

T.Y.B.Sc Sem. V  
Reg.  
17/04/28

Time: 2 ½ hours

Total Marks: 75

Q1. Multiple Choice Questions (MCQ) (attempt any 15 out of 20)

15

- 1 EIA stands for \_\_\_\_\_  
a) Environmental internal assessment      b) environmental Indian association  
c) Economic Impact analysis              d) Environmental Impact Assessment.
- 2 The \_\_\_\_\_ is commonly called the mineral heart of India.  
a) Chotanagpur plateau    b) Deccan    c) Western Ghats    d) Madhya Pradesh.
- 3 \_\_\_\_\_ is a process in which biodegradable waste is rapidly heated to remove moisture from waste.  
a) Pyrolysis    b) Bio drying    c) UASB    d) Anaerobic digestion.
- 4 \_\_\_\_\_ is known as Ice man of India  
a) Sonam Wangchuk                              b) Dr. Sunil Chetry  
c) Chewang Norphel                              d) Bhupen Hazarika.
- 5 \_\_\_\_\_ plant is good source of biodiesel.  
A) *Madhuca indica*    b) *Rosa bonica*    c) *Aloe barbadensis*    d) *Manilkara zapota*.
- 6 Dolphins live in \_\_\_\_\_ for the search of food.  
a) pack                              b) herd                              c) pod                              d) troop
- 7 Many animals mark the \_\_\_\_\_ to advertise their territory.  
a) signals                              b) sign posts                              c) flags                              d) alerts
- 8 \_\_\_\_\_ cause whirling disease in fishes.  
a) *Myxobolus cerebralis*                              b) *Macrobrachium rosenbergii*  
c) *Mycobacterium tubercular*                              d) *Salmonella typhi*
- 9 \_\_\_\_\_ is an example of solitary animal.  
a) Langoor                              b) Panther                              c) Zebra                              d) Elephant
- 10 \_\_\_\_\_ helps to compile a numerical profile of wild animals.  
a) prion                              b) sign post                              c) census                              d) pod
- 11 Use of plants or organisms by animals for treating the infections is not limited to themselves but also for their colony is called \_\_\_\_\_ zoopharmacognosy.  
a) trans                              b) social                              c) self                              d) ecological
- 12 Fruit flies in healthy condition do not eat the banana which contains alcohol, this is an example of \_\_\_\_\_  
a) social zoo pharmacognosy                              b) self-zoo pharmacognosy  
c) trans-generational zoo pharmacognosy,                              d) zero zoo pharmacognosy.

- 13 Honey bee colonies are infected with fungus \_\_\_\_\_ to cause the larval disease called chalkbrood.  
a) *Mycophorae indica*                      b) *Aphinophora mendis*  
c) *Ascophaera apis*                        d) *Achalknophora apis*
- 14 \_\_\_\_\_ teaches their offspring about feeding habits in the uterus itself.  
a) Sheep                      b) Cow                      c) Crow                      d) Dog
- 15 Sweet wormwood is the source of 100% effective anti-malarial drug named as \_\_\_\_\_.  
a) streptomycin                      b) erythromycin                      c) artemisinin                      d) vasicine
- 16 All the continents had initially been one big land mass called \_\_\_\_\_.  
a) Pangea                      b) Nazca                      c) Peru                      d) Eurasia
- 17 Many spectacular volcanoes are found along \_\_\_\_\_ zones:  
a) mid ocean                      b) subduction                      c) induction                      d) divergent
- 18 The animals which can thrive over a large range of atmospheric challenge are called \_\_\_\_\_ animals.  
a) eurytopic                      b) euryhaline                      c) stenohaline                      d) stenotopic
- 19 \_\_\_\_\_ is an example of sweep take bridge.  
a) floating ice                      b) island                      c) wind                      d) temperature
- 20 \_\_\_\_\_ sub region belongs to Neitropical realm.  
a) Mexican                      b) California                      c) Canadian                      d) Polynesian

Q.2 A) Write an explanatory note on solid waste management. (07)

OR

A) Give an account on Environment Protection Act, 1986. (07)

B) Write short note on any two. (08)

a) Coal as a non-renewable energy resource.

b) Solar energy.

c) Reasons of depletion of natural resources.

d) Landfill.

Q. 3 (A) Give an account on hunting and poaching. (07)

OR

(A) Give a brief account on biological factors of habitat. (07)

(B) Write short notes on any two: (08)

a) Niche.

b) Climate change as a threat to wildlife.

c) Thinning harvest.

d) Functional classification of forests.

Q.4 A) Explain the Traditional and modern Bioprospecting. (07)

OR

A) Methods of Self-medication through geophagy. (07)

B) Write short note on any two. (08)

a) Any two case studies of Bioprospecting and Biopiracy in India.

b) Disadvantages of bioprospecting.

c) Methods of self-medication by ingestion in ants.

d) Social Zoo pharmacognosy.

Q5. A) Explain the concept and working of plate tectonics. (07)

OR

A) Describe Ethiopian realm in brief. (07)

B) Write short note on any two. (08)

a) Filter bridge and temperature as a climatic barrier.

b) Climate and evolution theory of Matthew.

c) Sub regions of Oriental region.

d) Fauna of Antarctic region.

Time: 2.30 hours

Total Marks: 75

- Q1. Multiple Choice Questions (MCQ) (attempt any 15 out of 20) 15 Marks  
(1 Mark each)
- Sickle cell anaemia is an excellent example of \_\_\_\_\_ type of mutation.  
a. Mis-Sense    b) Silent    c) Non-sense    d) Insertion
  - \_\_\_\_\_ is a type of non-ionizing radiation.  
a) X rays  
b) Alpha rays  
c) Beta rays  
d) Ultra Violet radiation
  - Ethidium bromide is \_\_\_\_\_ type of chemical mutagen.  
a) Deaminating agent  
b) Hydroxylamine  
c) Intercalating agent  
d) Alkylating agent
  - In \_\_\_\_\_ system of DNA repair DNA glycosylase recognizes the damaged base and breaks the glycosidic linkage.  
a) Homologous recombination repair  
b) NHEJ repair  
c) Mismatch repair  
d) Base Excision Repair
  - Which of the following steps is involved in the process of mismatch repair in eukaryotes?  
a) Nucleotide excision  
b) Base excision  
c) Strand-directed mismatch recognition  
d) Double-strand break repair
  - Which of the following statements is true about restriction endonucleases?  
a) They cut DNA at random locations without any sequence preference.  
b) They are enzymes that cut DNA at specific recognition sites, usually palindromic sequences.  
c) They require ATP to function and only cut RNA.  
d) They are exclusively found in bacterial cells and are used for protein synthesis.
  - The cosmid vector requires \_\_\_\_\_ sites for the successful packaging of recombinant plasmid within the protein coat of the bacteriophage.  
a) Four    b) One    c) Three    d) Two
  - Which of the following combinations correctly matches the steps of PCR with their respective temperatures?  
a) Denaturation at 95°C → Annealing at 55°C → Extension at 72°C.  
b) Denaturation at 72°C → Annealing at 95°C → Extension at 50°C.  
c) Denaturation at 55°C → Annealing at 95°C → Extension at 37°C.  
d) Denaturation at 37°C → Annealing at 72°C → Extension at 95°C.

- ix. \_\_\_\_\_ is the technique used for the separation and detection of RNA.
- Western Blotting
  - Polymerase chain Reaction
  - Northern Blotting
  - Southern Blotting
- x. In Edman degradation, which part of the protein is directly sequenced?
- The N-terminal amino acid
  - The C-terminal amino acid
  - The peptide bonds
  - The side chains of amino acids
- xi. \_\_\_\_\_ is caused due to deletion of 5p arm of the chromosome.
- Turner syndrome
  - Down's syndrome
  - Cri-Du chat syndrome
  - Klinefelter syndrome
- xii. The primary cause of meiotic non-disjunction is \_\_\_\_\_.
- Failure of homologous chromosomes to separate during meiosis I
  - Failure of sister chromatids to separate during meiosis II
  - A mutation in the DNA sequence
  - Errors during DNA replication
- xiii. What does "euploidy" refer to?
- A condition where there is an exact multiple of the normal number of chromosomes.
  - A condition where the organism has an extra set of chromosomes
  - A condition where an organism has missing chromosomes
  - A mutation in the gene sequence
- xiv. Phenylketoneuria is \_\_\_\_\_ type of inheritance.
- Autosomal dominant trait.
  - Autosomal recessive trait.
  - X-linked dominant trait.
  - X-linked recessive trait.
- xv. \_\_\_\_\_ syndrome occurs when person inherits both copies of a section of chromosome 15 from mother.
- Pradar-Willi chromosome
  - Cystic fibrosis
  - Angelman syndrome
  - Albinism
- xvi. \_\_\_\_\_ searches the nucleotide query against a protein database, translating the query on the fly.
- BLASTN
  - BLASTP
  - BLASTX
  - RPS-BLAST
- xvii. \_\_\_\_\_ is a pairwise alignment tool which takes input as nucleotide or protein sequences and compares it with existing databases.
- BLAST
  - ClustalW
  - FASTA
  - T-Coffee



[Time: 2 ½ Hours]

Please check whether you have got the right question paper.

- N.B: 1. All questions are compulsory and carry equal marks.  
2. Figures to the right indicate full marks.  
3. Draw neat and labelled diagrams wherever necessary.  
4. Answer the questions in proper order.

Q1. Attempt any 15 out of 20

15 Marks

- 1 ----- are important in DNA replication and repair process.
  - a) Ligases
  - b) Hydrolases
  - c) Oxidoreductases
  - d) amylases
- 2 The Induced fit model of enzyme action was proposed by -----
  - a) Emil Fischer
  - b) Frederic Kunhe
  - c) Alexander Fleming
  - d) Daniel Koshland
- 3 ----- inhibitors compete with substrates to bind with the active site of the enzyme.
  - a) Non-competitive
  - b) Reversible
  - c) Competitive
  - d) Irreversible
- 4 The optimum temperature for most enzymes of human body is -----
  - a) 30°C
  - b) 38°C
  - c) 40°C
  - d) 43°C
- 5 Enzymes are polymers of -----
  - a) Glucose
  - b) Fatty acids
  - c) Nucleic acids
  - d) Amino acids
- 6 The process by which organisms maintain a stable internal environment is called -----
  - a) Adaptation
  - b) Homeostasis
  - c) Mutation
  - d) Excretion

- 7 The ----- regulates physiological processes according to a 24-hour cycle.
- Biological clock
  - Heart
  - Nervous system
  - Reflex arc
- 8 Animals that generate heat internally to maintain body temperature are called -----
- Ectotherms
  - Endotherms
  - Poikilotherms
  - Heterotherms
- 9 Production of sweat is a mechanism for -----
- Heat retention
  - Heat loss
  - Heat production
  - Water conservation
- 10 Freshwater fish face the problem of -----
- Losing too much water
  - Losing too much salt
  - Gaining excess water
  - Excess heat production
- 11 Thyroxine contains four atoms of -----
- Iron
  - Calcium
  - Copper
  - Iodine
- 12 The paraventricular nucleus of hypothalamus produces -----
- Oxytocin
  - Adrenaline
  - ACTH
  - Calcitonin
- 13 The two lobes of thyroid gland are connected with each other by a narrow band called -----
- Ethmoid
  - Isthmus
  - Ecotone
  - Parafollicular zone
- 14 ----- regulates the level of calcium and phosphorus in blood.
- Gastrin
  - Glucocorticoids
  - Parathormone
  - Secretin

- 15 ----- is a hormone derived from cholesterol.
- a) Insulin
  - b) Glucagon
  - c) Adrenalin
  - d) Estrogen
- 16 ----- is not a physical agent of sterilization.
- a) Sunlight
  - b) Radiation
  - c) Drying
  - d) Alcohol
- 17 ----- is an instrument used for sterilization of instruments.
- a) Millipore filter
  - b) Autoclave
  - c) Centrifuge
  - d) Desiccator
- 18 ----- is the quickest way to sterilize solutions without heating.
- a) Filtration
  - b) Alcohol
  - c) Steam
  - d) Chlorine
- 19 Filter used in laminar air flow is -----
- a) HEPA
  - b) Notch filter
  - c) LPF
  - d) HPF
- 20 Hybridoma technology is a method of producing -----
- a) Antibiotics
  - b) Cell lines
  - c) Monoclonal antibodies
  - d) Organs

**Q2. A) Describe ANY ONE of the following**

7 Marks

A) Concept of activation energy and transition state

OR

A) Industrial application of enzymes

**B) Write short note on ANY TWO**

8 Marks

a) Lineweaver Burk plot

b) EC number of enzymes

c) Covalent regulation of enzymes

d) Isozymes

**Q3. Explain ANY ONE of the following**

7 Marks

A) Role of kidney in ionic regulation

OR

A) Adaptations for living in hyper-osmotic environment

Time: 2 ½ Hours.

Total Marks-75

Please check whether you have got the right question paper.

N.B: 1. All questions are compulsory and carry equal marks.

2. Figures to the right indicate full marks.

3. Draw neat and labelled diagrams wherever necessary.

4. Answer the questions in proper order.

- Q1 Multiple choice questions (MCQ) (Attempt any 15 out 20)(1Mark each) 15 M
- i Phylum Chordata is a group of animals having a flexible supporting rod like structure called \_\_\_\_\_
- Nerve ring
  - Neochord
  - Notochord
  - Spicule
- ii Euchordates are higher chordates having prominent head and cranium or skull around brain hence called \_\_\_\_\_.
- Arachnid
  - Craniata
  - Eurypterids
  - Cleavage
- iii Herdmania is commonly called as \_\_\_\_\_.
- Asteroidea
  - Sea urchin
  - Sea cucumber
  - Sea squirts
- iv *Branchiostoma (Amphioxus)* is commonly called as \_\_\_\_\_.
- Appendicularia
  - Larvocet
  - Lancelet
  - Gregaria
- v The term 'Vertebrata' was first coined by \_\_\_\_\_ in 1866.
- Ernst Haeckel
  - Charles Darwin
  - Garstang
  - W. H. Gaskell
- vi Animals having mouth bounded by jaws belongs to division\_-----\_
- Placodermi
  - Craniata
  - Gnathostomata
  - Euchordata
- vii *Rhinobatus* is commonly called as \_\_\_\_\_
- Guitar fish
  - lung fish
  - Sun fish
  - Flying fish

- viii Parental care is well developed in \_\_\_\_\_
- Protopterus*
  - Exocoetus*
  - Climacopterus*
  - Rhinobatus*
- ix The limbless amphibian is \_\_\_\_\_
- Toad
  - Caecilian
  - Hyla*
  - Amphiuma*
- x \_\_\_\_\_ is nocturnal and carnivorous.
- Hyla*
  - Amphiuma*
  - Labeo*
  - Tilapia*
- xi \_\_\_\_\_ is non venomous snake
- Sand Boa
  - Indian Cobra
  - Pit Viper
  - Krait
- xii Rabbit shows \_\_\_\_\_ habitats
- Cursorial
  - Burrowing
  - Arboreal & Fossorial
  - Aerial
- xiii Veritable tiger among bird is \_\_\_\_\_
- Gallus*
  - Woodpecker
  - Emu
  - Barn Owl
- xiv Exoskeleton of reptile is mostly made up of \_\_\_\_\_
- Feathers
  - Scales
  - Plates
  - Furs
- xv \_\_\_\_\_ is an example of Gnawing Mammals.
- Sorex*
  - Macropus*
  - Funambulus*
  - Macaca*
- xvi Shark belongs to order \_\_\_\_\_
- Gnathostomata
  - Elasmobranchi
  - Selachii
  - Carcharhiniformes

- xvii \_\_\_\_\_ is an intromittent organ present in male Shark.
- Testis
  - Siphon
  - Clasper
  - Vas deferens
- xviii According to skeleton Shark is -----fish
- Bony
  - Cartilaginous
  - Marine
  - Freshwater
- xix The Shark is also called as dogfish because \_\_\_\_\_
- Look like a dog
  - Fast swimmer
  - Tremendous capacity of smelling like dog
  - Carnivorous and Feeds on other fish
- xx Which is anterior region of skull of *Scoliodon*
- Olfactory
  - Ethmoidal
  - Occipital
  - Orbital
- Q.2 A Explain general characters of chordates 7 M
- OR
- A Describe Annelids as ancestors of chordates
- B Write a short note on Any Two (4 marks each) 8 M**
- Oikopleura*
  - Amphioxus*
  - Cephalaspis*
  - Characters of non-chordates
- Q.3 A Describe the general characters of class Osteichthyes with suitable example 7 M
- OR
- A Describe habit, habitat and external characters of Dipnoi
- B Write short notes on any two (4 marks each) 8 M**
- Rhinobatus*
  - Affinities of dipnoi with class pisces
  - Superclass tetrapoda
  - Amphiuma*
- Q.4 A Describe the characteristics features of Sphenodon 7 M
- OR
- A Describe the characteristics features of Barn owl
- B Write short note on Any Two (4 marks each) 8 M**
- Sea turtle
  - Woodpecker
  - Heron
  - Duck-billed Platypus

Q.5 A Describe external characters of Shark

7 M

OR

A Describe Digestive system of Shark

B Write short note on Any Two (4 marks each)

8 M

- a) Placoid scales in shark
  - b) Pectoral girdle of Shark
  - c) Ampullae of Lorenzini
  - d) Economic importance of Shark
-

23/4/25

T.Y.B.Sc  
Sem. VI Reg.  
SAC 1625

2503425

**T.Y.B.SC (SEMESTER VI APPLIED COMPONENT - FISHERY BIOLOGY  
(Marine resources , Post-harvest and Farm Engineering )**

Time: 2:00 hrs. 30 min

Total Marks : 75

- Note:** (1) Question No. 1 is compulsory  
(2) Attempt any four questions from Question No. 2 to Question No. 7, 15 Marks each.  
(3) Draw and label the neat diagrams wherever necessary.

Q.1) Write short notes on any five of the following

15 Marks

- A. Coastal fishery of *Cybium guttatum*
- B. Deep sea fishery of *Thunnus alalunga*
- C. *Sepia pharaonis* (Pharaoh cuttlefish)
- D. *Acetes indicus* (Jawala, Paste shrimp)
- E. *Artemia*
- F. *Daphnia*
- G. Prophylaxis of Viral diseases in fish
- H. Dropsy
- I. Cryo-quick
- J. Dry salting
- K. Uses of chitin
- L. Pearl essence processing
- M. Extensive aquaculture
- N. Cage culture

Q.2) A. Explain commercial potential and major landing centres of the *Scomber microlepidotus* 15 Marks  
and *Stromateus cinereus*

OR

B. Explain the following

- i. Coastal fishery of *sarda oreintalis* (Striped bonito) 7 Marks
- ii. Coastal fishery of *Synagris japonicus* (Blackmouth splitfin) 8 Marks

Q.3) A. Explain the Crustacean fishery of *Parapenaeopsis stylifera* and *Penaeus indicus* 15 Marks

OR

B. Explain the following

- i. *Crassotrea spp.* (Oyester) 7 Marks
- ii. *Panulirus polyphagus* (Mud spiny losbter) 8 Marks

25210A2  
Q.4) A. Explain Formulated feed and add a note on nutritional algae products

2518025  
15 Marks

OR

B. Explain the following

i. *Infusoria*

7 Marks

ii. *Chaetoceros*

8 Marks

Q.5) A. Explain the bacterial infections occurred to fishes and its treatment

15 Marks

OR

B. Explain the following

i. Crustacean infections in fishes

7 Marks

ii. Physiological disorders in fish

8 Marks

Q.6) A. Describe Drying and Icing as method of fish preservation

15 Marks

OR

B. Explain the following

i. Freezing procedures.

ii. Equipments and utensils used in seafood processing

Q.7) A. Describe proximate composition of fish meat

15 Marks

OR

B. Explain the following

i. Fish hydrolysate

7 Marks

ii. Importance of personal hygiene in fish industry

8 Marks

Q. 8) A. Explain equipments and accessories used in various aqua farms.

15 Marks

OR

B. Explain the following

i. Rope culture

7 Marks

ii. Pen culture

8 Marks