Test Paper:1 A	Chapter-1	Tinsukia

Time 30 min **Max Marks: 20**

General Instructions:

- *This QP contains **12** Questions. Q1-6 carries 1 mark each. Q 7-10 carries 2 marks each and Q 11-12 carries 3 marks each*
- *Your answer should be brief and relevant*

1	Which individuals can be termed as clones?	**1**
2	How do the following organisms reproduce: a) *Paramoecium* b) *Penicillium*?	**1**
3	Which part of banana and ginger plants are used for vegetative propagation?	**1**
4	In *Bryophyllum,* leaf margins show green structures. What are these? Name another plant having such structure.	**1**
5	What is the vital link between two generations?	**1**
6	Give term for the condition in which a single organism possesses both sex organs.	**1**
7	Why do hilly areas of Kerala, Karnataka and Tamil Nadu transform into blue Stretches that attracts many tourists?	**2**
8	Define 'oestrus' and 'menstrual' cycles.	**2**
9	Differentiate between homogamete and heterogametes.	**2**
10	What regulates the reproduction processes and the associated behavioral expressions in organisms?	**2**
11	Give any three differences between asexual and sexual reproduction.	**3**
12	Enlist the changes that occur post- fertilization in plants.	**3**

	Value Points / Marking Scheme: 1A	Mark Split
1	The individuals who are morphologically and genetically identical are called clones.	**1**
2	a) Paramoecium - binary fission. b) Penicillium - conidia.	**½ +½**
3	The rhizomes of a banana and a ginger are used to propagate new plantlets.	**½ +½**
4	These are leaf vegetative buds. Example- *Begonia.*	**½ +½**
5	Zygote.	**1**
6	Hermaphrodites.	**1**
7	*Strobilanthus kunthiana* which flowers only once in every 12 years flowered in 2006 that resulted into transformation of the hilly tracks of Kerala, Karnataka and Tamil Nadu into blue stretches.	**1+1**
8	Non- Primates like cows, sheep etc. show certain cyclic changes during reproduction called oestrus cycle while Primates like apes, humans the cycle is referred to as menstrual cycle.	**1+1**
9	Homogametes- Gametes which are similar in morphologically and motility. Heterogametes- Gametes which are dissimilar in morphologically and motility. Male gamete is smaller and motile while female gamete is large and non-motile.	**1+1**
10	Interaction between hormones and certain environmental factors regulate the reproductive processes and the associated behavioural expressions of organisms.	**2**

11

ASEXUAL REPRODUCTION	SEXUAL REPRODUCTION
1. There is involvement of only one individual.	1. Two sexually distinct individuals are involved
2. There is no formation of gamete.	2. There is formation of gametes.
3.Syngamy and zygote formation is absent.	3. Syngamy and zygote formation take place.

1+1+1

12 The various post- fertilization changes as observed in plants are **1+1+1**

- The sepals, petals and stamens wither away.
- The pistil remains attached to the plant.
- The zygote develops into embryo, ovary develops into fruit and
- the ovules develop into seeds.

Test Paper:1 B	**Chapter-1**	**Tinsukia**

Time 30 min **Max Marks: 20**

General Instructions:

- *This QP contains **12** Questions. Q1-6 carries 1 mark each. Q 7-10 carries 2 marks each and Q 11-12 carries 3 marks each*
- *Your answer should be brief and relevant*

1	What is a meiocyte?	**1**
2	Give the term for period of growth before an organism attain sexual maturity.	**1**
3	Some organisms reproduce throughout the year. What are they called?	**1**
4	A Papaya plant has staminate flower. What does it mean?	**1**
5	By which event pollen grains are reach up to stigma of a flower.	**1**
6	Where does syngamy occur in amphibians and reptiles?	**1**
7	Differentiate between antherozoid and egg cell.	**2**
8	Homothallic and heterothallic conditions are referred for?	**2**
9	How is zygote differing from zoospore?	**2**
10	Birds are oviparous and humans are viviparous. What does it mean?	**2**
11	In which structure zygote, ovule and ovary developed during post-fertilization changes?	**3**
12	Define embryogenesis. Explain its events in brief.	**3**

	Value Points / Marking Scheme: 1B	**Mark Split**
1	The diploid gamete mother cell which undergoes meiosis.	**1**
2	Juvenile phase.	**1**
3	Continuous breeders.	**1**
4	A flower having with stamens only.	**1**
5	Pollination.	**1**
6	Amphibians- water, Reptiles-land	**½ +½**
7	Antherozoid—Male gamete, motile. Produced in antheridia. Egg cell—Female gamete, non-motile. Produced in archaegonia.	**1+1**
8	Homothallic- Thallus possessing both the sex organs. Hterothallic- Both sex organs are found on different thallus.	**1+1**
9	Zoospore- Asexual spore, Haploid structure Zygote- Result of fusion of two gametes in sexual reproduction, Diploid structure.	**1+1**
10	Oviparous – Animals which lay eggs.	**1+1**

Viviparous- Animals which give birth to fully developed foetus.

11 Zygote-embryo, Ovule- seed and Ovary- fruit. **1+1+1**

12 Process of development of embryo is known as embryogenesis. It includes- **1+1+1**
a) Cell division – increase the no. cells in developing embryo.
B)Cell Differentiation- cells undergo certain modification to form specialized tissue and organs.

Test Paper:2A	**Chapter-2**	**Tinsukia**

Time 30 min **Max Marks: 20**

General Instructions:

- *This QP contains **12** Questions. Q1-6 carries 1 mark each. Q 7-10 carries 2 marks each and Q 11-12 carries 3 marks each*
- *Your answer should be brief and relevant*

1 What is agamospermy? **1**

2 Can snails pollinate the flowers? What do you call such a pollination? **1**

3 In some species of Asteraceae and grasses, seeds are formed without fusion of gametes. Give the scientific term for such type of reproduction. **1**

4 How are pollen stored in a pollen bank? **1**

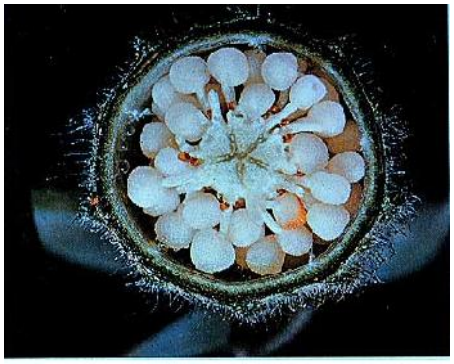
5 Hypanthodium is a special type of inflorescence. Then what is hypanthium? **1**

6 In the embryos of a typical dicot and a grass, which are the true homologous structures? **1**

7 State two differences between Perisperm and Pericarp **2**

8 Draw l.s of anatropous ovule of an angiosperm and label a) Nucellus b) Secondary nucleus. **2**

9 **2**

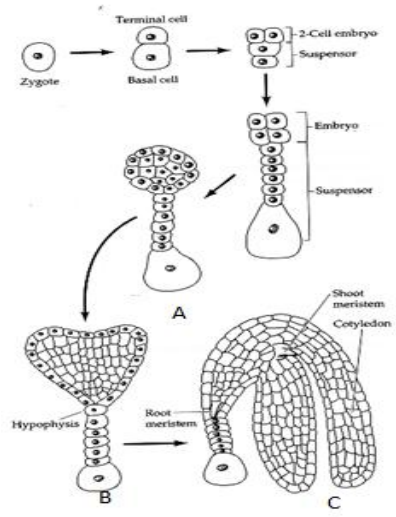


Identify the type of placentations and define them

10 a) Draw a labeled sectional view of albuminous seed. **2**
b) Give two advantages of seeds to flowering plants

11 Continued self pollination lead to inbreeding depression. List three devices, which flowering plant have developed to discourage self pollination? **3**

12 **3**



The diagram represents the stages of dicot embryo development. Label A, B and C.

b)Which type of cell division takes place in embryogenesis?

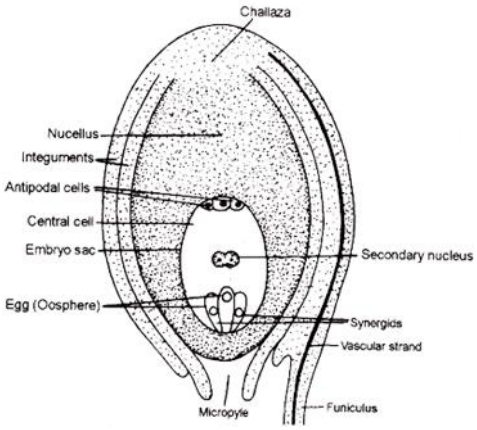
c)Endosperm development precedes embryo development.Justify.

Value Points / Marking Scheme: 2A

		Mark Split
1	The asexual formation of embryos and seeds without the occurrence of fertilization.	**1**
2	Yes, Malacophily	**½+½**
3	Apomixis	**1**
4	Pollen can be stored in a viable condition in pollen bank for many years in liquid nitrogen at -196^{o}C	**1**
5	In some flowers, the stamens, petals, and sepals are fused into a "floral tube" or *hypanthium*.	**1**
6	Cotyledons and Scutellum	**½+½**
7		**1+1**

S.No	Perisperm	Pericarp
1	It represents the persistent remains of nucellus in the seed	It represents the wall of the fruit formed by ovarian wall
2	It is usually dry	It can be dry or fleshy

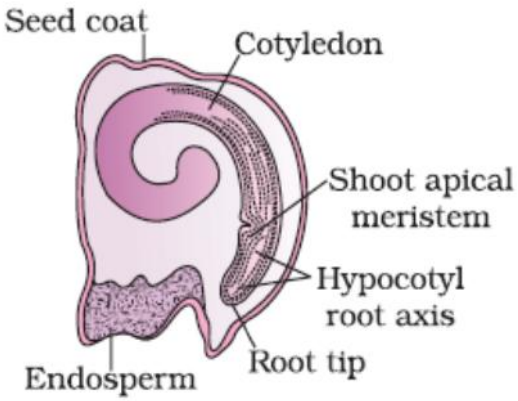
8 **1+½+½**



9 If the ovary is divided, with the ovules born on a line of placentation at the inner angle of each locule, this is axile placentation. **½+½**

An ovary with free central placentation, on the other hand, consists of a single compartment without septae and the ovules are attached to a central column. **½+½**

10 **1+1+½+½**



a)

b)The reserved food material of the seed support the growth o0f the seedling till they become nutritionally dependent

Seeds posses better adaptive strategies for dispersal to form a new colony.

11 (a) Dichogamy: The condition in which the stamens and stigma of a bisexual flower mature at different times. **1+1+1**

(b) Heterostyly:Anther and stigma are at different position/heights in some plants-

(c) Self-incompatibility or Self-sterility

12
a) A-Globular B-Heart shaped C-Torpedo **½+½+½**
b) Mitosis **½**
c) Because the developing embryo requires nutrition for its development which is provided by the endosperm. **1**

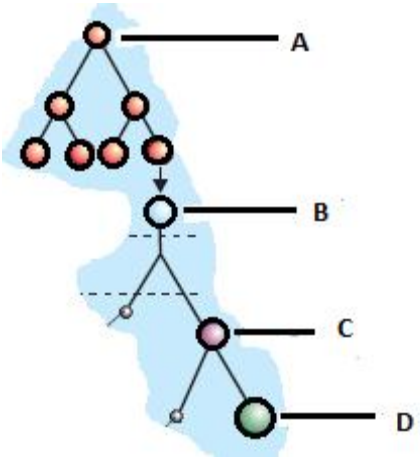
Test Paper:3 A	**Chapter-3**	Tinsukia

Time 30 min **Max Marks: 20**

General Instructions:

- *This QP contains **12** Questions. Q1-6 carries 1 mark each. Q 7-10 carries 2 marks each and Q 11-12 carries 3 marks each*
- *Your answer should be brief and relevant*

1 Where fertilization does takes place in human female? **1**
2 Which cells of embryo have potency to give rise to all tissues and organs? **1**
3 Write two major functions of ovary. **1**
4 How many eggs are released by human female in a month? **1**
5 Which hormone is involved in induction of parturition? **1**
6 What is colostrum? **1**
7 Why testes are situated outside the abdominal cavity within a pouch called scrotum? **2**
8 Identify major differences between spermatogenesis and oogenesis*?* **2**
9 Label A,B, C and D in the following schematic representation of oogenesis. **2**

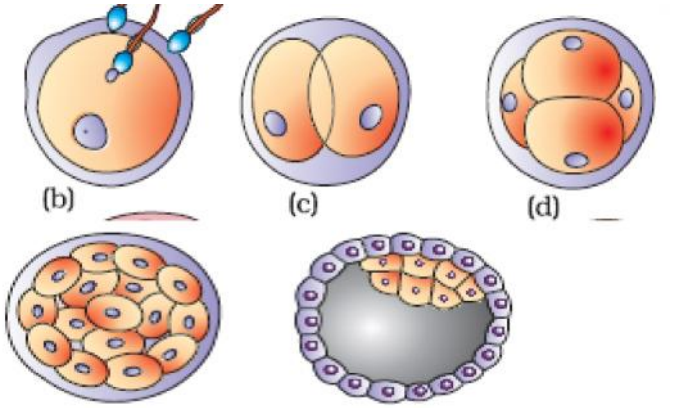


10 Write the function of each one of the following: **2**

1. Seminal vesicle
2. Luteinising hormone in males

11 Draw a labeled diagram of the microscopic structure of sperm. **3**

12 Identify the stage b, c, d, e and f of embryonic development by looking at the diagrams given below: **3**



(e) (f)

What is the name of a cell in stage b and c

	Value Points / Marking Scheme: 3A	Mark Split
1	ampullary-isthmic junction	**1**
2	Stem cells	**1**
3	a) To produce female gametes (ovum) by oogenesis.	**½**
	b) To secete estrogen and progesterone.	**½**
4	One egg	**1**
5	Oxytocin	**1**
6	Milk produced by the mother during first few days after child birth	**1**
7	The scrotum helps in maintaining the low temperature of the testes (2–2.5$_{o}$ C lower than the normal internal body temperature) necessary for spermatogenesis.	**2**

8

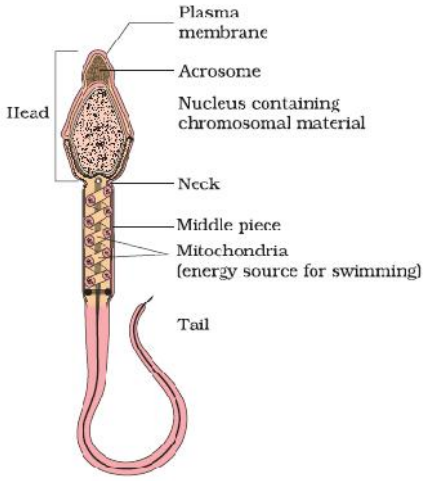
S. No.	**Spermatogenesis**	**Oogenesis**
1	Occur in testes.	Occur in ovaries.
2	growth phase is short	growth phase is very long
3	A spermatogonium produces four functional	An oogonium produces one functional ovum and three non-

1/2x4=2

	spermatozoa.	functional polar bodies.
4	Spermatogonia are formed and added through out life.	no more oogonia are formed and added after birth.

9 A. Oogonia **1/2x4=2**
B. Primary oocyte
C. Secondary oocyte
D. ovum

10 1. Secretions of these glands constitute the seminal plasma which is rich in fructose, calcium and certain enzymes. **1+1**
2. LH acts at the Leydig cells and stimulates synthesis and secretion of androgens.

11 

1 1/2(dig.)+1/2x4(at least 4 labels)

12 b)Zygote **(1/2x5)**
c) 2 celled stage
d) 4 celled stage
e) Morula
f)blastocyst
blastomere **½**

Test Paper: 3B	**Chapter-3**	**Tinsukia**

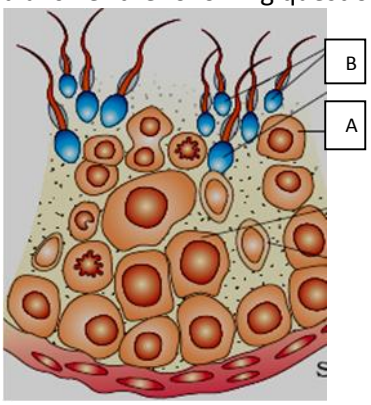
Time 30 min **Max Marks: 20**

General Instructions:

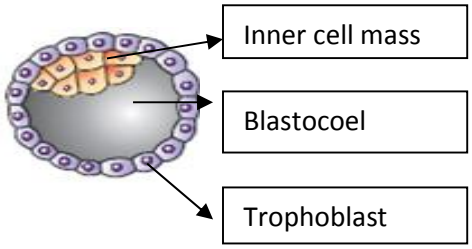
- *This QP contains **12** Questions. Q1-6 carries 1 mark each. Q 7-10 carries 2 marks each and Q 11-12 carries 3 marks each*
- *Your answer should be brief and relevant*

1 Name the cell organelles present in the neck of a human sperm. **1**
2 Which sugar is present in seminal plasma? **1**
3 What is the function of the cells of alveoli in respect to mammary gland? **1**
4 Which structure in an ovary is characterised by a fluid filled cavity called antrum? **1**
5 What is the ploidy of the first and second polar body respectively? **1**
6 Name the tissue which secrete estrogens and progestogens for the maintenance of pregnancy. **1**

7	Mention two functions of FSH during the follicular phase of mensrual cycle.	**2**
8	Mention the accessory glands of male reproductive system. Give a term to the secretions of these glands collectively.	**2**
9	How does the enzymes of the acrosome help in fertilisation?	**2**
10	Draw a neat and a labelled diagram of a blastocyst. Where are stem cell found in the blastocyst?	**2**
11	What are the hormones which are released only during pregnancy? Mention one function of each.	**3**
12	Study the diagram and answer the following question:	**3**



a)Identify 'A' and 'B'.
b)Which cell division takes place to form a primary spermatocyte from spermatogonia?
c)State the function of interstitial cells

	Value Points / Marking Scheme: 3B	Mark Split
1	A proximal centriole and a distal centriole.	**½+½=1**
2	Fructose	**1**
3	The cells of alveoli secrete milk which is stored in the lumens of alveoli.	**1**
4	Tertiary follicle	**1**
5	Both are diploid(23 chromosomes each)	**½+½=1**
6	Placenta	**1**
7	Functions: 1.Stimulates the growth of follicles, 2. Stimulates secretion of estrogen by the growing follicles.	**1+1=2**
8	Accessory glands- a prostrate gland, a pair of bulbourethral glands and a pair of seminal vesicles. Collectively they are called seminal plasma.	**½+½+½+½ =2**
9	The enzymes of the acrosome help to dissolve zona pellucida layer and plasma membrane of the ovum for the entry of the sperm into the cytoplasm of the ovum.	**2**
10	 Stem cells are found in inner cell mass.	**½+½+½+½ =2**

11	The three hormones are:hCG, hPL and relaxin. Function: hCG= stimulates the corpus luteum to secrete progesterone till parturition. hPL= stimulates the growth of mammary glands for lactation. Relaxin=facilitates partrition by softening the connective tissue of the pubic symphysis.	**½+½+½+½ +½+½ =3**
12	a)A=Secondary spermatocyte, B=Spermatozoa b)Mitosis c)They have connective tissue which includes blood vessels Leydig cells.	**½+½+1 +1 =3**

Test Paper: 4A	**Chapter- 4**	Guwahati

Time 30 min **Max Marks: 20**

General Instructions:

- *This QP contains **12** Questions. Q1-6 carries 1 mark each. Q 7-10 carries 2 marks each and Q 11-12 carries 3 marks each*
- *Your answer should be brief and relevant*

1	Name the drug developed by CDRI, Lucknow.	**1**
2	Increasing female foeticide is the result of amniocentesis. How?	**1**
3	Cutting and tying of vas deferens is termed as ----------.	**1**
4	At how many cell stage embryo will transfer in ZIFT?	**1**
5	Lactational amenorrhea is a contraceptive method. How?	**1**
6	Give two examples of copper releasing IUDs.	**1**
7	Write type of surgical methods of contraception.	**2**
8	Oral contraceptives are considered safer than other methods.Justify	**2**
9	Write the full form of ART. List any two techniques.	**2**
10	When does GIFT and ZIFT applied?	**2**
11	What are the objectives of sex education in schools?	**3**
12	Write the aims and objectives of RCH programmes.	**3**

	Value Points / Marking Scheme: 4A	**Mark Split**
1	Saheli	**1**
2	Technique of sex determination in embryonic stage.	**1**
3	Vasectomy	**1**
4	8- celled stage	**1**
5	Intense lactation period – No menstruation	**1/2+1/2**
6	Cu T, Cu7	**1**
7	Vasectomy and Tubectomy	**1+1**
8	Lesser side effects , Non – steroidal preparation	**1+1**
9	Assistated Reproductive Technologies.IVF, AI (Any relevant answer)	**1+1/2+1/2**
10	Failure of natural fertilization, Inability in production of ova.	**1+1**
11	Aware them regarding adolescence and sex related problems .	**1+1+1**
12	Awareness regarding reproduction related aspects. Reproductively healthy society with facilities and support	**1+1+1**

Test Paper: 5A	Chapter- 5	Kolkata

Time 30 min **Max Marks: 20**

General Instructions:

- *This QP contains **12** Questions. Q1-6 carries 1 mark each. Q 7-10 carries 2 marks each and Q 11-12 carries 3 marks each*
- *Your answer should be brief and relevant*

1	What type of allele produces its effects only in homozygous individual . a) dominant, b) recessive, c) incomplete dominant , d) incomplete recessive.	**1**
2	Write the phenotypic ratio of di hybrid cross.	**1**
3	Name two organisms where males are heterogametic.	**1**
4	Scientific name of garden pea is _____	**1**
5	Tendency of gene to link together in a same locus is called _____	**1**
6	Name two Mendelian disorder that are sex- linked	**1**
7	Distinguish between monohybrid and dihybrid cross.	**2**
8	What is trisomy, Give an example.	**2**
9	What is co-dominance, give an example.	**2**
10	Write four symptomps of Turner"s syndroms.	**2**
11	Mentions the advantages of selecting pea plant for experiment.	**3**
12	What is Pedigree analysis? Write advantages.	**3**

	Value Points / Marking Scheme: 5A	Mark Split
1	b. recessive	**1**
2	9:3:3:1	**1**
3	Human and Drosophilla	**1**
4	*Pissum sativum*	**1**
5	Linkage	**1**
6	Haemophilia , colour blindness	**1**
7	Crossing between asingle con trasting character/two contrasting character. Phenotypic ratio of monohybrid cross is 3:1/ dihybrid is 9:3:3:1.	**1+1**
8	Three copies of a particular chromosome present in a cell, example- Down"syndrome	**1+1**
9	When alleles express themselves equally,. Blood group AB.	**1+1**
10	1)sterile female ,2)poorly developed breast 3)short stature. 4) small uterus	**½*4**
11	Pea is a annual plant and cultivated in small area, pollination generally self but cross pollination may take artificially, contrasting characters are not overlapping.	**2+2**
12	It is a system to study the distribution and movement of traits in a series of generation in a family. Sex linked disorders like Haemophilia and colour blindness will be identified and treated by Pedigree .	**2+2**

Test Paper: 6A	Chapter- 6	Kolkata

Time 30 min **Max Marks: 20**

General Instructions:

- *This QP contains **12** Questions. Q1-6 carries 1 mark each. Q 7-10 carries 2 marks each and Q 11-12 carries 3 marks each*
- *Your answer should be brief and relevant*

1	What are the components of a nucleoside ?	**1**
2	Who experimentally proved the semiconservative nature of DNA replication?	**1**
3	How is the nitrogenenous base linked to the pentose sugar ?	**1**
4	Which enzyme is used in the Transcription process ?	**1**
5	Write the dual function of AUG.	**1**
6	Expand VNTR .	**1**
7	State two reasons that favour DNA to be the genetic material than that of RNA .	**2**
8	How are the exons different from introns? Give two points of difference .	**2**
9	Which strand of DNA is transcribed and Why ?	**2**
10	Stat two functions of DNA polymerase .	**2**
11	Who postulated an adapter molecule to link the genetic code and the amino acids? State its two functions.	**3**
12	(i)What are the four levels at which gene expression is regulated in eukaryotic cell ? (ii)Name the regulatory gene of Lac –operon .	**3**

	Value Points / Marking Scheme: 6A	Mark Split
1	Contains nitrogen base and a pentose sugar.	**½.+1/2**
2	Messelson and Stahl.	**½.+1/2**
3	By N-glycosidic linkage.	**1**
4	RNA Polymerase	**1**
5	Start codon and codes for Methionine.	**½.+1/2**
6	Varible number of Tandem repeats	**1**
7	(1) Presence of Thymine in place of Uracil confers additional stability (2) DNA mutates but at a slower rate than that of RNA and hence chemically less reactive.	**1+1**
8	(1)Exons are coding sequences that forms part of mRNA,Introns are non –coding sequences that donot become part of mRNA.(2) Exons are joined together during splicing to make the information continous, Introns are removed during splicing.	**1+1**
9	DNA strand with polarity 3'-> 5' called template strand is transcribed as RNA polymerase can function only in 5'->3' direction because it is complementary to the 3'->5' direction of the template .	**1+1**
10	To catalyse polymerization of nucleotides into polynucleotides. Proof reading .	**1+1**
11	Francis Crick postulated tRNA as an adapter molecule.(1)It has amino acid binding site at 3' end .(2)It has anticodon to recognize the codon on mRNA for the amino acid.	**1+2**
12	(i) Transcription level, Processing level ,Transport of mRNA to cytoplasm , Translation level. (ii) Gene i .	**½*4+1**

Test Paper: 7A	Chapter- 7	Ranchi

Time 30 min **Max Marks: 20**

General Instructions:

- *This QP contains **12** Questions. Q1-6 carries 1 mark each. Q 7-10 carries 2 marks each and Q 11-12 carries 3 marks each*
- *Your answer should be brief and relevant*

1	Who proposed that the first form of life came from pre-existing non living organic molecules?	**1**
2	The wing of bat is homologous to a. arm of a human b. tail of a kangaroo c. tail fin of a fish d. wing of a butterfly	**1**
3	Who provided experimental support for Oparin-Halden hypothesis?	**1**
4	Mention any one source of variation in a sexually re producing organism.	**1**
5	What is meant by gene pool?	**1**
6	Mention the two key concepts of Darwinism.	**1**
7	Would you consider wings of a butter fly and a bat homologous or analogous?	**2**
8	Birds have evolved from reptiles. How does paleontology provide evidence in support of this statement?	**2**
9	What is genetic variability? Name two sources of variation in the gene pool.	**2**
10	Differentiate between convergent and divergent evolution.	**2**
11	How did industrial melanism bring about natural selection?	**3**
12	Explain evolution of DDT resistance in mosquitoes.	**3**

	Value Points / Marking Scheme: 7A	Mark Split
1	Oparin and Halden.	
2	a. arm of human	
3	Urey and Miller	
4	Crossing over , Mutation, Genetic drift, Gene migration(any one)	
5	Sum total of all the genes of all the members of a population is called gene pool.	
6	Variation and Natural selection.	
7	Wings of a butterfly and a bat are analogous organs because they are structurally different but performing same function.	
8	Archaeopteryx was a fossil showing both characters of reptiles and birds. In their	

beak teeth were present.

9 Differences in the genetic materials in members of same population are called genetic variability. It is caused due to mutation ,recombination, gene migration, genetic drift etc.

10 Convergent evolution means performing of similar function by analogous organs and divergent evolution means doing of different functions by homologous organs.

11 Industrial melanism changed the colour of stem into dark due to loss of lichens which causes easy predation of white moth increasing the number of black moth in course of time.

12 Due to continuous exposer of DDT in mosquitoes develop DDT resistance in some individuals of mosquitoes due to their resistant gene which finally evolve as resistant variety

Test Paper: 8A	**Chapter- 8**	Ranchi

Time 30 min **Max Marks: 20**

General Instructions:

- *This QP contains **12** Questions. Q1-6 carries 1 mark each. Q 7-10 carries 2 marks each and Q 11-12 carries 3 marks each*
- *Your answer should be brief and relevant*

1	Write the scientific name of the causative organism of elephantiasis.	**1**
2	What do you mean by malignant tumor ?	**1**
3	What are interferons ?	**1**
4	How does saliva act in body defence ?	**1**
5	What is the test used to confirm typhoid ?	**1**
6	Smack is common drug which is consumed by many person. Name the plant from which it is obtained.	**1**
7	What is contact inhibition? How does this phenomenon operate in cancer cells?	**2**
8	Write the full form of ELISA. Give an example of the clinical application of ELISA test.	**2**
9	Due to undue peer pressure a group of adolescents started using opioids intravenously. What are the serious problems they might face in future?	**2**
10	Write the specific symptoms of pneumonia .Name the causative organism.	**2**
11	In which way has the study of biology helps us to control infectious diseases?	**3**
12	Do you think that friends can influence one to take alcohol/ drugs? If yes, how one may protect himself from such an influence?	**3**

	Value Points / Marking Scheme: 8A	**Mark Split**
1	*Wuchereria bancrofti*	**1**
2	When tumor cells spread to different sites of the body	**1**
3	Proteins secreted by virus infected cells, non infected cells are protected from viral infections	**½+1/2**
4	Contains lysosome enzymes, kills bacteria& prevent growth of microbes	**1**
5	Widal test	**1**
6	Latex of poppy plant	**1**

7	Normal cells are surrounded by near by cells-contact inhibition. Cancer cells lost contact inhibition property	**1+1**
8	Enzyme Linked Immune Sorbent Assay. Detection of HIV/ AIDS	**1+1**
9	Infections like HIV& Hepatitis B. Dependence of these drugs	**1+1**
10	Fever, chill, headache .In severe case lips & finger nails may turn bluish.*Streptococcus pneumonia* & *Haemophilous infaelunzae*	**1+1**
11	Awareness about diseases& prevention and control	**1+1+**
12	Yes, counseling, help from parents & peers, medical & professional help.	**1+1+1**

Test Paper: 9A	**Chapter- 9**	**Ranchi**

Time 30 min **Max Marks: 20**

General Instructions:

- *This QP contains **12** Questions. Q1-6 carries 1 mark each. Q 7-10 carries 2 marks each and Q 11-12 carries 3 marks each*
- *Your answer should be brief and relevant*

1	Write down the two strategies to enhance the food production.	**1**
2	Name a common species of hpney bee which can be reared.	**1**
3	Give an example of disease resistance crop plant of Cauliflower .	**1**
4	Is cross-breeding reduce the inbreeding depression?	**1**
5	Why are selected breeds used in the breeding ofplants and animals?	**1**
6	What is blue revolution?	**1**
7	Define mutation?	**2**
8	How is single cell protein provide us the scope to produce food source?	**2**
9	What do mean by tissue culture?Which part of the plant is used in this technique?	**2**
10	Mention the four objectives of biofortification.	**2**
11	How is artificial insemination conducted?Why it is beneficial?	**3**
12	Name the herd improvement programme.Which hormone is administered?At which cell stage the fertilised egg is transferred to surrogate mother?	**3**

	Value Points / Marking Scheme: 9A	**Mark Split**
1	Animal breeding and plant breeding	**1/2+1/2**
2	Apis indica	**1**
3	Pusa subhra or Pusa snowball K-1	**1**

4	Yes.It allows the desirable qualities of different breeds to be combined.	**1**
5	Because selected breeds contain the desirable qualities like high yield and disease resistance.	**1/2+1/2**
6	Revolution in aquatic animals like fish.	**1**
7	Inducing mutation artificially through use of chemicals or radiations,selecting and using the that have desirable characters.	**2**
8	A green algae ,Spirullina is used to produce food rich in protein, minerals,fats,carbohydrates and vitamins in large quantity.	**2**
9	A techenique to propagate the plants from explants is called tissue culture.Meristematic tissues.	**2**
10	i)protein content and quality (ii)Oil content and quality (iii)Vitamin content(iv) Micronutrient and mineral content	**1/2+1/2+1/2+1/2**
11	Semen colleted from the chosen male and injectd into the reproductive tract of selective female.Semen may be used immediately or can be frozenand used later. It can be transported in a frozen formto where the femae housed. It helps in overcome several problems of normal mating.	**2+1**
12	MOET,Follicle stimulating hormone(FSH),8-32 celled stage	**1+1+1**

Test Paper: 10A — Chapter- 10

Time 30 min **Max Marks: 20**

General Instructions:

- *This QP contains **12** Questions. Q1-6 carries 1 mark each. Q 7-10 carries 2 marks each and Q 11-12 carries 3 marks each*
- *Your answer should be brief and relevant*

1 The vitamin whose content increases following the conversion of milk into curd by lactic acid bacteria is: **1**

a. vitamin C
b. vitamin D
c. vitamin B12
d. vitamin E

2 Match the following list of bacteria and their commercially important products: **1**

(i) *Aspergillus niger*	(a) Lactic acid
(ii) *Acetobacter aceti*	(b) Butyric acid
(iii) *Clostridium butylicum*	(c) Acetic acid
(iv) *Lactobacillus*	(d) Citric acid

3 _____ causes large holes in swiss cheese? **1**

4 If a given water sample have more BOD, what does it indicate? **1**

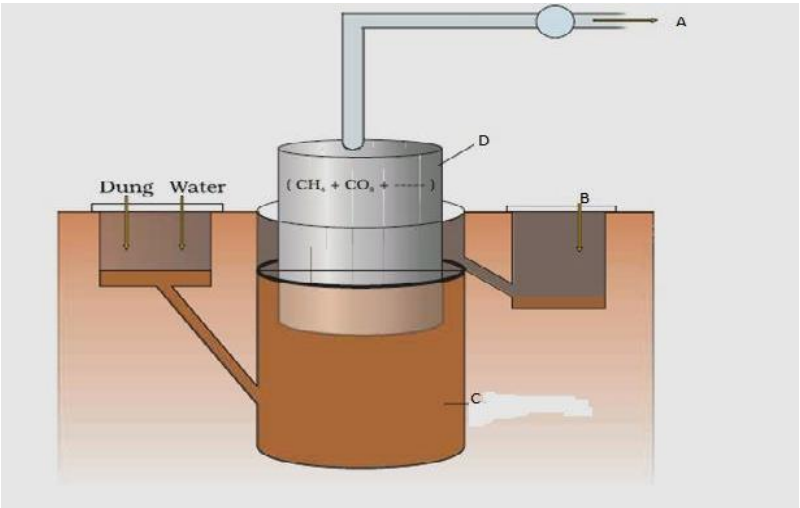
5 Give any two microbes that are useful in biotechnology. **1**

6 How are alcoholic drink wine and beer different from whisky and rum? **1**

7 One farmer of your locality is suffered as soil of his paddy field became less fertile due to excessive use of chemical fertiliser. What would you suggest him? **2**

8 What are flocs? What is their role in WWTP? **2**

9 Label A, B, C, D. **2**



10	Why are Nucleopoly hedroviruses considered as excellent bioinsecticides?	**2**
11	Name any two bioactive molecules, their source microbes and their uses.	**3**
12	Write any three benefits of having mycorrhizal association in plants.	**3**

	Value Points / Marking Scheme: 10A	**Mark Split**
1	c	**1**
2	I d, ii c, iii b, iv a	**1**
3	*Propionibacterium sharmani*	**1**
4	More polluted or more organic material present in it.	**1**
5	*E.coli and Saccharomyces cenevisae*	**1**
6	Wine and beer are made without distillation while rum and whiskey are made by distillation of fermented broth.	**1**
7	Use of biofertilisers like bacteria as *Rhizobium, Azotobactor* and cynobacteria as *Anabaena , Nostoc* etc	**1+1=2**
8	Masses of bacteria associated with fungal filament to form mesh like structure. They consume the organic material and reduce the BOD.	**1+1=2**
9	A- Gas, B- sludge, C- digester, D- Gas holder	**½X4=2**
10	Because they are species specific and no negative impact on other animals.	**2**
11	Cyclosporin A From *Trichoderma polysporum* used as immunosuppressive agent Statins from *Monascus perpureus* used as blood cholesterol lowering agent.	**½ X6=3**
12	Increase in plant growth and development, resistant to root borne pathogens, tolerance to salinity and drought.	**1X3=3**

Test Paper: 11A	Chapter- 11	Bhubaneswar

Time 30 min **Max Marks: 20**

General Instructions:

- *This QP contains **12** Questions. Q1-6 carries 1 mark each. Q 7-10 carries 2 marks each and Q 11-12 carries 3 marks each*
- *Your answer should be brief and relevant*

1 What is the role of restriction endonuclease in biotechnology? **1**

2 Restriction endonuclease usually isolated from bacteria and bacteria use it for its self protection. How? **1**

3 ---------- and ---------- are two main processes used in downstream processing. **1**

4 Name the enzyme that is used to dissolve cell wall of bacteria and plant. **1**

5 A rDNA is inserted in the coding sequence of an enzyme and which inactivates the gene. Give the term for that. **1**

6 Name two natural genetic engineer used in biotechnology process **1**

7 Complete the table given below **2**

Processes	**Enzyme involved**
• Cutting of DNA fragments at specific site	
• Joining of foreign DNA fragments with plasmid	
• Amplification of DNA fragments	
• Dissolve fungal cell wall	

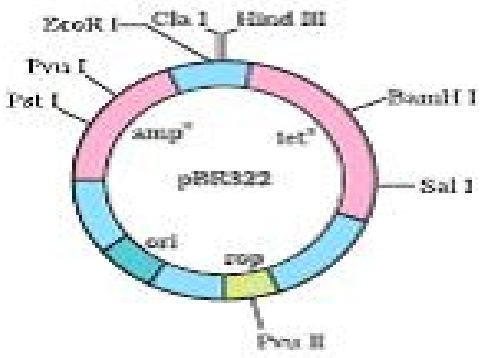
8 Give diagrammatic representation of rDNA technology **2**

9 DNA being hydrophilic cannot pass through the cell membrane of a cell. Explain how recombinant DNA get introduces into the cell to transform the latter. In bacterial culture some of the colonies produce blue colour in the presence of a chromogenic substrate and some did not due to the presence or absence of an insert (rDNA) in the coding sequence of the beta- galactosidase. **2**

a) Mention the mechanism and steps involved in the above experiments.

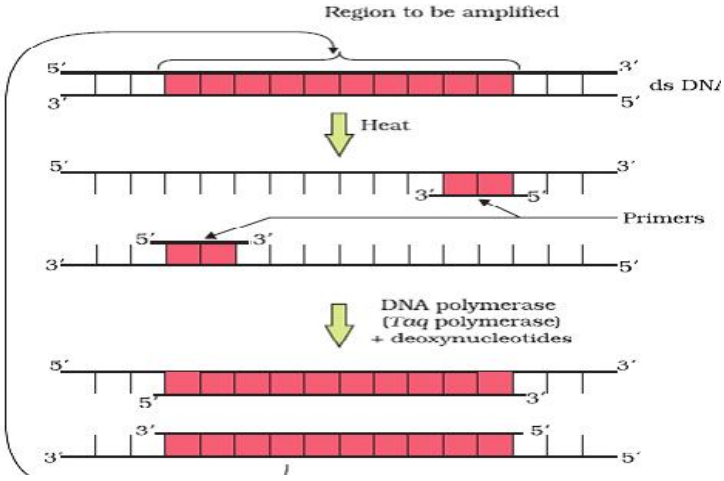
b) How is it better than the technique of plating on two plates having different antibiotics

10 **2**



From the above diagram answer the following question
A) Name the restriction sites
b) what is Rop
c) Name two antibiotic resistance genes.

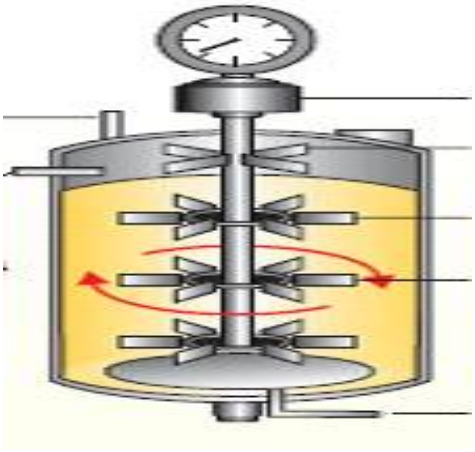
11 **3**



Study the figure given above and answer the following questions given below

- What does the figure represent?
- Name its three steps.
- What is the source of DNA polymerase

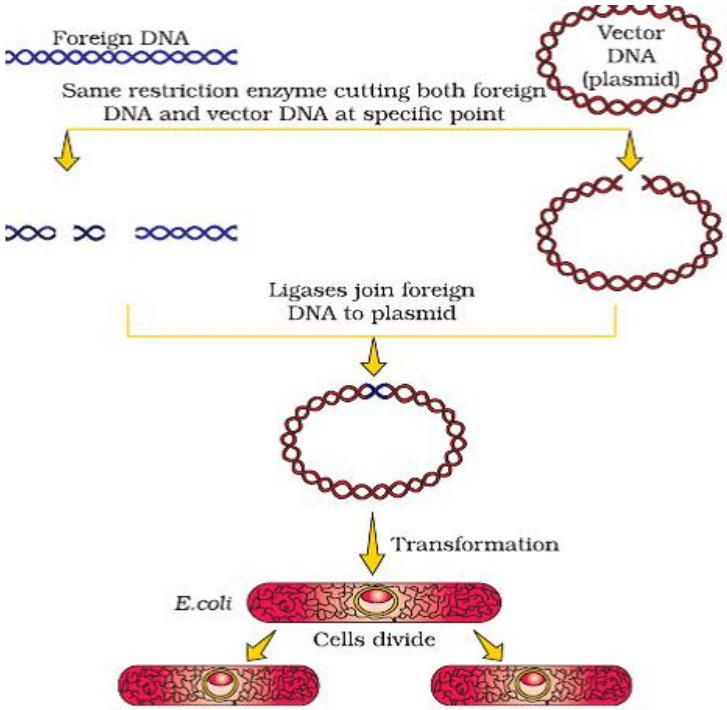
12 **3**



Identify the figure and label any four parts .

	Value Points / Marking Scheme: 11A	Mark Split
1	It cuts the DNA at specific site or specific recognition sequence.	**1**
2	Bacteria itself protect its own DNA by adding 1 or 2 methyl group at its bases in the recognition sequence. As the DNA is modified, so cannot recognized by restriction enzyme.	**1**
3	Separation and purification	**½+1/2 =1**
4	Lysozyme and cellulase	**½+1/2 =1**
5	Insertional inactivation	**1**
6	*Agrobacterium tumefaciens* and retrovirus	**½+1/2 =1**
7	• Restriction endonuclease b) DNA ligase c) Taq polymerase d)chitinase	**1/2x4 = 2**

8 **2**



9 a) Insertional inactivation in which recombinants differ from nonrecombinants on the basis of their ability to to produce colour in presence of chromogenic substrate. A rDNA is inserted within the coding sequence of DNA, due to which it becomes inactive and unable to express. Non-recombinants produce blue colour due to the chromogenic substance as the gene product (enzyme Beta galactosidase) binds with the chromogenic substance. **1+1=2**

b) simultaneous plating on two plates having two antibiotics is a cumbersome procedure

10 a)Hind III, BamH I, Sal I, Pvu II, Eco R I, , Pvu I **1x3=3**

b)Rop codes for the protein involved in the replication of the plasmid

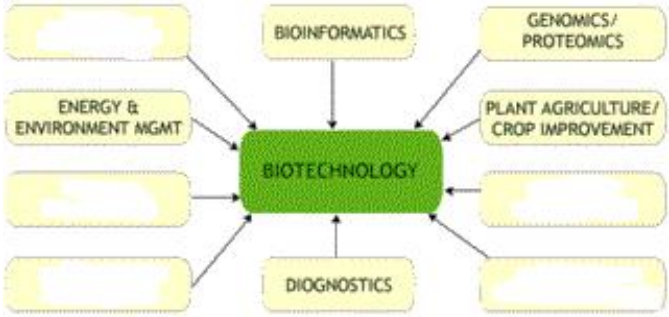
c) Amp^R tet^R

11
- Polymerase chain reaction **1x3=3**
- Denaturation, annealing and extension
- *Thrermous aquaticus*
-

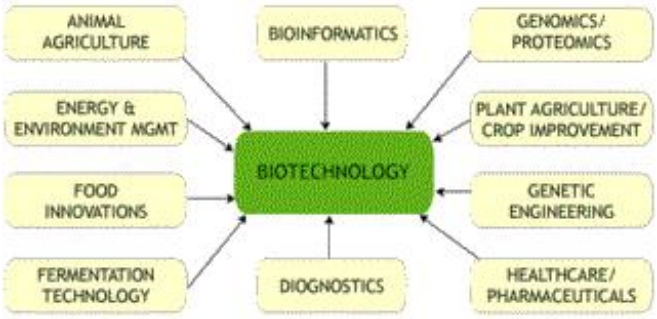
12 Simple stirred tank bioreactor,acid-base pH control,motor, foam breaker, flat bladed impellor, culture broth, sterile air **1+ 1/2x4=3**

EXTRAS

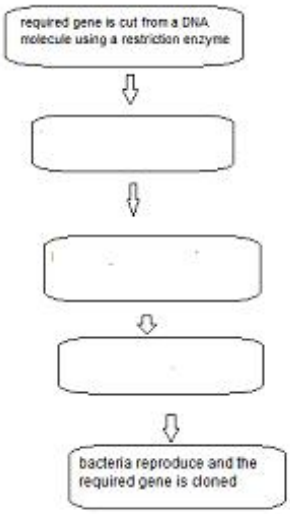
1-Mention the related areas in Biotechnology and fill the boxes.



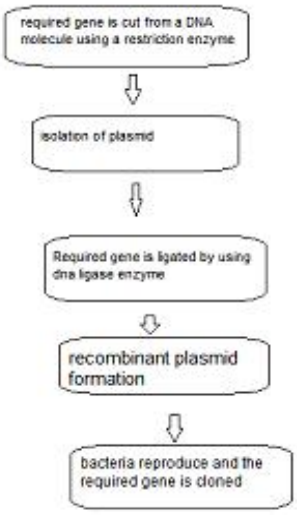
Ans-



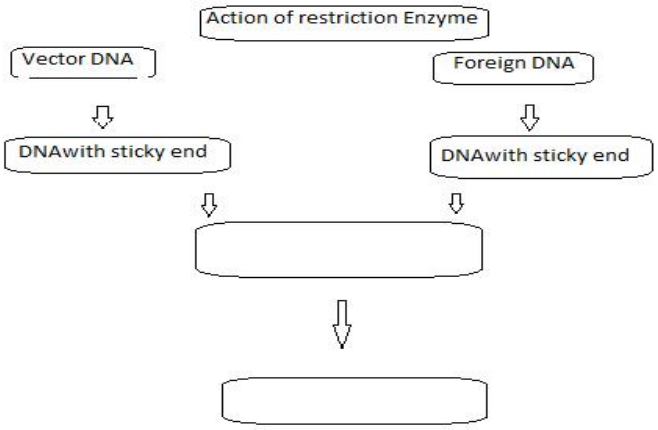
2-The stepsfor recombinant DNA formation are:



Answer:

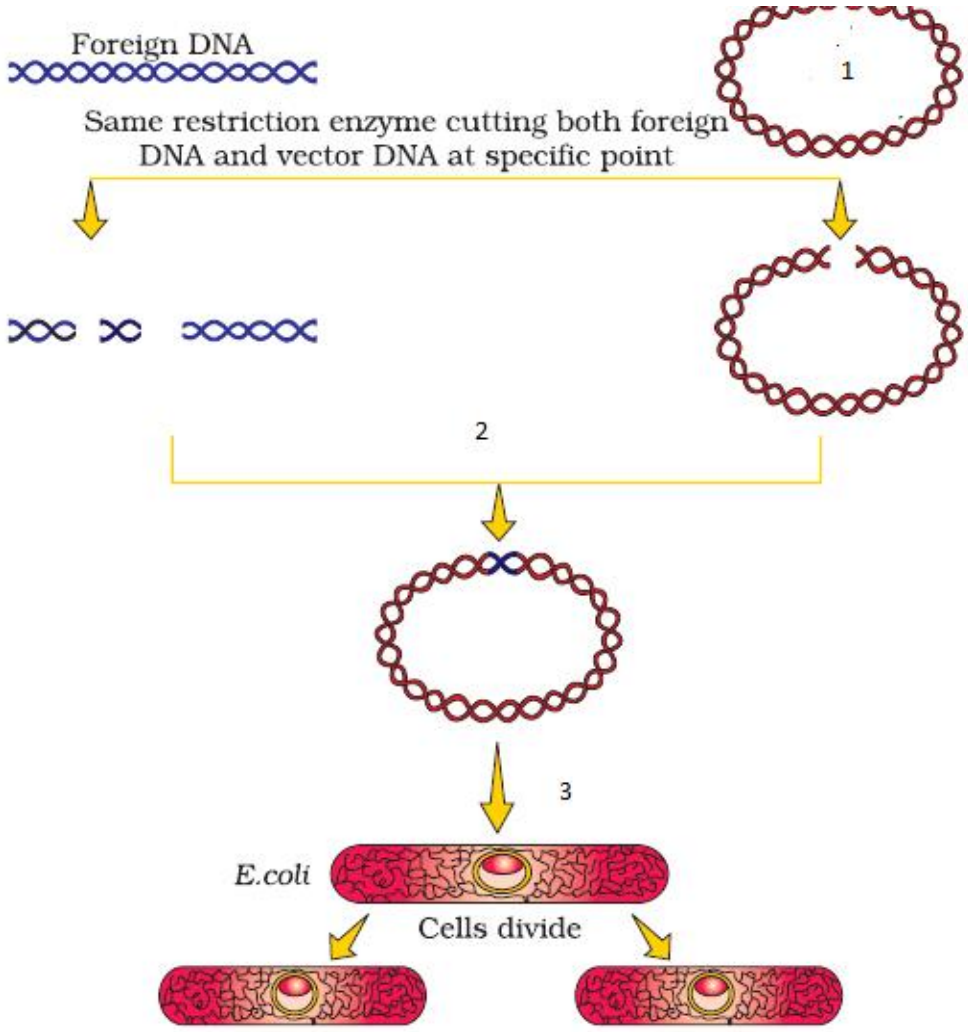


3-



Answer-1-DNA fragments join at sticky ends, 2-Recombinant DNA

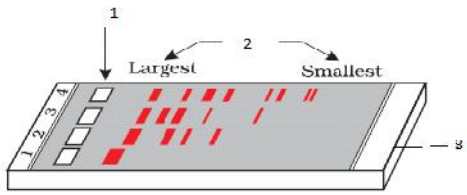
4-Mention the steps 1, 2,3 in a recombinant DNA technology given below.



Answer-1-VectorDNA(plasmid)

2-Ligases join foreign DNA to plasmid 3-Transformation

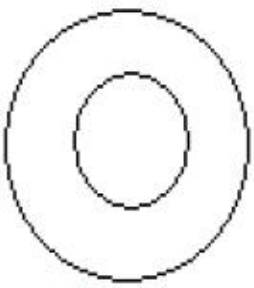
Q5-Mention 1, 2, 3 from the diagram



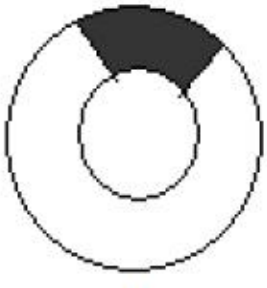
A typical agarose gel electrophoresis showing migration of undigested (lane 1) and digested set of DNA fragments (lane 2 to 4)

Ans-i-wells,ii-DNA bands,iii-Agarose gel

6-What is the difference between the two plasmid?



A



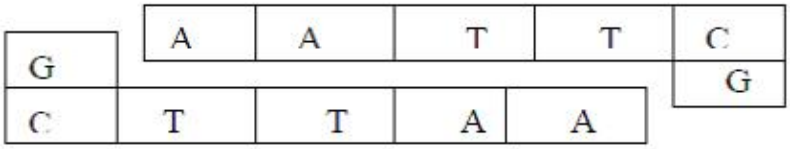
B

Ans-A-non recombinant B –recombinant type

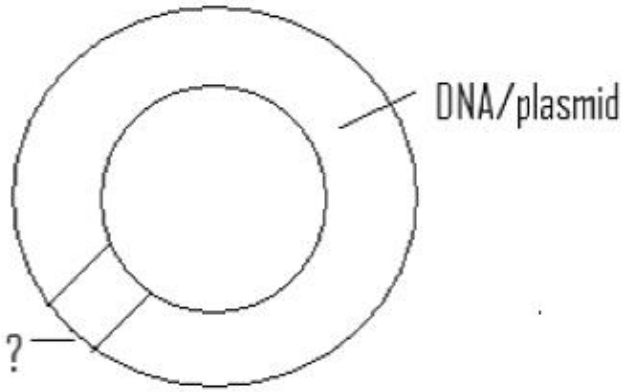
Q7-Name the following:

(i) 5'- GAATTC- 3'
3'- CTTAAG- 5' ----------

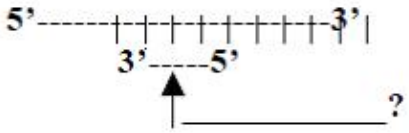
(ii)



(iii)



(iv)



Ans-i-pallindromic sequence

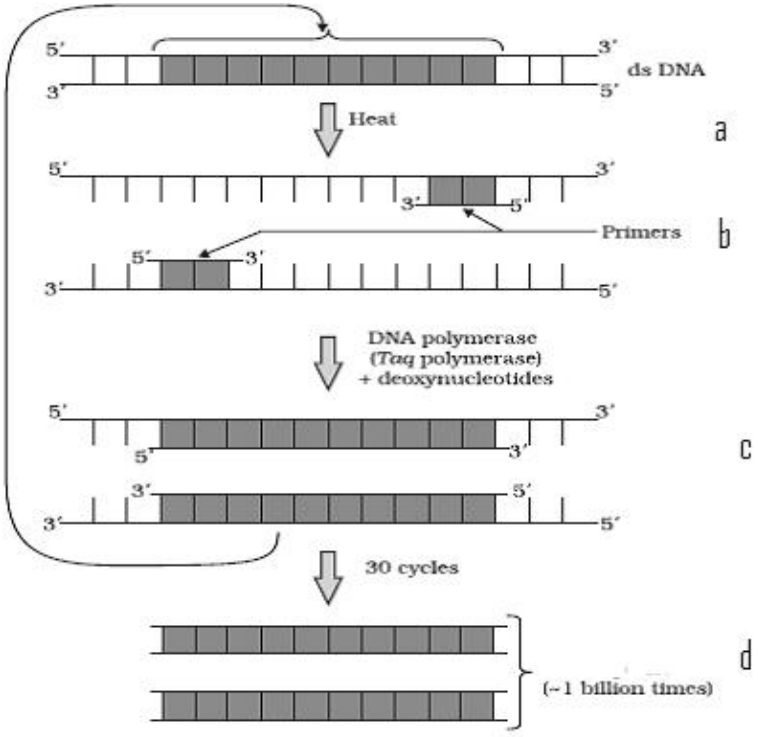
ii-Sticky end iii-Ori-Origin of replication iv-Annealing of primers

Q8-Complete the steps for separation and isolation of DNA fragment.

Cutting of DNA by----------,During ----------the DNA fragments move to---------- DNA fragments separate in the matrix of----------,and the ----------fragments move farther where as---------- fragments remain nearer. The DNA Fragments after staining are exposed to----------,Fragments are extruded from the gel piece,and is known as ----------.

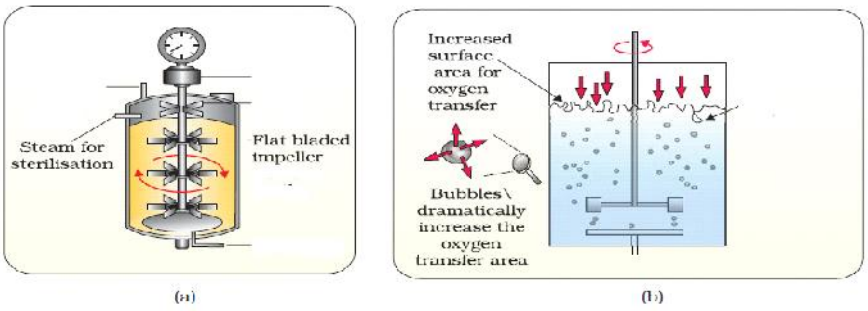
Answer-Restriction endonuclease , Electrophoresis, anode, agarose ,smaller DNA ,larger DNA,UV light, Elution.

Q9-Complete the mentioned part in the following PCR technique.

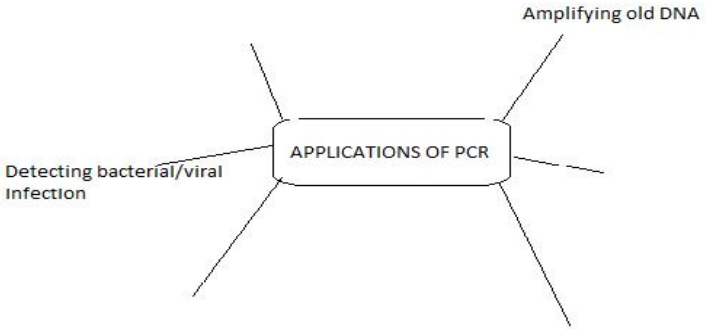


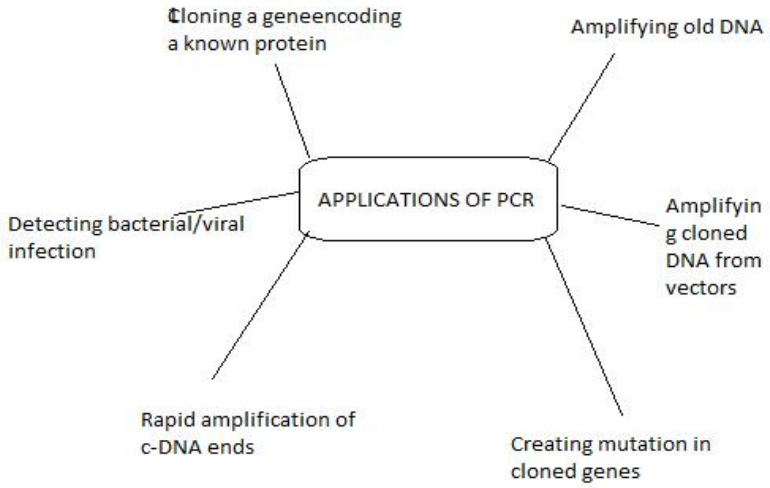
Answer-**a. Denaturing**
b. Annealing
c. Extension
d. Amplification

Q10-Lable the mentioned part and name the type3 of bioreactors given in the figure.



Q11-Applications of PCR technology:





Q12-Show the Stages in Downstream Processing(fill the gaps)

Removal of insolubles ---------- Product Purification----------

Ans- Removal of insoluble Product Isolation Product Purification Product Polishing

Q13-

Ans- Recombinant plasmid

Test Paper: 12A	**Chapter- 12**	**Bhubaneswar**

Time 30 min **Max Marks: 20**

General Instructions:

*This QP contains **12** Questions. Q1-6 carries 1 mark each. Q 7-10 carries 2 marks each and Q 11-12 carries 3 marks each*

Your answer should be brief and relevant

1 Choose the right answer **1**

Process of interference is applicable for

- Prokaryotic organisms
- Eukaryotic organisms
- Both prokaryotic and eukaryotic organisms
- None of the above

2 Why does Bt toxin not kill the bacteria in which it is present? **1**

3 Name the vector through which nematode specific gene is introduced into the host plant **1**

4 Give one difference between genetically modified insulin and natural insulin **1**

5 Name the recombinant vaccine that is currently being used in vaccination program? **1**

6 For which variety of Indian rice patent was made by a USA company? **1**

7 With one example of each give one difference between therapeutic and diagnostic. **2**

8 Name the transgenic cow. Which gene was introduced in this cow? **2**

9 What is GEAC and what are its objectives? **2**

10 Explain the steps of role of Bt toxin **2**

11 A two years old baby is deficient in his immune system since birth. His father was told that this was due to an enzyme deficiency which is crucial for the immune **3**

system to function.
A) Name the enzyme
b) The cause of its deficiency
c) The cure of the disease?

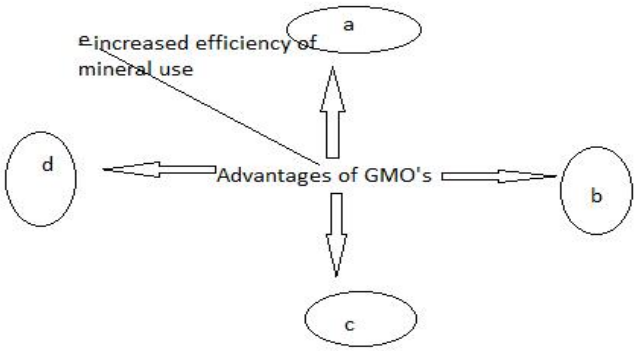
12 A method to present infestation of a nematode *Meloidegyne incognitia* on roots of tobacco is silencing the specific mRNA. What is the scientific name of the technique? How is this performed by ds- RNA? **3**

	Value Points / Marking Scheme: 12A	**Mark Split**
1	Eukaryotic organisms	1
2	It exists as inactive pro-toxin	1
3	*Agrobacterium* vector	1
4	Genetically modified insulin has 2 peptides where as natural insulin has 3 peptides	½ + ½ = 1
5	Hepatitis B recombinant vaccine is used for vaccination of hepatitis virus	1
6	Indian Basmati was crossed with semi-dwarf varieties and claimed as an invention. .	1
7	Therapeutics agent helps in the treatment of a disease where as diagnostic technique identifies a disease. Example of therapeutic s – antibiotics for bacterial disease and diagnostic test – ELISA test for HIV	1+1 =2
8	Rosie, gene for human lactaalbumin	1+1 =2
9	Genetic energy approval committee Objective- a) examine validity of GMO research Inspect the safety of introducing the GM for public services	1+1 =2
10	*Bacillus thuriengiensis* produce incectidal toxin(pro-toxin) consumed by insect alkaline pH in gut activates the protoxin soluble toxic protein binds to epithelial cell of mid gut creates pores cell swelling and lysis death of insect	½ x6 =3
11	• Adenosine deaminase • Defective gene/ deletion of gene that synthesize the enzyme which is hereditary • Gene therapy •	1+1+1=3
12	**RNA interference** (RNAi) RNAi in all eukaryotic organisms involves silencing of a specific mRNA due to a complementary dsRNA molecule that binds to prevents translation of the mRNA (silencing). The source of this complementary could be virus having RNA genome	1+2=3

or transposones. Through Agrobacterium vectors, nematode specific genes are introduced into the host plant.The DNA produces both sense and anti-sense RNA in host cells. The two RNA's being complementaryform double stranded RNA and silence the specific mRNA.

EXTRAS

Q1- Mention the advantages of genetically modified Organisms



Advantages -i) More tolerant to stresses (heat, cold, drought).

ii) Pest resistants GM crops, reduce the use of Chemical pesticides. Eg- BT-Cotton

iii) Reduced post harvest losses. Eg- Flavr savr tomato.

iv) Enhance nutritional value of food. Eg- Golden Rice (Vitamin A enriched).

Q2-

Complete the basic steps to create GMO
(i)----------with desired gene
(ii)---------- into host
(iii) ----------into progeny

Ans (i) Identification of DNA

(ii) Introduction of DNA

(iii) Transfer of DNA

Q3 lines of treatment of ADA deficiency disease are i---------- ii--------- iii----------

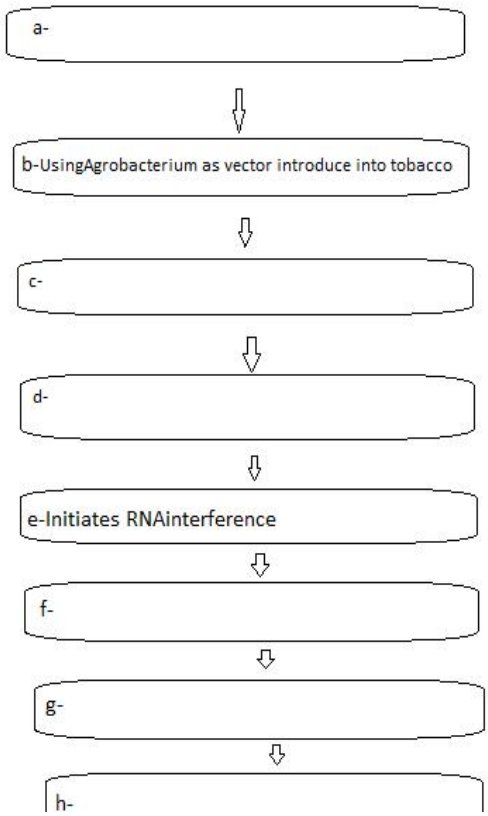
Ans

1] Bone marrow transplantation

2] Enzyme replacement theory

3] Gene therapy

Q4-Write the missing steps in its proper sequence for producing nematode resistant tobacco plant based on RNAi



Ans -a- isolation of nematode specific gene

c- Production of sense and antisense RNA in the host.

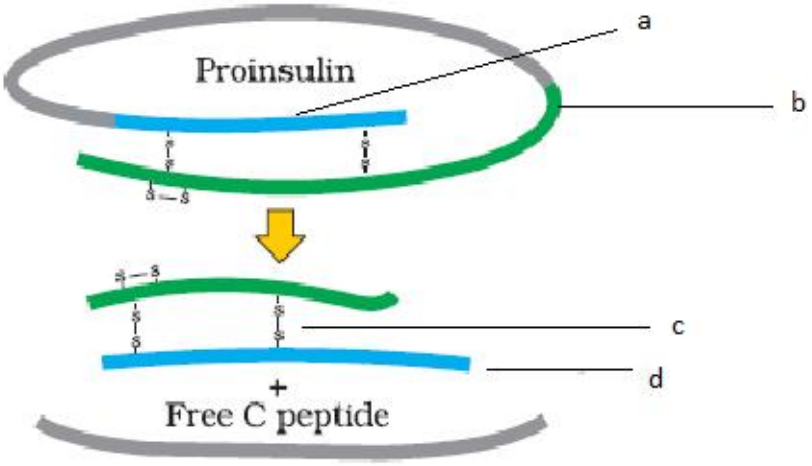
d- Formation of dsRNA

f- Silencing of specific m-RNA of the nematode

g- host expresses the interfering RNA

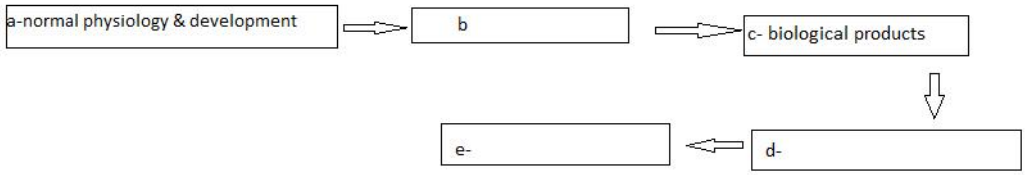
h- Parasite cannot survive and host (tobacco) plant is protected.

Q5-Name the parts mentioned in the formation of matured insulin



Ans
a-Alpha chain-Beta chain-Disulphide link**, d-Matured insulin**

Q6-Reason for production of transgenic animals are:



Ans - b-Study of disease, d-Vaccine safety, e -Chemical safety testing

Test Paper: 13A	**Chapter- 13**	Guwahati

Time 30 min **Max Marks: 20**

General Instructions:

- *This QP contains **12** Questions. Q1-6 carries 1 mark each. Q 7-10 carries 2 marks each and Q 11-12 carries 3 marks each*
- *Your answer should be brief and relevant*

1 Ecology consists of organisms, populations _____ and _____. **1**

2 In recent years, there has been a growing concern about the gradually increasing average global temperatures. If this trend continues, would you expect the distributional range of some species to be affected? **1**

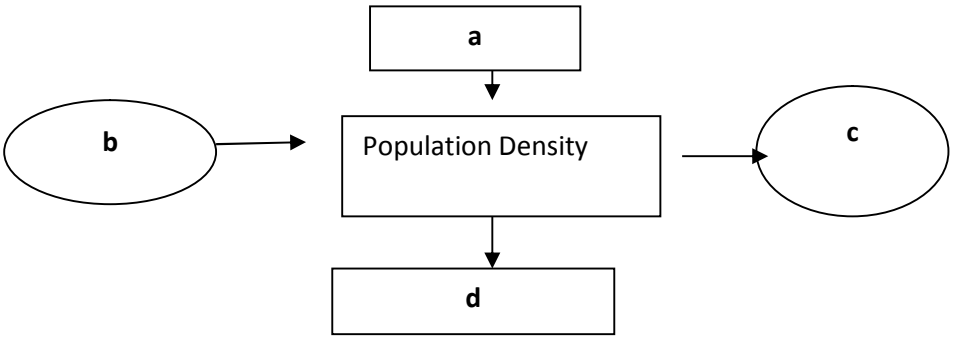
3 N1= N0+ (B+I) _ (D+E) .In the given equation what will happen if a change is seen in B. **1**

4 If in a pond there are 20 lotus plants in the last year and it becomes 28 in the next year due to reproduction. Calculate the birth rate. **1**

5 Archaebacteria live in hot springs and deep sea hydrothermal vents that exceeds 100 ċ.How is this possible? **1**

6 If resources are available in plenty ,which type of growth curve is seen? **1**

7 **2**

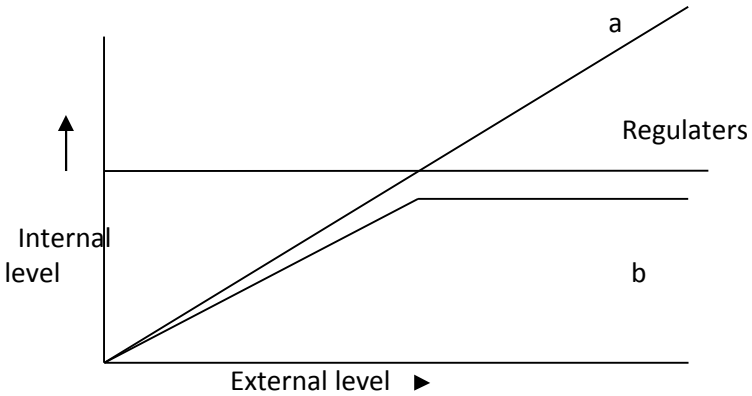


Label 'a', 'b', 'c' and 'd' from the diagram.

8 **2**

a. Why is temperature considered to be the most relevan abiotic factor that influences life of organisms?
b. During global warming which type of organism can cope up better – eurythermal or stenothermal? Why?

9 **2**



a. Lable 'a' and 'b' in the given diagram.
b. Which one of the animal group shows more adaptability.

10 Why are small birds like Humming birds not found in polar regions? Explain. **2**

11 Biomass is a more meaningful l measure of population size. Explain with an example **3**

12 Starfish is an important predator.When we remover starfish from an enclosed intertidal area. A. What will be the effect of it? Why ? **3**

	Value Points / Marking Scheme: 13A	Mark Split
1	Communities and Biomes	**1/2+1/2**
2	Yes.	**1**
3	B is directly proportional to N1	**1**
4	8/20	**1**
5	Adaptation	**1**
6	Sigmoid curve	**1**
7	a. Immigration b. Natality c. Mortality d. Emigration	**1/2 +1/2 +1/2 +1/2**
8	a. Affect enzyme activity b. Eurythermal , greater adaptability	**1+1/2+1/2**
9	a. conformers and Partial regulators. b.Conformers	**1/2+1/2+1**

10	Maximum heat loss due to small body surface	**1+1**
11	Percentage cover by a single individual is more meaningful than number of individual s of different specices. Banyan tree and Parthenium	**2+1/2+1/2**
12	Invertebrate become extinct , Inter specific competition(explain)	**1+ 2**

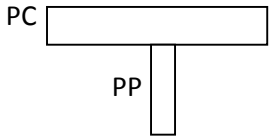
Test Paper: 14A	**Chapter- 14**	Guwahati

Time 30 min **Max Marks: 20**

General Instructions:

- *This QP contains **12** Questions. Q1-6 carries 1 mark each. Q 7-10 carries 2 marks each and Q 11-12 carries 3 marks each*
- *Your answer should be brief and relevant*

1	Earthworms are known as farmer's friend. Can we also consider them as detriovore . If yes, how?	**1**
2	Vertical distribution of species in a forest is known as …….	**1**
3	Vegetation of an area depands upon it's soil type. How?	**1**
4	Moist and warm climate favour decomposition.Justify in one sentence.	**1**
5	Phosphorus cycle is sedimentary in nature . Why?	**1**
6	Name the pioneer species of xerarch condition.	**1**
7	Grass ⟶ Grass hopper ⟶ Frog ⟶ Snake ⟶ Peacock. If grass get's 10,000kj energy from the sun then how much energy will get by the peacock and Why?	**2**
8		**2**



a. Identify the given pyramid.
b. When does it occur. Give one example.

9	"Description of ecological succession usually focuses on changes in vegetation or more than one aspect ." If yes, than write the other aspect.	**2**
10	Mostly food chains will starts from green plants, but one exception is also their. A. Identify the one. B. Writes its role.	**2**
11	Give an account of factors affecting the rate of decomposition.	**3**
12	Human activities have significantly influenced the carbon cycle . Justify the statement.	**3**

	Value Points / Marking Scheme: 14A	**Mark Split**
1	Yes , as they decompose soil in to fine particles (humus)	**1**
2	Stratification	**1**
3	Different vegetations grow on different types of soil as requirement is different.	**1**

4	As they enhance the activity of soil microbes.	**1**
5	As it found in the form of sediment in ocean .	**1**
6	Lichen	**1**
7	1 kj according to 10% law.	**1+1**
8	a. Inverted b .Number of individuals increase in higher trophic level. Pyramid of biomass in sea.	**1+1**
9	Yes, Food, Shelter, number and type of animals , and decomposer	**2**
10	Detritus food chain. Cleaner of ecosystem.	**1+1**
11	Temperature , soil and chemical nature of detritus.(explain)	**1+1+1**
12	Urbanisation and industrialization (any other relevant factors and explain)	**3**

Test Paper: 15A	**Chapter- 15**	**Silchar**

Time 30 min **Max Marks: 20**

General Instructions:

- *This QP contains **12** Questions. Q1-6 carries 1 mark each. Q 7-10 carries 2 marks each and Q 11-12 carries 3 marks each*
- *Your answer should be brief and relevant*

1 Which of the following is not a major characteristic feature of biodiversity hot spots? **1**
a. Large number of species
b. Abundance of endemic species
c. Large number of exotic species
d. Destruction of habitat

2 Two hot spots of India are _____ and _____. **1**

3 The Amazon rainforest is reffered to as "lungs of the planet". Mention any one human activity which causes loss of biodiversity in this reason. **1**

4 Match the animals given in column A with their location in column B: **1**

Column A	Column B
(i) Dodo	(a) Africa
(ii) Quagga	(b) Russia
(iii) Thylacine	(c) Mauritius
(iv) Stellar's sea cow	(d) Australia

5 Why is genetic variation important in the plant *Rauwolfia vomitoria*? **1**

6 How conservation of species in wildlife sanctuaries is different from in zoological parks? **1**

7 Evil Quartet are the four main reasons of biodiversity loss. Name these. **2**

8 Water logging and soil salinity are some of the problems that have come in the wake of the Green Revolution. Discuss their causes and adverse effects to the environment. **2**

9 List any two features that make a stable biological community. **2**

10 What is the association between the bumble bee and its favorite orchid, *Ophyrus*? How extinction of one would affect the other? **2**

11 There is greater biodiversity in tropical /subtropical regions than in temperate region. Explain why? **3**

12 Alien species are highly invasive and are a threat to indigenous species. Substantiate this statement with any two examples. **3**

	Value Points / Marking Scheme: 15A	Mark Split
1	C	**1**
2	Western Ghats and Sri Lanka, Indo-Burma and Himalaya (ant two)	**½ X2=1**
3	Cutting and clearing for cultivating the forest *soya beans* or for conversion to grasslands for raising beef cattle.	**1**
4	i-c, ii-a, iii-d, iv-b	**1**
5	Because they produce different type of reserpine in terms of the potency and concentration of the active chemical (reserpine).	**1**
6	Insitu and exsitu conservation.	**1**
7	Habitat loss, over exploitation, alien species invasion, co extinction.	**½ X4=2**
8	Water logging draws salt to the surface of the soil. The salt then is deposited as a thin crust on the land surface or starts collecting at the roots of the plants. This increased salt content is inimical to the growth of crops and is extremely damaging to agriculture.	**1+1=2**
9	It should not show too much variation in productivity from year to year, resistant or resilient to occasional disturbances (natural or man-made), resistant to invasions by alien species. (any two)	**1+1=2**
10	Mutualism or pollinator, second will extinct also. (co-extinction)	**1+1=2**
11	(a)tropical latitudes have remained relatively undisturbed for millions of years and thus, had a long evolutionary time for species diversification (b) are less seasonal (c)There is more solar energy available in the tropics, which contributes to higher productivity	**1X3=3**
12	When alien species are introduced unintentionally or deliberately for whatever purpose, some of them turn invasive, and cause decline or extinction of indigenous species. Example -The Nile perch , carrot grass(*Parthenium*)*, Lantana* and water hyacinth (*Eicchornia*),the African catfish *Clarias gariepinus* .	**1+2=3**

Test Paper: 16A	**Chapter- 16**	**Silchar**

Time 30 min **Max Marks: 20**

General Instructions:

- *This QP contains **12** Questions. Q1-6 carries 1 mark each. Q 7-10 carries 2 marks each and Q 11-12 carries 3 marks each*
- *Your answer should be brief and relevant*

1	Nuisance growth of aquatic plants and bloom-forming algae in natural waters is generally due to high concentrations of: a. carbon b. sulphur c. calcium d. phosphorus	**1**
2	CNG is _____.	**1**
3	Expand FOAM.	**1**
4	Write the unit used for measuring ozone thickness.	**1**
5	Ozone is good as well as bad for living organisms. Comment.	**1**
6	Why should motor vehicles, equipped with catalytic converter use unleaded petrol?	**1**

7	Match the following COLUMN A — COLUMN B i. Environment Protection Act — A. 1974 ii. Air Prevention & Control of Pollution Act — B. 1987 iii. Water Act — C. 1986 iv. Amendment of Air Act to include noise — D. 1981	**2**
8	What is hybrid vehicle technology? Explain the advantages with a suitable example?	**2**
9	Is it true that if the dissolved oxygen level drops to zero the water will become septic? Give an example which could lower the dissolved oxygen content of an aquatic body.	**2**
10	Name any one of the green house gases and its possible source of production on a large scale. What are the harmful effects of it?	**2**
11	Concentration of DDT is increased at successive trophic levels. Name this phenomenon. What will be the consequences of it in the fish eating birds?	**3**
12	Write a short note on electronic waste. List the various sources of e- wastes and the problems associated with the disposal of e-waste.	**3**

	Value Points / Marking Scheme **Chapter: 3**	**Mark Split**
1	d	**1**
2	Compressed natural gas	**1**
3	Friends of the Arcata Marsh	**1**
4	Dobson unit.	**1**
5	In troposphere it harms plants and animals so bad and in **stratosphere**, and it acts as a shield absorbing ultraviolet so good.	**1**
6	Because lead in the petrol inactivates the catalyst.	**1**
7	i-C, ii-D, iii-A, iv-B	**½ X4=2**
8	Vehicles running on dual mode like petrol and CNG are hybrid vehicle. As CNG is a green fuel there is conservation of fossil fuels and reduction in the environmental pollution.	**1+1=2**
9	Yes, the water becomes septic if the dissolved oxygen drops to zero. Organic pollution (biodegradable) is an example.	**1+1=2**
10	CO_2 and Methane. CO_2 levels are increasing due to burning of fossil fuels, leading to Global Warming.	**1+1=2**
11	**B**iomagnification, In fish-eating birds high concentrations of DDT disturb calcium metabolism in birds, which causes thinning of eggshell and their premature breaking, eventually causing decline in bird populations.	**1+2=3**
12	Discarded unusable electronic gadgets such as computers, mobile phones, circuits, television sets, etc., form electronic waste. These contain harmful toxic substances like heavy metals to which the unskilled manual workers are directly exposed.	**1X3=3**