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# ARKA JAIN University, Jharkhand

1st Semester Final Examination – 2018-19

Subject: Biochemistry  
Full Marks: 50

Course: Optometry  
Pass Marks: 25  
Time: 2 Hours

- Candidates are required to give their answers in their own words as far as practicable.
- Question Paper is divided into **Three Parts –A,B& C**
- **Part-A** is compulsory.
- **Part- B** contains **FIVE** questions out of which **FOUR** questions are to be answered.
- **Part- C** contains **THREE** questions out of which **TWO** questions are to be answered.

## PART A

Q.1) Multiple Choice Questions:

(10x1=10)

- a) Molecules that bear charged groups of opposite polarity are known as?
- Zwitterions
  - Ambions
  - Ion conversion
  - Amphions
- b) A nucleotide consists of?
- a sugar, a base and a phosphate
  - a sugar and a phosphate
  - paired bases
  - a sugar, a base and three phosphates
- c) An essential amino acid is one that
- is essentially easy to synthesize
  - is essential to flagella motion
  - the body cannot synthesize
  - the body can synthesize at optimum condition
- d) Which of the following is found on RNA but not DNA?
- Adenine
  - Uracil
  - Guanine
  - Cytosine
- e) A buffer solution comprises which of the following?
- A weak acid in solution
  - A strong acid in solution
  - A weak base in solution
  - A weak acid and its conjugate base in solution
- f) Protein component of enzyme is called
- Cofactor
  - Coenzyme
  - Activator
  - Apoenzyme

- g) Which of the following character does not apply to water?
- The water molecule is asymmetric
  - The water molecule readily forms hydrophobic interactions
  - The covalent bonds in water are highly polarized
  - All three atoms in the water molecule readily form hydrogen bonds
- h) Which of the following indicates that the pK of an acid is numerically equal to the pH of the solution when the molar concentration of the acid and its conjugate base are equal?
- Michaelis-Menten equation
  - Haldanes equation
  - Henderson-Hasselbalch equation
  - Hardy-Windberg law
- i) Beta pleated sheets are examples of protein's
- primary structure
  - secondary structure
  - tertiary structure
  - quaternary structure
- j) The released energy obtained by oxidation of glucose is stored as
- a concentration gradient across a membrane
  - ATP
  - NAD<sup>+</sup>
  - ADP

### PART B

**Q.2) Answer any Four:**

**(4x5=20)**

- Describe the forces that stabilize the tertiary structure of proteins.
- What is enzyme. Write the properties of enzyme.
- Describe the non-competitive inhibition with example.
- What is amino acid? Describe the classification of amino acid with suitable examples.
- Describe the chemistry and functions of phospholipids.

### PART C

**Answer any two:**

**(2x10=20)**

- Write the reaction sequence of  $\beta$ -oxidation of saturated even number fatty acids.
- Describe in detail the double helix structure of DNA? Write difference between A, B and Z form of DNA.
- Name the various pathways for glucose metabolism. Give in detail the tricarboxylic acid cycle and mention its regulatory points.



# ARKA JAIN University, Jharkhand

1st Semester Internal Examination – 2018-19

1 - C - X

Subject: Physiology

Time: 2 Hour

Course: B.Optomety

Full Marks: 50

Pass Marks: 25

- Candidates are required to give their answers in their own words as far as practicable.
- Question Paper is divided into **Three Parts –A,B&C**
- **Part-A** is compulsory.
- **Part- B** contains **FIVE** questions out of which **FOUR** questions are to be answered.
- **Part-C** contains **THREE** questions out of which **TWO** questions are to be answered.

## PART A

### Q.1) Multiple Choice Questions

(10x1=10)

i) Non respiratory air movements are

- a) Cough and sneeze
- b) crying
- c) Laughing
- d) All

ii) COPD stands for.....

iii) How many sub-phases in Mitosis

- a) one
- b) two
- c) three
- d) four

iv) In Down syndrome, which pair of chromosome is getting affected?

- a) fifth
- b) Seventh
- c) both
- d) None

v) Left lung consist.....lobe.

- a) ten
- b) two
- c) thirty
- d) none of these

vi) Elimination of waste product like Nitrogenous waste is led by.....system.

vii) Adipose capsule surrounds the kidney, provides .....

viii) Structural and Functional of kidney is .....

ix) Sex hormone in female are Estrogen and .....

x) Vasectomy is method of .....

**PART B**

**Answer any Four:**

**(4x5=20)**

Q.2) Write a note on Lymphatic system.

Q.3) Short note on Diffusion and Osmosis.

Q.4) Elaborate Auditory apparatus. (Ear)

Q.5) Endocrine Glands.

Q.6) Cardiac Cycle (Flow chart).

**PART C**

**Answer any two:**

**(2x10=20)**

Q.7) Explain Digestive System.

Q.8) Explain Brain stem and different regions with diagram.

Q.9) Different types of Family planning.



PART B

Answer any Four:

(4x5=20)

Q.2) Write a note on Phases of embryonic development.

Q.3) Short note on Mitochondria.

Q.4) Elaborate Cavities of Body. (wrt skeleton system).

Q.5) Short note on Skull.

Q.6) Placenta and its function

PART C

Answer any two:

(2x10=20)

Q.7) Explain Cell division. (Mitosis and Meiosis)

Q.8) Explain Brain stem and different regions with diagram.

Q.9) Explain Upper limb & Lower Limb. What are the different types of joints?



ARKA JAIN University, Jharkhand

1st Semester Final Examination – 2018-19

Subject : Geometrical Optics 1

Course: B. Optometry

Time : 3 Hours

Full Marks : 50

Pass Marks: 20

- Candidates are required to give their answers in their own words as far as practicable.
- Question Paper is divided into **Three Parts –A, B & C**
- **Part-A** is compulsory.
- **Part- B** contains **FIVE** questions out of which **FOUR** questions are to be answered.
- **Part- C** contains **THREE** questions out of which **TWO** questions are to be answered.

**PART A**

Q.1) All questions are compulsory

A] Multiple Choice Questions :

(10x1=10)

- a) When light travelling in a certain medium falls on the surface of another medium, a part of it turns back into the same medium. This phenomenon is called
- reflection
  - refraction
  - diffraction
  - acoustics
- b) What is the other name for the maximum external incident angle in an optical fiber ?
- Optical angle
  - Total internal reflection angle
  - Refraction angle
  - Wave guide acceptance angle
- c) The speed of light in a certain material is 50% of its speed in vacuum. What is the refractive index of this material?
- 1.5
  - 0.5
  - 6.0
  - 2.0
- d) To describe change in speed of light in a medium, term used is called
- index of reflection
  - index of refraction
  - index of defraction
  - index of acoustics

- e) Which of the following is true about light?  
I) It is an electromagnetic wave  
II) It does not propagate in vacuum  
III) Its maximum speed is approximately  $3 \times 10^8$  m/sec

- i) I only
- ii) I and II only
- iii) I and III only
- iv) III only

- f) The relation between focal length & radius of curvature of a mirror is

- i)  $f = (f/2) + 1$
- ii)  $f = R + 2$
- iii)  $f = R/2$
- iv)  $f = 2R$

- g) When light passes through a glass prism, the colour of light which is deviated least is

- i) Violet
- ii) Green
- iii) Red
- iv) Yellow

- h) A spherical mirror whose inner curved surface is reflecting is called

- i) plane mirror
- ii) convex mirror
- iii) concave mirror
- iv) silver mirror

- i) A ray of light passing through the \_\_\_\_\_ retraces its path.

- i) focus
- ii) centre of curvature
- iii) pole
- iv) vertex

- j) The bending of a beam of light when it passes obliquely from one medium to another is known as \_\_\_\_\_

- i) reflection
- ii) refraction
- iii) deviation
- iv) dispersion

## PART B

Q2. Answer any four:

(4x5=20)

- i) Write a short note on chromatic aberration.
- ii) What is total internal reflection? Mention the conditions of total internal reflection.
- iii) Find the lateral shift produced when a ray of light passes through a plane parallel glass plate of thickness  $t$  & refractive index  $\mu$ .
- iv) A ray of light falling at an angle of  $45^\circ$  with the surface of a clean slab of ice of thickness  $1\text{m}$  is refracted into it an angle of  $30^\circ$ . Calculate the time taken by the light rays to cross the slab. Speed of light in vacuum is  $3 \times 10^8 \text{ m/sec}$ .
- v) Write a short note on astigmatism.

## PART C

Answer any two:

(2x10=20)

- Q.3) Explain with a labelled diagram to show how an optical fiber transmits light along its length. Also state 5 applications of optical fiber.  
An optical fiber cable has a refractive index of 1.5. Calculate the angle at which total internal reflection occurs.
- Q.4) Two thin lenses of focal lengths  $f_1$  &  $f_2$  are kept separated by a distance  $d$ . Derive the equivalent focal length & power of the combination.
- Q.5) Derive Lens Maker's formula for thin lens stating its limitations.



# ARKA JAIN University, Jharkhand

1st Semester Final Examination – 2018-19

Subject: ENGLISH

Time: 3 Hours

Course: BA OPT.

Full Marks: 70

Pass Marks: 28

- Candidates are required to give their answers in their own words as far as practicable.
- Question Paper is divided into **Three Parts –A, B & C**
- **Part-A** is compulsory.
- **Part- B** contains **six** questions out of which **FOUR** questions are to be answered.
- **Part- C** contains **five** questions out of which **THREE** questions are to be answered.

## PART A

Q.1) All questions are compulsory

A) Multiple Choice Questions:

(10x1=10)

- Mr. Able lived with his daughter, \_\_\_\_\_
  - Victoria
  - Amelia
  - Elizabeth
- Who wrote the poem 'Report on Experience'
  - Henry Vaughan
  - Edmund Blunden
  - Tennyson
- In this **poem**, Henry Vaughan is bemoaning his sins and wishing that he could go back to a purer state, which poem is it?
  - Break Break Break
  - The Retreat
  - Ode on Solitude
- "Ode on Solitude" is a poem by \_\_\_\_\_, written when he was 12 years old
  - Alexander Pope
  - John Milton
  - Tennyson
- He wants to get a better \_\_\_\_\_ and earn more money.
  - job
  - work
  - employment
- We haven't had ..... news from our agent.
  - some
  - any
  - no
- Scientific point of view is written by \_\_\_\_\_
  - Henry Blunden
  - JBS Haldane
  - EV Lucas
- The Dear Departed is a \_\_\_\_\_ act play.
  - Two
  - One
  - Three

- i. I ..... the piano since the age of five.
  - i. played
  - ii. am playing
  - iii. play
- j. Warning! No unauthorized personnel ..... this point.
  - i. About
  - ii. from
  - iii. beyond

**B] Very Short question**

**(5x2=10)**

- a. What is the theme of the poem ode on solitude?
- b. Discuss the thoughts of the poet in the poem report on experience
- c. The Retreat is all about falling back. Explain.
- d. Name the characters of the play, The Dear Departed.
- e. What is a sonnet?

**PART B**

**Q2. Attempt any four questions**

**(4x5=20)**

- a) The first stanza of the poem **Break, Break, Break**, by Alfred Lord Tennyson presents the picture of the poet sitting near his friend's grave on the sea-beach. What is the mood of the poem Break Break Break?
- b) To promote healthy eating habits amongst college students your college recently organized a 'Nutritious Food and Snacks Competition'. The competition was open to both parents and students. The participation was very encouraging. The famous nutrition expert, Dr. Shikha Sharma was the chief guest. As Anjum, the student editor of your school magazine, write a report about this event in 100 words. Follow the schematic format for writing your report.
- c) Define business letter writing. State the different types of business letters with examples.
- d) Read the passage and answer the questions that follow :

Mike and Morris lived in the same village. While Morris owned the largest jewelry shop in the village, Mike was a poor farmer. Both had large families with many sons, daughters-in-law and grandchildren. One fine day, Mike, tired of not being able to feed his family, decided to leave the village and move to the city where he was certain to earn enough to feed everyone. Along with his family, he left the village for the city. At night, they stopped under a large tree. There was a stream running nearby where they could freshen up themselves. He told his sons to clear the area below the tree, he told his wife to fetch water and he instructed his daughters-in-law to make up the fire and started cutting wood from the tree himself. They didn't know that in the branches of the tree, there was a thief hiding. He watched as Mike's family worked together and also noticed that they had nothing to cook. Mike's wife also thought the same and asked her husband "

Everything is ready but what shall we eat ? ” Mike raised his hands to heaven and said ” Don’t worry. He is watching all this from above. He will help us.”

The thief got worried as he had seen that the family was large and worked well together. Taking advantage of the fact that they did not know he was hiding in the branches, he decided to make a quick escape. He climbed down safely when they were not looking and ran for his life. But, he left behind the bundle of stolen jewels and money which dropped into Mike’s lap. Mike opened it and jumped with joy when he saw the contents. The family gathered all their belongings and returned to the village. There was great excitement when they told everyone how they got rich. Morris thought that the tree was miraculous and this was a nice and quick way to earn some money. He ordered his family to pack some clothes and they set off as if on a journey. They also stopped under the same tree and Morris started commanding everyone as Mike had done. But no one in his family was willing to obey his orders. Being a rich family, they were used to having servants all around. So, the one who went to the river to fetch water enjoyed a nice bath. The one who went to get wood for fire went off to sleep. Morris’s wife said ” Everything is ready but what shall we eat ?” Morris raised his hands and said, ” Don’t worry. He is watching all this from above. He will help us.”

As soon as he finished saying, the thief jumped down from the tree with a knife in hand. Seeing him, everyone started running here and there to save their lives. The thief stole everything they had and Morris and his family had to return to the village empty handed, having lost all their valuables that they had taken with them.

**Question 1 :** Why did Mike and his family decide to rest under the thief’s tree ?

- A) Being a large family, they knew that they could easily defeat the thief
- B) It was a convenient spot for taking a halt at night
- C) There was a stream nearby and wood enough to build a house
- D) That was the only large tree that could shelter their large family

**Question 2 :** Which of the following best describes Morris ?

- A) He was a rich businessman
- B) He bullied his wife
- C) He paid his servants well
- D) He was greedy and imitated Mike

**Question 3 :** What did Mike mean when he said “He is watching all this from above”?

- A) He had spotted the thief and wanted to scare him
- B) He was telling his wife to have faith in god
- C) It was just a warning for his family members to stick together
- D) He was begging the thief to help his family

**Question 4 :** Why did the thief return to the tree?

- A) To wait for Mike to return
- B) To set up a trap
- C) To wait for Morris’s family
- D) Not mentioned in the passage

**Question 5 :** How did the fellow villagers react to Mike getting rich overnight?

- A) They were jealous of him
- B) They were very excited
- C) They followed his example
- D) They envied him

**e) Transformation of sentences**

- a. Active: Brutus stabbed Caesar.  
Passive:.....
  - b. Active: The members will make him the President of this organization.
  - c. Passive:.....
  
  - d. Active: The audience loudly cheered the Mayor's speech.
  - e. Passive:.....
  
  - f. Passive: Promises should be kept.
  - g. Passive:.....
  
  - h. Affirmative: I was doubtful whether it was you.
  - i. Negative:.....
- f) You have now finished your degree and have been the university topper too who holds the best qualities and ability to do best in the professional field. Prepare your resume in the chronological format to submit for the post of Assistance manager in the MGM Eye hospital.

**PART C**

**Answer any three:**

**(3x10=30)**

**Q.3)** You are school correspondent Mr. Jagdish Valecha. Your school Patna Central School organised the Prize Distribution Function on March 2, 2014. The school patron Sh. Sudarshanji Maharaj was the chief guest of the function. Write a detailed report for the school magazine. Follow the letter writing format for your report.

**Q.4)** The Retreat" is based on the belief that we exist as souls in heaven before we are born on Earth.

**Q.5)** What according to you is the best resume writing format? Explain with an example.

or

You have been working as the Assistance Eye Specialist in the Tata Eye Hospital for the past 6 years and now you have been nominated for the Head of the Eye Specialist at MGM, for which you have to prepare your resume in functional format. Frame your resume.

**Q.6)** Write a Report for your school magazine describing a Cultural Fest held in your school in which various schools of your city took part.

**Q.7)** Discuss the characters of the play, 'The Dear Departed'