Exam Code: 121301 **Paper Code: 1184**

Bachelor of Science (Medical) Semester-I

Course Title: Zoology (Diversity of Nonchordates-I (Protozoa Annelida))

Course Code: BSML-1483

Time: 3 Hours **Max. Marks: 70**

Note: Attempt five questions, selecting one question from each section. The fifth question can be attempted from any section. Each question carries 14 marks. Draw neat and well labelled diagrams wherever required.

Section A

1. Discuss theconjugationin Paramecium with the help of well labelled diagrams. 14

2. Describe following with the help of well labelled diagrams:
   a) Schizogony phase in Plasmodium 7
   b) Digestion in Paramecium 7

Section B

3. Discuss the Reproduction in Sycon. 14

4. Explain the histology of polypin detail. 14

Section C

5. Give an account ofnervous system of Liver fluke. 14

6. Describe life history of Tapeworm. 14

Section D

7. Explain parasitic adaptations in helminthes in detail. 14

8. Give an account of nervous system of Earthworm. 14

Exam Code: 121301 **Paper Code: 1185**

Programme: Bachelor of Science (Semester: I)

Course Title: Chemistry (Inorganic Chemistry – I: Atomic Structure and Periodic Table)

Course Code: BSML/BSNL-1084

Time Allowed: 3 Hours **Max Marks: 70**

Note: Attempt five questions in all, selecting atleast one question from each section. The fifth question may be attempted from any section. Each question carries 14 marks.

Section-A

1. a) Deduce the Schrodinger wave equation for an electron moving in three dimensions.

   b) Show diagrammatically/graphically how many nodes are present in each of the following orbitals:

   (i) 1s (ii) 2s (iii) 3s (iv) 3p

(7, 7)

2. a) What is ionisation energy? Discuss the factors which affect ionisation energy and give its variation in a period and in a group in the periodic table.

   b) What is effective nuclear charge? Calculate screening constant and effective nuclear charge for its 4s and 3d electron of Zn.

(7, 7)

Section-B

3. a) Draw MO diagram of NO and show its bond order. Compare the bond length of NO with that of NO^+.

   b) Explain the structure of NH_3 molecule on the basis of VBT and hybridization.

(7, 7)

4. (a) Draw and discuss the structures of NaCl and CsCl. Show the coordination around each type of ion in these structures? What is the basic difference in these two types of structures?

(b) Construct the Born-Haber cycle for the formation of KCl. How does it explain the stability of ionic compounds? (7, 7)

Section-C

5. (a) How is $BeCl_2$ prepared? Draw the structure of $BeCl_2$ in solid state and in the vapour state?

(b) Explain: Li forms normal oxide, Na peroxide and K, Rb and Cs the superoxides. (7, 7)

6 (a) Discuss Lux-Flood theory for acids and bases with suitable examples.

(b) What are conjugate acid- base pairs? Why strong Bronsted acid has weak conjugate base and vice versa? (7, 7)

Section-D

7. (a) Give one preparation of diborane. Explain the structure of diborane on the basis of hybridisation.

(b) What do you understand by back bonding? Why $N(SiH_3)_3$ is trigonal planar, but $N(CH_3)_3$ is pyramidal? (7, 7)

8. (a) What is Inorganic benzene? Explain its structure.

(b) Why CO_2 is a gas whereas SiO_2 is a solid. Explain in detail. (7, 7)

Exam Code: 121301 **Paper Code: 1186**

Programme: Bachelor of Science
Semester: I
Course Title: Botany (Diversity of Cryptogams)
Course Code: BSML-1075

Time Allowed: 3 Hours **Max Marks: 70**

Note: Attempt any five questions selecting at least one question from each section. The fifth question may be attempted from any section. All questions carry equal marks. Draw labelled diagrams wherever necessary.

Section-A

1. Explain the following: (3.5 marks each)
   i) Habitat of algae
   ii) Sexual reproduction in *Vaucheria*
   iii) Plurilocular sporangia
   iv) Post fertilization in *Polysiphonia* (14)
2. Discuss any two of the following: (7 marks each)
   i) Sexual reproduction in *Volvox*
   ii) Synzoospores in *Vaucheria*
   iii) Asexual reproduction in *Ectocaprus* (14)

Section-B

3. Illustrate the life history of *Puccinia graminis tritici.* (14)
4. Write notes on the following: (3.5 marks each)
   i) Economic importance of yeast
   ii) Apothecium
   iii) Red rot of sugarcane
   iv) Late Blight of potato (14)

Section-C

5. What are gemma cups in *Marchantia*? Discuss the reproduction by gemma cups in *Marchantia*. Draw a transverse section of vegetative thallus of *Marchantia.* (3+7+4)

6. Write notes on: (7 marks each)
   i) Sporogonium of *Anthoceros*
   ii) Capsule of *Funaria* (14)

Section- D

7. How many types of gametophytes are found in *Lycopodium*? Illustrate your answers with suitable diagrams of each kind. (14)
8. Write short notes on the following: (3.5 marks each)
   i) Rhizophore
   ii) Alteration of generation
   iii) Mechanism of sporangial dehiscence and spore dispersal in *Pteris*
   iv) Hydrophytic and xerophytic characters of *Equisetum* stem (14)

Exam Code:121301 **Paper Code: 1187**

Programme: Bachelor of Science
Semester- I
Course Title: Physics (Electricity and Magnetism)
Course Code: BSNL/BCSL-1395

Time Allowed:3 hrs Maximum Marks: **70**

Serial no.	Space for instructions to the candidates Attempt 5 questions selecting one from each section. The fifth question can be attempted from any section. All questions carry equal marks.(14)	Marks
	Section A	
1	(a) What do you mean by gradient of a scalar quantity? Give its physical interpretation.	10
	(b) If $\phi = e^{xyz}$, calculate the gradient of ϕ at the point (1,-1,1).	4
2	(a) State and prove the Gauss divergence theorem.	7
	(b) Determine the electric field due to uniformly charged infinite wire.	7
	Section B	
3	(a) State and prove Stoke's theorem.	10
	(b) Electric potential at a point is given by $V= x^2y+ 2z$. what are the components of electric field at that point?	4
4	Determine the electric potential due to an arbitrary charge distribution and express it in terms of multipole moments.	14

Section C

5	What is electric image? Find the electric potential and electric field due to a point charge placed near an infinitely conducting sheet.	14
6	(a) Distinguish between current and current density. Derive a relation which connect them.	4
	(b) Derive the microscopic form of Ohm's law and explain its limitation.	10

Section D

7	Derive the expressions for Maxwell's equations.	14
8	Discuss in detail the behaviour of various substances in the magnetic field.	14