केवल मूल्यांकनकर्ता के उपयोग हेतु!

माध्यमिक शिक्षा मण्डल, मध्यप्रदेश, भोपाल 32 पृष्ठीय

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

प्रश्न क्रमांक	पृष्ठ क्रमांक	ांक (अंकों में)	प्रश्न क्रमांक	पृष्ठ क्रमांक	प्तांक (अंकों में)
1			17		
2			18		
3			19		
4			20		
5			21		
6			22		
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11			27		
12			28		
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14					
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16					

परी मुख्य परीक्षक द्वारा भरा जावे ↓

प्रमाणित किया अन्दर के पृष्ठों के अं ठ पर अंकों की प्रविष्टी एवं अंकों का योग सही है।

निर्धारित मुद्रा : नाम, पदना म्बर, परीक्षक क्रमांक एवं पदांकित संस्था के नाम एं।

उप मुख्य परीक्षक र्धारित मुद्रा

परीक्षक निर्धारित मुद्रा

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परीक्षक एवं उपमुख्य परीक्षक द्वारा भरा जावे →

कुल अंक

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Question (1) Choose the correct option (Answers) :-

(i) Ans. :- (c) 3n (Triploid)

(ii) Ans. :- (d) Perisperm

(iii) Ans. :- (d) GUG

(iv) Ans. :- (C) Haemozoin

(v) Ans. :- (b) size only

(vi) Ans. :- (c) Mutualism.

Question (2) Fill in the blanks (Answers) :-

(i) Ans. :- ovulation.

(ii) Ans :- DNA polymorphism.

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(iii) Ans :- curd

(iv) Ans :- C peptide chain

(v) Ans :- SCID (Severe combined Immuno deficiency)

(vi) Ans :- producers

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Question (3) Write True / False (Answers) :-

(i) Ans :- False

(ii) Ans :- True

(iii) Ans :- False

(iv) Ans :- True

(v) Ans :- True

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(vi) Ans :- True

Question (4) Match the column (Answers) :-

'A'	'B' (Answers)
(i) Corona radiata	- (d) ovum
(ii) Structural genes	- (a) z, y and a
(iii) T-lymphocytes	- (b) bone marrow
(iv) Competition	- (e) detrimental interaction
(v) PBR 322	- (c) Vectors

Question (5) Answer in one sentence :-

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(i) Ans :- ZIFT = Zygote Intra Fallopian Transfer

(ii) Ans :- Miller took gases $CH_4 : NH_4 : H_2$ in ratio 2:1:2 and created reducing environment with spark discharge and boiling H_2O. and got aspartic acid, alanine.

(iii) Ans :- Cytokine barriers provide innate immunity by producing interferons (anti viral particles).

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:- Bacillus thuringiensis.

v) Ans :- Amazon Rain forest is called 'lungs of the earth'

Question (6) Answer :-

OR

MTP :- MTP stands for medical term termination of pregnancy. It is also called induced abortion. Government of India legalised MTP in the year 1971, at some special cases. Induced abortion is performed when continuation of pregnancy is fatal for mother or fetus or for both. Safety period of M.T.P is within

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first trimester (3 months). MTP is also performed before second trimester but with the prescription of 2 doctors.

Question (7) Answer :-

Mutations are sudden inheritable changes in the genetic material. When only a single nucleotide is altered in the nucleotide sequence of DNA, then it is termed as point mutation.
Example :- Sickle cell anaemia :- In this disease adenine of codon GAG is substituted by Uracil and converted into GUG which now codes for valine.

Question (8) Answer :-

Adaptive Radiation :- It is type of divergent in evolution in which a single specie members adapt different functions. In adaptive radiation, members of a single specie literally radiate to different areas and adapt according to the environment.

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Example of adaptive radiation :- Darwin's finches in Galapagos island.
- originated from single seed eating bird and now different beaks are present.

Question (9) OR Answer :-

Swiss cheese is produced by the action of a bacteria, propioni-bacterium Sharmanii. This bacteria produces CO_2 gas which get trapped in the cheese producing large holes. Thus, Swiss cheese have big holes because of CO_2 gas.

Question (10) OR Answer :-

Golden rice is an example of biofortified crop plant. The ...es of rice is altered with a foreign DNA. Golden rice ... is rich β-carotene. β-carotene is the precursor of ...min A. Therefore, golden rice are considered rich source of vitamin A. However, this crop plant is opposed by some naturalist.

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Question 11 (OR) Answer :-

Camouflage :- It is the property of an organism by which it hides in the surrounding. In other words, camouflage means resembling the background environment. An organism uses camouflage to escape from predators.

Example :- (i) Biston betularia moth resembles the tree trunk,
(ii) Chameleon.

Sometimes, predators also use camouflage to catch the prey.

Question (12) Answer :-

Hot-spot :- Biodiversity hot-spots are the regions where high biodiversity is present of endemic species. (Endemic species are those species which are present in that particular area and are not found in any other area) Specie richness in these these areas is very high.

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Example :- (i) Western Ghats (hotspot in India) have high diversity of amphibians.
(ii) Himalayan region.

Question (13) Answer :-

Human testis are located outside the abdominal cavity in a pouch named scrotum.

In human testis the process of formation of sperms (male gametes) called spermatogenesis takes place. The process spermatogenesis requires relatively lower ~~temperature~~ temperature than the human body (abdomen) for its completion. Spermatogenesis requires (2-2.5°c) lower body temperature than the abdomen which is provided in scrotum outside the body of male human. If testis are present in abdominal cavity then this leads to male sterility.

These are the reasons testis is located outside the abdominal cavity.

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Question (14) OR Answer :-

Codominance :- When one of the allele of a gene is not completely.

Co-dominance :- Co-dominance is observed when both the alleles of a gene express their own character in heterozygous condition. No one allele is completely dominant over the other both the alleles are dominant.

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Example :- ABO blood group in animals humans show co-dominance.

The concept of dominance comes from the production of enzymes. The allele which produce functional enzymes are dominant and which do not produce any enzymes are recessive and are not able to express their characters.

The ABO blood group in human gene (i) has three alleles I^A, I^B and I. The allele I^A and I^B produce functional enzymes and the I does not produce any enzyme. Hence, I^A and I^B are dominant alleles and I is recessive.

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When both I^A and I^B alleles are present in the form of ad allele antigen on the surface of RBCs then both A and B means AB blood group is obtained, this shows Co-dominance.

Question (15) Answer :-

Biopesticides	Chemical pesticides
(i) Pest control by living organisms like bacteria is called Bio control and this these organisms are called biopesticides	(i) Pest control by some chemical substances is called chemical method and substances used are called chemical pesticides
(ii) There is no such resistant developed.	(ii) Prolonged exposure makes the pest resistant to chemical pesticides
(iii) Does not affect the crop.	(iii) Affects the variety of crop.
Examples :- Baculovirus, Bacillus thuringiensis, Dragon flies	Examples :- Fertilizers and manure and pesticides

BSE

Question (16) Answer :-

Pyramid of energy is always upright or erect.

Reason :- The linear sequence of food relationship among organisms is called as food chain. The energy in a food chain always flow from one direction it is never reverted back. The flow of energy follows Lindman's 10% law, which states that only 10% of energy is transferred to the next food chain trophical level in a food chain and rest of the energy (90%) is lost to the environment. So, according to this every next level recieves lesser energy and therefore the first trophic level (base of pyramid) have the maximum energy, therefore base is large. and the topmost trophic level has the least enery therefore apex is shortest, resulting into an upright pyramid.

Example :- Plant → Herbivores → Carnivores → Top carnivores
(10,000 J) (1000 J) (100 J) (10 J)

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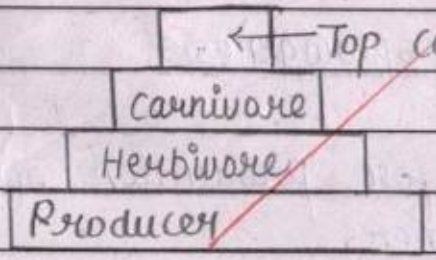
Pyramid of energy will be :-



B S E

Question (17) Answer :-

Difference between microsporogenesis and megasporogenesis :-

Microsporogenesis	Megasporogenesis
(i) The process of formation of microspores from microspore mother cell is called microsporo-genesis	(i) The process of formation of megaspores from megaspore mother cell is called megasporo-genesis.
(ii) Site - pollen sac of anther.	(ii) Site - ovule in an ovary.
(iii) One microspore mother cell produces four microspores.	(iii) One megaspore mother cell produces only one megaspore P.T.O. other three are degenerated.

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Microsporogenesis	Megasporogenesis
(iv) Process for production of male gametes.	(iv) Process for production of female gametes.

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Cell division :- Meiosis (reduction) devision takes place which converts diploid mother cell into haploid gametes

At the end of microsporogenesis, four microspores are formed which forms microspore tetrad which matures into polen grains (male gametophyte).

At the end of megasporogenesis, only one megaspore is produced. which in turns contains egg cell.

Question (18) Answer :-

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Hershey and chase peryormed an experiment on bacteriophage and proved that DNA is the genetic material.
They used following principles :-

(i) The way of causing infection by bacteriophage. Bacteriophage is a virus that affects bacterias. It contains a protein coat and a genetic material DNA. The bacteriophage while causing the infection adhere on the bacteria and release its genetic material into the bacteria. The viral genome gets incorporated with the bacterial DNA and takes over the machinery and gets multiplied.

(ii) Another principle used was chemical nature of protein and DNA. Protein contains sulphur but not phosphorus and DNA contains phosphorus not sulphur.

Experiment :- Hershey & Chase cultured bacteriophage and radioactively labelled the protein coat with ^{35}S isotope. Also they cultured another bacteriophage and radioactively labelled the DNA of phage with ^{32}P isotope. So one type of phage contains radiocative sulphur and another contains radioative

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phosphorus when the viruses were allowed to cause infection in E.coli. They were mixed and allowed to centrifuge in one case where radioactive protein coat was taken the radioactivity detected in supernetant and not in the bacteria. Also where radioactive DNA was taken radioactivity detected in bacteria not in supernetant. This proved that it was DNA which enters the bacteria not protein.

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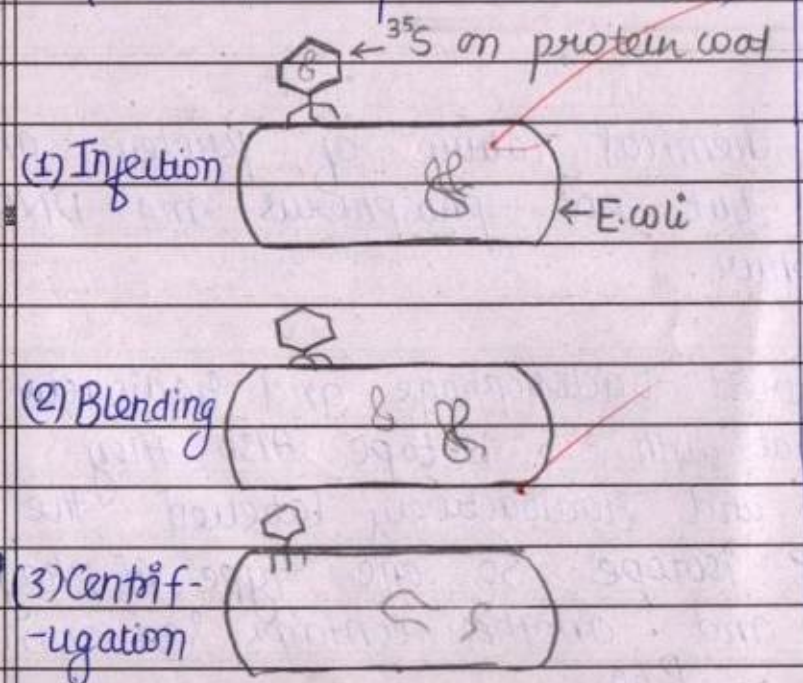
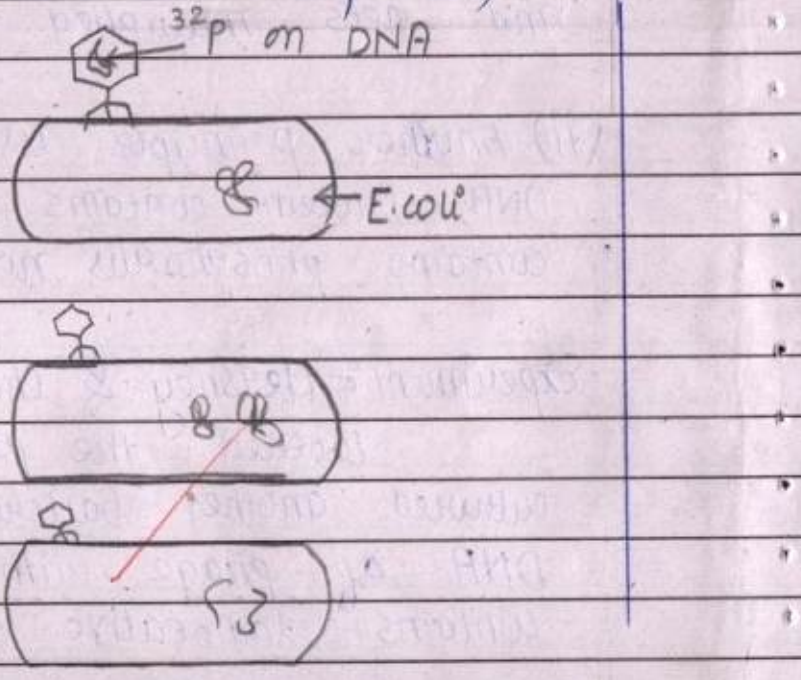
Case I (radioactive protein not DNA)	Case II (radioactive DNA not protein)
	

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Case I	Case II
^{35}S labelled radioactivity in supernetant	^{32}P labelled radioactivity in bacteria

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Question (19) OR Answer :-

AIDS :-

(i) Full form :- Acquired Immunodefiiieny Syndrome.

(ii) Name of AIDS pathogen :- HIV (Human Immunodeficiency Virus)
Detected by :- ELISA test
(Enzyme linked Immuno sorbent Essay)
based on antigen-antibody interation

Caused due to four reasons generally :-

(1) Sexual contact with infected individual.
(2) Mother to child through placenta.

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(3) Blood transfusion.
(4) Sharing of infected syringes or needles.

(iii) Measures to prevent AIDS :-

(1) Avoiding sex with unknown partners
(2) Making blood transfusion safe.
(3) Clearing of syringes or needles and making them free of contamination.
(4) Regular checkup.

HIV makes the immune system weak by destroying T-cells and our body becomes succeptible to mild infections of virus like toxoplasma etc.

There is no cure for AIDS. Prevention is the best cure. 'Don't die of ignorance'. Government is making efforts to control AIDS. (NACO) National AIDS control organization is one such example.

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Question (20) Answer :-

PCR (Polymerase Chain Reation) :-

This technique was discovered by Kary Mullis. The process of amplification of DNA (desired) i.e producing many copies of desired DNA is called Polymerase chain Reation.

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Principle :- Denaturation of DNA strand at high temperature.

Steps :- It contains three steps :-

(1) Denaturation :- The double stranded DNA fragment of desired DNA is denatured (separated) at a high temperature around (92°C).

(2) Annealing :- The joining of RNA primer (oligonucleotides) to the separated DNA fragments according to the complimentarity is called annealing of primer.

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(3) Extension :- The nucleotide bases are joined with the help of or synthesized with the help of Taq polymerase (Polymerase enzyme active at a high temperature obtained from Thermas aquaticus bacteria). The taq polymerase synthesize new DNA strand and the DNA is extended.

30 such cycles of PCR produces the DNA 1 billion times the of DNA before PCR.

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- Requirements of PCR :-

(i) Taq polymerase
(ii) Nucleotides
(iii) RNA primer

Diagram :-

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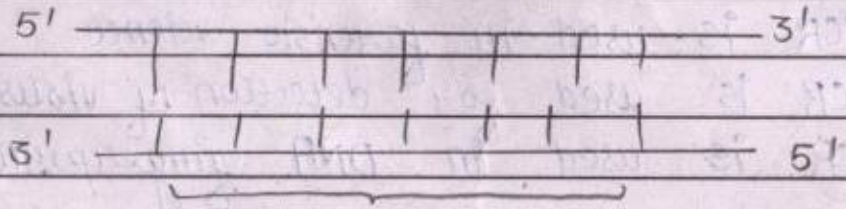
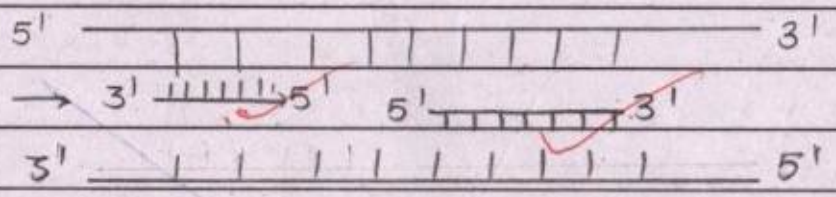
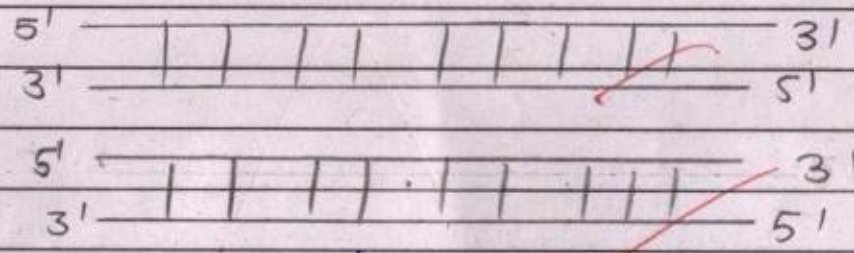


Region to be amplified

↓



↓ Taq Polymerase + Nucleotides



↓ x 30 times

1 billion copies.

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Uses :- (i) PCR is used in forensic science.
(ii) PCR is used for detection of viruses.
(iii) PCR is used in DNA fingerprinting.

END