Presidency University, Bengaluru

School of Engineering

I Semester 2015-2016 | COMPREHENSIVE EXAMINATION | Course: BIO A 101 General Biology (Closed Book)

Max Marks:60 | Max Time: 2 hours | Weightage: 30 % | 6th Jan' 2016 | **SET A**

Instructions to Candidates
1. Write legibly.
2. Attempt all questions.

PART A (10 X 3 = 30 Marks)

1. List three differences between eukaryotes and prokaryotes.

2. List any three differences between mitosis and meiosis.

3. What are alleles? Give any two examples of alleles in humans. (1 + 2)

4. Define Electron transport system. Name the two molecules which generate hydrogen electrons in Electron transport system. (2 + 1)

5. Define fermentation. Name two end products of fermentation. (1+ 2)

6. List any three applications of human genome project.

7. What is monoculture? List any two disadvantages of monoculture. (1+ 2)

8. List any two ways by which we can know if two populations really do belong to the same species.

9. List any three characteristics of fungi.

10. Name the cell components of blood and their respective functions.

PART B (4 X 5 = 20 Marks)

11. Give the overview summary of light dependent reaction.

12. List the three steps of protein synthesis. Name the codons which are involved in starting and stopping of protein synthesis. (3 + 2)

13. Draw a well labeled diagram of the structure of heart.

14. Draw a well labeled diagram of oogenesis.

PART C (1 X 10 = 10 Marks)

15. a) Define interphase stage of cell cycle. Name the different stages of cell cycle. (2 + 3)
    b) What is plasma membrane? List its various constituents. (1 + 4)

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I Semester 2015-2016	COMPREHENSIVE EXAMINATION	Course: **BIO A 101 General Biology** (Open Book)		
Max Marks: 20	Max Time: 1 hour	Weightage:10 %	6th Jan' 2016	**SET A**

Instructions to Candidates
1. Write legibly.
2. Attempt all questions.

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2 X 10 = 20 Marks

1. With the help of a dihybrid cross explain Mendel's laws of inheritance.

2. A child's paternity needs to be determined. Child has 12 and 10 VNTR repeats, mother has 12 and 16 VNTR repeats. Two possible fathers: Father 1 with 10 and 16 VNTR repeats and Father 2 with 16 and 20 VNTR repeats needs to be tested to determine the biological father of the child.

a) Name the technique and all the experimental steps you will use determine the paternity. (2+5)

b) Which person you think is the biological father of the child and why? (1+2)

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I Semester 2015-2016	COMPREHENSIVE EXAMINATION	Course: **BIO A 101 General Biology** (Closed Book)		
Max Marks:60	Max Time: 2 hours	Weightage: 30 %	6th Jan' 2016	**SET B**

Instructions to Candidates
1. Write legibly.
2. Attempt all questions.

PART A (10 X 3 = 30 Marks)

1. Define diffusion. Give an example where diffusion takes place in human body.

2. Define chromosomal non disjunctinon. Name one disease caused by non disjunction of sex chromosome and its chromosome composition. (2 + 1)

3. List any three salient features of Mendel's cross.

4. Write the summary steps of Krebs cycle.

5. Define Electron transport system. Where it takes place? (2 + 1)

6. Write any two differences between the two methods used comparing DNA.

7. List the different assumptions of Darwin's theory of natural selection.

8. Define species. Mule is hybrid of horse and donkey; explain why it is not considered as a species. (2 + 1)

9. Name any two parasitic protists and the disease they cause.

10. Name three types of blood vessels and their respective functions.

PART B (4 X 5 = 20 Marks)

11. Give the overview summary of light independent reaction.

12. Name two types of nucleic acids present in our body. List any three differences between them. (2 + 3)

13. Draw a well labeled diagram of nephron representing its various parts and their functions.

14. Draw a well labeled diagram of spermatogenesis.

PART C (1 X 10 = 10 Marks)

15. a) Name any two cytoskeleton structures. List any three functions of cytoskeleton. (2 + 3)

    b) Define cytokinesis. List any three differences between mitosis in plants and animals. (2 + 3)

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School of Engineering

I Semester 2015-2016	COMPREHENSIVE EXAMINATION	Course: **BIO A 101 General Biology** (Open Book)		
Max Marks: 20	Max Time: 1 hour	Weightage:10 %	6th Jan' 2016	**SET B**

Instructions to Candidates
1. Write legibly.
2. Attempt all questions.

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2 X 10 = 20 Marks

1. In humans, the allele for normal color vision is dominant and the allele for color deficiency is recessive. Both alleles are X-linked. People who cannot detect the difference between certain colors, such as between red and green, are described as having "color-defective vision." A male who has defective vision mates with a female who is heterozygous for normal color vision. What type of children can they have in terms of these traits, and what is the probability for each type?

2. A scientist can clone a gene. An organism can be a clone. a) How is the use of the word *clone* different in these instances? b) How is the use of the word *clone* the same in both uses? (5 + 5)

ID No.:										

Section No.:		Signature of Invigilator:	

Presidency University, Bengaluru
School of Engineering

I Semester 2015-2016 Quiz Course: **BIO A 101 General Biology**
(Closed Book)

Max Marks: 20 Max Time: 30 Min Weightage: 10% 22nd Dec' 2015 **Set A**

Instructions to Candidates
1. Write legibly using pen only.
2. Do not overwrite.
3. Answer in the question paper itself, there will be no separate answer book provided.
4. Enter your ID No. and Section No. in the designated place

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20 x 1 = 20 Marks

Fill in the blanks

1. Biology is a natural science concerned with the study of -------

2. During cell division, the chromatin becomes tightly coiled into short, dense structure called----
----

3. ---------- agents cause cancer.

4.Spindle fibers are made up of ----------

5. End product of Glycolysis is ----------

6. Anticodon is code of nucleotide base present in ---------

7. Protozoa are the members of the kingdom----------

State true or false (write T or F)

8. Responsive Process are activities that result in an increase in the size of the organisms

9. Endoplasmic reticulum is responsible for the synthesis of protein

10. Malignant tumors are harmful because they may spread or invade other parts of the body

11. Phenotype of an organisms is how it appears outwardly

12. ETS is a series of enzyme controlled reaction that takes place inside the mitochondrion

13. AGU is called as start codon

14. Methanogens belongs to Archebacteria

Choose the best option (put a tick mark)

15. A group of individual organisms of a particular kind

a. Community b. Population c. Species d. None of the above

16. Microfilament is also called as

a. Tungsten filament b. Actin filament c. Inclusion bodies d. Centriole

17. Chemotherapy and radiation therapy are used for the treatment of

a. Thyphoid b. Fever c. Cold d. Cancer

18. Fertilization is the process of two haploid sex cells joining to form

a. Chromosome b. Haploid cells c. Zygote d. Mutation

19. Cellular respiration produces

a. FQ b. FAD c. NAD d. ATP

20. Base pair rule of DNA states that

a. G pairs with A b. A pairs with T c. T pairs with C d. C pairs with U

For official use (students shall not write beyond this line)

Marks scored out of 20 [ ]

Name and Signature of Examiner with Date

ID No.:										

Section No.:	

Signature of Invigilator:	

Presidency University, Bengaluru
School of Engineering

I Semester 2015-2016 Quiz Course: **BIO A 101 General Biology**
(Closed Book)

Max Marks: 20 Max Time: 30 Min Weightage: 10% 22nd Dec' 2015 **Set B**

Instructions to Candidates
1. Write legibly using pen only.
2. Do not overwrite.
3. Answer in the question paper itself, there will be no separate answer book provided.
4. Enter your ID No. and Section No. in the designated place

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20 x 1 = 20 Marks

Fill in the blanks

1. --------- is the basic unit of life.

2. Movement of water from outside to inside of the cell is called----------

3. Haploid cells contain ---------- number of chromosomes.

4. Two or more alternate forms of genes are known as ----------

5. Alcoholic fermentation is the ---------- respiration

6. -------- are the stop codon which terminates the synthesis of aminoacids

7. Algae are the protists that contain---------- Pigment

State true or false (write T or F)

8. A mature plant cell contains large central vacuole

9. Bacteria and archaea are called as Eukaryotes

10. Meiosis involves two cell divisions and produces two cells

11. Pisum sativum is the botanical name of potato

12. Glucose consists of C5H12O6

13. Translation is the process of making vitamins

14. Plasmodium vivax causes malaria

Choose the best option (put a tick mark)

15. Flagella are present in

a. Plants b. Animals c. Virus d. Bacteria

16. Hyperbaric chamber is an example for

a. Phagocytosis b. cell c. Diffusion d. Pinocytosis

17. In which phase of meiosis, the chromosome number was reduced from diploid to haploid

a. Prophasel b. Anaphase I c. Metaphase I d. Telophase I

18. Single factor cross is also called as

a. Dihybrid cross b. Monosomy cross c. Monohybrid cross

d. Trisomy cross

19. During lactic acid fermentation

a. Pyruvic acid is reduced to form lactic acid

b. Lactic acid is reduced to Pyruvic acid

c. Pyruvic acid is reduced to form protein

d. Pyruvic acid is reduced to form amino acids

20. How many possible combination of codons present in a cell to produce amino acids

a. 68 b. 62 c. 64 d. 60

For official use (students shall not write beyond this line)

Marks scored out

Name and Signature of Examiner with Date

ID No.:										

Section No.:		Signature of Invigilator:	

Presidency University, Bengaluru
School of Engineering

I Semester 2015-2016 Quiz Course: **BIO A 101 General Biology**
(Closed Book)

Max Marks: 20 Max Time: 30 Min Weightage: 10% 22nd Dec' 2015 **Set C**

Instructions to Candidates
1. Write legibly using pen only.
2. Do not overwrite.
3. Answer in the question paper itself, there will be no separate answer book provided.
4. Enter your ID No. and Section No. in the designated place

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20 x 1 = 20 Marks

Fill in the blanks

1. --------- is the power house of the cell

2. In ------ Phase of cell division DNA replication takes place.

3. Allele that masks the effect of another allele is known as ----------

4. Color blindness is an abnormality associated with -------- linked genes.

5. Photosystem II of photosynthesis absorbs light at ---------nm

6. Adenine pairs with ---------

7. Water molds belongs to fungus like ----------

State true or false (write T or F)

8. Chloroplast is a membranous saclike organelle responsible for the process of photosynthesis

9. Cytokinesis is the process of cell splitting

10. Karyotyping is the deletion and addition of chromosomes

11. DHT is Dihydrotestosterone

12. Photosystem is composed of antenna complex, reaction center and other enzymes

13. DNA nucleotide consists of phosphate group, deoxyribose sugar and nitrogenous bases

14. Algal Bloom is caused by Cyanobacteria

Choose the best option (put a tick mark)

15. -------- separates the genetic material(DNA) from the cytoplasm

    a. Plasma Membrane b. Nuclear membrane c. Cell wall d.Cuitical

16. If prophase is the beginning , what is the end of the cell division

    a. Telophase b. Metaphase c. Anaphase d. Interphase

17. Trisomy and monosomy is an example for

    a. Hybrid variety

    b. Nondisjunction and Chromosomal abnormalities

    c. Protein production

    d. Karyotype

18. Autosomes are chromosomes that are not directly involved in

    a. Disease identification b. Crossing over c. Cancer d.Sex determination

19. Grana consists of stalks of individual membranous sacs called

    a. Stroma b. Thylakoids c. Vacuoles d. NAD

20. The process of protein synthesis takes place in

    a. Mitochondria b. Nucleus c. Plasma membrane d. Cytoplasm

For official use (students shall not write beyond this line)

Marks scored out

Name and Signature of Examiner with Date

Presidency University, Bengaluru

School of Engineering

I Semester 2015-2016 Test 1 Course: **BIO A 101 General Biology**

(Closed Book)

Max Marks:30 Max Time: 50 Minutes Weightage: 15 % 2nd Nov' 2015 **SET B**

Instructions to Candidates

1. Write legibly
2. Draw neat sketches if required

PART A (3 x 2 Marks = 6 Marks)

1. a) Name the three domains of life.

   b) Write two differences between Kingdom animalia and plantae. (1+1)

2. State any two beneficial uses of fungi for human beings. (2)

3. State any two functions of nuclear membrane. (2)

PART B (3 x 3 Marks = 9 Marks)

4. Define theoretical and applied science with an example. (3)

5. Write a (only one) difference between the following in a tabular form.

   a) Smooth endoplasmic reticulum and Rough endoplasmic reticulum

   b) Endocytosis and Exocytosis

   c) Cilia and Flagella (1x3)

6. a) Define asexual reproduction. (1)

   b) Draw a well labeled diagram of binary fission. (2)

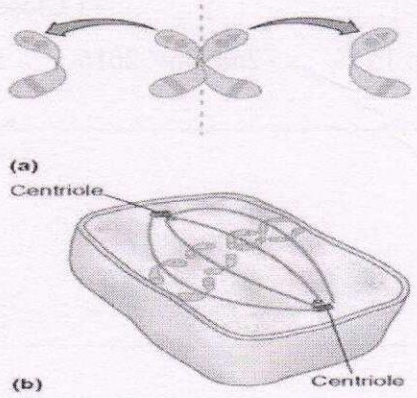
PART C (3 x 5 Marks = 15 Marks)

7. a) Name any two organelles which are energy converters. (1)

   b) List any two ways how these organelles are different from other organelles. (2)

   c) Explain the major function of these two organelles. (2)

8. a) Name the stage of cell division depicted in the figure below. (1)



   b) Write any two characteristic features of the cell division stage depicted. (2)

   c) List any two differences between mitosis in plant and animal cells. (2)

9. a) What are extremophiles? (1)

   b) Name the domain to which extremophiles belongs. (1)

   c) Name any three habitats where extremophiles can reside. (1x3=3)

Presidency University, Bengaluru

School of Engineering

I Semester 2015-2016 Test 1 Course: **BIO A 101 General Biology**

(Closed Book)

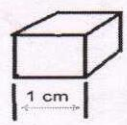
Max Marks:30 Max Time: 50 Minutes Weightage: 15 % 2nd Nov' 2015 **SET C**

Instructions to Candidates

1. Write legibly
2. Draw neat sketches if required

PART A (3 x 2 Marks = 6 Marks)

1. State any two evidences used to establish phylogenetic relationships. (2)
2. Calculate the surface area to volume ratio of the given cell. (2)



3. Define algae and specify the Kingdom to which it belongs. (2)

PART B (3 x 3 Marks = 9 Marks)

4. A new plant with probable anti-aging property is found. Draw the flow chart stating the scientific method/steps to be adopted to test the observation. (3)
5. a) State two functions of Golgi apparatus. (1x2=2)

   b) Name any two organelles which along with golgi apparatus form the endomembrane system. (0.5 x 2=1)
6. Explain the functions of the following in brief.

   a) Contractile vacuole

   b) Pseudopodia (1.5 x 2 =3)

PART C (3 x 5 Marks = 15 Marks)

7. a) Define osmosis. (1)

   b) What are hypotonic and hypertonic solutions? (2)

   c) What will be the effect on human red blood cells when they are placed in hypotonic and hypertonic solutions respectively? (2)

8. a) Define cell cycle. (1)

   b) What is interphase stage of cell cycle? (1)

   c) Name different stages of interphase and list one characteristic event of each. (3)

9. a) State any four salient features of kingdom fungi. (2)

   b) Define Mycorrhizae and state its types. (1+1)

   c) Name any two plant diseases caused by fungus. (0.5 + 0.5)

Presidency University, Bengaluru

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I Semester 2015-2016 Test 1 (Nov) Course: **BIO A 101 General Biology**

(Closed Book)

Max Marks:30 Max Time: 50 Minutes Weightage: 15 % ~~2nd Nov~~ 3rd Nov' 2015 ~~**SET A**~~

Instructions to Candidates

1. Write legibly
2. Draw neat sketches if required

PART A (3 x 2 Marks = 6 Marks)

1. The binomial system of nomenclature uses two Latin names to name an organism.
   a) What the two names represent?
   b) Give one example of a binomial name. (1+1)
2. Differentiate between Eukaryotes and Prokaryotes cells. (Any four differences). (0.5 X 4=2)
3. Explain the uses of agar agar and Carrageenin. (1+1)

PART B (3 x 3 Marks = 9 Marks)

4. Scientists have found a new living organism. List any three characteristics by which it could be confirmed it is living. (3)
5. a) Name the organelles which form cellular cytoskeleton. (1.5)
   b) List any three functions of the cellular cytoskeleton.(1.5)
6. Define the following in one line only
   a) mutualism or symbiotic relationship.
   b) decomposers.
   c) pathogens. (1x3=3)

PART C (3 x 5 Marks = 15 Marks)

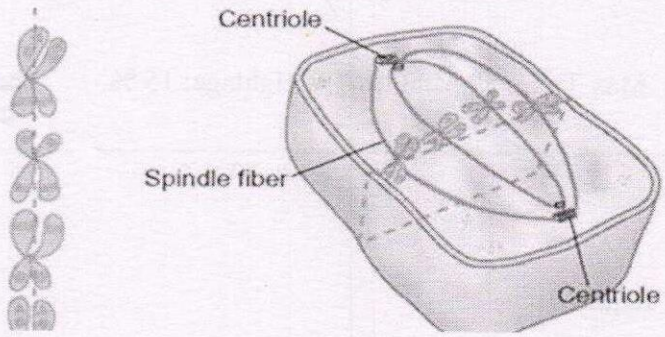
7. a) Explain how lipids and proteins are arranged in the cell membrane. (2)

   b) Name the model which represents the construction/arrangement of cellular membrane. (0.5)

   c) Along with protein and lipids name the other molecules present in cell membrane. (1)

   d) Enlist any three functions of plasma membrane. (1.5)

8. a) Name the stage of cell division depicted in the figure below. (1)



   b) Write any two characteristic features of the cell division stage depicted. (2)

   c) Name the type of cell division the above figure represents. List its any two functions. (1+1)

9. a) Explain any two usage of bacteria for humans. (1+1)

   b) It is difficult to control bacterial population. List any two reasons for it. (1+1)

   c) Name any two agents used to control bacterial population. (0.5 + 0.5)

Presidency University, Bengaluru

School of Engineering

I Semester 2015-2016 Test 2 Course: **BIO A 101 General Biology**

(Closed Book)

Max Marks:30 Max Time: 50 Minutes Weightage: 15 % 21st Dec' 2015 **SET A**

Instructions to Candidates

1. Write legibly
2. Draw neat sketches if required

PART A (4 x 3 Marks = 12 Marks)

1. Define meiosis and crossing over.
2. Name any three characters in pea plants selected by Mendel.
3. Define Autotrophs and Heterotrophs.
4. Define nucleic acids. Name four nitrogenous bases.

PART B (3 x 4 Marks = 12 Marks)

5. List any two events that occurs in prophase I and Metaphase I.
6. Define Glycolysis .Write the summary of glycolysis.
7. Explain the four requirements of Dark reaction of photosynthesis.

PART C (1 x 6 Marks = 6 Marks)

8. Define Mutation. What are the distinguishing features of Down syndrome, which chromosome number is affected.

Presidency University, Bengaluru

School of Engineering

I Semester 2015-2016 Test 2 Course: **BIO A 101 General Biology**

(Closed Book)

Max Marks:30 Max Time: 50 Minutes Weightage: 15 % 21st Dec' 2015 **SET B**

Instructions to Candidates

1. Write legibly
2. Draw neat sketches if required

PART A (4 x 3 Marks = 12 Marks)

1. Name any three ways to treat cancer.
2. Define Phenotype and Genotype.
3. What is the number of ATP synthesized in Glycolysis, Krebs Cycle and Electron transport system?
4. Define and Name start codon and stop codon.

PART B (3 x 4 Marks = 12 Marks)

5. What are mutagen and carcinogens? Differentiate between Benign tumor and Malignant tumor.
6. List the four requirements of Photosynthesis.
7. Explain the functions of DNA Helicase and DNA polymerase.

PART C (1 x 6 Marks = 6 Marks)

8. Define Mono and Dihybrid cross. Calculate the percentage of F1 generation of Phenotype (Green and Yellow pod) having their genotype (Green-Gg and Yellow-gg) by drawing punnet square

Presidency University, Bengaluru

School of Engineering

I Semester 2015-2016 Test 2 Course: **BIO A 101 General Biology**

(Closed Book)

Max Marks:30 Max Time: 50 Minutes Weightage: 15 % 21st Dec' 2015 **SET C**

Instructions to Candidates

1. Write legibly
2. Draw neat sketches if required

PART A (4 x 3 Marks = 12 Marks)

1. Define Genetic diversity and segregation
2. Define Gene linkage and Polydactylism
3. Define Photon. What is the wave length spectrum for of visible light?
4. List three difference between DNA and RNA

PART B (3 x 4 Marks = 12 Marks)

5. What is allele? Name two examples.
6. Define Histone . What are the three steps involved in Protein synthesis?
7. List any two events that occurs in prophase I and Metaphase I

PART C (1 x 6 Marks = 6 Marks)

8. Explain the functions of Promotor sequence, Termination sequence and Enhancer