



केवल मूल्यांकनकर्ता के उपयोग हेतु!

माध्यमिक शिक्षा मण्डल, मध्यप्रदेश, भोपाल

32 पृष्ठीय

केवल परीक्षक द्वारा भरा जावे। प्रश्न क्रमांक के सम्मुख प्राप्तांकों की प्रविष्टि करे।

प्रश्न क्रमांक	पृष्ठ क्रमांक	अंक (अंकों में)	प्रश्न क्रमांक	पृष्ठ क्रमांक	अंक (अंकों में)
1			17		
2			18		
3			19		
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10			26		
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16					

प्राप्तांक अंकों में

परीक्षक एवं उपमुख्य परीक्षक द्वारा भरा जावे

प्रमाणित किया जाता है कि अन्दर के पृष्ठों के अनुरूप मुख्य पृष्ठ पर अंकों की प्रविष्टि एवं अंकों का योग सही है।

निर्धारित मुद्रा : नाम, पदनाम, मोबाईल नम्बर, परीक्षक क्रमांक एवं पदांकित संस्था के नाम की मुद्रा लगाएं।

उप मुख्य परीक्षक के हस्ताक्षर एवं निर्धारित मुद्रा

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परीक्षक के हस्ताक्षर एवं निर्धारित मुद्रा

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परीक्षक एवं उपमुख्य परीक्षक द्वारा भरा जावे



Question : 01

Answer

Ans 1) Haemoglobin ✓

Ans 2) size only ✓

Ans 3) Mutualism ✓

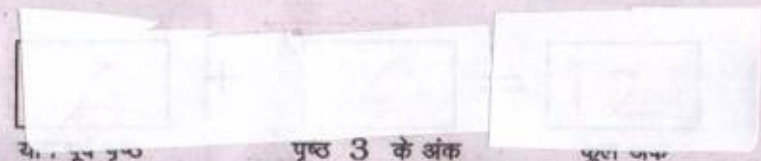
Ans 4) $3n$ (Triploid) ✓

Ans 5) Perisperm ✓

Ans 6) GU_2 ✓

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RUCHI CHODHARY



Question: 02
Answer

Ans 1) surd.

Ans 2) C-peptide (stretch).

Ans 3) SCIDs [Severe Combined immuno deficiency]

Ans 4) producer

Ans 5) Quilation

Ans 6) Repetitive DNA



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Question: 03

Answer

Ans 1) True ✓

Ans 2) True ✓

Ans 3) True ✓

Ans 4) False ✓

Ans 5) True ✓

Ans 6) False ✓



[Redacted]

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Question: 4

Answer:

'A'

'Answer'

1) T-lymphocytes

Bone marrow

2) Competition

detrimental interaction

3) PBR 322

vectors

4) Corona radiata

ovum

5) Structural genes

z, y & a



प्रश्न क्र.

Question : 05

Answer.

Ans 1) ^{NH₃,} ~~NH₄~~, CH₄, CO₂, H₂ & water vapour

Ans 2) Interferon [by biological response modifier]

Ans 3) Bacillus thuringiensis

Ans 4) Amazon Rain forest.

Ans 5) Zygote Intra Fallopian Transfer.



प्रश्न क्र.

Question : 06

AnswerGolden Rice :

Golden rice is the biofortified variety of rice. It is one of the best example of biofortified crops is rich in beta carotene. Beta carotene is the precursor of Vitamin A. Hence it is helpful in preventing the disease caused due to deficiency of vitamin A i.e, Night blindness.

Golden rice is facing opposition from some of the environmentalists.

Question : 07

AnswerCamouflage :

It is the technique which the organism adapt to protect themselves from their predator. In this technique organism hide itself by blending its colour with any object or another organism.



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Example :

A common moth [†]Biston bitularia hide itself on the light background of lichen grown on the tree trunk.

Question : 08

AnswerB
S
EHotspot :

Conservationists give the name hotspot to those area where there is very high species diversity

To be considered as biological hotspot, an area should fulfill following criteria :

- 1) There should be high species diversity
- 2) Threatened habitat
- 3) High endemism

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Name of a hotspot in India :-

- 1) Western Ghats & Sri Lanka
- 2) Indo Burma
- 3) Eastern Himalayas

Question: 09

Answer

B
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MTP :

Full form :- Medical Termination of pregnancy.

Intentional or voluntary removal of foetus from the womb of mother before the completion of gestation period is called Medical termination of pregnancy. In the year 1971, Govt. of India legalized MTP with some strict restriction to avoid its misuse. The MTP is allowed when:

- 1) Continuation of pregnancy is harmful to either mother or baby or both.
- 2) Pregnancy is the result of unprotected sexual coitus.
- 3) Pregnancy is due to sexual crime i.e., rape.



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Safety Period :

MTP is safe upto 12 weeks (1st trimester) of pregnancy.

Question : 10

Answer.

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Point Mutation :

The mutation that is caused to due to insertion, deletion or substitution of single base pair is called point mutation.

Example :

Sickle cell anaemia is the best example of point mutation. It is caused to due to change in single base pair.

The sixth amino acid of β globin chain of haemoglobin is glutamic acid which is coded by codon GAG but in this disease base pair A is replaced by U and the resulting codon is GUG which codes for amino acid valine.

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Question: 11

Answer:Hardy-Weinberg Principle:

According to this principle:

B
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"The allelic frequency of all the individual in the population always remain constant and stable from generation to generation." This is Hardy-Weinberg equilibrium

Following is the equation to determine allelic frequency of individual:

$$p^2 + 2pq + q^2 = 1$$

Where p^2 = allelic frequency of dominant homozygous

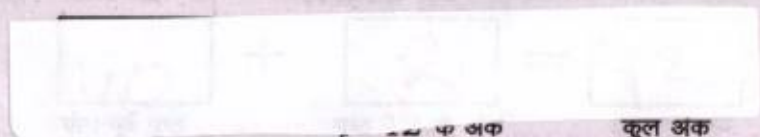
p = A frequency of dominant allele

$2pq$ = allelic frequency of heterozygote

q^2 = allelic frequency of recessive homozygous

q = frequency of recessive allele

Here always $p+q = 1$



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Question: 12

Answer

Swiss cheese is formed by "*Propionibacterium sharmanii*"
flor

large hole in Swiss cheese is due to gas CO_2 produced by bacteria *propionibacterium sharmanii*. During its metabolic activity, this bacteria produced CO_2 gas that causes large hole in Swiss cheese.

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Question: 13

Answer

Bio gas plant:

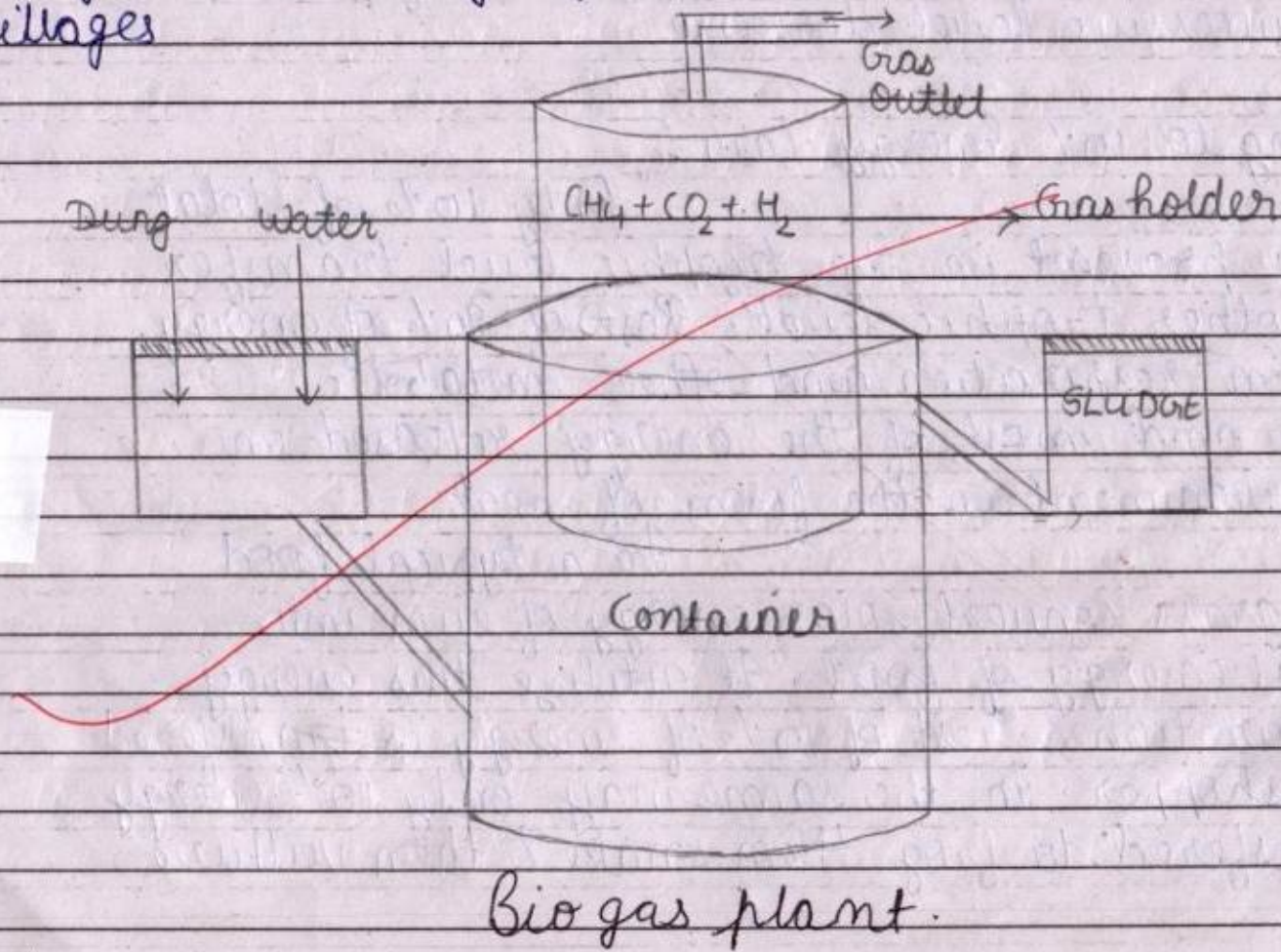
Bio gas plant is a large concrete tank (10-15 feet) deep in which the bio waste are fed & slurry of dung is collected. The gas holder is placed over the slurry. It keep on rising due to the production of gas. There is an outlet which

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is connected to the nearby houses for supply of gas. There is an other outlet in which remaining sludge is taken out for using it as fertilizer.

Little dung is mostly found in villages hence bio gas plant is more common in villages

B
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E





प्रश्न क्र.

Question: 14

Answer

Pyramid of energy is always upright since it follows "10% energy law". Energy transfer in each successive level decreases.

According to 10% energy law:

"Only 10% of total energy present in the trophic level transfer to another trophic level". Rest of 90% of energy is lost in respiration and other metabolic activity and most of the energy released in the environment in the form of heat.

In a typical food chain, grass convert solar energy of sun into chemical energy of food. It utilize this energy in respiration & rest of 10% of energy is transferred to grasshopper. In the same way only 10% energy is transferred to frog then snake & then vulture.

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Grassland ecosystem

10% Energy law

Energy lost in environment

Grass
10000 Kcal

Grasshopper
1000 Kcal

Frog
100 Kcal

Snake
10 Kcal

Vulture
1 Kcal

Producer

1st consumer

2nd consumer

Decomposers & Detritivores

Energy lost in metabolic activity

Energy decreases at successive trophic level

B
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E





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Question: 15

Answer:

The process of spermatogenesis requires 2 to 3°C temperature less than the normal body temperature.

The temperature of abdominal cavity is same as the normal body temperature i.e., 37°C and in this temperature, the process of spermatogenesis will not be possible & this process will be hampered.

Therefore, human testes descended below the abdominal cavity in the pouch named "scrotum" which provide suitable temperature for the process of spermatogenesis & this process takes place successfully.

Name of the pouch in which testis is present:
scrotum

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प्रश्न क्र.

Question: 16

Answer:

Monohybrid Cross:

The cross which is takes place between male & female parents differing in a single character is called monohybrid cross.

B
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Steps to perform monohybrid cross:

- 1) Selection of true breeding parents.
- 2) Formation of first filial generation^(F₁) by crossing both the true breeding parents.
- 3) Formation of second filial generation (F₂) by selfing of F₁ plants.



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If height is taken as trait then its true breeding tall & dwarf parents will be TT & tt respectively.

Diagrammatic Representation

B
S
E

Parents TT × tt

↓ ↓
T t

Gametes

F₁ progeny Tt Tall

Selfing of F₁

Parents Tt × Tt

↓ ↓ ↓ ↓
T t T t

Gametes

F₂ progeny TT Tall Tt Tall Tt Tall tt Dwarf



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Question: 17

Answer:(i) Full Name of AIDS:Acquired Immuno Deficiency Syndrome.(ii) Name of AIDS pathogen:HIVHuman Immuno deficiency virus.(iii) Measures to prevent AIDS:1) Avoid sex with strangers & affected person.2) Use disposable needle & syringes in case of drug abuser.Ensure HIV safe blood transfusion.3) Use condoms while having sexual intercourse.



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As there is no perfect cure for AIDS disease therefore its prevention should be followed strictly to avoid having this disease. Because most of the people said that "Prevention is better than cure".

B
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Question: 18

Answer:Polymerase Chain Reaction:

This method is used to generate many copy of a fragment of DNA. By this method approximately 1 billion copy of desired DNA fragment can be produced.

Principle:

When double stranded DNA molecule is heated then it get separated into two strand. Then DNA polymerase enzyme form replica of these two strand & thus copies of DNA can be obtained.



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Requirements:

- 1) DNA fragment to be magnified
- 2) RNA primer (oligonucleotides)
- 3) Thermostable DNA polymerase (Taq polymerase)
- 4) Deoxyribonucleotides

Process:

i) Denaturation:

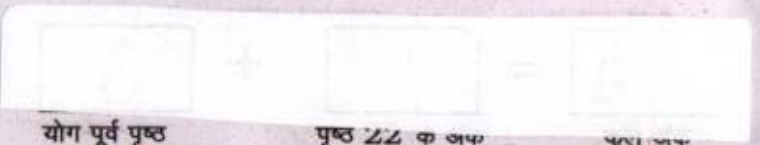
The DNA fragment is heated at 92°C & they get denatured.

ii) Annealing:

In this step RNA primer get hybridized with each strand of DNA. This hybridization is called Annealing.

iii) Elongation:

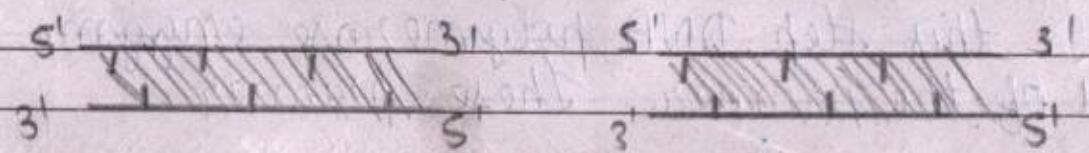
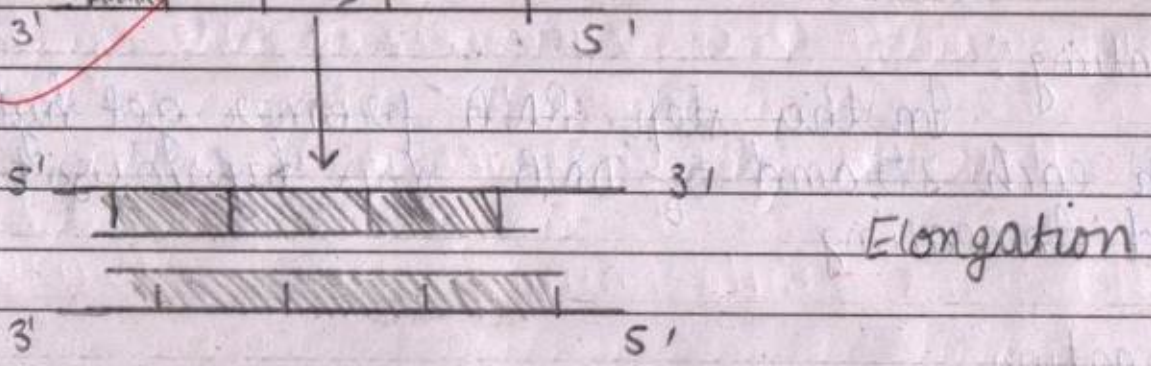
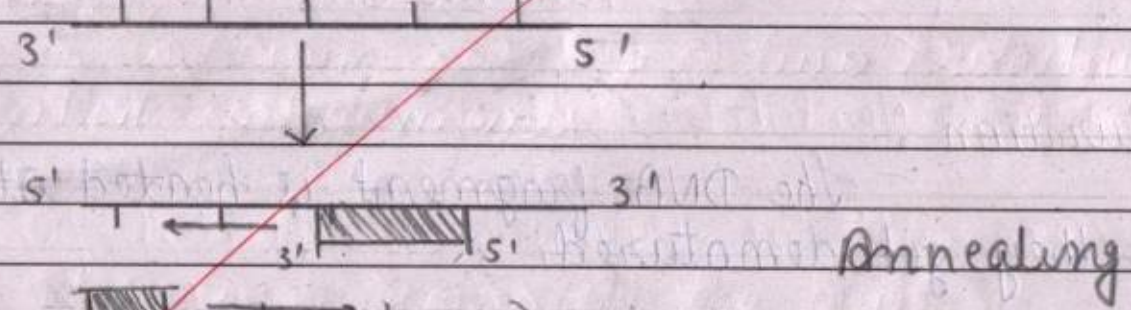
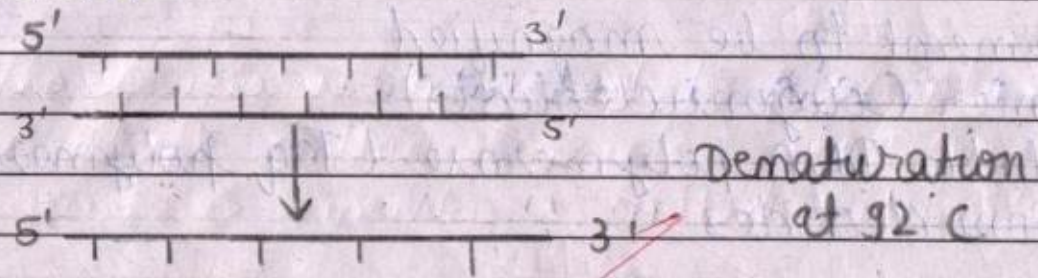
In this step DNA polymerase enzyme act by $3' \text{ OH}$ of the primer. These primer



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extend toward each other & form double stranded DNA.

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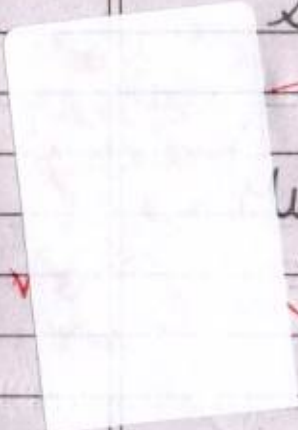
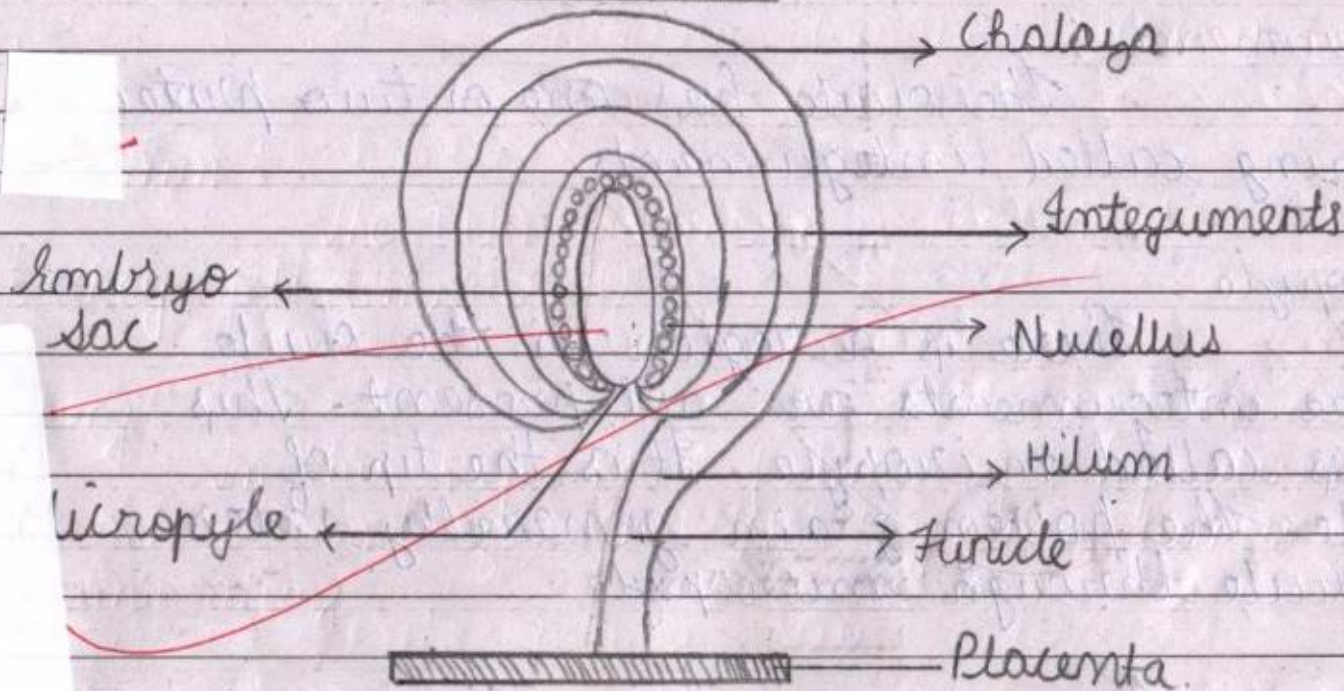
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Application of PCR :

- 1) It is used in forensic science (DNA fingerprinting)
- 2) It is used in study of genome.

Question : 19
Answer :

B
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Different parts of ovule are :

1) Funicle :

The ovule is attached to placenta by means of a stalk called funicle. The junction between ovule & funicle is called 'hilum'.

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2) Integuments :

The ovule has one or two protective covering called integuments.

3) Micropyle :

There is a region in the ovule where integuments are not present. This hole is called micropyle. It is the tip of ovule. The pollen grain generally enter to ovule through micropyle.



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4) Nucellus :

The centre part of ovule is called nucellus. It contains micropylar region. Opposite to micropyle, there is chalazal end. It is the end part of ovule.

B 7) Embryo sac :

S
E It is the part where fertilization takes place. It is 8 nucleated & 7 celled structure. Three cells called antipodal cells are present toward chalazal end. Two synergids & one egg cell are present toward micropyle. They are together called egg apparatus. In centre there is 2 polar nuclei & a large central cell.



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Question: 20
Answer:

DNA fingerprinting:

It is the most authentic, reliable method of comparing the DNA of two individual & identify the variation present in both of them at DNA level.

Mechanism of DNA fingerprinting:

- 1) Isolation of DNA fragments.
- 2) Cutting of DNA fragment with the help of restriction enzyme.
- 3) Separation of DNA fragment with the help of gel electrophoresis.
- 4) Transfer the separated DNA into nitrocellulose membrane.



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- 5) Hybridization of DNA with labelled VNTR probe.
- 6) Identifying the hybridized DNA by radiography.

Application:

- B
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E
- 1) Used in study of biological evolution.
 - 2) In paternity disputes
 - 3) In identifying the criminals
 - 4) In identifying the dead insulin.

P.T.O



प्रश्न क्र.

B
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