



ARKA JAIN University, Jharkhand

1st Semester End Semester Examination – 2019-20

Subject: Geometrical Optics 1

Time : 2 Hours

Course: B. Optometry

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

Multiple Choice Questions:

(10x1=10)

- 1) After refraction by lens, rays parallel to the principal axis passes through
 - i. Optical centre
 - ii. Vertex
 - iii. Focal point
 - iv. Core
- 2) Two thin lenses of focal length f_1 & f_2 are coaxially placed in contact with each other then the power of the combination i
 - i. $\frac{f_1+f_2}{2}$
 - ii. $\sqrt{\frac{f_1}{f_2}}$
 - iii. $\frac{f_1 f_2}{f_1 + f_2}$
 - iv. $\frac{f_1 + f_2}{f_1 f_2}$
- 3) The focal length of a concave mirror is 15cm. What is the radius of curvature ?
 - i. 15 cm
 - ii. 30 cm
 - iii. 7.5 cm
 - iv. 45 cm
- 4) Entire light is reflected back into the denser medium, which is called
 - i. total internal reflection of light
 - ii. total external reflection of light
 - iii. total internal refraction of light

- iv. total external refraction of light
- 5) Line passing through two centers of curvatures of lens is called
- Principal axis
 - Optical centre
 - Principal focus
 - Focal length
- 6) When a light wave travels through a medium_____
- particles are transferred from one place to another
 - energy is transferred in a periodic manner
 - energy is transferred at a constant speed
 - none of the above statement is applicable
- 7) The rays of different colours fail to converge at a point after going through a converging lens. This defect is called
- spherical aberration
 - coma
 - distortion
 - chromatic aberration
- 8) Sound & light waves both
- have similar wavelength
 - obey the laws of reflection
 - travel as longitudinal waves
 - travel through vacuum
- 9) When light passes from air to glass it
- bends towards the normal without changing speed.
 - bends towards the normal & slows down
 - bends towards the normal & speeds up
 - bends away from the normal & slows down
- 10) Lens which diverges light from a single point is
- concave lens
 - convex lens
 - biconvex lens
 - both i) and ii)

PART B

Q2. Answer any four:

(4x5=20)

- What is Fermat's principle? Derive Fermat's law of refraction.
- Explain geometrical & optical path lengths.

- c. The refractive index of a lens is given as 1.5, two curved surfaces have radius of curvature 10cm and -15cm respectively. Calculate the focal length of the given lens?
- d. What is vergence? Explain.
- e. Write a short note on acceptance angle & numerical aperture.

PART C

Answer any two:

(2x10=20)

- Q.3)** Derive Lens Maker's formula for thin lens stating its limitations.
- Q.4)** What is aberration? How many types of aberrations are there ? Explain all of them.
- Q.5)** What is the equivalent power of two thin lenses in contact with each other ?



Subject: Biochemistry
Full Marks: 50
Time: 2 Hours

Course: Optometry
Pass Marks: 25

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PART A

Q.1) All questions are compulsory

A] Multiple Choice Questions

(5x1=5)

- a) 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
- b) Which of the following is found on RNA but not DNA?
- Adenine
 - Uracil
 - Guanine
 - Cytosine
- c) Protein component of enzyme is called
- Cofactor
 - Coenzyme
 - Activator
 - Apoenzyme
- d) Beta pleated sheets are examples of protein's
- primary structure
 - secondary structure
 - tertiary structure
 - quaternary structure
- e) The released energy obtained by oxidation of glucose is stored as
- a concentration gradient across a membrane
 - ATP
 - NAD⁺
 - ADP

B] Very Short question

(5x1=5)

- Epimers
- Enzyme
- Bond angle
- Buffer
- Catabolic pathway

PART B

Answer any Four:

(4x5=20)

- Q.2) Describe the forces that stabilize the tertiary structure of proteins.
- Q.3) What is nucleic acid? Write difference between A, B and Z form of DNA.
- Q.4) Describe the competitive enzyme inhibition with example.
- Q.5) What is amino acid? Describe the classification of amino acid with suitable examples.
- Q.6) Describe the chemistry and functions of phospholipids.

PART C

Answer any two:

(2x10=20)

- Q.7) What is carbohydrate? Write the classification and functions of carbohydrate.
- Q.8) What is enzyme? Write the properties of enzyme.
- Q.9) Name the various pathways for glucose metabolism. Give in detail the glycolysis and mention its regulatory points.



ARKA JAIN University, Jharkhand

1st Semester End Semester Examination – 2019-20

Subject: Physiology

Course: B.Optomety

Time: 2 Hour

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 /Fill in the blanks

(10x1=10)

- Deep notch present in medial border of kidney is called....
-factor converts prothrombin to Thrombin
- Normal value of glomelular filtration is.....
 - 90ml/min
 - 150ml/min
 - 200ml/min
 - 125ml/min
- Tuft of capillary vessels which surrounded Bowman's capsule is known as.....
- Universal Blood Donor is.....
 - AB Blood group
 - B Blood group
 - A Blood group
 - O Blood group
- Blood coagulation factor IX known as.....
- Glucose is mainly reabsorbed from Kidney via.....
- Cell responsible for development of myelin sheath are.....
 - Glial cells
 - ependymal cells
 - satellite cells
 - Schwann cell
- Menopause is.....
- Diffusion means.....

PART B

Answer any Four:

(4x5=20)

- 1) write a note on family planning
- 2) Short note on menstruation cycle
- 3) Write a note on neuromuscular junction
- 4) Write note on glomerulous apparatus
- 5) Write a note on blood group

PART C

Answer any two:

(2x10=20)

- Q.7)** Label Diagram of Pituitary Gland. Write in detail about hormones secreted from the posterior part of pituitary gland.
- Q.8)** what is Digestion? Describe briefly about mechanism of digestive system.
- Q.9)** Describe briefly the nephron with label diagram. Explain reabsorption process of nephron.

PART B

Answer any Four:

(4x5=20)

Q.2) Write a note on Spermatogenesis.

Q.3) Short note on Cell Cycle.

Q.4) Elaborate Golgi body with structure.

Q.5) Structure of Bone

Q.6) Placenta and its function

PART C

Answer any two:

(2x10=20)

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

Q.8) Explain Nerve cell and brain Organization with diagram.

Q.9) Explain axial and appendicular skeleton system. What are the different types of joints?



ARKA JAIN University, Jharkhand

1st Semester Final Examination – 2018-19

Subject: ENGLISH

Time: 2 Hours

Course: BA OPT & BIOTECH

Full Marks: 35

Pass Marks:14

- 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 **four** questions out of which **two** questions are to be answered.
- **Part- C** contains **three** questions out of which **one** question is to be answered.

PART A

Q1.) All questions are compulsory:-

A] Multiple choice

(5x1=05)

- Every ball, bat, glove _____ an extra 25 cents at Frank's.
 - costs
 - cost
 - costed
 - had cost
- Coach Mike nor his players _____ enough skill to win the championship.
 - has
 - have
 - having
 - has been
- Each of the happy kids _____ across the playground at recess.
 - hops
 - is hopping
 - hop
 - had hopped
- On the playground _____ many little crying children who want their mummies.
 - was
 - is
 - were
 - are
- He _____ the best hot dogs in all the land.
 - made
 - is making
 - makes
 - make

B] Short Answer Type

(5x2=10)

- What is the theme of the poem Of Studies?
- What has the poet expressed in the poem Can Life be a Blessing?
- In the poem, Ode to Duty what duty is been discussed?
- Shaw's Arms and the Man project after effect of war or just comedy?

Armada drifted out into the North Sea. The Spaniards recognized the superiority of the English fleet and returned home, defeated.

1. Sir Francis Drake added wealth to the treasury and diminished Spain's _____.
 - i. unlimited power
 - ii. unrestricted growth
 - iii. territory
 - iv. treaties
 - v. Answer not available in article

2. King Philip recruited many _____ soldiers and sailors.
 - i. warlike
 - ii. strong
 - iii. accomplished
 - iv. timid
 - v. inexperienced

3. The _____ Armada set sail on May 9, 1588.
 - i. complete
 - ii. warlike
 - iii. independent
 - iv. isolated
 - v. Answer not available

4. The two battles left the Spanish fleet _____.
 - i. open to change
 - ii. triumphant
 - iii. open to-attack
 - iv. defeated
 - v. discouraged

5. The Armada was _____ on one side.
 - i. closed off
 - ii. damaged
 - iii. alone
 - iv. circled
 - v. Answer not available in this article

Do as directed

(1x5=05)

- a. "The oracle", he said , "chose me as the wisest Athenian because I am the only one who knows that he doesn't know anything" (change into indirect)
- b. Look at the condition of woman. (change the voice)
- c. Is it fair to neglect woman's plight(Rewrite the following sentences into Assertive)
- d. No other civil or military mobilization in human history is as large as it(Change the Degree)
- e. Unless you take heed, you will again put to shame (Use if.....not)

- e. Discuss in brief the theme of the poem The Portrait of a Lady.

PART B

Q2.) Answer any two:

(2x5=10)

- The play, Arms and the Man does not only depict the Bulgarian society of that time but reflects the norms of today's society as well. Discuss with reference to the play.
- The fundamental message of the story is that people have the ability to do good as well as bad to others. State the theme of the story Kabuliwala.
- What does Khushwant Singh describe in The Portrait of a Lady?
- Much like the newborn calf that is unsteady the author has successfully embedded their emotions into words. Elaborate your thoughts with reference to the poem A Grey Haze over the Rice Fields.

PART C

Read the given passage and answer the questions

(1x5=5)

Conflict had existed between Spain and England since the 1570s. England wanted a share of the wealth that Spain had been taking from the lands it had claimed in the Americas.

Elizabeth I, Queen of England, encouraged her staunch admiral of the navy, Sir Francis Drake, to raid Spanish ships and towns. Though these raids were on a small scale, Drake achieved dramatic success, adding gold and silver to England's treasury and diminishing Spain's supremacy.

Religious differences also caused conflict between the two countries. Whereas Spain was Roman Catholic, most of England had become Protestant. King Philip II of Spain wanted to claim the throne and make England a Catholic country again. To satisfy his ambition and also to retaliate against England's theft of his gold and silver, King Philip began to build his fleet of warships, the Spanish Armada, in January 1586.

Philip intended his fleet to be indestructible. In addition to building new warships, he marshaled 130 sailing vessels of all types and recruited more than 19,000 robust soldiers and 8,000 sailors. Although some of his ships lacked guns and others lacked ammunition, Philip was convinced that his Armada could withstand any battle with England.

The martial Armada set sail from Lisbon, Portugal, on May 9, 1588, but bad weather forced it back to port. The voyage resumed on July 22 after the weather became more stable.

The Spanish fleet met the smaller, faster, and more maneuverable English ships in battle off the coast of Plymouth, England, first on July 31 and again on August 2. The two battles left Spain vulnerable, having lost several ships and with its ammunition depleted. On August 7, while the Armada lay at anchor on the French side of the Strait of Dover, England sent eight burning ships into the midst of the Spanish fleet to set it on fire. Blocked on one side, the Spanish ships could only drift away, their crews in panic and disorder. Before the Armada could regroup, the English attacked again on August 8.

Although the Spaniards made a valiant effort to fight back, the fleet suffered extensive damage. During the eight hours of battle, the Armada drifted perilously close to the rocky coastline. At the moment when it seemed that the Spanish ships would be driven onto the English shore, the wind shifted, and the

Armada drifted out into the North Sea. The Spaniards recognized the superiority of the English fleet and returned home, defeated.

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