माध्यमिक शिक्षा मण्डल, मध्यप्रदेश, भोपाल

2020

24 पृष्ठीय

परीक्षार्थी द्वारा भरा जावे ↓

परीक्षा का विषय	विषय कोड	परीक्षा का माध्यम
Biology	2 9 1	English

[redacted]

उत्तर पुस्तिका का सरल क्रमांक: 320 - 0327661

परीक्षार्थी का रोल नम्बर

अंकों में

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शब्दों में

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पर्यवेक्षक / सहायक केन्द्राध्यक्ष एवं परीक्षक द्वारा भरा जावे

क :– पूरक उत्तर पुस्तिकाओं की संख्या अंकों में ☐ शब्दों में ☐

ख :– परीक्षार्थी का कक्ष क्रमांक 28

ग :– परीक्षा का दिनांक 11 | 06 | 2020

परीक्षा का नाम एवं परीक्षा केन्द्र क्रमांक की मुद्रा

हायर सैकेण्डरी परीक्षा

पर्यवेक्षक का नाम एवं हस्ताक्षर	केन्द्राध्यक्ष / सहायक केन्द्राध्यक्ष के हस्ताक्षर
सतेन्द्रसिंह 11.6.20	[signature]

परीक्षक एवं उपमुख्य परीक्षक द्वारा भरा जावे ↓

परीक्षक एवं उपमुख्य परीक्षक द्वारा भरा जावे

प्रमाणित किया जाता है कि मूल्यांकन के समय पूरक उत्तर पुस्तिकाओं की संख्या उपरोक्तानुसार सही पाई होलो क्राफ्ट ... अन्दर के पृष्ठों के अनुरूप मुख्य पृष्ठ पर अंकों ... निर्धारित मुद्रा : नाम, पदनाम, ... संस्था के नाम की मुद्रा लगाएं ... उप मुख्य परीक्षक के हस्ताक्षर एवं नि...

कु... वरिष्ठ अध्यापक

मोबाईल न. 94245-9974...

परीक्षक क्रमांक - DH/TD/231/...

V.A. Biology

S.S. Shainsola

DHTW/231/20...

केवल परीक्षक द्वारा भरा जावे।

प्रश्न क्रमांक के सम्मुख प्राप्तांकों की प्रविष्टी करें।

प्रश्न क्रमांक	पृष्ठ क्रमांक	प्राप्तांक
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नोट :– "हायर सैकेण्डरी परीक्षा में केवल वाणिज्य संकाय के विषयों तथा हाईस्कूल परीक्षा ... प्रायोगिक विषय को छोड़कर शेष विषयों हेतु नियमित एवं स्वाध्यायी छात्रों के लिये प्रश्न ... 100 अंकों का होगा किन्तु नियमित छात्रों को 100 अंक के प्राप्तांक का 80% अधिभ... एवं स्वाध्यायी छात्रों को 100 अंक के प्राप्तांक ही अंकसूची में प्रदर्शित किये जायेंगे।"

... अंकों में

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de'mat

प्रश्न क्र.

Answer of Q.1

fill ups —

Ans(i) Panmenogenetic.

(ii) Sutton.

(iii) Micropropagation.

(iv) Palindromic site.

(v) Tropical forest. (Lung of Earth)

Answer of Q.2

Choose the correct option:

Ans(i) (d) Conidia.

Ans(ii) (b) Coenozoic.

Ans(iii) (d) Alcoholism.

Ans(iv) (b) Bacillus Thuringiensis.

Ans(v) (a) 1986.

योग पृष्ठ 2   3 के अंक   कुल अंक

प्रश्न क्र.

Answer of Q.3.

Answer in one word :

Ans (i) Ovulation.

Ans (ii) Antisense strand.

Ans (iii) AUG.

Ans (iv) fisheries.

Ans (v) Micro-Bio-controlling ~~method~~ pest. eg. ladybird and Gambusia fish.

Answer of Q.4.

Matching :

(a) IUD → (4) Copper T

(b) Mutualism → (5) Lichens.

(c) Biston betularia → (1) Melanism.

(d) Man made Insulin. → (2) Humulin

(e) Energy flow → (3) 10% law.

Answer of Q.5.

→ 'Spermatogenesis' process occurs inside testes and it requires 2 (or) 3°C lower than body temperature (37°C). Thus, testis are situated outside the abdominal cavity.

Answer of Q6.

Interspecific and Intergeneric hybridizations are unsuccessful. Thus, we took two different somatic cell of different species. Then we treat them with cellulase, protease to get the naked protoplasm and the fusion of protoplasm produces new hybrid. This process is called somatic hybridisation.

eg. Pomato (Potato + Tomato)

Bomato (Brinjal + Tomato)

(5) [ ] + [ ] = [ ]

योग पूर्व पृष्ठ | कुल अंक

प्रश्न क्र.

Answer of Q.7.

Biomagnification

The process of deposition of non-biodegradable substance in various tropic levels of ecosystem is known as Biomagnification.

eg. Deposition of D.D.T in aquatic ecosystem.

Answer of Q.8. (OR)

Amniocentesis.

→ The process of determination of various genetical diseases such as Down syndrom Phenylketonuria can be detected before birth of foetus.

→ This technique is banned in India because of increased female foeticide.

→ This process is known as Amniocentesis because it occurs by the analysis of Amniotic cell collected from pregnant mother.

योग पू

कुल अंक

प्रश्न क्र.

B S E

Answer of Q.9

Genetically modified organism (G.M.O)

"These are the transgenic cell which are manipulated by alien DNA."

Importance: (1) It can be used in Agricultural field, for getting pest resisting G.M.O crop.
ex. Bt-cotton.

(2) It can be used in Biofortification

ex. Golden rice is a G.M.O and it is rich source of vitamen A and caretonoid.

Answer of Q.10

Insitu conservation: The process of protecting the extincting animal and plant species by making protective area in their natural habitat.

eg. Safari Park, etc

Ex-situ conservation

The process of protection of animals and plants that are on the verge of extinction, are transferred to a place with human protection.

eg. Zoological park, etc.

Answer of Q.11

Operon model: It is a model which consists of functionally inter-related structural gene, such as -

(1) Repressor or Inducer.
(2) promoter
(3) operator.
(4) Tricistronic structural gene.

These (4) structural gene form Lac-operon model.

→ This model is Inducible model.

→ This model is catabolic model.

8

[box] = [box]

य ... 8 क अंक — कुल अंक

प्रश्न क्र.

Normal mode (switch off)

R or I	Promoter (P)	Operator (O)	Structural gene		
			Z	Y	A

(Transcriptase) → X

Active Repressor protein

B
S
E

Switch on mode

R or I	promotor (P)	Operator (O)	Structural gene		
			Z	Y	A

(Transcription) →

Active Repressor

β-Galactoside enz.

Permease enz.

Transacetylase enz.

Lactose + Active repressor

↓

Inactive Repressor

प्रश्न क्र.

→ In Normal condition, lac-operon model is switched off because repressor protein (active) binds to ~~transcription~~ operator and stops Transcription.

→ But when this regulated unit lac-operon kept in presence of lactose. It switches on. Because lactose binds to the active repressor and converts it into inactive repressor.

→ Thus, Transcription of structural gene starts.

* z gene secretes ⇒ β-galactosidase enzyme.

* Y gene secretes ⇒ Permease enzyme.

* A gene secrete ⇒ Transacetylase enzyme.

→ Permease and Transacetylase enzyme increase permeability of medium for entry of lactose.

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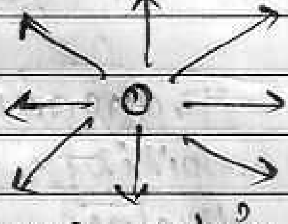
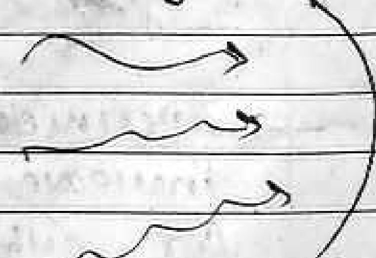
Answer of Q.12

Difference b/w Homologous and Analogous organs.

S.N	Homologous organ	Analogous organ
1.	These organs have same origin and same basic structure.	These organs have different origin and structure.
2.	Their functions may or may not be same.	Their functions are same.
3.	They show Adaptive Radiations.  * same origin ~~different~~	They show convergent radiation  * Same function
4.	Ex- (i) Limbs of Human, Whale, Bat. all mammals	(i) wings of Birds (?) and wing of insect

→ have same structure of limbs such as Carpel, Meta-carpel, Radius-ulna, etc.	→ wing of Dolphin and → wings of Birds are modified fore limb but in Insect it is membranous. → function → same i.e flying.
(ii) ✱ Tendrils and Thorns in pea and Bougainvillia. Both are modification of axillary bud but their function are different.	(ii) Potato and Sweet potato (stem mod.) (root mod.) → function same i.e storage of food.

Answer of Q.13 (or)

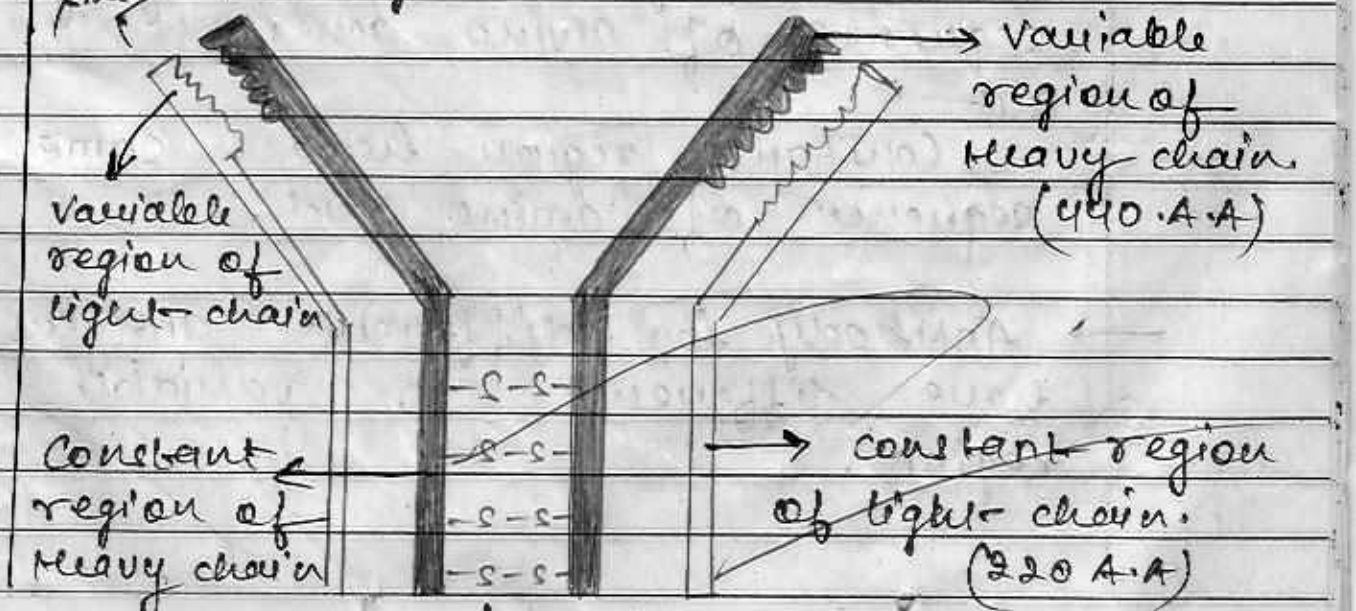


fig: Antibody

प्रश्न क्र.

→ Antibody is a Y shaped structure.

→ It is made up of two heavy and two light chains. (H_2L_2)

→ Heavy chain consist of 440 A.A.

→ Light chain consist of 220 A.A.

→ Both the chains are connected by Disulphide bond. (-S-S-)

→ Antigen binding site is made by variable region of light chain and variable region of heavy chain.

→ Variable region have changing sequence of amino acids.

But

Constant region have same sequence of amino acid.

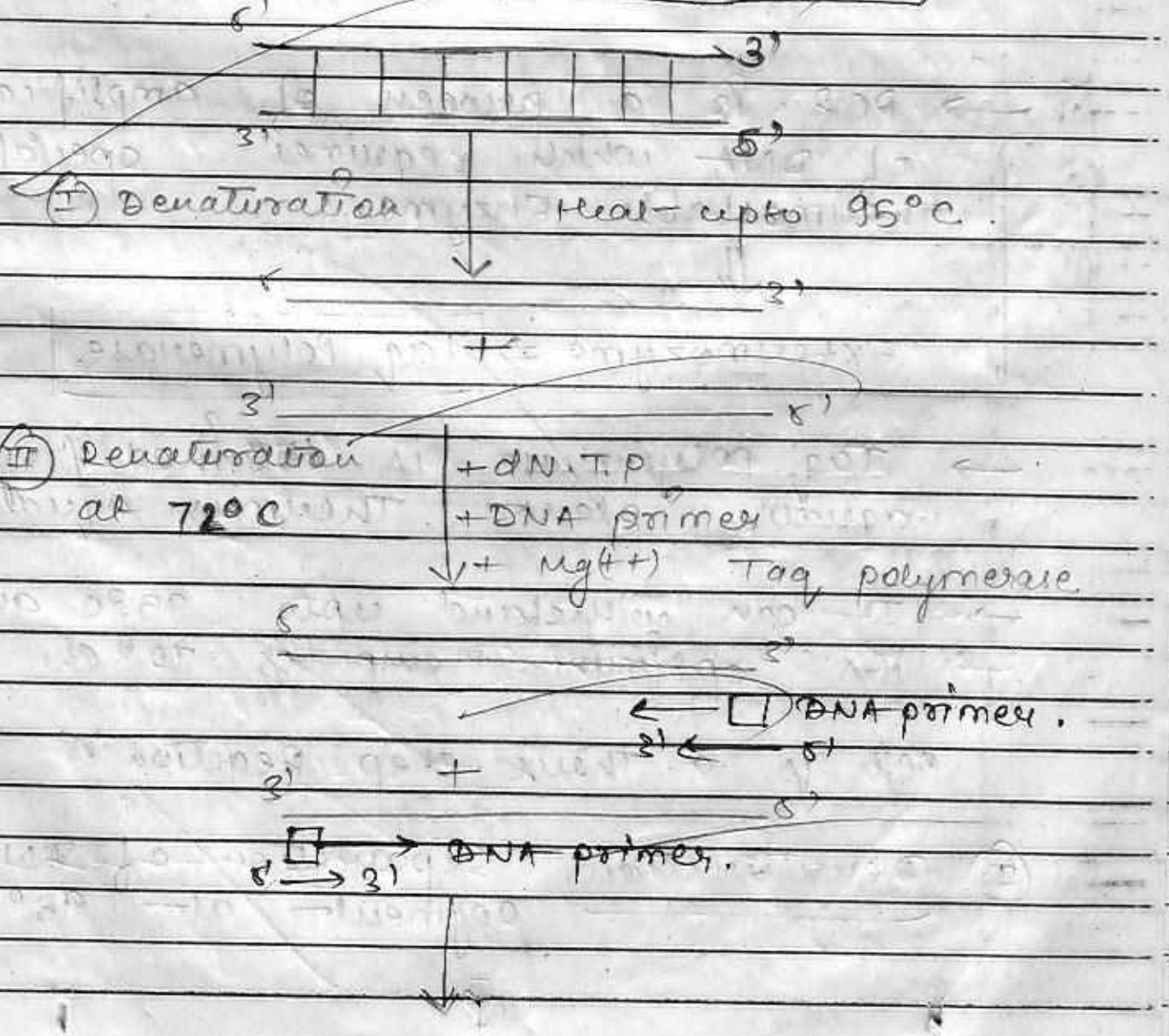
→ Antibody for different antigens have difference in variable region.

→ Antibody for same antigens have difference in constant Region.

Eg Ig^A, Ig^G, Ig^M, Ig^E, Ig^D.

Answer of Q.18.

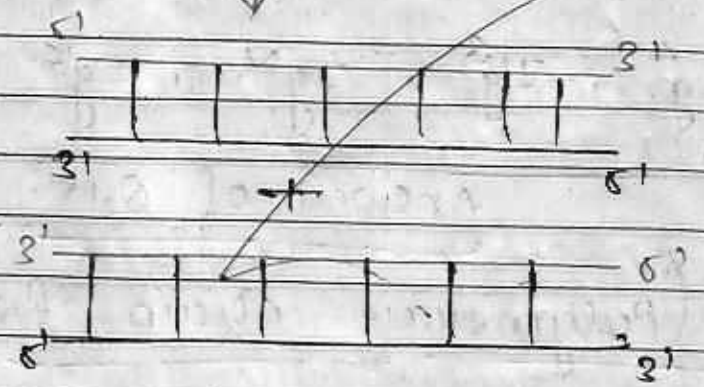
PCR (Polymerase chain Reaction)



योग पृष्ठ 1 + पृष्ठ 14 के अंक = कुल अंक

प्रश्न क्र.

(III) Extension | Slow cooling (42°C)



B → PCR is a process of amplification of DNA which requires special Thermostable Enzyme.

S

E

⇓

Extremozyme ⇒ Taq Polymerase

→ Taq polymerase is obtained from aquatic plant Thermus aquaticus.

→ It can withstand upto 95°C and its optimum Temp is 72°C

PCR is a three step Reaction:

(I) Denaturation; Separation of DNA segment at 95°C.

(II) Renaturation: It occurs at 72°C (optimum temp. for Taq polymerase).

→ DNA primer starts polymerizing the separated strand in direction 5' → 3'.

→ Mg^{++} acts as activator

(III) Extension: In this step DNA amplifies completely at slow cooling (42°C).

⇒ By PCR 1 million copies of DNA can be made in just 30 cycles.

Answer of Q.16

Difference b/w Asexual & sexual Reproduction

S.N	Asexual Reproduction	Sexual Reproduction
1.	It is a primitive method.	It is an advanced method.
2.	Maleness and femaleness are not distinguished.	Maleness and femaleness are distinguished.

3.	No meiosis occurs during gametogenesis	Meiosis occurs during gametogenesis
4.	fertilization absent always.	fertilization occurs always.
5	All the offsprings are clones i.e carbon copy of parents and they are morphologically & genetically similar.	All the offsprings possess variation due to meiosis.
6.	It has no evolution any importance.	It is evolutionary important.

Answer of Q.17.

Law of Dominence

→ This law states that in F_1 generation out of the two trait only dominent trait will express while recessive trait get hidden.

Monohybrid cross.

→ Mendel observe law of Dominence in f_1 generation of monohybrid cross and named it as Ist law of Genetics.

TT × tt

Tall plant — Dwarf plant

gametogenesis

(T) (T) × (t) (t)

(T) (T)

(t)	Tt (Tall)	Tt (Tall)
(t)	Tt (Tall)	Tt (Tall)

All tall plants in f_1 generation

Answer of Q.18 (or)

food chain: It is the prey predator relationship in an ecosystem ~~& Represent flow of Energy.~~

→ It is in order of Higher Tropic level to lower Tropic level.

प्रश्न क्र.

→ Organism of Higher Tropic level consume the organism of lower Tropic level.

→ food chain is of 2 types :

(I) Grazing food chain (G.F.C)

→ It is the predator food chain and energy for its initiation is provided by solar energy.

→ It does not include Decomposers.

eg (1) Grass (T1) → Grasshopper (T2) → frog (T3) → snake (T4)

(2) phytoplankton (T1) → zooplankton (T2) → small fish (T3) → Large fish (T4)

Large fish (T4) → Crocodile (T5)

Large fish (T4) → Kingfisher (T5)

प्रश्न क्र.

→ In aquatic ecosystem, it is longer because no. of carnivores in aquatic ecosystem are more.

(#) food chain is actually flow of energy in ecosystem

(II) Decomposer food chain (D.f.C)

→ It is the shortest food chain in nature.

→ ~~It starts from Decomposer and~~

→ It starts from Detritus and ends at Decomposer (or) Detritivore.

Detritus (fallen leaves) → Decomposer. (Bacteria, microorganism)

Detritivores (Earthworm)

→ sometimes, it get attached to aquatic food chain.

(#). Detritus → Detritivore (earthworm) → small fish → Phytoplankton → Zooplankton → large fish → Crocodile / kingfishers.

Answer of Q.14. (or)

Difference b/w primary and secondary sewage Treatment.

Ans (a) Primary Treatment: It is a mechanical process.

→ It includes 2 steps.

(1) filtration: In this step, the effluent on the surface of sewage water is removed by filtration.

(2) Sedimentation: In this step, pebbles and soil particle combine -ly known as grit sediment down.

→ This sediment mixture is used for road filling.

(b) Secondary Treatment: It is a Biological process.

→ The effluent from primary chamber are poured in Aeration Tank.

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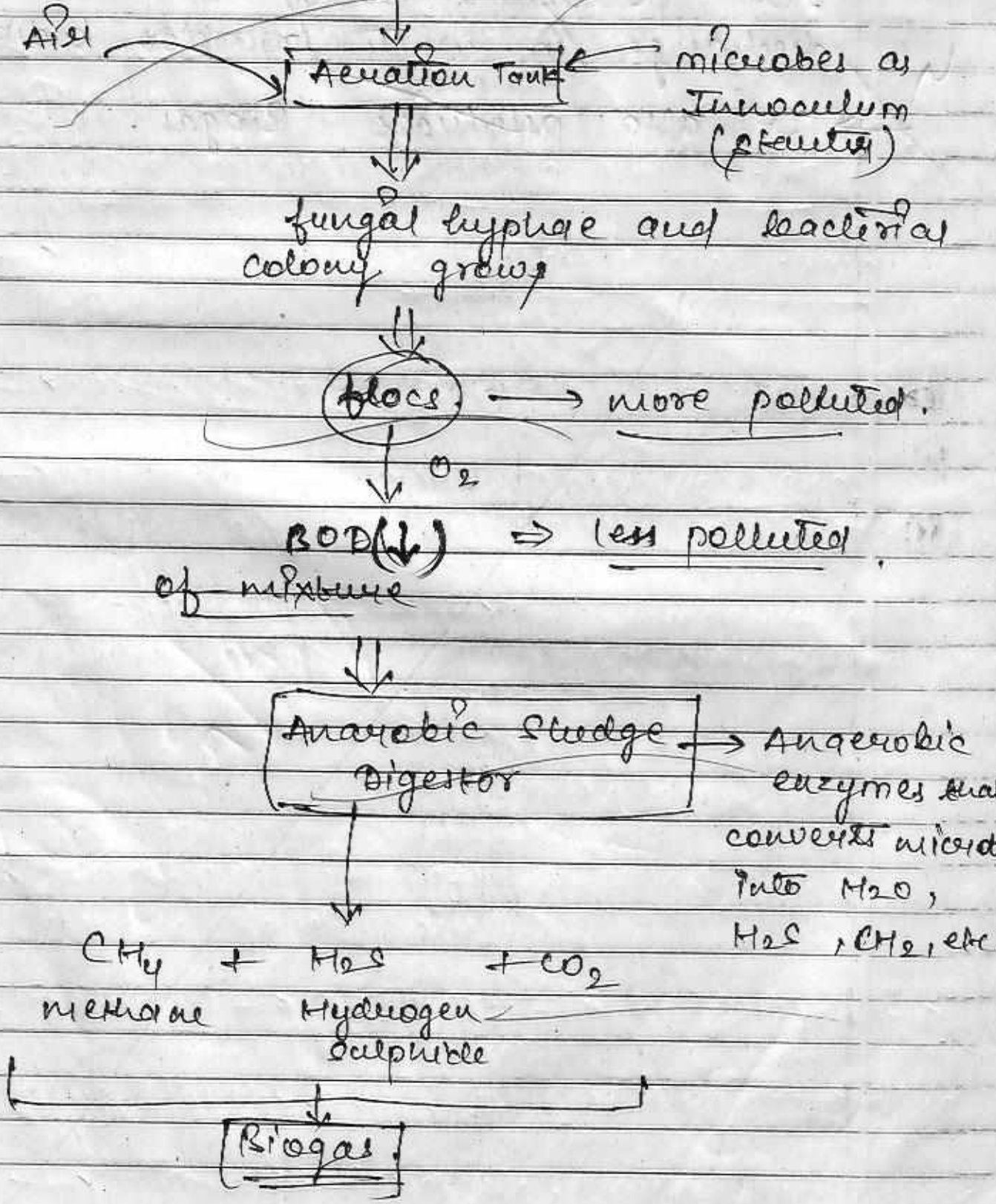
Effluent from primary treatment
Air
Aeration Tank
microbes as Inoculum (starter)
fungal hyphae and bacterial colony grows
flocs
more polluted.
O_2
BOD(↓)
less polluted
of mixture
Anarobic Sludge Digestor
Anaerobic enzymes that converts microbe into H_2O, H_2S, CH_2, etc.
CH_4 + H_2S + CO_2
methane
Hydrogen Sulphide
Biogas

प्रश्न क्र.

→ By Sewage Treatment, water become less polluted i.e BOD(↓) and can be discharge in water bodies.

→ It also produces Biogas.