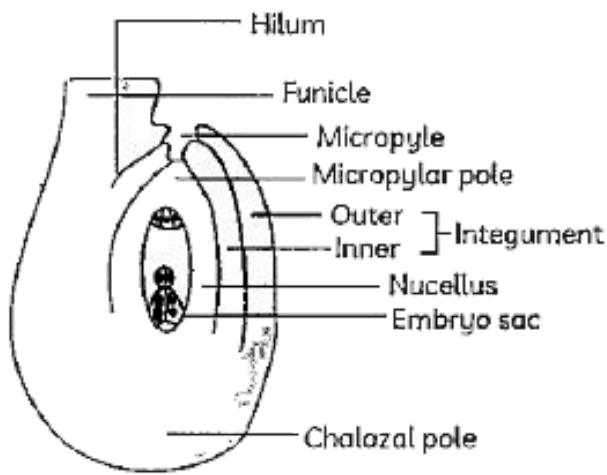
DNA polymerase

Answer: C



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13. Megasporogenesis is defined as the process of formation of megaspores from the megaspore mother cell (MMC). MMC is a diploid cell This process occurs inside the nucellus of the developing ovule.



The mass of cells enclosed within the integuments is called

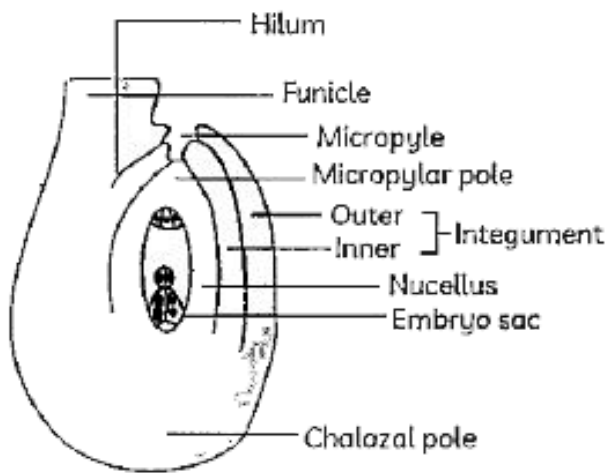
- A. Nucellus
- B. Micropyle
- C. Chalaza
- D. Funicle

Answer:



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14. Megasporogenesis is defined as the process of formation of megaspores from the megaspore mother cell (MMC). MMC is a diploid cell. This process occurs inside the nucellus of the developing ovule.



The integuments do not encircle the ovule at

.....

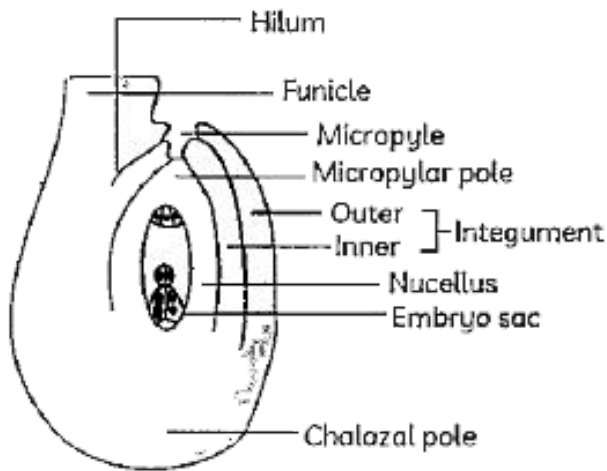
- A. Hilum
- B. Micropyle
- C. Chalaza
- D. Funicle

Answer:



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15. Megasporogenesis is defined as the process of formation of megaspores from the megaspore mother cell (MMC). MMC is a diploid cell. This process occurs inside the nucellus of the developing ovule.



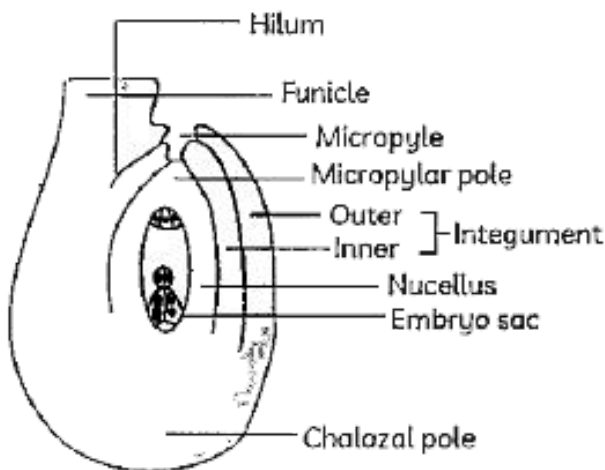
..... represents the basal part of the ovule.

- A. Nucellus
- B. Micropyle
- C. Chalaza
- D. Funicle

Answer:



16. Megasporogenesis is defined as the process of formation of megaspores from the megaspore mother cell (MMC). MMC is a diploid cell This process occurs inside the nucellus of the developing ovule.



Ovules generally differentiate a Megaspore mother cell/s in the micropylar region of the nucellus.

A. One

B. Two

C. Three

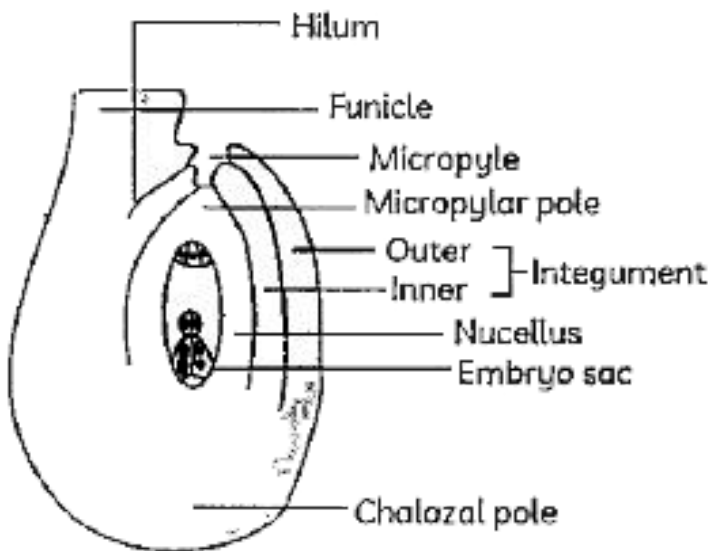
D. Four

Answer:



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17. Megasporogenesis is defined as the process of formation of megaspores from the megaspore mother cell (MMC). MMC is a diploid cell This process occurs inside the nucellus of the developing ovule.



The fate of polar nuclei in the embryo sac is:

A. Formation of Pirmary Endosperm

Nucleus

B. Formation of zygot

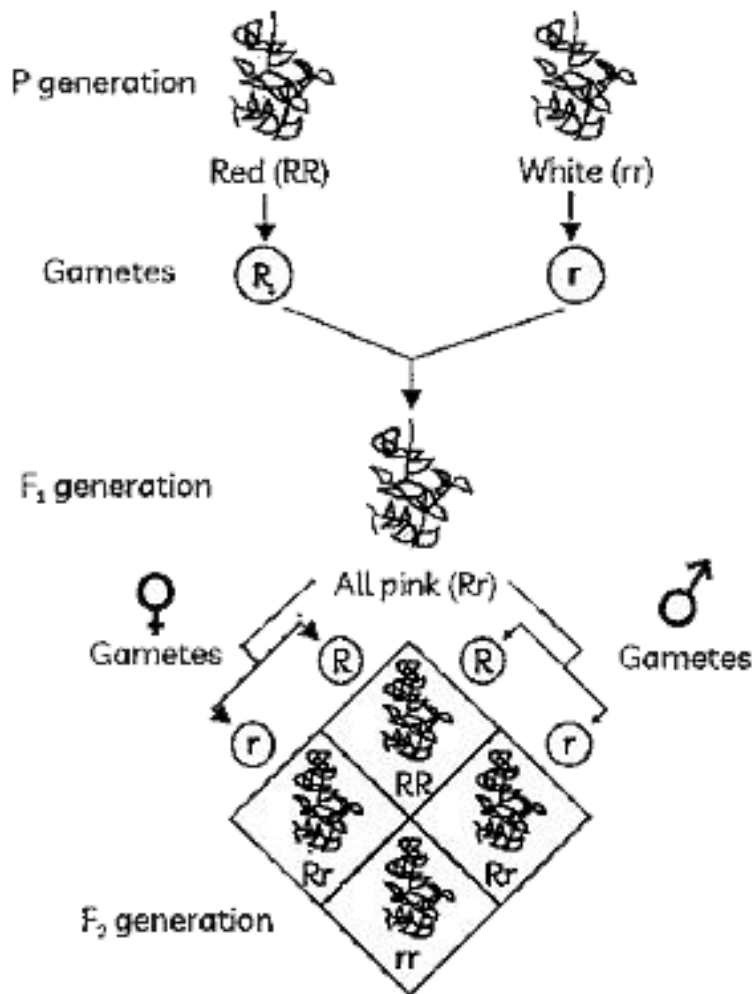
C. Embryo

D. All of these

Answer:



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Phenotypic ratio : Red : Pink : White
 1 : 2 : 1

Genotypic ratio : RR : Rr : rr
 1 : 2 : 1

18.

Observe the given cross. Which phenomenon

has been shown here?

A. Co-dominance

B. Incomplete dominance

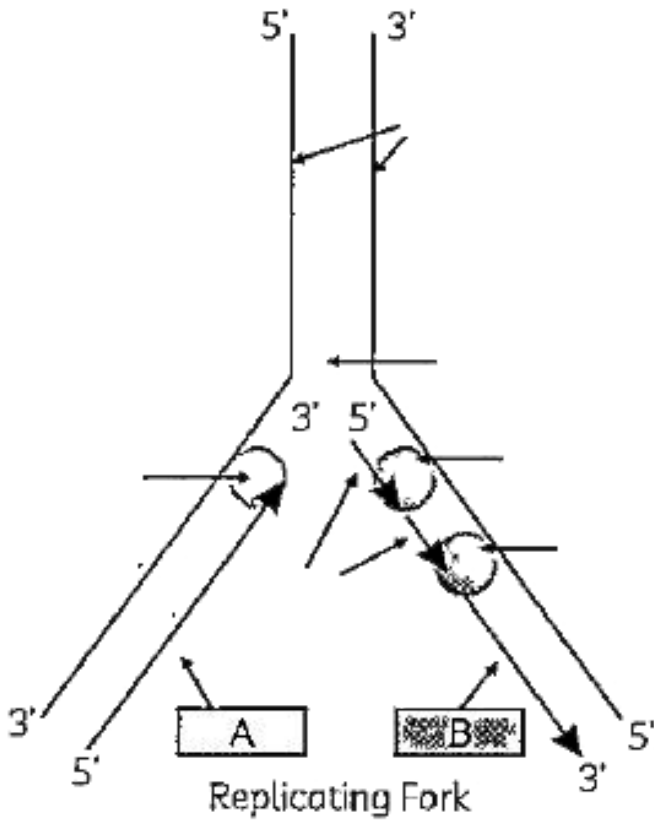
C. Pleiotropy

D. Multiple alleles

Answer:



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19.

A. A = Lagging Strand, B = Leading Strand

B. A = Okazaki Fragments, B = Leading

Strand

C. A = DNA Polymerase, B = Dna Ligase

D. A = Leading Strand , B = Lagging Strand

Answer:



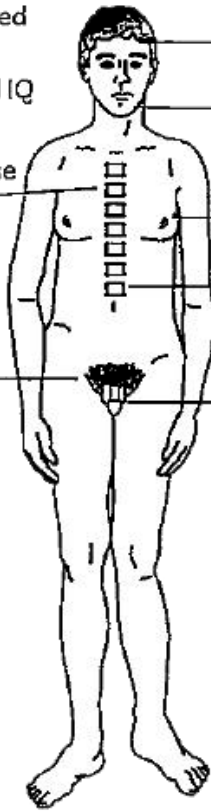
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20. Name the syndrome from which the given individual is suffering:

Tall stature
Slightly feminized
physique
Mildly impaired IQ

Tendency to lose
chest hairs

Female-type
pubic hair
pattern



Frontal baldness
absent

Poor beard growth

Breast
development

Osteoporosis

Testicular
atrophy

A. Turner's

B. Down's

C. Klinefelter's

D. Asperger's

Answer:



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21.

Observe the given figure showing the R.B.C.'S of individual X. He is suffering from:

A. Huntington's disease

B. Phenylketonuria

C. Sickle cell anaemia

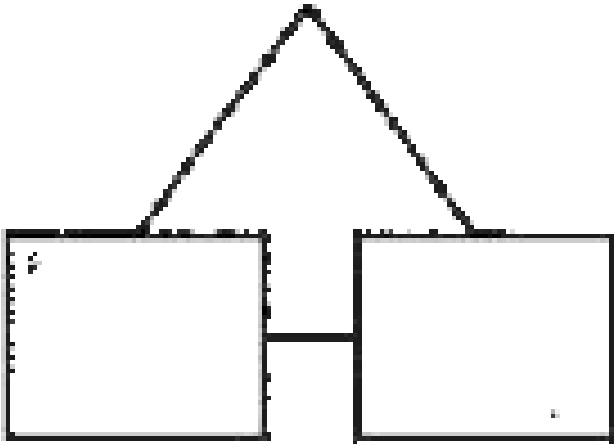
D. Turner's syndrome

Answer:



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22. In pedigree analysis, what is indicated by this symbol:



- A. Dizygotic twins
- B. Monozygotic twins
- C. Consanguineous mating
- D. Sex unknown

Answer:



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