

परीक्षार्थियों के लिए आवश्यक निर्देश

1. समस्त प्रश्नों का हल निर्धारित शब्द सीमा में इसी उत्तर पुस्तिका में करना है। विशेष परिस्थिति में अतिरिक्त उत्तर पुस्तिका पृथक से उत्तर पुस्तिका भरी हुई होने पर पर्यवेक्षक एवं वीक्षक की अनुशंसा पर ही उपलब्ध कराई जायेगी।
2. प्रश्न-पत्र पर निर्धारित स्थान पर अपना नामांक लिखें।
3. प्रश्न-पत्र हल करने के पश्चात् जिस पृष्ठ पर हल समाप्त होता है, उस पर अन्त में "समाप्त" लिखकर अन्त के सभी रिक्त पृष्ठों को तिरछी लाईन से काटें।
4. निम्न बातों का विशेष ध्यान रखें अन्यथा अनुचित साधनों की रोकथाम अधिनियम के तहत कार्यवाही की जा सकती है।
 - (i) उत्तर पुस्तिका के ऊपर/अन्दर तथा प्रश्नोत्तर के किसी भी भाग में चाही गई सूचना के अलावा अपना नामांक, नाम, पता, फोन नम्बर अथवा पहचान की कोई अन्य प्रकार की सूचना आदि अंकित नहीं करें अन्यथा "अनुचित साधनों के प्रयोग" के अन्तर्गत कार्यवाही की जावेगी।
 - (ii) उत्तर पुस्तिका के पृष्ठों को फाड़ें नहीं। उत्तर-पुस्तिका के मुख पृष्ठ पर अंकित संख्या के अनुसार पृष्ठ पूरे होने चाहिये। परीक्षार्थी उत्तरपुस्तिका प्राप्त करते ही पृष्ठ संख्या की जांच कर लें यदि पृष्ठ कम/अधिक या क्रम में नहीं हैं तो वीक्षक से तुरन्त बदलवा लें।
 - (iii) परीक्षा केन्द्रों पर पुस्तक, लेख, कागज, केलक्यूलेटर, मोबाईल, पेजर आदि किसी भी प्रकार का इलेक्ट्रॉनिक उपकरण तथा किसी भी प्रकार का हथियार आदि ले जाना निषेध है।
 - (iv) वस्त्र, स्केल, ज्योमेट्री बॉक्स पर कुछ न लिखकर लावें। टेबुल के आस-पास कोई अवैध सामग्री नहीं होनी चाहिये, इसकी जांच कर लें।
 - (v) अपनी उत्तर पुस्तिका/ग्राफ/मानचित्र आदि परीक्षा भवन से बाहर ले जाना दण्डनीय अपराध है, अतः परीक्षा समाप्ति पर उत्तर पुस्तिका वीक्षक को बिना सौंपे परीक्षा कक्ष नहीं छोड़ें।
5. उत्तरों को क्रमानुसार एक ही स्थान पर लिखें। प्रश्न क्रमांक भी सही अंकित करें, अन्यथा दण्ड स्वरूप परीक्षक को 1 अंक कम करने का अधिकार है। बीच में उत्तर पुस्तिका के पृष्ठ रिक्त न छोड़ें। गणित विषय के लिए रफ कार्य उत्तर पुस्तिका के अंतिम पृष्ठों पर करें तथा तिरछी रेखा से काटें।
6. जहाँ तक हो सके प्रश्न के सभी भाग के उत्तर, उत्तर पुस्तिका में एक ही स्थान पर अंकित करें।
7. भाषा विषयों को छोड़कर शेष सभी विषयों के प्रश्न-पत्र हिन्दी-अंग्रेजी दोनों भाषा में मुद्रित है। किसी भी प्रकार की त्रुटि/अन्तर/विरोधाभास होने पर हिन्दी भाषा के प्रश्न को ही सही माना जाये।



(Section - A)

Q.1

Ans → Agamospelmy → Formation of embryo without or the formation of seed. There is no fertilization and syngamy takes place. "Seed without fertilization" is called agamospelmy.

Q.2

Ans → ~~Plottlets~~ Copper (Cu).

Q.3

Ans → Oxido-reductase enzyme.

Q.4

Ans → Auxin.

Q.5

Ans → Polymerase chain reaction.



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Q.6

Ans → Bio-gas → Bio-gas is the gas originated from animals and plant residue, which is used as fuel. Ex: - Bio gas (Methanogen bacteria) of Gobar.

Q.7

Ans → Platelets.

Q.8

Ans → Blindspot.

Q.9

Ans → Adrenaline hormone and non-adrenaline.

Q.10

Ans → Atlas.

Q.11

Ans → Implantation → The process of plantation of embryo in the endometrium of uterus is called Implantation.

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Q.12

Ans → Haemoglobinometry.

Q.13

Ans → M. R. I ⇒ Magnetic Resonance Imaging.(Section-B)

Q.14

Ans → i) $\psi_w = \psi_s + \psi_p$ where,
 ψ_w = Water potential
 ψ_s = Osmotic potential
 ψ_p = Pressure potential.

Water potential is the sum of osmotic potential and pressure potential. It is denoted by ' ψ ' (Psi). Water potential is the free energy of water molecule. Water potential of pure water is zero.

ii) $\psi_w = \psi_s + \psi_p$
 $\psi_w = (-35) + (-5)$
 $\psi_w = -35 - 5$
 $\psi_w = -40$ } Ans



Q.15

Ans \Rightarrow i) $N \Rightarrow$ Nitrogen
 $P \Rightarrow$ phosphorous
 $K \Rightarrow$ Potassium
B, Cu, Zn, Mo etc. } \Rightarrow Critical elements in soil.

ii) Calcium (Ca) and Boron (B).

Q.16

Ans \Rightarrow λ -Bacteriophage is more important vector than M-13. Because of following reasons :-

- i) It is free to replicate as compare to M-13.
- ii) It is easily available.
- iii) It has simple structure derived from phage which has simple linear structure as compare to M-13.
- iv) More cloning power more than 24 kb as compare to M-13.
- v) More no. of restriction sites are present. It is available at low cost.
- vi) Its DNA is linear and double helix structure.
- vii) It is the bacteriophage of E. coli.



Q.17

Ans → In agrobacterium mediated gene transfer, Agrobacterium contain Ti-gene (Tumour inducing gene) which can infect the whole plant. By genetic engineer, the Ti-gene is replaced by another desired gene for the desired plant is called agrobacterium mediated gene transfer.

Q.18

Part-A	Part-B
(i) Groundnut	→ Seed
(ii) Coconut	→ Endosperm.
(iii) Clove	→ dry flower bud.
(iv) Turmeric	→ dried Rhizome.

Q.19

Ans → Blue green algae or Cyanobacteria work as a biofertilizer. It fertilizes the crop and increase the productivity and yield of the crop. It give proper amount of oxygen (O_2) to crop by oxygenic photosynthesis. It help it to bind the Nitrogen (N_2) from atmosphere and used it for the growth of plant. BGA is the first oxygenic photosynthetic bacteria which is helpful in various metabolic or catabolic process in plant to increase productivity.



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Q.20

Ans \Rightarrow Respiratory disorder \Rightarrow (i) Asthma,
(ii) Bronchitis.

(i) Asthma \Rightarrow It is disorder occurs from due to the improper supply of O_2 in alveoli of lung. Which creates suffocation. It is the chronic respiratory problem. Improper supply of air to blood.

(ii) Bronchitis \Rightarrow Bronchi of respiratory tract become hard. And the improper supply of O_2 to blood. It is happen by dust particle, smoke are jammed in the respiratory tract. A worker who work in mining affected by this disorder.

Q.21

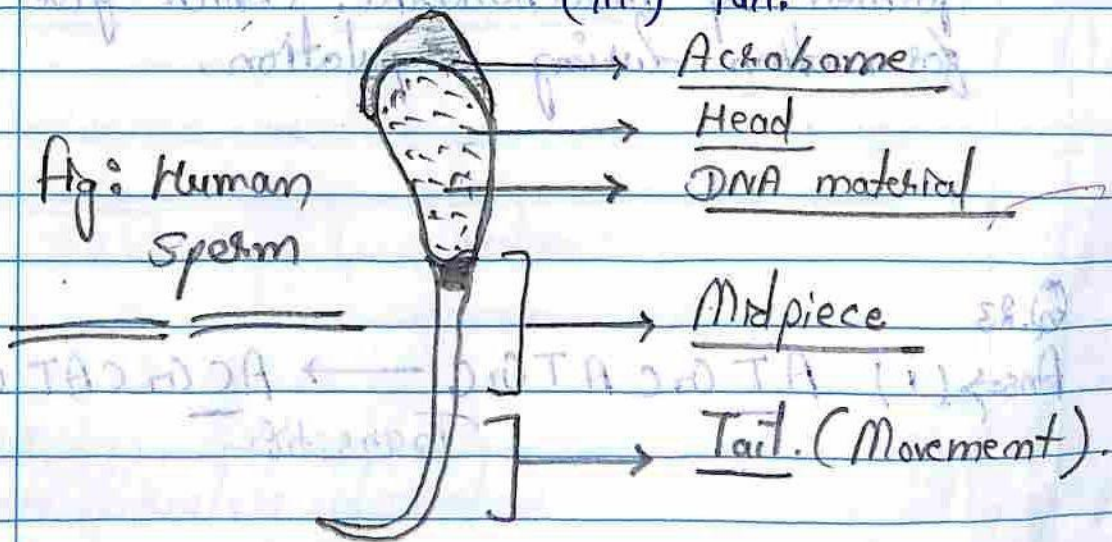
Ans \Rightarrow Luteinizing Hormone (LH-Hormone). The post ovulatory phase is the final stage in menstrual cycle. It occurs from 15-28 days. LH-hormone is increases gradually the formation of Corpus luteum from ruptured graffian follicle. Corpus luteum increases the progesterone hormone which repair the lining of Endometrium. And ready the uterus for



the implantation of embryo. After getting sperm from male pronucle. If the corpus luteum damage the above process could not occur and after it the the next menstrual cycle start. And if fertilization not occur embryo is misguided.

Q.22

Ans → Structure of Sperm → (i) Head
(ii) Middle piece
(iii) Tail.



(i) Head → Head is the topmost part of sperm. It contain genetic material which is helpfull in fertilization.

It contain achosome which is topmost part of sperm cover the head of sperm. In achosome it contain "Hyloxumidase enzyme" which denature the wall of egg cell



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(ii) Midpiece \Rightarrow It is the middle part of sperm which contains 2 centrioles.

:- (i) Proximal centriole.

(ii) Distal centriole.

Proximal centriole forms the spindle during after fertilization in egg cell. It forms the midpiece of sperm. And distal centriole form tail part of sperm.

(iii) Tail \Rightarrow It is last part of sperm which help it to move in oviduct. It formed by mitochondria, which give energy for motion during computation.

Q.23

Ans \Rightarrow (i) ATGCATGC \longrightarrow ACGCATGC
Transition

(ii) ATGCATGC \longrightarrow ATGAAATGC

Transversion



Q.24

Ans → Antamoeba Histolytic.

- Symptom ⇒ (i) Ulcer in small intestine
(ii) Patches of blood with fecal material.
(iii) Stomach ache and
Stomachache.
- Preservation ⇒ (i) It can be prevented by
the avoiding contaminated
food and eat the core food.
(ii) Drink the boiling water.

(Section - C)

Q.25

Ans → Structure of anatropous ovule ⇒ It is the inverted form of orthotropous ovule. It is found in 80.6% plants. The funicle is attached to the chalazal end. And the micropyle and hilum are in close contact with each other. It is the inverted form of ovule normally.
Ex:- found in gamopetalous plants.

(RT) + (AT)



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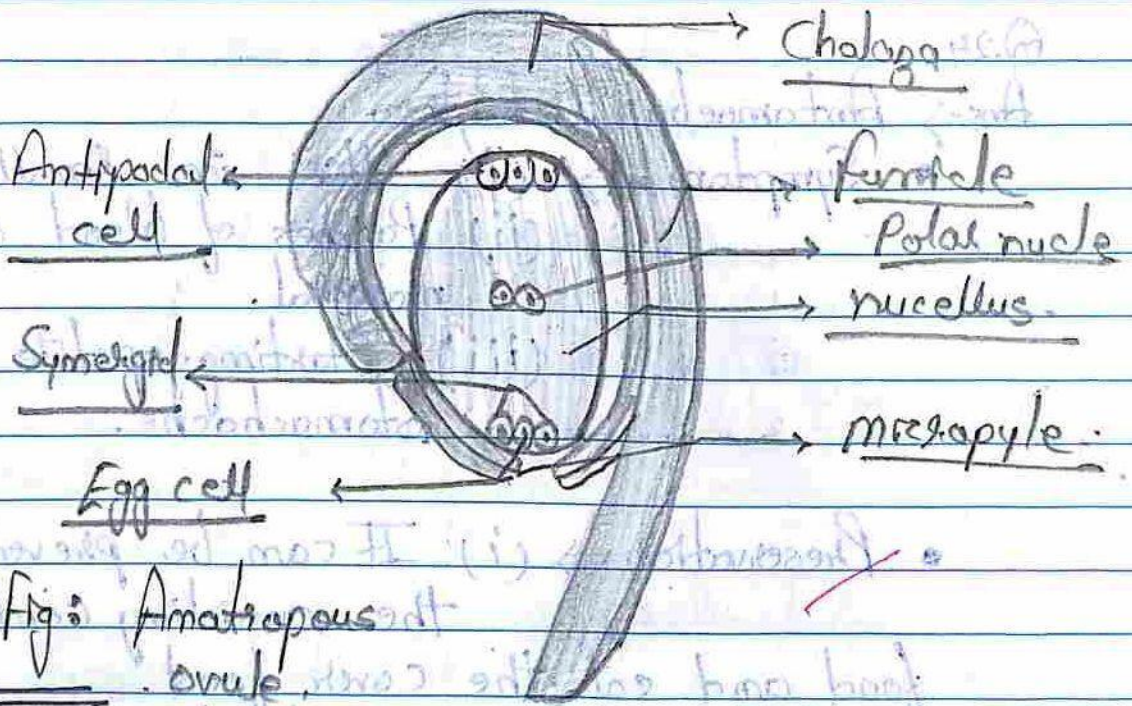


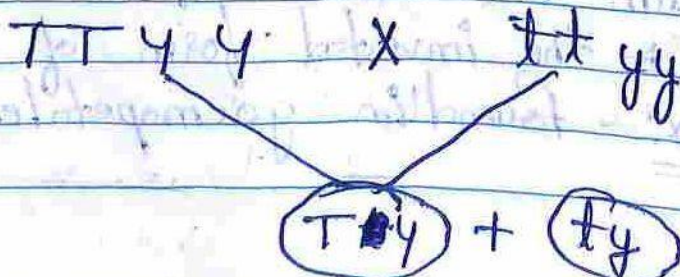
Fig: Anatropous ovule

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Q.26

Ans → Dihybrid Cross ⇒ If is the cross of 2 types of character in same plant is called dihybrid cross.

Mendel dihybrid cross ⇒ When pure tall pure dwarf, and pure yellow pure green the two character mixes.





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♂/♀	TY	ty
TY	TTY	Tty
ty	tty	tty

Phenotypic Ratio :- 3 : 1

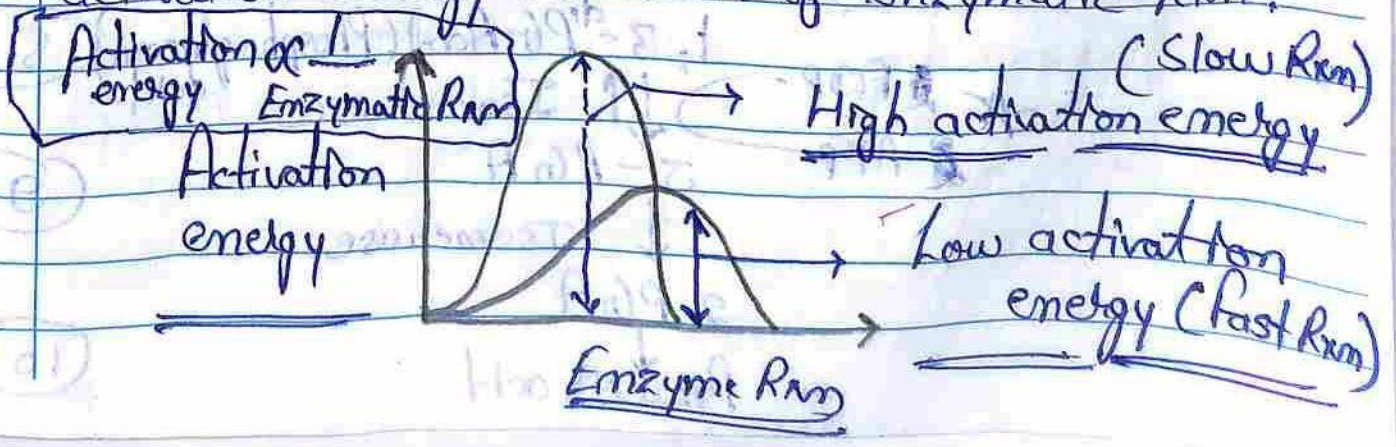
Genotypic Ratio :- 9 : 3 : 3 : 1

for F₂ - generation

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Q.27

Ans) Enzyme is the biocatalyst which increase the rate of the reaction. If the activation energy is low the enzyme work with more and fast. And If the activation energy of enzyme is more then the enzyme work very slowly and less efficiently. Activation energy is the activating power for the enzyme. Low activation energy high rate of enzymatic rxn. High activation energy low rate of enzymatic rxn.





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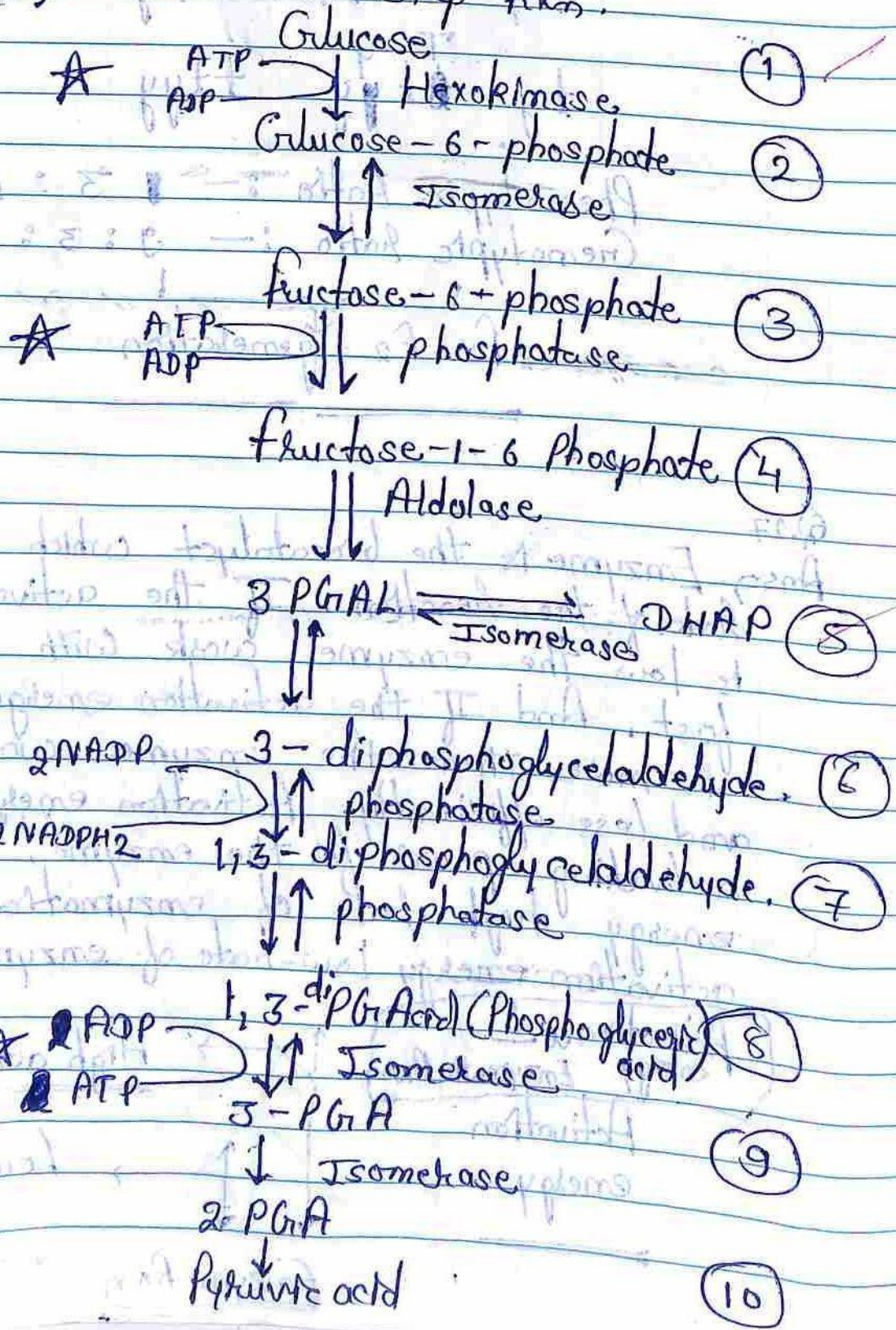
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(Section - D)

Q. 28

Ans \Rightarrow (i) IF occurs in cytoplasm of cell.
(iii) IF is ten step rxn.



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(ii)

(A) Phosphorylation of glucose :-

Glucose is converted into glucose-6-phosphate by enzyme Hexokinase. And by isomerase Glucose-6-phosphate convert into fructose-6-phosphate. 2 ATP is given to Rxn.

(B) Fructose-6-phosphate into fructose 1-6 phosphate :-

It is the conversion of fructose-6-phosphate into fructose 1-6 phosphate by Phosphatase enzyme,

(C) 3PGAL into 3-PGA :- It is the conversion of 3-phosphoglyceraldehyde by isomerase into 3-diphosphoglyceraldehyde. And 1,3-diphosphoglyceraldehyde into 1,3-di phosphoglyceric acid and after 3-diphosphoglyceric acid. 2 NAPH₂ is get from Rxn.

(D) 3-PGA into pyruvic acid :- Conversion of 3-phosphoglyceric acid into 2-PGA and after it into pyruvic acid, 1 ATP is get from the Rxn.



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Q. 29

Ans →

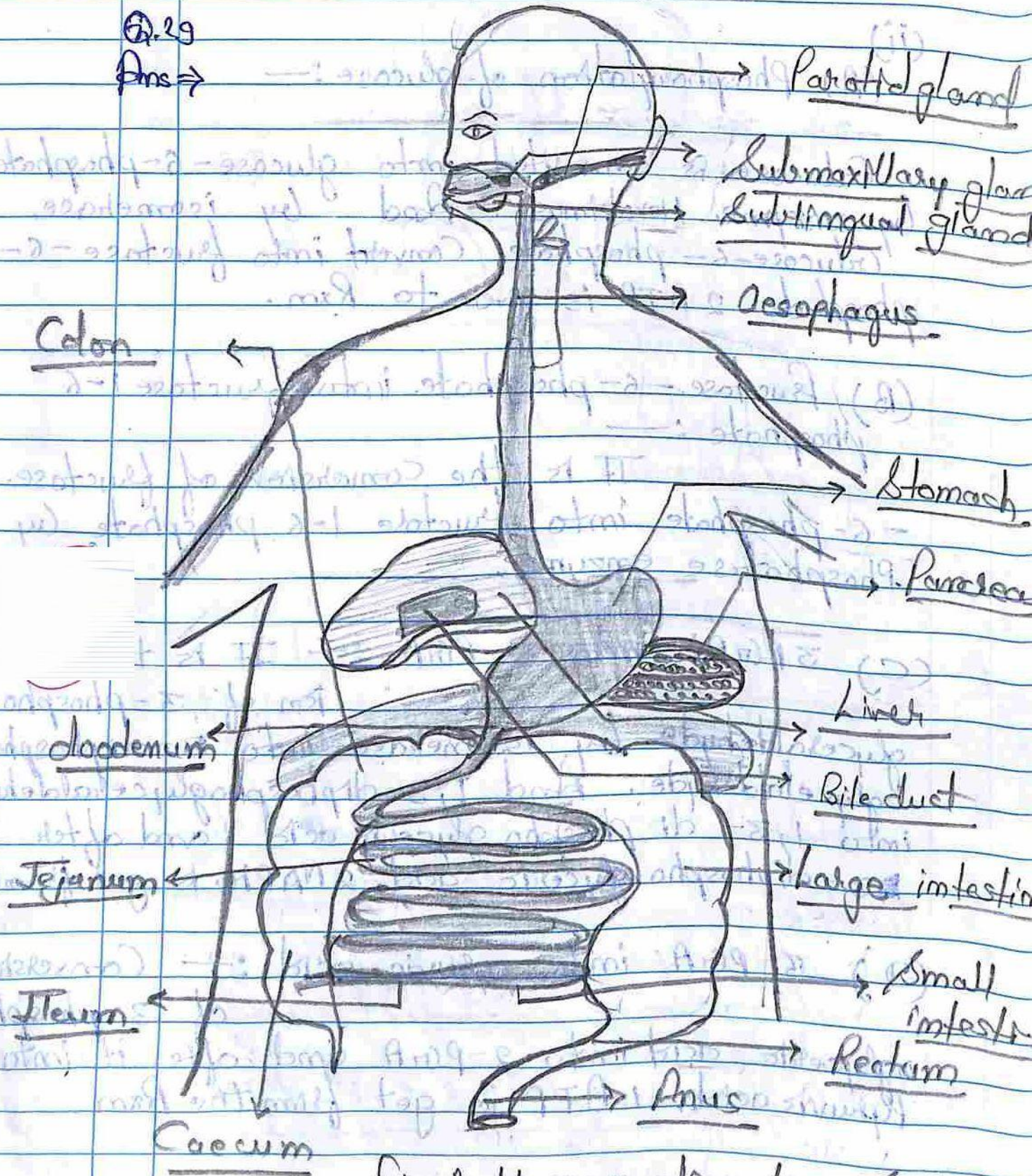


Fig : Human digestive system



- Mechanism of digestion in stomach :- The food enter into the mouth is converted into maltose by action of amylase in saliva. Then the bolus is go to Oesophagus. In the oesophagus mucous is secreted into it. And the bolus is passed to stomach by peristaltic movement in stomach.

Food Amylase, Maltase.

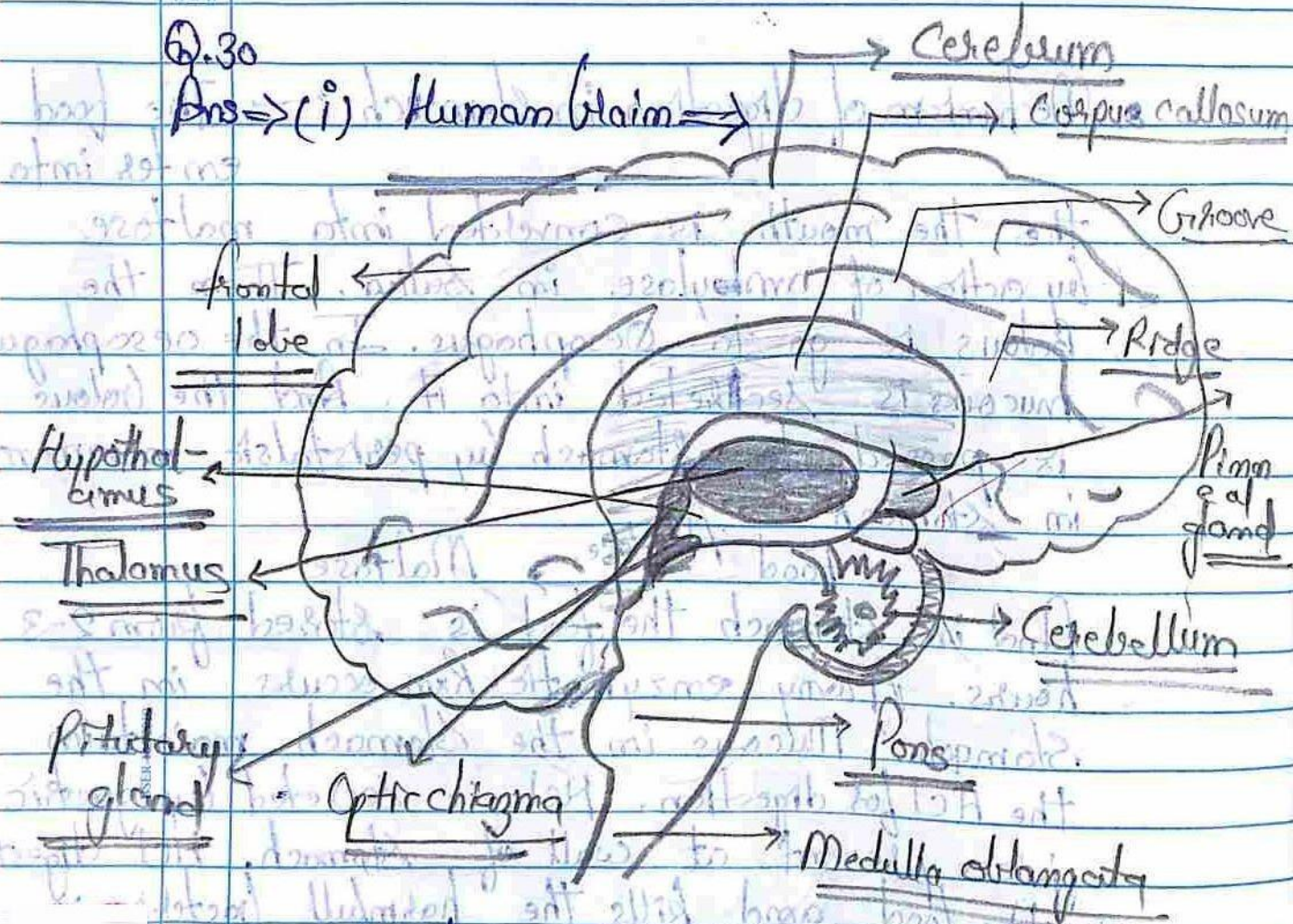
And in stomach the food is stored from 2-3 hours. Many enzymatic rxn occurs in the stomach. Mucous in the stomach maintain the HCl for digestion. HCl is secreted by gastric juices present at wall of stomach. HCl digest the food and kills the harmful bacteria in food. Liver secretes bile juice and pancreas secrete pancreatic juice for breakdown of complex compound into simple and soluble form in the intestine. In intestine the absorption of food occur by villi and absorb all nutrients, vitamins in the food. And passed the chyme into large intestine.

In large intestine caecum absorb water and mineral and in rectum the all absorption process could be done. And remaining part is passed by Anus time to time.

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Q.30

Ans \Rightarrow (i) Human Brain \Rightarrow 

(ii) • Cerebrum \Rightarrow Cerebrum is the front part of brain. Which is divided into

(i) right hemisphere
(ii) Left hemisphere
Left hemisphere controls right side of the body and right hemisphere controls left side of the. It is helpful for mental Exercise.

(iii) • Function \Rightarrow (i) It help us to thought.
(ii) It make memories.
(iii) It make planning and Idea for work.



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The end

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