



Multan Board-2024-G-2

Paper Code		2024 (1 st -A)		Roll No: 	
Number: 4466		INTERMEDIATE PART-II (12 th Class)			
BIOLOGY PAPER-II GROUP-II					
TIME ALLOWED: 20 Minutes		OBJECTIVE		MAXIMUM MARKS: 17	
Q.No.1	You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that bubble in front of that question number, on bubble sheet. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question.				
S.#	QUESTIONS	A	B	C	D
1	Which one of these syndromes is rare X-linked recessive trait?	Color blindness	Testicular feminization	Hemophilia <input checked="" type="radio"/>	Hypophosphatemic rickets
2	Bacterial cells take up recombinant DNA when treated with:	CaCl ₂ <input checked="" type="radio"/>	DNA ligase	RNA polymerase	Bacteriophage
3	Luciferase enzyme is found only in:	Fruit fly	Dragon fly	Fire fly <input checked="" type="radio"/>	Butterfly
4	The main cause of extinction of species is:	Pollution	Habitat destruction <input checked="" type="radio"/>	Global warming	Parasitism
5	The relationship between insects and flowering plants is an example of:	Mutualism <input checked="" type="radio"/>	Parasitism	Commensalism	Predation
6	Which zone is rich in life in aquatic ecosystem?	Profundal zone	Limnetic zone	Littoral zone <input checked="" type="radio"/>	All of these
7	Stone cancer is a result of _____ pollution.	Water <input checked="" type="radio"/>	Soil	Sound	Air
8	Which one of these requires least amount of water for its elimination from body?	Creatinine	Uric acid <input checked="" type="radio"/>	Ammonia	Urea
9	There are _____ muscles present in human body.	650 <input checked="" type="radio"/>	630	680	206
10	The action of venus flytrap is called:	Nitinasty	Photonasty <input checked="" type="radio"/>	Thermonasty	Haptonasty
11	Nociceptors in our body are related with:	Vibration	Touch	Pain <input checked="" type="radio"/>	Light
12	Which one of these hormones promotes flowering in pineapple?	Auxins	Ethene <input checked="" type="radio"/>	Absciscic acid	Cytokinins
13	Which of these is present between uterus and vagina?	Urinogenital duct	Oviduct	Cervix <input checked="" type="radio"/>	Fallopian tube
14	During chick development, nervous system arises from:	Ectoderm <input checked="" type="radio"/>	Mesoderm	Endoderm	Coelom
15	In sickle cell anemia, valine is present in hemoglobin in place of:	Praline	Glutamine	Glutamic acid <input checked="" type="radio"/>	Isoleucine
16	X-Ray diffraction analysis of DNA was performed by:	Erwin Chargaff	Rosalind Franklin <input checked="" type="radio"/>	Watson and Crick	Frederick Miescher
17	In yeast, cell cycle is completed in:	9 hours	10 hours	4.5 hours	1.5 hours <input checked="" type="radio"/>


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Multan Board-2024-G-2

		2024 (1 st -A)	
		INTERMEDIATE PART-II (12 th Class)	Roll No: _____
BIOLOGY	PAPER-II	GROUP-II	
TIME ALLOWED: 2.40 Hours		SUBJECTIVE	MAXIMUM MARKS: 68
NOTE: Write same question number and its parts number on answer book, as given in the question paper.			
SECTION-I			
2. Attempt any eight parts.			8 × 2 = 16
(i)	How does aldosterone play its role in concentration of urine?		
(ii)	What is special or unique feature of Malpighian tubules in insects?		
(iii)	Why does temperature of body increase during fever?		
(iv)	What is "All or None" response in muscle contraction?		
(v)	How does exercise affect a muscle?		
(vi)	How is pulvinus involved in sleep movements?		
(vii)	How are identical twins produced?		
(viii)	What do you know about the term oviparity?		
(ix)	Write down any two properties of hydrospheric ecosystem.		
(x)	Differentiate between Prairies and Savanna grasslands.		
(xi)	How are solid wastes useful in overcoming energy crisis?		
(xii)	Mention causes of Beriberi and Haemophilia.		
3. Attempt any eight parts.			8 × 2 = 16
(i)	Define Habituation. Give two examples.		
(ii)	Write the role of a hormone in regulation of bile and pancreatic juice secretion.		
(iii)	Give the functions of sympathetic nervous system.		
(iv)	What are compound sex chromosomes? Write one example.		
(v)	Differentiate the sex-determination pattern in humans and birds.		
(vi)	What are Pseudoautosomal genes? Give one example.		
(vii)	What are Transgenic bacteria? Give their role in cleaning up beaches.		
(viii)	How Transgenic bacteria are better than Transgenic animals?		
(ix)	What is meristem culture? Write its one advantage.		
(x)	Draw a flow sheet of an energy pyramid showing transfer of energy from producers to tertiary consumers.		
(xi)	Differentiate between Primary and Secondary Succession.		
(xii)	Define the terms habitat and niche.		
4. Attempt any six parts.			6 × 2 = 12
(i)	Highlight the role of morphogenetic determinants during development of an individual.		
(ii)	What do you know about discoidal cleavage?		
(iii)	"Genetic code is universal but not quite universal". Justify this statement.		
(iv)	How is lagging strand synthesized in the replication process?		
(v)	What is point mutation? Give one example.		
(vi)	Why interphase is called resting phase?		
(vii)	How is Phragmoplast formed? Give its importance for future daughter cells.		
(viii)	What are Hydrothermal vents?		
(ix)	Differentiate between Divergent and Convergent evolution.		
SECTION-II			
NOTE: Attempt any three questions.			3 × 8 = 24
5.(a)	Explain thermoregulatory strategies in mammals.	4	
(b)	Describe Necrosis and Apoptosis.	4	
6.(a)	Explain process of repair of broken bones.	4	
(b)	Write a note on Xerosere.	4	
7.(a)	What is a Nerve Impulse? Discuss the major factors involved in Resting Membrane Potential.	4	
(b)	Discuss major points of Darwin's theory of natural selection.	4	
8.(a)	Enlist the names of different types of asexual reproduction in animals.	4	
	Explain Parthenogenesis and its types.	4	
(b)	Write a note on Erythroblastosis foetalis.	4	
9.(a)	Discuss the role of nucleus in development by giving the example of Acetabularia?	4	
(b)	Write a detailed note on Gene sequencing.	4	


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Multan Board-2024-G-1

Paper Code		2024 (1 st -A)		Roll No: 	
Number: 4461		INTERMEDIATE PART-II (12 th Class)			
BIOLOGY PAPER-II GROUP-I					
TIME ALLOWED: 20 Minutes		OBJECTIVE		MAXIMUM MARKS: 17	
Q.No.1	You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that bubble in front of that question number, on bubble sheet. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question.				
S.#	QUESTIONS	A	B	C	D
1	Which of the given is recovered in the collecting duct of the nephron?	Glucose	Water <input checked="" type="radio"/>	NaCl	Potassium ions
2	The type of muscle having regular striations multinucleate and voluntary is:	Skeletal muscle <input checked="" type="radio"/>	Smooth muscle	Cardiac muscle	All types of muscles
3	Cyclic activity of cross bridges is regulated by:	Calcium ions <input checked="" type="radio"/>	Troponin	ATP	Actin
4	Given are the principle action of insulin except:	Increasing glycogen synthesis <input checked="" type="radio"/>	Increasing cell utilization of glucose	Inhibits hydrolysis of glycogen	Promotes hydrolysis of glycogen <input checked="" type="radio"/>
5	Cell bodies of sensory neurons constitute:	Dorsal root ganglion	Gray matter	Ventral root ganglion	Posterior root ganglion
6	Mature sperms are formed from spermatids through:	Meiosis-I	Meiosis-II	Differentiation <input checked="" type="radio"/>	Mitosis
7	The head can be regenerated in:	Earthworm	Frog	Leech	Grasshopper <input checked="" type="radio"/>
8	Which of the given is a stop codon?	UUG	UGA <input checked="" type="radio"/>	UCU	CCA
9	To code 50 amino acids in a polypeptide chain, what will be the minimum number of nucleotides in its gene?	50 <input checked="" type="radio"/>	150 <input checked="" type="radio"/>	100	51
10	Which of the given is trisomy syndrome?	Down's <input checked="" type="radio"/>	Edward	Patau	All of these
11	Different alleles of a gene that are both expressed in heterozygous condition are called:	Complete dominance	Incomplete dominance	Codominant <input checked="" type="radio"/>	Over dominance
12	Which of the given is incorrectly matched?	Protoplast – plant cell engineering	RFLPs – DNA finger printing	DNA polymerase – PCR	DNA Ligase – Mapping humans chromosomes <input checked="" type="radio"/>
13	Taq polymerase is used in PCR because of its:	Low thermal stability	High thermal stability <input checked="" type="radio"/>	High fidelity	High speed
14	Lyell published the principles of:	Geology	Population <input checked="" type="radio"/>	Genetics	Ecology
15	Diseases in living organisms which are caused by parasites are termed as:	Mutualism	Commensalism	Infestations <input checked="" type="radio"/>	Succession
16	Coniferous forest located at high latitude are called:	Alpine	Boreal <input checked="" type="radio"/>	Taiga	Prairies
17	The decline in thickness of ozone layer is caused by increasing level of:	Hydrocarbon	Nitro carbon	Chlorine	Chlorofluorocarbon <input checked="" type="radio"/>

27(Obj)(☆)-2024(1st-A)-15000 (MULTAN)

Multan Board-2024-G-1

		2024 (1 st -A)	Roll No: <u>MTN-1-24</u>
INTERMEDIATE PART-II (12 th Class)			
BIOLOGY PAPER-II GROUP-I			
TIME ALLOWED: 2.40 Hours		SUBJECTIVE	MAXIMUM MARKS: 68
NOTE: Write same question number and its parts number on answer book, as given in the question paper.			
SECTION-I			
2. Attempt any eight parts.			8 × 2 = 16
(i)	How metanephridium is better than protonephridium?		1+1
(ii)	Categorise the plants distribution on the basis of osmoregulation.		2
(iii)	How can you describe blubber?		2
(iv)	Compare Epinasty with Hyponasty?		1+1
(v)	How would you define sliding filament model?		2
(vi)	How does jet propulsion mechanism work?		2
(vii)	What are advantages of Sexual Reproduction?		1+1
(viii)	How menstrual cycle is defined?		2
(ix)	Mention role of light in Limnetic zone.		2
(x)	Compare Coniferous alpine and Boreal forests.		1+1
(xi)	Define Greenhouse effect.		2
(xii)	Write any two sources of water pollution.		2
3. Attempt any eight parts.			8 × 2 = 16
(i)	What are the elements of nervous system?		
(ii)	Which factors control secretion of Antidiuretic hormone or Vasopressin?		
(iii)	Define Habituation. Give example.		
(iv)	Differentiate between Homozygote and Heterozygote.		
(v)	What are multiple Alleles? Give example.		
(vi)	How does sex determination occur in birds?		
(vii)	How can gene of interest be obtained?		
(viii)	What are the applications of PCR amplification and analysis?		
(ix)	Mention forensic application of DNA analysis.		
(x)	What is Biosphere?		
(xi)	Define Food web. Give its importance.		
(xii)	Write a note on Limnetic zone.		
4. Attempt any six parts.			6 × 2 = 12
(i)	How do environmental factors contribute to abnormal development?		
(ii)	Why growth pattern in plants is called an open growth?		
(iii)	What are Fixed alleles?		
(iv)	How can you differentiate between Homologous and Analogous organs?		
(v)	Why do DNA replication always proceeds 5' → 3' directions?		
(vi)	What is a Point Mutation? Give one example.		
(vii)	How do different chromosomes differ from each other?		
(viii)	How are cancerous cells distinguished from normal cells?		
(ix)	Is interphase a resting phase? Why?		
SECTION-II			
NOTE: Attempt any three questions.			3 × 8 = 24
5.(a)	Explain different methods of excretion in plants.		4
(b)	What is Meiosis? Discuss prophase-I of meiosis in detail.		4
6.(a)	Define Joints. How they are classified? Explain.		4
(b)	Define Succession? Explain Xerosere in detail.		4
7.(a)	What is Synapse? How impulse can pass through synapse? Discuss it with suitable diagram.		4
(b)	Define Endangered species. Explain three measures to save endangered species.		4
8.(a)	What are autosomes and sex-chromosomes? Explain sex-determination in humans.		4
(b)	Discuss the role of phytochromes in photoperiodism.		4
9.(a)	Explain embryonic induction in detail.		4
(b)	What are transgenic bacteria? Write down their practical use in various fields.		4

27-2024(1st-A)-15000 (MULTAN)

Multan Board-2023

Paper Code Number: 4463		2023 (1 st A) INTERMEDIATE PART-II (12 th Class)		Roll No: _____	
BIOLOGY PAPER-II GROUP-I					
TIME ALLOWED: 20 Minutes		OBJECTIVE		MAXIMUM MARKS: 17	
Q.No.1		You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that bubble in front of that question number, on bubble sheet. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question.			
S.#	QUESTIONS	A	B	C	D
1	During cell division, nuclear division is called:	Cytokinesis	Karyokinesis	Karyotype	Plasmolysis
2	The gene of blue opsins is present on:	Autosome 9	Autosome 1	Autosome 7	Autosome 3
3	In cystic fibrosis transmission of which is faulty resulting in disease?	Magnesium	Calcium	Fluoride	Chloride
4	During PCR how DNA double helix is separated:	By heat treatment	By use of DNA polymerase	By use of DNA helicase	By use of DNA ligase
5	Organs which are functionally similar but have different structures:	Hypologous	Homologous	Unilogous	Analogous
6	Bacteria and fungi are examples of:	Predators	Consumers	Decomposers	Detritivores
7	Zoological name of Rhesus monkey is:	Macaca mulo	Macaca mulatto	Solenoporus mullianus	Felis bengalensis
8	The decline in thickness of ozone layer is caused by increasing level of:	Chlorofluorocarbon	Nitrogen	Chlorine	CO ₂
9	Which portion of nephron is under control of Aldosterone?	Proximal tubule	Ascending limb	Distal end and collecting duct	Descending limb
10	How many bones are involved in formation of each half of mandible?	3 bones	2 bones	4 bones	5 bones
11	What do we call the cell surface membrane of a muscle fiber?	Sarcomere	Twitch fiber	Sarcolemma	Capsule
12	Effectors in human body which respond to stimulus are?	Glands only	Bones	Muscles only	Glands and muscles
13	β – cells of pancreas secrete hormone:	Insulin	ADH	Glucagon	Gastrin
14	Which disease is sexually transmitted?	Tuberculosis	AIDS	Dengue fever	Cholera
15	Primary growth is due to the activity of:	Apical meristem	Intercalary meristem	Lateral meristem	Cork cambium
16	rRNA in eukaryotes is synthesized by:	DNA ligase	RNA polymerase II	RNA polymerase III	RNA polymerase I
17	Start codon AUG represents the amino acid:	Serine	Proline	Methionine	Valine

2023 (1 st -A)		Roll No: _____
INTERMEDIATE PART-II (12 th Class)		
BIOLOGY PAPER-II GROUP-I		
TIME ALLOWED: 2.40 Hours	SUBJECTIVE	MAXIMUM MARKS: 68
NOTE: Write same question number and its parts number on answer book, as given in the question paper.		

SECTION-I

Attempt any eight parts.

8 × 2 = 16

1. Why leaves are called excretophores?
2. How most plants have adapted to survive in heat stress?
3. Why does body temperature increase in fever?
4. Differentiate between thermonasty and photonasty.
5. Name unpaired facial bones.
6. What is muscle fatigue? Give its cause.
7. In which way does germinating pollen tube help the plant?
8. How can you say that water is compulsory for external fertilization?
9. Give four examples of desert ecosystems in Pakistan.
10. What do you know about plant and animal life in tundra?
11. Give four ways by which we can save energy.
12. Why forests are important for us?

Attempt any eight parts.

8 × 2 = 16

1. Differentiate between Habituation and Imprinting.
2. Name the synthetic auxins and describe their commercial applications.
3. Why anterior lobe of pituitary gland is called master gland?
4. What is sex limited trait? Give an example.
5. How Epistasis differ from dominance?
6. What do you know about protanopia and deuteranopia?
7. How recombinant DNA is formed?
8. What are the two primary goals of human genome project?
9. Which type of technique is used to replace faulty genes in the body?
10. How nitrogen depletion from soil is being overcome in nature?
11. Sketch food chain to show various trophic levels?
12. How moderate grazing is helpful for ecosystem?

Attempt any six parts.

6 × 2 = 12

1. What is Meristem? Names its types.
2. Differentiate between Area Pellucida and Area Opaca.
3. What are the properties of Genetic code?
4. How transcription bubble is formed?
5. What is the chemical composition of chromosome?
6. What is Down's syndrome? Give their symptoms.
7. Can you differentiate between cancerous and normal cells?
8. What are vestigial organs? Give example
9. What was the peculiar features of Finches of Galapagos?

SECTION-II

Attempt any three questions.

3 × 8 = 24

1. What is dialysis? Explain procedures of hemodialysis and peritoneal dialysis. 4
2. What is mitosis? How does mitosis take place in animal cell? 4
3. How does a fractured bone recover to its normal position after physical trauma? 4
4. What is Grazing? Give its significance. 4
5. Define Nerve impulse. Explain the mechanism involved by labelled diagram. 4
6. How did evolution proceed from Prokaryotes to Eukaryotes? 4
7. State the techniques of raising genetically identical plants and animals. 2 + 2 = 4
8. How does an allele affect its partner in a gene pair completely and incompletely? 2 + 2 = 4
9. Write down the process of development of nervous system from ectoderm in chick. 4
10. What is recombinant DNA? Explain the process of expression of Recombinant DNA. 4

Paper Code		2023 (1 st -A)		Roll No: _____	
Number: 4466		INTERMEDIATE PART-II (12 th Class)			
BIOLOGY PAPER-II GROUP-II					
TIME ALLOWED: 20 Minutes		OBJECTIVE		MAXIMUM MARKS: 17	
Q.No.1	You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that bubble in front of that question number, on bubble sheet. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question.				
S.#	QUESTIONS	A	B	C	D
1	The plan of new cell wall formation in a dividing cell is determined by:	Endoplasmic reticulum	Ribosomes	Golgi bodies	Microtubules
2	Which one of the following genotypic ratio is observed for cross between heterozygous round and homozygous wrinkled seed in pea?	3 : 1	1 : 1	2 : 1	1 : 3
3	Which one is used to make the animal eggs transgenic?	By agro bacterium	Parthenocarp	Micro propagation	Vortex mixing
4	Which of the following organisms are used to prevent airborne chemical pollutants?	Transgenic bacteria	Transgenic Plants	Transgenic Animals	Transgenic Fungi
5	The prokaryotes may have arisen more than _____ billion years ago.	6.5	5.5	4.5	3.5
6	Succession is initiated by a few hardy invaders called:	Pioneers	Pioneers	Parasites	Grazers
7	The desert ecosystem of Southern Punjab is:	Thar	Thar	Cholistan	Sahara
8	A good example of natural buffer is:	Forest	Forest	Lake	Desert
9	Fresh water flatworms excrete very dilute _____.	Plasma	Tissue fluid	Urine	Uric acid
10	Mature bone cells are called:	Osteoblast	Osteoclast	Chondrocytes	Osteocytes
11	Each myosin filament is surrounded by _____ actin filaments at each end.	03	06	09	12
12	The number of spinal nerve pairs:	31 pairs	12 pairs	24 pairs	62 pairs
13	The selective weed killer is:	NAA	IPA	2, 4 D	Ethene
14	Menstruation usually lasts for:	3 – 7 days	3 – 9 days	1 – 3 days	4 – 8 days
15	Meristems are growing tissues or group of cells that retain the potential to:	Regeneration	Penetration	Survive	Divide
16	In E. Coli, the true replicating enzyme is:	DNA polymerase I	DNA polymerase II	DNA polymerase III	RNA polymerase III
17	Which does one bear greater molecular mass among following nitrogenous bases of nucleic acid?	Guanine	Cytosine	Thymine	Uracil

BIOLOGY PAPER-II GROUP-I	INTERMEDIATE PART-II (12th Class)
TIME ALLOWED: 2.40 Hours	SUBJECTIVE
NOTE: Write same question number and its parts number on answer book, as given in the question paper.	

SECTION-I **Multan Board-2023**

8 × 2 = 16

2. Attempt any eight parts.

- Why leaves are called excretophores?
- How most plants have adapted to survive in heat stress?
- Why does body temperature increase in fever?
- Differentiate between thermonasty and photonasty.
- Name unpaired facial bones.
- What is muscle fatigue? Give its cause.
- In which way does germinating pollen tube help the plant?
- How can you say that water is compulsory for external fertilization?
- Give four examples of desert ecosystems in Pakistan.
- What do you know about plant and animal life in tundra?
- Give four ways by which we can save energy.
- Why forests are important for us?

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3. Attempt any eight parts.

- Differentiate between Habituation and Imprinting.
- Name the synthetic auxins and describe their commercial applications.
- Why anterior lobe of pituitary gland is called master gland?
- What is sex limited trait? Give an example.
- How Epistasis differ from dominance?
- What do you know about protanopia and deuteranopia?
- How recombinant DNA is formed?
- What are the two primary goals of human genome project?
- Which type of technique is used to replace faulty genes in the body?
- How nitrogen depletion from soil is being overcome in nature?
- Sketch food chain to show various trophic levels?
- How moderate grazing is helpful for ecosystem?

6 × 2 = 12

4. Attempt any six parts.

- What is Meristem? Name its types.
- Differentiate between Area Pallucida and Area Opaca.
- What are the properties of Genetic code?
- How transcription bubble is formed?
- What is the chemical composition of chromosome?
- What is Down's syndrome? Give their symptoms.
- Can you differentiate between cancerous and normal cells?
- What are vestigial organs? Give example
- What was the peculiar features of Finches of Galapagos?

SECTION-II

NOTE: Attempt any three questions.

3 × 8 = 24

- What is dialysis? Explain procedures of hemodialysis and peritoneal dialysis. 4
- What is mitosis? How does mitosis take place in animal cell? 4
- How does a fractured bone recover to its normal position after physical trauma? 4
- What is Grazing? Give its significance. 4
- Define Nerve impulse. Explain the mechanism involved by labelled diagram. 4
- How did evolution proceed from Prokaryotes to Eukaryotes? 4
- State the techniques of raising genetically identical plants and animals. 2 + 2 = 4
- How does an allele affect its partner in a gene pair completely and incompletely? 2 + 2 = 4
- Write down the process of development of nervous system from ectoderm in chick. 4
- What is recombinant DNA? Explain the process of expression of Recombinant DNA. 4

27-2023(1st-A)-13000 (MULTAN)

Please visit for more data at: www.pakcity.org

BIOLOGY PAPER-II GROUP-I

TIME ALLOWED: 20 Minutes

OBJECTIVE

MAXIMUM MARKS: 17

Note: You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that bubble in front of that question number, on bubble sheet. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question. No credit will be awarded in case BUBBLES are not filled. Do not solve question on this sheet of OBJECTIVE PAPER.



Q.No.1

- (1) The excretory product that requires minimum water for its elimination as compared to others is:
(A) Uric acid (B) Urea (C) Ammonia (D) Creatinine
- (2) Which of the following is called as Excretophore?
(A) Stem (B) Root (C) Leaf (D) Seed
- (3) Which of the following cells lack of secondary walls?
(A) Sclerenchyma (B) Collenchyma (C) Mesophyll (D) Vessels
- (4) Vertebrae of neck region are called:
(A) Lumbar (B) Thoracic (C) Cervical (D) Pelvic
- (5) The meristems that are found at the tips of roots and shoots are called:
(A) Lateral meristems (B) Intercalary meristems (C) Secondary meristems (D) Apical meristems
- (6) In Microcephaly, the individuals are born with small:
(A) Skull (B) Neck (C) Jaws (D) Vertebrae
- (7) Crossing over is occurred in:
(A) Zygotene (B) Pachytene (C) Leptotene (D) Diplotene
- (8) Down's syndrome has number of chromosomes:
(A) 47 (B) 45 (C) 46 (D) 44
- (9) The receptors which produce the sensation of pain are called:
(A) Chemo receptors (B) Photo receptors (C) Nociceptors (D) Thermo receptors
- (10) Parthenocarpy is artificially induced by adding:
(A) Auxins (B) Ethene (C) Abscissic acid (D) Gibberellins
- (11) Highly condensed portions of chromatin are called:
(A) Euchromatin (B) Chromatids (C) Centromere (D) Heterochromatin
- (12) Position of gene on chromosome is called:
(A) Allele (B) Genotype (C) Locus (D) Phenotype
- (13) The enzyme which is used to cut out the gene of interest, is called:
(A) DNA Ligase (B) Restriction Endonucleases (C) RNA Polymerase (D) DNA Polymerase
- (14) Archaeobacteria can tolerate temperature upto:
(A) 120°C (B) 122°C (C) 125°C (D) 115°C
- (15) The actual location of place, where an organism lives is called its:
(A) Niche (B) Environment (C) Biome (D) Habitat
- (16) In aquatic ecosystem near shore zone is called:
(A) Limnetic zone (B) Profundal zone (C) Littoral zone (D) Benthic zone
- (17) A treasure of all types of resources essential to maintain life on earth is:
(A) Environment (B) Water (C) Land (D) Sun

NOTE: Write same question number and its part number on answer book, **Multan Board-2021** as given in the question paper.

SECTION-I

8 × 2 = 16

2. Attempt any eight parts.

- (i) Compare hypotonic and hypertonic solution.
- (ii) How arthropods and mammals overcome the problem of evaporative water loss?
- (iii) Write the formula of uric acid.
- (iv) What is the role of vacuole in generating turgor pressure in plant cells?
- (v) What are cartilaginous joints?
- (vi) How does shape of wing affect the type of flight in birds?
- (vii) What is climactic?
- (viii) Define apomixis.
- (ix) What is profundal zone?
- (x) Compare prairies and savanna.
- (xi) Define pollution. Write any two types of pollution.
- (xii) What are the harmful effects of lead compounds and carbon monoxide?

8 × 2 = 16

3. Attempt any eight parts.

- (i) What are neuroglia?
- (ii) Define nerve impulse.
- (iii) Enlist hormones secreted by posterior lobe of pituitary gland.
- (iv) What are jumping genes?
- (v) Define probability. What is product rule?
- (vi) Define over dominance.
- (vii) What is recombinant DNA?
- (viii) What are plasmids? Give example.
- (ix) Write role of DNA Ligase.
- (x) Differentiate between population and community.
- (xi) Define ecological niche.
- (xii) Name six major terrestrial Biomes.

6 × 2 = 12

4. Attempt any six parts.

- (i) Differentiate between growth and development.
- (ii) Compare epiblast and hypoblast in gastrulation stage of chick development.
- (iii) What is the function of RNA polymerase in Transcription?
- (iv) What is Nucleosome?
- (v) What is "One gene one polypeptide" Hypothesis?
- (vi) Define cell cycle.
- (vii) Give the significance of Meiosis.
- (viii) State Endosymbiont Hypothesis.
- (ix) What are fossils? Where are they found?

SECTION-II

NOTE: Attempt any three questions.

3 × 8 = 24

- 5.(a) Write a note on kidney problems and its cures. 4
- (b) What are acid rains? Write its effects. 4
- 6.(a) Describe different phases of repair process of simple fracture. 4
- (b) Describe the process of transcription. 4
- 7.(a) Discuss in detail the hormones produced by Anterior pituitary. 4
- (b) Write notes on the following: 4
 - (i) Eutrophication
 - (ii) Greenhouse effect
- 8.(a) Write a note on fruit set and fruit ripening. 4
- (b) What are multiple alleles? Explain with an example. 4
- 9.(a) Describe the process of Neurulation in chick development. 4
- (b) Discuss factors affecting gene frequency of population. 4

BIOLOGY PAPER-II GROUP-II

TIME ALLOWED: 20 Minutes

OBJECTIVE

MAXIMUM MARKS: 17

Note: You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that bubble in front of that question number, on bubble sheet. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question. No credit will be awarded in case BUBBLES are not filled. Do not solve question on this sheet of OBJECTIVE PAPER.

Q.No.1



- (1) Excess thyroxine produces a condition called:
 (A) Cretinism (B) Dwarfism (C) Grave's disease (D) Cushing's disease
- (2) Placental lactogen in human females is secreted by:
 (A) Pituitary gland (B) Ovary (C) Corpus luteum (D) Placenta
- (3) Notochord is one of the few prominent structures seen in the embryo of:
 (A) 24 hours (B) 22 hours (C) 20 hours (D) 18 hours
- (4) Grey vegetal cytoplasm of ascidian egg gives rise to:
 (A) Notochord (B) Muscle cells (C) Gut (D) Epidermis
- (5) TTGACA binding site in prokaryotes is called:
 (A) -25 sequence (B) -35 sequence (C) -10 sequence (D) -75 sequence
- (6) The paired chromosomes start to separate during:
 (A) Diakinesis (B) Diplotene (C) Pachytene (D) Zygotene
- (7) Individuals having 45 chromosomes with one missing "X" chromosome are affected by:
 (A) Down's syndrome (B) Klinefelter's syndrome (C) Turner's syndrome (D) Edward's syndrome
- (8) MN blood type is an example of:
 (A) Codominance (B) Over dominance (C) Incomplete dominance (D) Complete dominance
- (9) Plasmids were discovered while studying the sex life of:
 (A) E. Coli (B) Hyphomicrobium (C) Vibrio (D) Mycobacterium
- (10) A respiratory protein found in all aerobic species is:
 (A) Cytochrome 'a' (B) Cytochrome 'b' (C) Cytochrome 'c' (D) Cytochrome 'f'
- (11) The actual location of an organism is called:
 (A) Niche (B) Habitat (C) Ecosystem (D) Biosphere
- (12) The coniferous forests located at high altitudes are called:
 (A) Alpine (B) Boreal (C) Taiga (D) Savanna
- (13) Which of these is a green house gas?
 (A) Sulphur dioxide (B) Nitric oxide (C) Carbon monoxide (D) Carbon dioxide
- (14) The central station of metabolism and metabolic clearing house of the body is:
 (A) Liver (B) Stomach (C) Hypothalamus (D) Pancreas
- (15) Urine leaves the body through:
 (A) Pelvis (B) Ureter (C) Urinary bladder (D) Urethra
- (16) Which of these are bone forming cells?
 (A) Osteoblasts (B) Osteoclasts (C) Osteocytes (D) Chondrocytes
- (17) Which one is needed to break the link between myosin bridge and actin?
 (A) Glucose (B) ATP (C) Creatine (D) Creatine phosphate

NOTE: Write same question number and its part number on answer book, **Multan Board-2021** as given in the question paper.

SECTION-I

2. Attempt any eight parts.

8 × 2 = 16

- (i) Distinguish Hypercalcemia from Hyperoxaluria.
- (ii) Define Nephron. Give its types.
- (iii) Define the term Heat Shock Proteins.
- (iv) Define hydrostatic skeleton by giving example.
- (v) What is osteoporosis? Give its causes.
- (vi) Differentiate Hinge joints from Ball and Socket Joints by giving examples.
- (vii) Compare haploid parthenogenesis and diploid parthenogenesis by giving examples.
- (viii) Define Genital Herpes.
- (ix) Give at least two differences of Limnetic and Littoral zones of Fresh Water Lake.
- (x) Distinguish Coniferous Alpine and Coniferous Boreal Forests.
- (xi) Define Ozone layer.
- (xii) Differentiate between Deforestation and Afforestation.



3. Attempt any eight parts.

8 × 2 = 16

- (i) Write the functions of photoreceptors and chemoreceptors.
- (ii) What are sodium and potassium pumps?
- (iii) Name any four neurotransmitters, associated with co-ordination.
- (iv) Differentiate between sex chromosomes and autosomes.
- (v) What is hemophilia? Name its types.
- (vi) Enlist types of colourblindness.
- (vii) What is Polymerase Chain Reaction(PCR)?
- (viii) What are transgenic organisms?
- (ix) Define bioreactors. Name two products of bioreactors.
- (x) Differentiate between endoparasites and ectoparasites.
- (xi) What is symbiosis? Give one example.
- (xii) Differentiate between predator and prey.

4. Attempt any six parts.

6 × 2 = 12

- (i) Differentiate between neurula and neurulation.
- (ii) Define discoidal cleavage.
- (iii) Write down structural formulae of thymine and cytosine.
- (iv) What is phosphodiester bond?
- (v) Name three major classes of RNA.
- (vi) Define cell cycle; write names of its phases.
- (vii) What is Turner's syndrome?
- (viii) Define theory of natural selection.
- (ix) What is genetic drift?

SECTION-II

NOTE: Attempt any three questions.

3 × 8 = 24

- 5.(a) Explain the Urea Cycle in detail. 4
- (b) Write a note on Food Web. 4
- 6.(a) Write note on disc slip and sciatica. 4
- (b) Write the experiment which proved that DNA replication is semi-conservative. 4
- 7.(a) Give an account of importance of forests. 4
- (b) Define Nerve impulse. How the action potential is initiated and conducted? 4
- 8.(a) Write a note on male reproductive system. 4
- (b) Write a note on Rh blood group system. 4
- 9.(a) Define and explain growth correlations. 4
- (b) Discuss evolution from Prokaryotes to Eukaryotes. 4

INTERMEDIATE PART-II (12th CLASS)

BIOLOGY PAPER-II (NEW SCHEME) GROUP-I

TIME ALLOWED: 20 Minutes

OBJECTIVE

MAXIMUM MARKS: 17

Note: You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that bubble in front of that question number. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question. Attempt as many questions as given in objective type question paper and leave others blank. No credit will be awarded in case BUBBLES are not filled. Do not solve questions on this sheet of OBJECTIVE PAPER.

Q.No.1

- (1) Bats and humming birds are example of:
(A) Ectotherms (B) Endotherms (C) Heterotherms (D) Poikilotherms
- (2) Trimethylamine oxide is produced in fishes which are:
(A) Cartilaginous (B) Bony (C) Fresh water (D) Marine water
- (3) The inflammatory degenerative disease of joint is:
(A) Arthritis (B) Sciatica (C) Herniation (D) Spondylosis
- (4) The cells found in seed coats and nut shells are:
(A) Fibres (B) Sclereides (C) Vessels (D) Trachea
- (5) Pavlov performed experiments on dog to prove:
(A) Conditional reflex I (B) Habituation (C) Conditional reflex II (D) Imprinting
- (6) Photoperiodism was first studied by Garner and Allard in:
(A) 1918 (B) 1920 (C) 1922 (D) 1924
- (7) The increase of level of estrogen stimulates secretion of:
(A) ACTH (B) FSH (C) Progesterone (D) LH
- (8) Gray equatorial cytoplasm gives rise to:
(A) Neural tube (B) Gut (C) Muscle cells (D) Larval epidermis
- (9) Genetic code for the amino acid methionine is:
(A) AUC (B) UGC (C) CGC (D) AUG
- (10) The chromatin material gets condensed by folding and chromosomes appear as thin thread in mitosis at the beginning of:
(A) Interphase (B) Prophase (C) Metaphase (D) Anaphase
- (11) The chromatids repel each other during:
(A) Zygotene (B) Pachytene (C) Diplotene (D) Diakinesis
- (12) The type of inheritance with same phenotypic and genotypic ratio, in F₂:
(A) Dominance (B) Incomplete dominance (C) Epistasis (D) Co-dominance
- (13) An antibody made by soybeans can be used for treatment of:
(A) AIDS (B) Hepatitis (C) Herpes simplex (D) Genital herpes
- (14) The idea of endosymbiont was purposed by:
(A) Cuvier (B) Lyell (C) Malthus (D) Margulis
- (15) Which of the following is macronutrient?
(A) Zinc (B) Iron (C) Sulphur (D) Iodine
- (16) Scum in eutrophication is formed by:
(A) Fungi (B) Algae (C) Bacteria (D) Cyanobacteria
- (17) Oxides of Nitrogen cause:
(A) Lung Cancer (B) Cough (C) Brain damage (D) Cholera

INTERMEDIATE PART-II (12th CLASS)**BIOLOGY PAPER-II (NEW SCHEME) GROUP-I****TIME ALLOWED: 2.40 Hours****SUBJECTIVE****MAXIMUM MARKS: 68****NOTE: - Write same question number and its part number on answer book, as given in the question paper.****SECTION-I****8 × 2 = 16****2. Attempt any eight parts.**

- (i) Write two adaptations of hydrophytes.
- (ii) What are heat shock proteins?
- (iii) Why temperature of the body increases during fever?
- (iv) How muscle fatigue is produced?
- (v) Differentiate between tendons and ligaments.
- (vi) What is herniation of disc?
- (vii) Write two primary goals of human genome project.
- (viii) What is Probe? Give its use.
- (ix) Differentiate between weather and climate.
- (x) Define productivity of an ecosystem.
- (xi) Write two effects of acid rain.
- (xii) Define soil and write its constituents.

3. Attempt any eight parts.**8 × 2 = 16**

- (i) Write down two commercial applications of Gibberellins.
- (ii) Write down two major functions of mid brain.
- (iii) What are the abnormalities caused by the destruction of the adrenal cortex?
- (iv) Write down few words on Genital Herpes.
- (v) Write down the name of interstitial hormone. What are its functions?
- (vi) Define Parthenocarpy. Write down the names of two fruits in which it occurs.
- (vii) Define Jumping Genes.
- (viii) Differentiate qualitative traits from quantitative traits.
- (ix) What are compound sex chromosomes? Give an example.
- (x) What is Biome? Write down the names of two terrestrial biomes.
- (xi) Define autecology and synecology.
- (xii) What are root modules? Give an example.

4. Attempt any six parts.**6 × 2 = 12**

- (i) What is the difference between inhibitory effect and compensatory effect?
- (ii) Differentiate between growth and development.
- (iii) What is metastasis?
- (iv) What happens during metaphase I?
- (v) Give two measures to protect the endangered species.
- (vi) Define homologous organs with an example.
- (vii) Define central dogma.
- (viii) What are Okazaki fragments?
- (ix) Define karyotype.

SECTION-II**NOTE: - Attempt any three questions.****3 × 8 = 24**

- (a) Give an account of Excretion in Planaria. 4
- (b) Write a note on Grazing. 4
- (a) Define paratonic movements in plants. Describe Nastic movements in detail. 4
- (b) How did Meselson and Stahl show that DNA replication is semi-conservative? 4
- (a) Discuss hormones of anterior lobe of pituitary gland. 4
- (b) Explain the terms deforestation and afforestation. 4
- (a) Write a note on Birth. 4
- (b) Define and explain incomplete dominance in plants. 4
- (a) Write comprehensive note on growth correlations. 4
- (b) State and explain the Hardy-Weinberg theorem. 4

TIME ALLOWED: 20 Minutes

OBJECTIVE

MAXIMUM MARKS: 17

Note: You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that bubble in front of that question number. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question. Attempt as many questions as given in objective type question paper and leave others blank. No credit will be awarded in case BUBBLES are not filled. Do not solve questions on this sheet of OBJECTIVE PAPER.

Q.No.1

- 1) ADH affects which part of nephron? (A) Walls of collecting duct
(B) Glomerulus (C) Walls of loop of Henle (D) Proximal convoluted tubule
- 2) Hag fishes are:
(A) Osmoregulators (B) Isotonic (C) Hypertonic (D) Hypotonic
- 3) All of the following are associated with coxal bone except:
(A) Ilium (B) Ischium (C) Pubis (D) Clavicle
- 4) The angular thickening in primary wall of cell is present in:
(A) Parenchyma (B) Collenchyma (C) Sclerenchyma (D) Sieve tubes
- 5) Which type of light promote germination of Fern spores?
(A) Green (B) Red (C) Blue (D) White
- 6) Temperature around 4°C stimulates the production of:
(A) Florigen (B) Vernalin (C) Auxins (D) Ethene
- 7) The stage that lasts for days, weeks or even years:
(A) Leptotene (B) Zygotene (C) Pachytene (D) Diplotene
- 8) Cell death due to tissue damage is called:
(A) Apoptosis (B) Metastasis (C) Necrosis (D) Suicide
- 9) The simplest form of learning behaviour is:
(A) Imprinting (B) Habituation (C) Insight learning (D) Latent learning
- 10) In which developmental stage, germ layers are formed?
(A) Cleavage (B) Blastula (C) Gastrula (D) Organogenesis
- 11) Which strand of DNA is transcribed?
(A) Coding (B) Sense (C) Template (D) Both strands
- 12) The type of inheritance with same phenotypic and genotypic ratio, in F_2 :
(A) Dominance (B) Epistasis (C) Incomplete dominance (D) Co-dominance
- 13) The children with "SCID" lack an enzyme: (A) α - galactosidase
(B) Phenylalanine hydroxylase (C) Adenosine deaminase (D) Succinic dehydrogenase
- 14) Homologous structures represent:
(A) Convergent evolution (B) Analogy (C) Divergent evolution (D) Functional similarity
- 15) Linnetic phytoplankton includes:
(A) Bacteria (B) Algae (C) Mosses (D) Cyanobacteria
- 16) Study of single population's relationship to environment is:
(A) Autecology (B) Synecology (C) Ecology (D) Community ecology
- 17) The cause of Kwashiorkor disease is:
(A) Pathogen (B) Metabolic disorder (C) Nutritional deficiency (D) Aging

INTERMEDIATE PART-II (12th CLASS)

BIOLOGY PAPER-II (NEW SCHEME) GROUP-II

TIME ALLOWED: 2.40 Hours

SUBJECTIVE

MAXIMUM MARKS: 68

NOTE: - Write same question number and its part number on answer book,
as given in the question paper.

SECTION-I



2. Attempt any eight parts.

8 × 2 = 16

- (i) Write at least two important characters of Hydrophytes.
- (ii) Differentiate between Osmoconformer and Osmoregulators.
- (iii) What is Pyrogen? Give its role.
- (iv) How exercise effect the muscle?
- (v) What is secondary growth? How it occurs?
- (vi) Define Bone. Write the names of cells associated with the bone.
- (vii) What are Restriction Endonucleases?
- (viii) Define Taq Polymerase. Give its source.
- (ix) Differentiate between alpine and boreal forest.
- (x) Give the characteristics of profundal zone.
- (xi) What is ozone layer?
- (xii) Write two disadvantages of Nuclear energy.

3. Attempt any eight parts.

8 × 2 = 16

- (i) Write any two commercial applications of Gibberellins.
- (ii) Describe action of Nicotine on coordination in animals.
- (iii) Discuss the role of progesterone in reproductive cycle of human females.
- (iv) What is "Fruit set" in plants? Discuss the role of pollen grain in it.
- (v) Describe Spermatogenesis-the formation of sperms in human males.
- (vi) What is Menopause?
- (vii) Write down any four contrasting traits of garden pea studied by G. Mendel.
- (viii) What is Over-Dominance?
- (ix) Describe XO -- XX type of sex determination.
- (x) What do you know about Commensalism?
- (xi) Define Predation. Explain it with at least two examples.
- (xii) Define Plant Succession.

4. Attempt any six parts.

6 × 2 = 12

- (i) What is embryonic induction?
- (ii) What is Neuregulation?
- (iii) What is crossing over?
- (iv) Differentiate between Karyokinesis and Cytokinesis.
- (v) What is a gene frequency?
- (vi) State Hardy-Weinberg theorem.
- (vii) Differentiate between Euchromatin and Heterochromatin.
- (viii) What is Transcription?
- (ix) What is nucleotide and nucleoside?

SECTION-II

NOTE: - Attempt any three questions.

3 × 8 = 24

5.(a) Give a detailed account on excretory system in earthworm.

4

(b) Describe the N_1 - cycle.

4

6.(a) What are Joints? Describe their different types.

4

(b) Describe how Hershey and chase prove that DNA is the heredity material?

4

7.(a) Describe the functions of thyroid gland.

4

(b) What is acid rain? State its cause and effects on environment.

4

8.(a) What are different physiological changes occur during the process of birth in human female?

4

(b) Define incomplete dominance. Explain it with an example.

4

9.(a) Describe role of nucleus in development.

4

(b) Describe comparative anatomy and comparative embryology as an evidence of evolution.

4

INTERMEDIATE PART-II (12th CLASS)**BIOLOGY PAPER-II (NEW SCHEME) GROUP-I**

TIME ALLOWED: 20 Minutes

OBJECTIVE

MAXIMUM MARKS: 17

Note: You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that bubble in front of that question number. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question. Attempt as many questions as given in objective type question paper and leave others blank. No credit will be awarded in case BUBBLES are not filled. Do not solve questions on this sheet of OBJECTIVE PAPER.

Q.No.1



- (1) Mongolism is the other name of:-
(A) Klinefelter's Syndrome (B) Turner's Syndrome (C) Down's Syndrome (D) Jacobs
- (2) The full cell cycle in yeast cells is completed in:-
(A) 24 hours (B) 4.5 hours (C) 30 minutes (D) 90 minutes
- (3) The cytoplasmic process/fibres which carry impulse towards cell body is called:-
(A) Dendron (B) Axons (C) Nissl's granules (D) Neurofibrils
- (4) The human life span is judged to be maximum of:-
(A) 60 – 70 years (B) 70 – 100 years (C) 120 – 125 years (D) 130 – 135 years
- (5) In sickle cell anemia code for glutamic acid is replaced by:-
(A) Leucine (B) Histidine (C) Valine (D) Proline
- (6) Universal recipient blood group is ____ blood group.
(A) A (B) B (C) AB (D) O
- (7) An enzyme α – galactosidase that can be used to treat a human lysosome storage disease, is harvested from:-
(A) Soyabeans (B) Tobacco plants (C) Sugarcane (D) Corn plants
- (8) The first photosynthetic organisms probably used Hydrogen Sulphide as a source of Hydrogen for reducing CO_2 to:-
(A) Sugars (B) H_2CO_3 (C) RUBP (D) Malate
- (9) Primary succession may start in a dry soil or rock is called:-
(A) Hydrosere (B) Xerosere (C) Desert (D) Derosere
- (10) Cacti and Euphorbia are the desert plants which store water in their:-
(A) Fleshy leaves (B) Fleshy buds (C) Fleshy stems (D) Fleshy roots
- (11) A single chlorine atom can react with ultraviolet rays and destroy as many as:-
(A) One million O_3 molecules (B) Three millions O_3 molecules
(C) Four millions O_3 molecules (D) Six millions O_3 molecules
- (12) _____ is not Endotherm.
(A) Bird (B) Amphibian (C) Flying insect (D) Some fishes
- (13) Glomerular filtrate are reabsorbed in:-
(A) Proximal tubule (B) Bowman's capsule (C) Loop of Henle (D) Distal tubule
- (14) The membrane that bounds vacuole is called:-
(A) Primary cell (B) Vascular wall (C) Pelicle (D) Tonoplast
- (15) In birds, the sternum is modified to form:-
(A) Keel (B) Neck (C) Rib (D) Clavicle
- (16) Fruit ripening is often accompanied by a burst of respiratory activity called:-
(A) Biometric (B) Redox (C) Climacteric (D) Photorespiration
- (17) An example of long-day plants is:-
(A) Tomato (B) Cabbage (C) Corn (D) Soyabean

INTERMEDIATE PART-II (12th CLASS)**BIOLOGY PAPER-II (NEW SCHEME) GROUP-I**

TIME ALLOWED: 2.40 Hours

SUBJECTIVE

MAXIMUM MARKS: 68

**NOTE: - Write same question number and its part number on answer book,
as given in the question paper.**

SECTION-I $8 \times 2 = 16$ **2. Attempt any eight parts.**

- (i) What is Lithotripsy?
- (ii) Why temperature of body increases during fever? Explain.
- (iii) Differentiate between fibres and sclereides.
- (iv) What is "All or None response"?
- (v) Define Vernalisation.
- (vi) What is meant by "After birth"?
- (vii) Differentiate between Climate and Weather.
- (viii) Define Productivity of an Ecosystem.
- (ix) What are heat-shock Proteins?
- (x) What is cause and symptoms of Rickets?
- (xi) How forests act as environmental buffers?
- (xii) Define Demography.

3. Attempt any eight parts. $8 \times 2 = 16$

- (i) Define Nissl's granules.
- (ii) What are Neurotransmitters? Give examples.
- (iii) Write two functions of Parathyroid gland.
- (iv) Differentiate between gene and allele.
- (v) What is Epistasis? Differentiate it from dominance.
- (vi) Define Crossing Over. Give its importance.
- (vii) Write three methods to get gene of interest.
- (viii) What is Probe? How is it traced?
- (ix) What do you know about the Particle Gun?
- (x) Compare Autecology with Synecology.
- (xi) Differentiate between Primary and Secondary Succession.
- (xii) What are Lichens? Write its significance.

4. Attempt any six parts. $6 \times 2 = 12$

- (i) Write practical applications of Apical dominance.
- (ii) Write about cleavage and discoidal cleavage.
- (iii) Write the functions of DNA polymerase III.
- (iv) Differentiate between Pyrimidines and Purines.
- (v) Define Phenylketonuria.
- (vi) Write symptoms of Turner's Syndrome.
- (vii) Define cell cycle. Write its phases.
- (viii) Define Hardy-Weinberg Theorem and also write its formula.
- (ix) What is Endosymbiont hypothesis?

SECTION-II

NOTE: - Attempt any three questions.

 $3 \times 8 = 24$

- 5.(a) Discuss the nature of excretory products in different habitats. 4
- (b) Define Ecosystem. Describe various components of an ecosystem. 4
- 6.(a) Describe Exoskeleton in arthropods. Write its advantages and disadvantages. 4
- (b) Explain one-gene/one-polypeptide hypothesis. 4
- 7.(a) Define nerve impulse. Explain factors responsible for resting membrane potential. 4
- (b) Write a note on Wild life. 4
- 8.(a) Write notes on:- (i) Seed Dormancy (ii) Fruit set and Fruit ripening 4
- (b) Describe genetic basis of ABO blood group system. 4
- 9.(a) Write a note on abnormal development. 4
- (b) Discuss comparative anatomy as an evidence of Evolution. 4

BIOLOGY PAPER-II (NEW SCHEME) GROUP-II

TIME ALLOWED: 20 Minutes

OBJECTIVE

MAXIMUM MARKS: 17

Note: You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that bubble in front of that question number. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question. Attempt as many questions as given in objective type question paper and leave others blank. No credit will be awarded in case BUBBLES are not filled. Do not solve questions on this sheet of OBJECTIVE PAPER.

Q.No.1



- (1) The human abdominal cavity lined by a thin epithelium is called:-
 (A) Ectoderm (B) Endoderm (C) Peritoneum (D) Epidermis
- (2) In human beings, the homeostatic thermostat is present in a part of the brain called as:-
 (A) Cerebrum (B) Thalamus (C) Hypothalamus (D) cerebellum
- (3) Rickets is a disease in children with bowed legs and deformed _____.
 (A) Head (B) Pelvis (C) Chest (D) Arms
- (4) The folded leaflets of sensitive Mimosa regain their turgidity after:-
 (A) 2 minutes (B) 5 minutes (C) 10 minutes (D) 15 minutes
- (5) Alpha cells of Pancreas secrete:-
 (A) Insulin (B) Pancreatic juice (C) Glucagon (D) Secretin
- (6) Corpus luteum secretes a hormone called:-
 (A) Progesterone (B) Oxytocin (C) Testosterone (D) Estrogen
- (7) Cucumber, tomato, garden pea, maize, cotton are examples of:-
 (A) Short-day plants (B) Long-day plants (C) Day-neutral plants (D) Night-neutral plants
- (8) The discoidal cap of cells above the blastocoele is called:-
 (A) Ectoderm (B) Mesoderm (C) Endoderm (D) Blastoderm
- (9) A sequence of three nucleotides in mRNA is called:-
 (A) Cistron (B) Codon (C) Anticodon (D) Template
- (10) Meiosis II is just like the:-
 (A) Amitosis (B) Regenerations (C) Mitosis (D) Replacement
- (11) The chances of teenage mother having Down's syndrome child is:-
 (A) One in one hundred (B) One in one thousand
 (C) One in many thousands (D) One in ten thousands
- (12) Protanopia is a:-
 (A) Red blindness (B) Green blindness (C) Blue blindness (D) Brown blindness
- (13) Cystic fibrosis patients lack a gene that codes for trans-membrane carrier of the:-
 (A) Sodium ion (B) Chloride ion (C) Potassium ion (D) Calcium ion
- (14) Acquired characteristics of an individual can not be:-
 (A) Inherited (B) Lost (C) Flourished (D) Migrated
- (15) Lichen is a symbiotic association between a fungus and:-
 (A) Gymnosperm (B) Angiosperm (C) An alga (D) Pteridophyta
- (16) Limnetic phytoplankton include the:-
 (A) Bacteria (B) Cyanobacteria (C) Fishes (D) Mosses
- (17) A chemical which kills the weeds in a crop is known as:-
 (A) Insecticides (B) Pesticides (C) Herbicides (D) Germicides

INTERMEDIATE PART-II (12th CLASS)**BIOLOGY PAPER-II (NEW SCHEME) GROUP-II**

TIME ALLOWED: 2.40 Hours

SUBJECTIVE

MAXIMUM MARKS: 68

NOTE: - Write same question number and its part number on answer book,
as given in the question paper.**SECTION-I**

- 2. Attempt any eight parts.** **8 × 2 = 16**
- Write a concise note on Hemodialysis.
 - Briefly describe Urea Cycle.
 - What is Uremia? Give its treatment.
 - How does tendon differ from Ligament?
 - Differentiate between sapwood and heartwood.
 - Write down disadvantages of Exoskeleton.
 - How do photoperiodism and vernalisation resemble with each other?
 - Write the functions of sertoli cells.
 - Compare weather with climate.
 - Write down soil conditions of grassland ecosystem.
 - Differentiate between Pollution and Pollutants.
 - Write any four ways to Conserve Energy.
- 3. Attempt any eight parts.** **8 × 2 = 16**
- What are Effectors?
 - Differentiate between Chemoreceptors and Mechanoreceptors.
 - What is Epilepsy? Write the name of important test in the study of Epilepsy.
 - Differentiate between Gene and Allele.
 - What is Law of Segregation?
 - Define Epistasis.
 - Enlist three possible ways to get the gene of interest.
 - What is Gene Therapy? Write names of two methods used for gene therapy.
 - What is Recombinant DNA?
 - Differentiate between Population and Community.
 - What are biotic components of an Ecosystem?
 - Differentiate between Autecology and Synecology.
- 4. Attempt any six parts.** **6 × 2 = 12**
- Differentiate between Primary Growth and Secondary Growth.
 - Define Growth Correlation.
 - Differentiate between Heterochromatin and Euchromatin.
 - Define Nucleosome.
 - Write two importance of Mitosis.
 - Differentiate between Benign tumour and Malignant tumour.
 - What is Phosphodiester bond?
 - What is Endosymbiont Hypothesis?
 - What are Vestigial organs? Give two examples.

SECTION-II

- NOTE: - Attempt any three questions.** **3 × 8 = 24**
- Write Homeostatic function of Liver. 4
 - Describe various stages of succession in Xerosere. 4
 - Write a note on paratonic movements in plants. 4
 - Write a note on Transcription. 4
 - What are Plant Hormones? Give the effects of Gibberellins and Ethene. 4
 - What are Renewable and non-renewable resources? Describe water as a renewable resource. 4
 - Describe female reproductive system of humans. 4
 - Describe the mechanism of incomplete dominance with an example. 4
 - Describe the external factors affecting the rate of growth in plants. 4
 - Describe the Hardy-Weinberg Theorem. 4