





- 19 Double immunodiffusion is also known as \_\_\_\_\_  
a) Mancini method  
 b) Ouchterlony method  
c) Grabar method  
d) Laurell's method

- 20 \_\_\_\_\_ is used in blood typing  
a) Indirect agglutination  
 b) Haemagglutination  
c) Latex agglutination  
d) Tube agglutination

- Q2.  A) Describe the types of leucocytes and add a note on their functions (diagram) (07)  
**OR**

A) Describe the process of development and maturation of RBC

B) Write short note on any two (08)

- a) Hemorrhage  
 b) Functions of white blood cells  
 c) Properties of hemoglobin  
 d) Leukemia

- Q3.  A) Describe the microscopic examination of malaria as an infectious disease (07)  
**OR**

A) Describe sign, symptoms, diagnosis and treatment of thalassemia (08)

B) Write short note on any two

- a) Hemophilia  
b) Alanine transaminase (ALT)  
c) Thyroid function test  
d) Glucose tolerance test

- Q4. A) Give an account on second line of defense (07)  
**OR**

A) Explain the basic structure of immunoglobulin

B) Write short note on any two (08)

- a) Active acquired immunity  
 b) Hapten  
 c) Phagocytosis  
d) B-lymphocyte

- Q5.  A) Classification of vaccines . (07)  
**OR**

A) Elaborate the role of MHC compatibility in organ transplantation

B) Write short note on any two (08)

- a) Mechanism of agglutination reaction  
b) Laurell's Rocket Immunoelectrophoresis  
c) Saponin as an adjuvant  
d) Types of grafts

**T.Y.B.SC (SEMESTER V APPLIED COMPONENT - FISHERY BIOLOGY  
(Oceanography Aquaculture Practices, Marketing & Finance)**

Time: 2 hrs 30 minutes

Total Marks: 75

- Note:** (1) Attempt any four questions from Question No. 2 to Question No. 8, 15 Marks each.  
(2) Question No. 1 is compulsory.  
(3) Draw and label the neat diagrams wherever necessary.

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

15 Marks

- A. Remote sensing.
  - B. Rigor mortis .
  - C. Peterson grab .
  - D. Hose pipe fishing
  - E. Electric fishing .
  - F. Extensive monoculture practices
  - G. Breeding and life cycle of freshwater prawns
  - H. Ornamental fish - *Betta splendens* (Siamese fighter)
  - I. Costing and feasibility report with respect to fund raising
  - J. Nursery management of *Scylla serrata*
  - K. Intensive monoculture practices
  - L. Financial institutions in fundraising
  - M. Lacquered can .
  - N. Nursery management of fin fish
- Q.2) A. Explain basic, physical and biological oceanography.

15 Marks

OR

- B. Explain the following
- i. Niskin water sampler
  - ii. Fish finding instrument

7 Marks

8 Marks

Q.3) A. Describe the methods parts and material used to design a boat

15 Marks

OR

- B. Explain the following
- i. Light fishing
  - ii. Winch and deck side equipment

7 Marks

8 Marks

Q.4) A. Breeding techniques of major carp.

15 Marks

OR

- B. Explain the following
- i. Hatchery and nursery management of exotic carp
  - ii. Semi intensive poly cultural practices

7 Marks

8 Marks

Q.5) A. Explain breeding and rearing of Flower horn

15 Marks

OR

- B. Explain the following
- i. Monoculture of *Macrobrachium rosenbergii* 7 Marks
  - ii. Breeding and rearing of *Pangasius bocourti* 8 Marks
- Q.6) A. Breeding, hatchery, nursery management and rearing of *Litopenaeus vannamei* 15 Marks

OR

- B. Describe the following
- i Breeding of *Lates calcarifer* 7 Marks
  - ii. Hatchery and nursery management of Giant mud Crab 8 Marks
- Q.7) A. Explain organoleptic and chemical methods for evaluating freshness and quality of fish and prawns / shrimps 15 Marks

OR

- B. Explain the following
- i. Fish industry waste water disposal and effluent treatment plant 7 Marks
  - ii Any two quality policy with respect to fishery 8 Marks
- Q.8) A. Basic accountancy with respect to maintain the fund and records of fishery business 15 Marks

OR

- B. Describe the following
- i. Role of Marine Products Exports Development Authority 7 Marks
  - ii. Maintenance of hygiene of food contact surfaces in fish industry 8 Marks

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.

Q.1 Multiple choice questions (MCQ) (Attempt any 15 out of 20) (1Mark each) 15

i \_\_\_\_\_ are groups of similar specialized cells carrying out a specific functions

- (1) a. Organs  
b. Tissues  
c. Cells  
d. Neurons

ii Which is the unicellular Ciliophoran animal

- a. Amoeba  
b. Opalina  
c. Dysteria - correct answer  
d. Euglena

iii The word Taxonomy was introduced by

- a. John Ray  
b. Candolle - correct answer  
c. Ernst Haeckel  
d. Carl Linnaeus

iv Which symmetry is found in man

- (1) a. Bilateral  
b. Radial  
c. Asymmetry  
d. Poly lateral

v Obligate intracellular Protozoan parasite that infect intermediate hosts like rodents pig and sheep

- a. Amoeba  
b. Plasmodium  
c. Toxoplasma - correct answer  
d. Opalina

vi \_\_\_\_\_ are called glass sponges

- (1) a. Hyalonema  
b. Euspongia  
c. Planaria  
d. Schistosoma

- vii ✓ The phenomenon of division of labour in which different functions are performed by different zooids of the colony
- a. Gametogenesis
  - b. Metamorphosis
  - c. Polymorphism
  - d. Regeneration
- viii (1) ✓ An example of class anthozoa is \_\_\_\_\_
- a. Hydra
  - b. Meandrina
  - c. Schistosoma
  - d. Fasciola hepatica
- ix (1) ✓ In tapeworm, the prominent middle part of scolex is called \_\_\_\_\_
- a. Cirrus
  - b. Strobili
  - c. Rostellum
  - d. Proglottids
- x (1) ✓ Amphids are present in class \_\_\_\_\_
- a. Adenophorea
  - b. Protozoa
  - c. Porifera
  - d. Hexactinellida
- xi All \_\_\_\_\_ have eight legs.
- a. Chelicerata
  - b. Arachnids — correct answer
  - c. Merostomata
  - d. Pycnogonida
- xii In leeches, salivary glands secrete an anticoagulant called \_\_\_\_\_
- a. Saliva
  - b. Thyroxin
  - c. Aldosterone
  - d. Hirudin — correct answer
- xiii (1) ✓ Ophiuroidea are known as \_\_\_\_\_ stars
- a. Loose
  - b. Brittle
  - c. Soft
  - d. Hard
- xiv In \_\_\_\_\_ development is mostly indirect through a free swimming tornaria larva.
- a. Protochordata
  - b. Urochordate
  - c. Cephalochordate
  - d. Hemichordate

xv \_\_\_\_\_ is planktonic animal also called as arrow worm.

- a. Moniliformis
- b. Acanthocephalan
- c. *Peripatus*
- d. *Sagitta*

xvi *Sepia* belongs to class \_\_\_\_\_

- a. Cephalopoda
- b. Gastropoda
- c. Decapoda
- d. Scaphopoda

xvii The shell in *Sepia* is made up of \_\_\_\_\_

- a. Silica
- b. Chitin
- c. Spongin fibers
- d. Calcium carbonate

xviii *Sepia* shows \_\_\_\_\_ development

- a. Indirect
- b. Direct
- c. Intermediate
- d. Direct & Indirect

xix Respiratory organs in *Sepia* are \_\_\_\_\_

- a. Trachea
- b. Keber's organ
- c. Ctenidia
- d. Book lung

xx Gustatory organ of *Sepia* is associated with \_\_\_\_\_

- a. Equilibrium
- b. Vision
- c. Smell
- d. Taste

Q.2 A Describe types of Metamerism

07

OR

A Describe types of triploblastic animals based on Coelom

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

08

- a) Multicellularity
- b) Radial symmetry
- c) General characters of subkingdom Protozoa
- d) *Opalina*

Q.3  A Explain the general characters of phylum Porifera and add a note on class Hexactinellida

07

OR

A Explain the general characters of phylum Platyhelminthes and a note on class Turbellaria

08

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

- a) *Euspongia*
- b) *Hydra*
- c) *Fasciola hepatica*
- d) *Trichinella spirallis*

Q.4  A Explain distinguishing features of phylum Echinodermata

07

OR

A Explain general characters of phylum Hemichordata with special reference to *Balanoglossus*.

08

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

- a) General characters of class Pelecypoda
- b) Atlas moth
- c) Concept of Phylogeny
- d) Starfish

Q.5 A Describe female reproductive system of *Sepia*

07

OR

A Describe external characters of *Sepia*

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

08

- a) Economic importance of *Sepia*.
- b) Ink gland of *Sepia*.
- c) Jaws and radula of *Sepia*.
- d) Spermatophore and Chromatophore of *Sepia*.

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