BIOLOGY

BOOKS - SRIJAN BIOLOGY (ENGLISH)

SAMPLE PAPER - 4 (BIOLOGY)

Questions

1. What is phase when the organism is old enough to reproduce known as?

A. Juvenile phase

B. Vegetative phase

C. Senescence

D. Reproductive phase

Answer: D

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2. Sexual reproduction in flowering plants was discovered by

A. Camerarius

B. Nawaschin

C. Strasburger

D. Maheshwari

Answer: A

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3. What should be the phenotype of the F_1 progeny produced by a cross between tall and dwarf true-breeding garden pea plants?

A. Tall plants

B. Dwarf plants

C. Intermediate plants

D. Mixed population of tall and dwarf plants

Answer: A

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4. Clitoris in females is

A. homologous to penis

B. analogous to penis

C. functional penis in female

D. non-functional

Answer: A

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5. Wings of bat and bird are

A. Homologous but not analogous

B. Neither homologous nor analogous

C. Analogous but not homologous

D. Vestigial

Answer: C

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6. Coacervates were experimentally produced by -

A. Oparin and Sidney Fox

B. Fischer and Huxley

C. Jacob and Monod

D. Urey and Miller

Answer: A

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7. Yeast is used in the production of-

A. Citric acid and Lactic acid

B. Lipase and Pectinase

C. Beer

D. Cheese and Butter

Answer: C

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8. What is the most important event in sexual reproduction?

A. Fusion of gametes

B. Secondary sexual organs

C. Temperature

D. Environmental factors

Answer: B

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9. In which of the following highest number of chromosomes found?

A. Dog

B. Human

C. Rice

D. Ophioglossum

Answer: D

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10. Analogous organs arise due to -

A. Divergent evolution

B. Artificial selection

C. Genetic drift

D. Convergent evolution

Answer: D

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11. The permissible use of the technique amniocentesis is for

A. detecting any genetic abnormality

B. detecting sex of the unborn foetus

C. artificial insemination

D. transfer of embryo into the uterus of a surrogate mother

Answer: A

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12. Corpus luteum secretes-

A. LH

B. Estrogen

C. Progesterone

D. FSH

Answer: C

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13. The unit of natural selection is -

A. an individual

B. a species

C. a germ

D. a population

Answer: A

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14. The first genetic material is -

A. Protein

B. Carbohydrates

C. DNA

D. RNA

Answer: D

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15. Synergids are -

A. Haploid

B. Diploid

C. Triploid

D. Tetraploid

Answer: A

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16. In the absence of acrosome, the sperm -

A. Cannot get food

B. Cannot swim

C. Cannot penetrate the egg

D. Cannot get energy

Answer: C

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17. Which of the following genotypes show the heterozygous condition?

A. Rr

B. RR

C. rr

D. None of these

Answer: A

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18. Epidermis, endothecium, middle layers, tapetum are:

A. Pollen sac layers

B. walls of anther

C. Pollen grain layers

D. epidermal layers

Answer: B

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19. Which one of the following is the most widely accepted method of contraception in India at present?

A. Cervical caps

B. Tubectomy

C. Diaphragms

D. IUD's (Intra Uterine Devices)

Answer: D

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20. The sugar present in milk is-

A. Glucose

B. Lactose

C. Fructose

D. Sucrose

Answer: B

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21. Identify the odd from the following-

A. Labia minora

B. Fimbriae

C. Infundibulum

D. Isthmus

Answer: A

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22. Genotypic ratio of a monohybrid cross is -

A. $5:1$

B. $3:1$

C. $1:2:1$

D. $1:1$

Answer: C

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23. Meiosis occurs in -

A. endosperm cells

B. intercalary meristems

C. apical meristems

D. spore mother cells

Answer: D

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24. Theory of spontaneous generation was proposed by

A. Spallanzani

B. Aristotle

C. F. Redi

D. Louis Pasteur

Answer: B

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25. Abiogenesis occurred about ___billion years ago.

A. 1.2

B. 1.5

C. 2.5

D. 3.5

Answer: D

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26. Chromosomal basis of inheritance was established by -

A. McClung

B. Henking

C. Morgan

D. Sutton and Boveri

Answer: D

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27. Methanogens do not produce-

A. oxygen

B. hydrogen sulphide

C. methane

D. carbon dioxide

Answer: A

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28. In angiosperms _____lead to the formation of a mature male gametophyte from a pollen mother cell.

A. two meiotic divisions

B. one meiotic and two mitotic division

C. one mitotic and two meiotic division

D. a single mitotic division

Answer: B

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29. The word gene for Mendelian factor was introduced by____ in 1909.

A. Watson and Crick

B. Sutton and Boveri

C. Johannsen

D. Punnett

Answer: C

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30. _____comprises the egg apparatus.

A. Polar nuclei

B. Antipodal cells

C. Egg cell and synergids

D. Male gametes

Answer: C

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31. What is each copy of the duplicated chromosome called?

A. Chromatid

B. Chromomere

C. Kinetochore

D. Chromonema

Answer: A

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32. _____is the phenomenon wherein, the ovary develops into a fruit without fertilisation.

A. Parthenocarpy

B. Apomixis

C. Sexual reproduction

D. None of these

Answer: A

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33. _____carried out experiments to study linkage in Drosophila.

A. Morgan

B. Correns

C. Boveri and Brauer

D. Flemming

Answer: A

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34. Larger nucleus in a pollen grain is called____.

A. callus

B. generative nucleus

C. vegetative nucleus

D. none of these

Answer: C

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35. Which one is the correct statement amongst the following?

A. Dioecious (hermaphrodite) organisms are found only in animals.

B. Dioecious organisms are found only in plants.

C. Dioecious organisms are found in both plants and animals.

D. Dioecious organisms are found only in vertebrates.

Answer: D

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36. Diaphragms are contraceptive device used by females. Which one is the correct option from the statement given below?

(i) They are introduced into the uterus.

(ii) They are placed to cover the cervical

region.

(iii) They act as physical barrier for sperm entry.

(iv) They act as spermicidal agents.

A. (i) and (ii)

B. (i) and (iii)

C. (i) and (iii)

D. (iii) and (iv)

Answer: C

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37. Match the following and choose the correct options:

Column I	Column II
(A) Trophoblast	(i) Embedding of blastocyst in the endometrium
(B) Cleavage	(ii) Group of cells that would differentiate as embryo
(C) Inner cell mass	(iii) Outer layer of blastocyst attached to the endometrium
(D) Implantation	(iv) Mitotic division of zygote

A. A-(ii), B-(i), C-(iii), D (iv)

B. A-(iii), B-(iv), C-(i), D-(i)

C. A-(iii), B-(i), C-(ii), D-(iv)

D. A-(ii), B-(iv), C-(iii), D-(i)

Answer: B

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38. Match the contraceptive methods given under column I with their examples given under column II and select the correct option.

Column I (Contraceptive methods)		Column II (Examples)	
A	Barriers	(i)	Tubectomy and vasectomy
B	IUDs	(ii)	Spermicidal jelly and foam
C	Chemical	(iii)	Vaults and cervical cap
D	Sterilisation	(iv)	Multiload 375

A. A-(ii), B-(iv), C-(i), D-(iii)

B. A-(i), B-(iv), C-(i), D-(ii)

C. A-(iii), B-(iv), C-(ii), D-(i)

D. A-(ii), B-(i), C-(iii), D-(iv)

Answer: C

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39. Identify the odd one.

A. Vaults

B. Condoms

C. Diaphragms

D. Periodic abstinence

Answer: D

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40. Find the odd one out.

A. Clitoris

B. Mons pubis

C. Lactiferous duct

D. Labia majora

Answer: C

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41. Assertion: Gynoecium consists of pistil.

Reason : It represents the male reproductive part in flowering plants.

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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42. Assertion : Corpus luteum is produced by Graafian follicle after ovulation.

Reason It secretes oestrogen which is necessary to maintain pregnancy.

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: A person should be considered reproductively healthy if he or she has healthy reproductive organs but is emotionally imbalanced.

Reason This statement about reproductive health was not given by the WHO.

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: D

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44. Assertion : Test cross is the cross between the F_1 progeny and either of the parent types. Reason Back cross is the cross between F_1 progeny and one of its parent plants.

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: D

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45. Assertion : Nuclear endosperm is formed by subsequent nuclear division without wall formation.

Reason : Coconut is an example of such endosperm where the endosperm remains

nuclear throughout the development of the fruit.

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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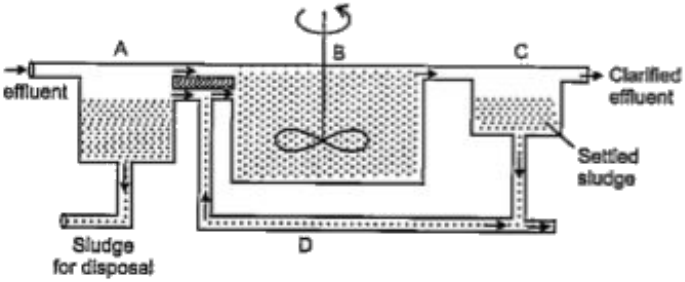
46. Study the diagram given below and answer the questions that follow: An assignment on sewage treatment plant (STP) to study the microbial load. It was assigned to Saurin, a M.Sc. Student. He made of simplified figure of the STP for his project after visiting such plant in his locality.



A denotes:

A. aeration tank

B. primary settling tank

C. secondary settling tank

D. sludge digester

Answer: B

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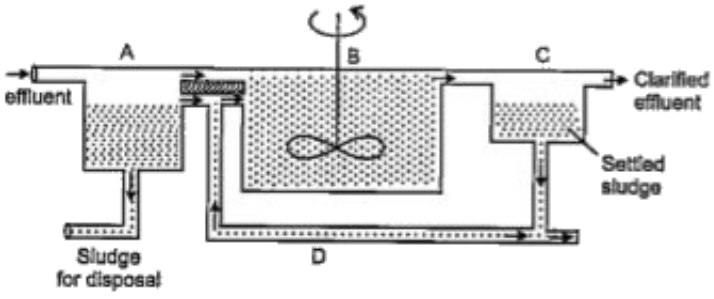

What does D denotes in the figure?

A. Primary sludge

B. Primary effluent

C. Activated sludge

D. Secondary effluent

Answer: C

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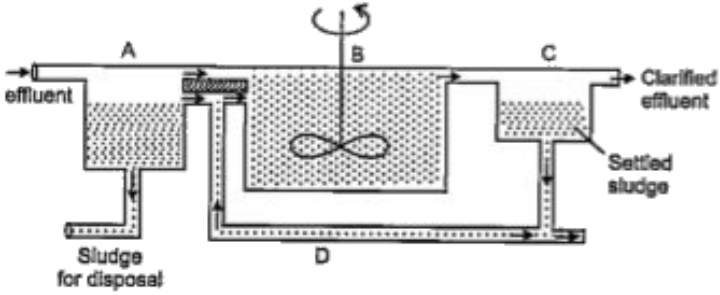

Which of the following is correct regarding the sludge release from A?

A. It is formed after primary treatment

B. It does not require aeration

C. It possess flocs of decomposer microbes

D. It is used in landfills

Answer: C

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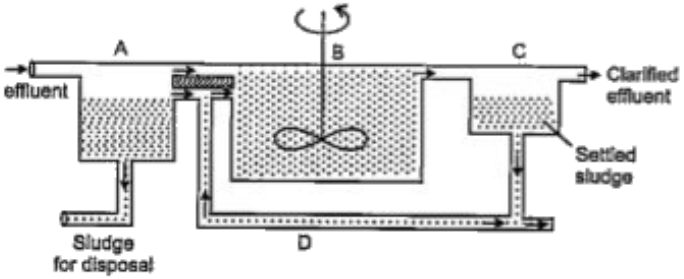

What are flocs?

A. Masses of fungi

B. Masses of algae

C. Masses of animals

D. Masses of bacteria

Answer: D

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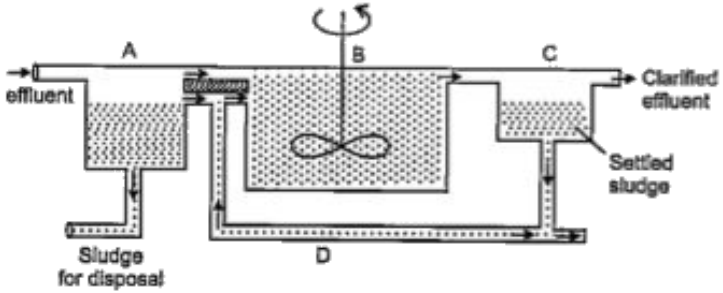

Which of the following is not considered as microorganisms?

A. Bacteriophage

B. Streptococcus

C. Porphyra

D. Staphylococcus

Answer: C

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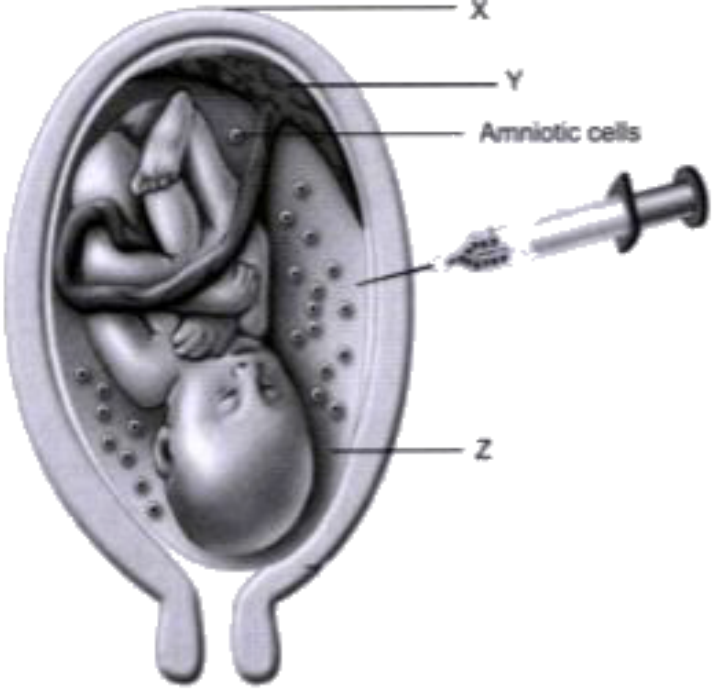
51. Read the details and answer the questions that follow: A technique known as amniocentesis is used to determine fetal abnormalities. This test is based on the chromosomal pattern in amniotic fluid. However, this technique is legally banned now.



Identify X and Y.

$X \qquad Y$

A. Amnion Chorion

B. Uterine wall Placenta

C. Placenta Uterine wall

D. Uterine wall Amnion

Answer: B

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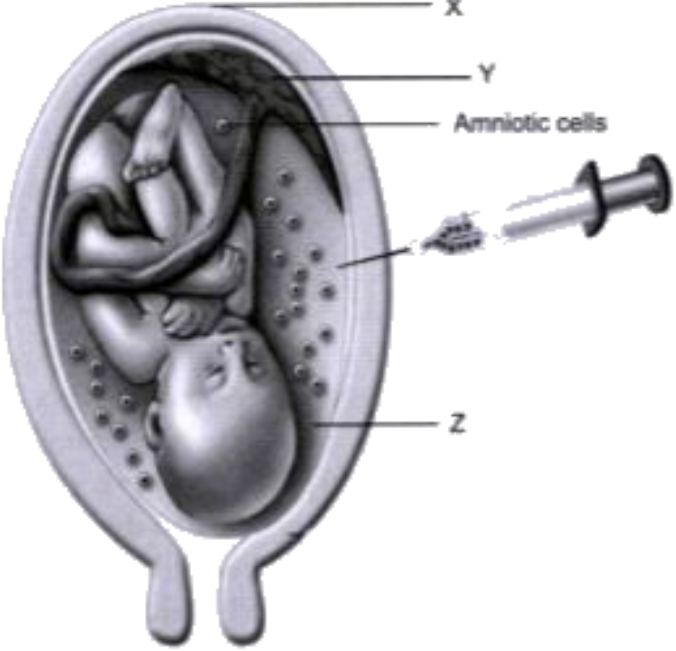

What is the function of Z?

A. Z is an amniotic fluid which prevents dessication of an embryo.

B. Z is yolk sac which functions as site of early blood cell formation.

C. Z is amnion which takes part in placenta formation

D. None of these

Answer: A

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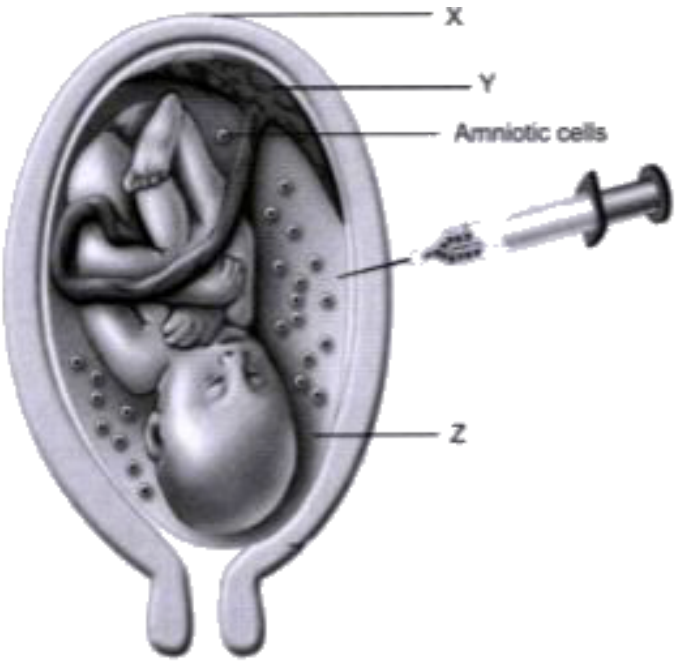

Which of the following disease cannot be diagnosed by amniocentesis?

A. Down's syndrome

B. Turner's syndrome

C. Jaundice

D. Klinefelter's syndrome

Answer: C

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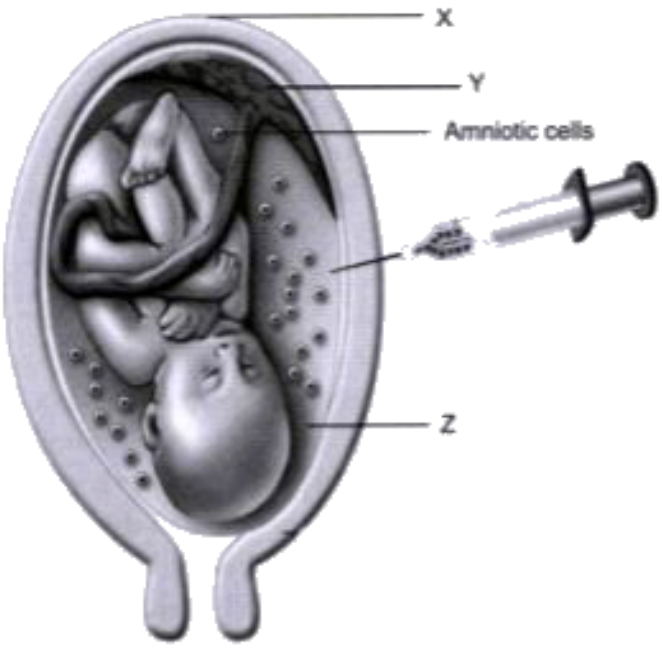

Which of these is a non invasive technique of detecting fetal disorder?

A. Fetoscopy

B. Amniocentesis

C. Chorionic villi sampling

D. Ultrasound imaging

Answer: D

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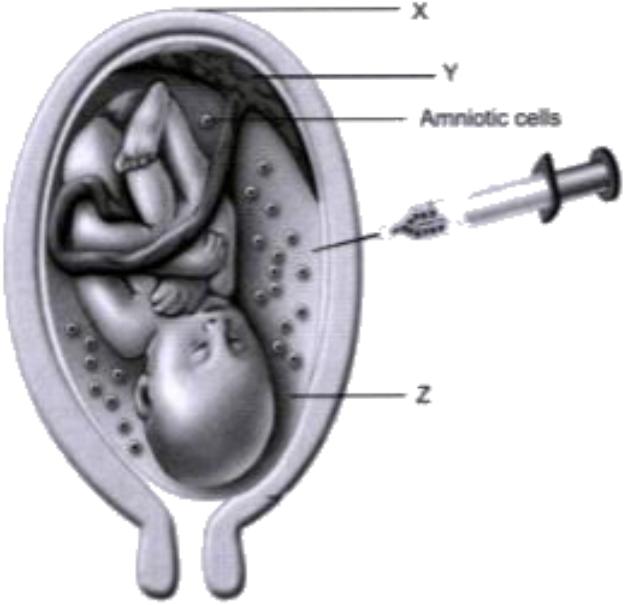

Abortion can be safely done for about_____weeks of pregnancy.

A. 4

B. 12

C. 8-10

D. 15-18

Answer: B

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56. Observe the diagram given below and answer the questions that follows:

Lac operon is an example of-

A. only positive regulation

B. only negative regulation

C. both positive and negative regulation

D. cometines positive sometimes negative

Answer: C

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57. Observe the diagram given below and answer the questions that follows:

What does the structural gene (y) of a lac operon code for?

A. β - galactosidase

B. Transacetylase

C. Permease

D. Glucagon

Answer: C

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58. Observe the diagram given below and answer the questions that follows:

The sequence of the structural gene in the lac operon is-

A. Lac Z-Lac Z-Lac Y

B. Lac Z-Lac Y-Lac A

C. Lac Z-Lac A-Lac Y

D. Lac A-Lac Y-Lac Z

Answer: B

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59. Observe the diagram given below and answer the questions that follows:

Lac operon will be turned on when

A. Lactose is less than glucose

B. Lactose is less in the medium

C. Lactose is more than glucose

D. Glucose is enough in the medium

Answer: C

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60. Observe the diagram given below and answer the questions that follows:

In Lac operon, the gene product of Lac A gene is:

A. Beta-galactoside permease

B. Beta-galactosidase transacetylase

C. Beta- galactosidase

D. Beta-galactosidase isomerase

Answer: B

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61. Read the following and answer the following questions:

An operon is a cluster of bacterial genes along with an adjacent promoter that controls the transcription of those genes.

In E.coli, and many other bacteria, genes encoding several different proteins may be located on a single transcription unit called an

operon. The genes in an operon share the same transcriptional regulation, but are translated individually. Eukaryotes generally do not group genes together as operons (exce elegans and a few other species). E.coli encounters many different sugars in its environment. These sugars, such as lactose and glucose, require different enzymes for their metabolism. Whenever glucose is present, E. coli metabolizes it before using alternative energy sources such as lactose, arabinose, galactose, and maltose. Only when the supply of glucose has been exhausted

does RNA polymerase start to transcribe the lac genes efficiently, which allows E. coli to metabolize lactose. Three of the enzymes for lactose metabolism are grouped in the lac operon: lac, lacy, and lacA. In the presence of lactose and absence of glucose, cyclic AMP (CAMP) joins with a catabolite activator protein that binds to the lac promoter and facilitates the transcription of the lac operon.

How many structural genes are present in a lac operon?

A. One

B. Five

C. Three

D. Seven

Answer: C

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In the presence of lactose, how long does it take for the lac operon to be expressed?

A. When lactose equals glucose concentration

B. When glucose is more than lactose concentration

C. As long as lactose is more than glucose concentration

D. As long as lactose is more than galactose concentration

Answer: C

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A. Allolactose

B. Lactose

C. Galactose

D. Glucose

Answer: A

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In a cell as per the Operon Concept, the regulator gene governs the chemical reactions by:

A. Inhibiting the substrate in the reaction

B. Inhibiting migration of mRNA into cytoplasm

C. mRNA transcription inhibited

D. Enzyme-reaction inactivation

Answer: D

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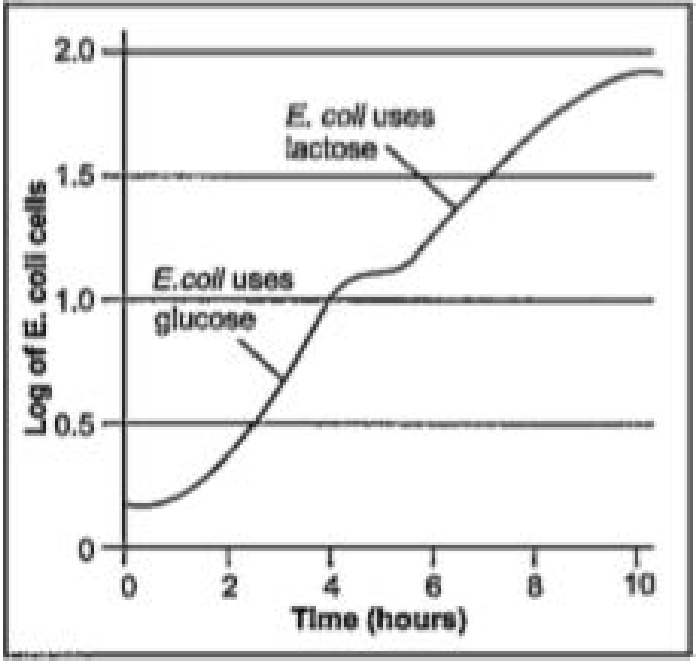
The following statements are drawn as conclusions from the graph given below:



I. When grown in the presence of two substrates, E. coli uses the preferred substrate in this case glucose) until it is depleted. Then, enzymes needed for the metabolism of the second substrate are expressed and growth resumes, although at a slower rate.

II. When grown in the presence of two substrates, E. coli uses both the substrates equally,

III. When grown in the presence of two substrates, E. coli uses the less preferred substrate (in this case glucose) until it is depleted. Then, enzymes needed for the metabolism of the second substrate are expressed and growth resumes, although at a faster rate.

IV. When grown in the presence of two substrates, E. coli uses only one substrate.

Choose from below the correct alternative.

A. Only I is true

B. I, and IV are true

C. III and II are true

D. I and III are true

Answer: A

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66. Read the following and answer the following questions:

Gregor Johann Mendel proposed the law of

inheritance or Mendel's law of inheritance after conducting several experiments on the garden pea plants. This includes three laws that are the law of dominance, the law of segregation and the law of independent assortment. More and more studies and discoveries were made on genetics after Mendel's studies. However, regularities of his experiment are applied only to the organisms he consciously chose for his experiments. These laws do not explain some pattern of genetic inheritance. Apart from these laws, there are several deviations. The principle of

independent assortment doesn't apply if the genes are close together (or linked) on a chromosome. Also, alleles do not always interact in a standard dominant/recessive way, particularly if they are co-dominant or have differences in expressivity or penetrance.

Mendel used for his experiments.

A. Pisum sativum

B. Pisum album

C. Oryza sativa

D. Oryza orientalis

Answer: A

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67. Read the following and answer the following questions:

Gregor Johann Mendel proposed the law of inheritance or Mendel's law of inheritance after conducting several experiments on the garden pea plants. This includes three laws that are the law of dominance, the law of segregation and the law of independent

assortment. More and more studies and discoveries were made on genetics after Mendel's studies. However, regularities of his experiment are applied only to the organisms he consciously chose for his experiments. These laws do not explain some pattern of genetic inheritance. Apart from these laws, there are several deviations. The principle of independent assortment doesn't apply if the genes are close together (or linked) on a chromosome. Also, alleles do not always interact in a standard dominant/recessive way, particularly if they are co-dominant or have

differences in expressivity or penetrance.

In what mode of inheritance, the F progeny exhibit characteristics of both the parents?

A. Complete dominance

B. Incomplete dominance

C. Co-dominance

D. Multiple allelism

Answer: C

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ABO blood grouping in humans is an instance of

A. complete dominance

B. incomplete dominance

C. co-dominance

D. pseudoscience

Answer: D

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inheritance or Mendel's law of inheritance after conducting several experiments on the garden pea plants. This includes three laws that are the law of dominance, the law of segregation and the law of independent assortment. More and more studies and discoveries were made on genetics after Mendel's studies. However, regularities of his experiment are applied only to the organisms he consciously chose for his experiments. These laws do not explain some pattern of genetic inheritance. Apart from these laws, there are several deviations. The principle of

independent assortment doesn't apply if the genes are close together (or linked) on a chromosome. Also, alleles do not always interact in a standard dominant/recessive way, particularly if they are co-dominant or have differences in expressivity or penetrance.

In incomplete dominance_____.

A. Phenotype of both allele is expressed

B. Phenotype of only one allele is expressed

C. Phenotype of neither of the alleles are expressed

D. Phenotype of both allele is partially expressed

Answer: A

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70. Read the following and answer the following questions:

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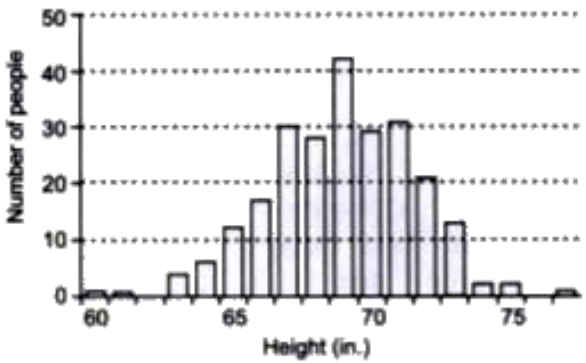
garden pea plants. This includes three laws that are the law of dominance, the law of segregation and the law of independent assortment. More and more studies and discoveries were made on genetics after Mendel's studies. However, regularities of his experiment are applied only to the organisms he consciously chose for his experiments. These laws do not explain some pattern of genetic inheritance. Apart from these laws, there are several deviations. The principle of independent assortment doesn't apply if the genes are close together (or linked) on a

chromosome. Also, alleles do not always interact in a standard dominant/recessive way, particularly if they are co-dominant or have differences in expressivity or penetrance.

Unlike Mendel's pea plants, humans don't come in two clear-cut "tall" and "short" varieties. In fact, they don't even come in four heights, or eight, or sixteen. Instead, it's possible to get humans of many different heights, and height can vary in increments of inches or fractions of inches.



Skin colour, eye colour, and adult height are examples of .....in humans.

A. Polygenic traits

B. Co-dominance

C. Incomplete dominance

D. Complete dominance

Answer: A

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