Annual Examination - 2021 B.Sc. Botany (Honours), Part-I Paper-I

Time: 3.00 Hrs. Full Marks: 80

Answer any Five questions. All questions carry equal marks.

- 1. Describe the structure and reproduction of *Oedogonium*.
- 2. Describe the structure and reproduction of *Volvox or Chara*
- 3. Describe structure and reproduction in *Peziza?* How apothecia is formed.
- 4. Describe the life cycle of Rust fungi (*Puccinia*) on both the host. How it reoccurs in the plains of India?
- 5. Describe the structure of sporophyte of *Marchantia*. What is the importance of elaters?
- 6. Describe the sporophyte of *Anthoceros*. What it its significance in the evolution of land plants?
- 7. Describe stelar organization in Pteridophytes.
- 8. What is Heteropory and seed habit. Mention its importance with reference to life cycle of *Selaginella* or Describe life cycle and evolutionary significance of *Psilotum*.
- 9. Describe the anatomical features of rhizome and petiole of Marsilea.
- 10. Describe life cycle of *Albugo*.

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Programme of B.Sc. Part-I Botany (Hons.)
Practical Counselling and Examination 2021
Venue: 1st Floor, Botany Lab, Biscomaun Tower, Patna

(A) Practical Counselling Classes for all students

Date	Paper	Time
22.03.2022	I and II	11:00 AM to 02:30 PM

(B)Practical Examination for all students

Date	Paper	Time
23.03.2022	Í	11:00 AM to 01:00 PM
23.03.2022	II	01:30 PM to 03:30 PM

EXAMINATION PROGRAMME, 2021 B.Sc. Mathematics, Zoology & Botany (Hons.), Part-I

Date	Papers	Time	Examination Centre
05.03.2022	Honours Paper-I	2.30 PM to 5.30 PM	Nalanda Open University, 2 nd Floor, Biscomaun Bhawan, Patna
08.03.2022	Honours Paper-II	2.30 PM to 5.30 PM	Nalanda Open University, 2 nd Floor, Biscomaun Bhawan, Patna
10.03.2022	Hindi Composition-100 or Hindi-50 + Urdu-50 or Eng-50	2.30 PM to 5.30 PM	Nalanda Open University, 2 nd Floor, Biscomaun Bhawan, Patna
12.03.2022	Chemistry (Sub)-I	2.30 PM to 5.30 PM	A. N. College, Boring Road, Patna-800013
14.03.2022	Physics (Sub)-I	2.30 PM to 5.30 PM	A. N. College, Boring Road, Patna-800013
24.03.2022	Mathematics (Sub)-I	2.30 PM to 5.30 PM	Nalanda Open University, 2 nd Floor, Biscomaun Bhawan, Patna
25.03.2022	Botany (Sub)-I	2.30 PM to 5.30 PM	Nalanda Open University, 2 nd Floor, Biscomaun Bhawan, Patna
26.03.2022	Zoology (Sub)-I	2.30 PM to 5.30 PM	Nalanda Open University, 2 nd Floor, Biscomaun Bhawan, Patna
29.03.2022	Home Science (Sub) P-I	2.30 PM to 5.30 PM	Nalanda Open University, 2 nd Floor, Biscomaun Bhawan, Patna
30.03.2022	Geography (Sub) P-I	2.30 PM to 5.30 PM	Nalanda Open University, 2 nd Floor, Biscomaun Bhawan, Patna

Annual Examination - 2021 R. Sa. Potany (Honoura) Part I

B.Sc. Botany (Honours), Part-I Paper-II

Time: 3.00 Hrs. Full Marks: 80

Answer any **Five** questions. All questions carry equal marks.

- 1. Describe development of Male gametophyte of *Taxus*.
- 2. Describe the development of female gametophyte of *Pinus*.
- 3. Describe different methods of Fossilization. Mention types of fossils.
- 4. Name fossil flora of Bihar and Jharkhand. Describe the life cycle of any one of them.
- 5. Describe the seed of **Lyginopteris**. Mention its phylogenetic value.
- 6. Describe the classification of Angiosperms as proposed by Hutchinson.
- 7. Describe the floral characters. Floral diagram, floral formula, plants of economic importance of any one the following:
 - (a) Labiatae

- (b) Asteraceae
- (e) Cucurbitaceae
- 8. Describe different types of Fructification found in *Calamites*.
- 9. Write short notes on any four of the following:
 - (a) Cross section of *Pinus needle*
- (b) Verticillaster

(c) Hypanthodium

- (d) Section of leaflet of Cycas
- (e) Free central placentation
- (f) Four plants of economic importance (botanical names)
- 10. Write the economic importance of Gymnosperms.



Programme of B.Sc. Part-I Botany (Hons.) Practical Counselling and Examination 2021

Venue: 1st Floor, Botany Lab, Biscomaun Tower, Patna (A) Practical Counselling Classes for all students

Date	Paper	Time
22.03.2022	I and II	11:00 AM to 02:30 PM

(B)Practical Examination for all students

Date	Paper	Time
23.03.2022	I	11:00 AM to 01:00 PM
23.03.2022	II	01:30 PM to 03:30 PM

Annual Examination - 2021B.Sc. Botany (Subsidiary), Part-I Paper-I

Time: 3.00 Hrs. Full Marks: 80

Answer any **Five** questions. All questions carry equal marks.

- 1. Describe properties and structure of a *Tobacco Mosaic Virus*.
- 2. Describe structure and reproduction of *Oedogonium*.
- 3. Describe life cycle of *Albugo*.
- 4. Give an account of sporophyte of *Marchantia*.
- 5. Describe the strobilus of *Selaginella*. What is its significance in heterospory?
- 6. Describe the mode of reproduction in a Pteridophyte studied by you.
- 7. Describe any four of the following:
 - (a) Apocarpous

- (b) Actinomorphic
- (c) Cyathium

(d) Verticillaster

- (e) Placentation
- (f) Floral diagram
- 8. Describe floral characters, floral formula and floral diagram of family. *Lamiaceae*. Write botanical names of two plants of the family.
- 9. Describe Male gametophyte of Pinus.
- 10. Assign the following plants to their family.
 - (a) Potato

- (b) Turnip
- (c) Banana
- (d) Riccinus

(e) Rice

- (f) Wheat
- (g) Mentha
- (h) Mango

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Practical Counselling Classes and Practical Examination Programme, 2021 of B.Sc., Part-I (Botany Subsidiary, Paper-I)

Venue: Botany Lab, 1st Floor, Biscomaun Tower, Patna

PRACTICAL COUNSELLING CLASS PROGRAMME

Date	Time	
Date	8:00 AM to 9:30 AM	9:30 AM to 11:00 AM
31.03.2022	Enrollment No. of Zoology (Hons.) Students All Old Students & 200510001 to 200510109	Enrollment No. of Zoology (Hons.) Students 200510110 to 200510200
02.04.2022	Enrollment No. of Zoology (Hons.) Students 200510201 to 200510295	Enrollment No. of Zoology (Hons.) Students 200510296 to 200510495
07.04.2022	_	Enrollment No. of Zoology (Hons.) Students 200510496 to 200510630
09.04.2022	All New & Old Students of Chemistry (Hons.), Physics (Hons.), Mathematics (Hons.), Yoga (Hons.), Geography (Hons.) & Home Science (Hons.)	_

PRACTICAL EXAMINATION PROGRAMME

Date		Time	
Date	8:00 AM to 10:00 AM	2:00 PM to 4:00 PM	4:00 PM to 6:00 PM
01.04.2022	_	Enrollment No. of Zoology (Hons.) Students All Old Students & 200510001 to 200510109	Enrollment No. of Zoology (Hons.) Students 200510110 to 200510200
04.04.2022	_	Enrollment No. of Zoology (Hons.) Students 200510201 to 200510295	Enrollment No. of Zoology (Hons.) Students 200510296 to 200510495
08.04.2022	_	Enrollment No. of Zoology (Hons.) Students 200510496 to 200510630	-
11.04.2022	All New & Old Students of Chemistry (Hons.), Physics (Hons.), Mathematics (Hons.), Yoga (Hons.), Geography (Hons.) & Home Science (Hons.)	_	_

Annual Examination - 2021

B.Sc. Botany (Honours), Part-II Paper-III

Time: 3.00 Hrs. Full Marks: 80

Answer **Five** questions, selecting atleast one question from each group A, B and C. All questions carry equal marks.

Group - A (Microbiology)

- 1. Give an account of ultra-structure of a Bacterial Cell.
- 2. Describe any one method of Genetic recombination in Bacteria.
- 3. Describe Ultra structure of TMV. How does it replicate?

Group - B (Plant Pathology)

- 4. Describe the role of enzymes in pathogenesis.
- 5. Write pathological notes on any two of the following:-
 - (a) Late blight of potato

- (b) Citrus canker
- (c) Biochemical defense of the host
- (d) Early blight of Potato
- 6. Write etiology, symptoms and control of *Wilt of pigeon pea*.
- 7. How does a fungus invades the host plant. Describe briefly.

Group - C (Embryology)

- 8. What are Endosperms? What is its significance in Plant?
- 9. Write short notes on any *Two* of the following:-
 - (a) Double fertilization

(b) Anther culture

(c) Apomixis

- (d) Parthenocarpy
- 10. Give an account of development of any one type of embryo sac studied by you.



Nalanda Open University, Patna

Programme of B.Sc. Part-II Botany (Hons.), Practical Class and Practical Examination, 2021 Venue:- 1st Floor, Botany Lab, Biscomaun Tower, Patna

(A) Practical Counselling Class For all Students

Date	Enrollment No	Paper	Time
29.04.2022	All Old & New Students	III & IV	08.00 AM to 11.00 AM

(B) Practical Examination for all Studends

Date	Enrollment No	Paper	Time
30.04.2022	All Old & New Students	III	08.00 AM to 10.00 AM
	All Old & New Students	IV	10.30 PM to 12.30 PM

Annual Examination - 2021B.Sc. Botany (Honours), Part-II Paper-IV

Time: 3.00 Hrs. Full Marks: 80

Answer **Five** questions, selecting atleast one question from each group A, B and C. All questions carry equal marks.

Group - A (Anatomy)

- 1. Describe the anatomical feature of xerophytic plants.
- 2. Define tissue. Describe different types of tissues found in plants.
- 3. What is abnormal secondary growth? Describe abnormal secondary growth in Boerhaavia plants.

Group - B (Cell Biology)

- 4. Describe detailed structure of Mitochondria or Nucleus. What is its function?
- 5. What are enzymes? Describe the classification of enzymes.
- 6. Write short notes on any *Four* of the following:
 - (a) Nucleotide

(b) Nucleosome

(c) Structure of chromosome

(d) Functions of Carbohydrate

(e) Alkaloids

- (f) Micronutrients
- 7. What are lipids? Classify different types of lipids.

Or

Describe briefly Protein synthesis in Prokaryotes.

8. What are Vitamins? Give an account of Vitamin B.

Group - C (Economic Botany)

- 9. Give an account of pulses of Bihar
- 10. Write botanical name and family of:
 - (a) Two medicinal plants.

- (b) Two fruit yielding plants
- (c) Two vegetables yielding plants
- (d) Two spices yielding plants



Nalanda Open University, Patna

Programme of B.Sc. Part-II Botany (Hons.), Practical Class and Practical Examination, 2021 Venue: <u>1st Floor, Botany Lab, Biscomaun Tower, Patna</u>

(A) Practical Counselling Class For all Students

Date	Enrollment No	Paper	Time
29.04.2022	All Old & New Students	III & IV	08.00 AM to 11.00 AM

(B) Practical Examination for all Studends

Date	Enrollment No	Paper	Time
30.04.2022	All Old & New Students	III	08.00 AM to 10.00 AM
	All Old & New Students	IV	10.30 PM to 12.30 PM

Annual Examination - 2021B.Sc. Botany (Subsidiary), Part-II Paper-II

Time: 3.00 Hrs. Full Marks: 80

Answer any **Five** questions. All questions carry equal marks.

- 1. What are Meristems? Name different types of meristems.
- 2. Give an account of root-stem transition.
- 3. Describe the process of fertilization in angiosperm.
- 4. Describe the ultra structure of Chloroplast.
- 5. What is endosperm? Describe different types of Endosperm found in angiosperms.
- 6. Describe the process of transpiration in plants.
- 7. What do you mean by ecosystem? Describe a forest ecosystem.
- 8. Name four drug yielding plants of Bihar. Write their botanical names and medicinal importance.
- 9. Describe Kreb's cycle.
- 10. Write notes on any four of the following:
 - (a) Acid rain
- (b) Greenhouse effect
- (c) Soil conservation

- (d) Structure of DNA
- (e) Air pollution
- (f) Two cereal yielding plants

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B.Sc. Botany (Subsidiary), Part II, for All Honours, Annual Practical Counselling and Examination 2021 Venue: 1st Floor, Botany and Zoology Lab, Biscomaun Tower, Patna-1

(A) Practical Counselling Class Programme

Date	Enrollment No.	Batch	Paper	Time
	For Zoology(Hons) Students All Old Students and New Students (190510001 to 190510110)	B1	II(Sub.)	08.00 AM to 09.30 AM
	For Zoology(Hons.) New Studnets (190510111 to 190510286)	B2	II(Sub.)	09:30 AM to 11:00 PM
08.05.2022	For Zoology(Hons.) New Studnets (190510287 to 190510430)	В3	II(Sub.)	11:00 AM to 12:30 PM
	For Zoology(Hons.)New Studnets (190510431 to 190510500) & All old & New students of Chemistry(Hons.), Physics(Hons.), Math(Hons.), Geography(Hons.) & Home Science(Hons.)	B4	II(Sub.)	12:30 PM to 02:00 PM

(B)Practical Examination Programme

Date	Enrollment No.	Batch	Paper	Time
	For Zoology(Hons) Students All Old Students and New Students (190510001 to 190510110)	B1	II(Sub.)	08.00 AM to 10.00 AM
12.05.2022	For Zoology(Hons.) New Studnets (190510111 to 190510286)	B2	II(Sub.)	10:00 AM to 12:00 Noon
	For Zoology(Hons.) New Studnets (190510287 to 190510430)	В3	II(Sub.)	12:00 Noon to 02:00 PM
16.05.2022	For Zoology(Hons.) New Studnets (190510431 to 190510500) and All old & New students of Chemistry(Hons.), Physics(Hons.), Math(Hons.), Geography(Hons.) & Home Science(Hons.)	B4	II(Sub.)	08.00 AM to 10.00 AM

Nalanda Open University Annual Examination - 2021

B.Sc. Botany (Honours), Part-III Paper-V (Physiology and Biochemistry)

Time: 3.00 Hrs. Full Marks: 80

Answer any five questions. Ouestions No. 1 is compulsory. All questions carry equal marks.

1.	Mult	iple ch	oice questions:						
	(i)	Sourc	e of liberated Oxyg	en in	Photosynth	esis is:			
		(a)	Carbon di oxide		•	(b)	Sulphur di c	oxide	
		(c)	Both (a) and (b)			(d) N	None of these		
	(ii)	The k	ey compound of Ca	lvin (Cycle				
	. ,		PGA		•	(b)	PGAL		
		(c)	DHAP			(d)	DPGA		
	(iii)	Photo	respiration occur in						
	()		*		ochondira	(c) Chlo	proplast and P	eroxisom	ie
		` /	Chloroplast, Peroxis			` '	1		
	(iv)	` ′	obic respiration occ						
	()		Mitochondira only			n only (c)	Mitochondria	a and Cys	toplasm
		` /	None of above	()	J 1	3 ()		J	•
	(v)	Synth	esis of ATP in Mito	chon	dria takes p	lace in:			
	()	-	Matrix		At the out		ne (c) A	t the crist	ae
		()	In the intra cristae p	` ′			()		
	(vi)		h of the following is		seous plant	growth reg	ulator?		
	()		Ethylene	_	Kinetin		GA	(d)	ABA
	(vii)	` ′	Aost abundant Mone	` ′		` '		()	
	(111)		Lactose			(b)	Glucose		
		()	Maltose			(d)	Sucrose		
	(viii)	` /	eleotide base not pre	esent i	n DNA is	()			
	(1111)		Adenine		21 (11 15	(b)	Guanine		
		` /	Uracil			(d)	Thymine		

- (c) Uracil Describe different steps of Nitrogen Cycle. 2.
- Describe light reaction of Photosynthesis 3.
- Describe the mechanism of opening and closing of stomata. 4.
- 5. Describe Glycolytic Pathway in detail.
- Give an account of Phytochrome system. How it supports initiation of flowering? 6.
- What are trace elements? What role do this play in the Physiology of plants? 7.
- What are Enzymes? Describe different kinds of Enzymes found in plants. 8.
- 9. Give an account of the mechanism of geotropism.
- Write notes on any two of the following: 10.
 - (a) Imbibition
- (b) Chemotropism

(c) Kinetics of Enzyme action

Electron transport system or Carrier (d)

concept of ion uptake in plant cells.

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Programme of B.Sc. Part-III Botany (Hons.) Annual Practical Counselling & Practical Examination - 2021

Venue: 1st Floor Biology Lab, Biscomaun Tower, Patna - 800 001

(A) Practical Counselling Botanu

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Date	Time	Paper		
17.06.2022	09.00 AM to 03.30 PM	V to VIII		

	(B) Practical Examination Botany					
Date	Time	Paper				
18.06.2022	09.00 AM to 11.00 AM	V				
	11.30 AM to 01.30 PM	VI				
20.06.2022	09.00 AM to 11.00 AM	VII				
	11.30 AM to 01.30 PM	VIII				

Annual Examination - 2021

B.Sc. Botany (Honours), Part-III Paper-VI (Environmental Biology)

				upci	VI (LIIVII OIIIIIC	ııcaı	Didiogy	
Time	e: 3.00							Full Marks: 80
_				-	stions No. 1 is comp	pulsor	y. All questions c	carry equal marks.
1.			choice questions					
	(i)		phic factors are i					
			Man		Animals		Soil	(d) Temperature
	(ii)	The	term Ecological		ion was first used l			
		(a)			Odum	(c)	Hult	(d) Nitric acid
	(iii)	Aere	enchyma is foun	d in or w	vell developed in:			
		(a)	Mesophytes	(b)	Hydrophytes	(c)	Xerophytes	(d) Halophytes
	(iv)	Alwa	ys upright shape	of pyra	mid is in:			
		(a)	Mass pyramid					
		(b)	Energy pyrami	d				
		(c)	Number pyram	id				
		(d)	None of these					
	(v)	Whi	ch is the main fa	ctor of v	water pollution?			
		(a)	Smoke	(b)) Industrial waste	e (c	e) Detergents	(d) Ammonia
	(vi)	A fo	od chain consist	s of:				
	` '	(a)	Producers only			(t	o) Consumers or	ıly
		(c)	Producers and	consum	ers		d) Decomposers	
	(vii)	Min	amata disease in	Japan v	vas caused by Polli	ıtion	of water by:	-
	` /		Lead	_) Cyanide		e) Nutrients	(d) Methyl isocyanate
	(viii)	The	basic componen	t of smo	g may be:	Ì		
	` ′	(a) (Ozone	(b)) PAN	(c	Ozone and PA	N (d) PPN and PBN
2.	Defi	ne ec	osystem? Descri		us components of			
3.								ous steps of xerosere.
4.					t adapt to live in wa			•
5.			cological pyrami					
			Food chain in gra			(ł) Food chain in	a pond
6.	Write	` /	•		P Describe ill effec	`	/	1
7.			different categor				1	
8.			•			Desc	cribe methods a	dopted for conservation of
		iversi						
9.			riefly					
-	-r -		Agroforestry and	its signi	ificance	(b) Social forestry	and its significance
10.	Write	` '	rt notes on any t	_		(0	,	
- • •		(a)	Plant indicator			(b) Significance o	f protected area
		\-'/				\~	, 6	

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(d) Acid rain

(f) non-conventional energy

(c) Greenhouse gases

(e) Chipko movement

Programme of B.Sc. Part-III Botany (Hons.) Annual Practical Counselling & Practical Examination - 2021

Venue: 1st Floor Biology Lab, Biscomaun Tower, Patna - 800 001

(A) Practical Counselling Botany

(1) Tructient Counseiting Bothing				
Date	Time	Paper		
17.06.2022	09.00 AM to 03.30 PM	V to VIII		

(B) Practical Examination Botany				
Date	Time	Paper		
18.06.2022	09.00 AM to 11.00 AM	V		
	11.30 AM to 01.30 PM	VI		
20.06.2022	09.00 AM to 11.00 AM	VII		
	11.30 AM to 01.30 PM	VIII		

Annual Examination - 2021

B.Sc. Botany (Honours), Part-III

Paper-VII (Cytogenic and Molecular Biology)

Time: 3.00 Hrs. Full Marks: 80

• • • • • • • • • • • • • • • • • • • •	An	swer any five questions. Questions No. 1 is	s compulsory.	All auestions carry e	eaual marks
1.		tiple choice questions:	computery.	in questions carry c	quen men us.
	(i)	The Sugar present in DNA is:			
	()	(a) Hexose Sugar (b) Triose Su	ıgar (c)	Tetrose Sugar (d)	Pentose Sugar
	(ii)	2n-2 is:	. , ,	- , ,	_
		(a) Monosomic	(b)	Nullisomic	
		(c) Tetrasomic	(d)	Trisomic	
	(iii)	Colchicine is a:			
		(a) Steroid	(b)	Alkaloid	
		(c) Cholestrol	(d)	None of these	
	(iv)	Chain initiation codon is:			
		(a) UGA	(b)	AUG	
		(c) GUG	(d)	AUG or GUG	
	(v)	Which of the following has clover leaf sh	nape		
		(a) mRNA	(b)	rRNA	
		(c) tRNA	(d)	Sn RNA	
	(vi)	Number of Chromosomes can crease or o			
		(a) Mutation	(b)	Genetic repetition	
		(c) Chromosomal non-disjunction	(d)	All of these.	
	(vii)	Haemophilia is due to:			
		(a) X Chromosome	(b)	Y Chromosome	
		(c) Bothe X and Y Chromosome	(d)	None of the above	
	(viii)	Anticodon is present on:			

2. Describe different types of RNA Mention its role in function of the cell.

(b) tRNA

3. Describe different stages of Mitosis.

(a) mRNA

- 4. Cite one example to explain interaction of Gene.
- 5. What is linkage, give one suitable example to explain Linkage.
- 6. Describe different steps of Replication of DNA
- 7. Describe the Ultrastructure of Chromosome.
- 8. Describe various methods adopted in plant breeding.
- 9. How can you prove that DNA is the genetic material?
- 10. Write short notes on (any two)
 - (a) Types of Histone Protein

(b) Idiogram

(c) mtRNA

(c) Heterochromatin and Euchromatin

(d) Regulator gene

(d) rRNA

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Programme of B.Sc. Part-III Botany (Hons.)

Annual Practical Counselling & Practical Examination - 2021

Venue: 1st Floor Biology Lab, Biscomaun Tower, Patna - 800 001

(A) Practical Counselling Botany

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Date	Time	Paper			
17.06.2022	09.00 AM to 03.30 PM	V to VIII			
(B) Practical Examination Botany					

Date	Time	Paper
18.06.2022	09.00 AM to 11.00 AM	V
16.00.2022	11.30 AM to 01.30 PM	VI
20.06.2022	09.00 AM to 11.00 AM	VII
20.00.2022	11.30 AM to 01.30 PM	VIII

Annual Examination - 2021

B.Sc. Botany (Honours), Part-III Paper-VIII (Genetics)

Time: 3.00 Hrs.

Answer any five questions. Questions No. 1 is compulsory. All questions carry equal marks.

1. Multiple choice questions:

(i) Who is associated with green revolution in India:

(a) E J Butler (b) M S Swaminathan (c) R S Paroda (d) B P Pal

(ii) The first animal for which Linkage map was constructed was:

(iii) The distance between the Gene is measured by:

(b)

- (a) Locus
- (b) Map units
- (c) Both (a) and (b)

Drosophila

(d) None of these.

(iv) The tendency of Genes to be inherited together is known as:

(a) Dominance (b) Linkage (c) Crossing over

Rat

(v) How many gametes will be formed from AaBbCc: (a) 8 (b) 4 (c) 16 (d) 20

(vi) Initiation codon in Prokaryote is:

(a) AUG (b) UAA

(b) UAA (c) UGA which stage?

(d) None of these

(d) Translocation.

(d) Pisum sativum

(vii) DNA synthesis occurs in which stage?
(a) G1 phase (b) S phase

(b) S phase (c) G2 phase

(d) M phase

(viii) The structure of Chromosome can be best seen at:

(a) Prophase (b) Metaphase (c) Anaphase

- (d) Telophase
- 2. Define mutation? Describe type of mutation and explain anyone of them in detatil.
- 3. Explain polyploidy, what are the types of polyploidy? How polyploidy can be useful?
- 4. Give an account of prophase I of meiosis. What is its significance?
- 5. Write short notes on any two of the following:
 - (a) Pedigree analysis

- (b) Inborn error of metabolism
- (c) ex-situ conservation of germ plasm
- 6. Write short notes on any two of the following:

(a) Mean

(b) Median

(c) Neurospora

(c) Mode

- (d) Standard deviation
- 7. Define interaction of gene. Give one example to prove interaction of gene.
- 8. Write short notes on any two of the following.

(a) Chromosomal non disjunction

(b) Plasmid vector

(c) Initiation codon and termination codon

- (d) Chemical mutagens
- 9. What is genetic engineering? Explain different application of genetic engineering for human welfare.
- 10. What is genetic code? Describe the characteristics of genetic code.

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Programme of B.Sc. Part-III Botany (Hons.)

Annual Practical Counselling & Practical Examination - 2021

Venue: 1st Floor Biology Lab, Biscomaun Tower, Patna - 800 001

(A) Practical Counselling Botany

Date	Time	Paper			
17.06.2022	09.00 AM to 03.30 PM	V to VIII			
(B) Practical Examination Botany					

Date	Time	Paper
18.06.2022	09.00 AM to 11.00 AM	V
	11.30 AM to 01.30 PM	VI
20.06.2022	09.00 AM to 11.00 AM	VII
	11.30 AM to 01.30 PM	VIII