



**Avinashilingam Institute for Home Science and Higher Education for Women**  
(Deemed to be University under Category 'A' by MHRD, Estd. u/s 3 of UGC Act 1956)  
Re-accredited with 'A+' Grade by NAAC. Recognised by UGC Under Section 12B  
Coimbatore - 641 043, Tamil Nadu, India

**Bachelor's Degree Examination – June / July 2021**  
**II Semester**

**Class : I UG**  
**Major : Biochemistry and Biotechnology**

**Time : 3 Hours**  
**Max. Marks : 100**

**18BBTC03 Biophysics**

**Part A**

**10 x 1 = 10**

**Choose the Correct Answer**

1. The study of energy relationships and conversions in biological systems is called as CO1 K1  
a. biophysics      b. biotechnology      c. bioenergetics      d. microbiology
2. What does the first law of thermodynamics state? CO1 K1  
a. Energy can neither be created nor destroyed  
b. Energy cannot be 100 % efficiently transformed  
c. All living organisms are composed of cells  
d. Input of heat energy increases the rate of movement of atoms and molecules
3. Colour blindness results when a single group of colour receptive cones is missing CO2 K2  
a. does not have role of genetic factors  
b. occurs more in female  
c. results when a single group of colour receptive rods is missing  
d. none of the above
4. The chemical in the rods is called CO2 K2  
a. rhodopsin      b. bathorhodopsin      c. rod pigments      d. retinene
5. The following ions is/are involved in the neuronal action potential. CO3 K2  
a. Sodium      b. Potassium      c. Calcium      d. Chloride
6. The middle ear is exposed to atmospheric pressure only through the CO3 K1  
a. pinna      b. auditory nerve  
c. tympanic membrane      d. eustachian tube
7. Visi pitch is a type of aid for correcting CO4 K1  
a. vision      b. hearing      c. speech      d. cardiac function
8. Raman spectroscopy of proteins uses CO4 K3  
a. amide bonds      b. amine bonds      c. both a and b      d. hydrogen bond
9. MRI stands for CO5 K1  
a. Maximal Radiology Imaging      b. Magnetoray Idometry  
c. Medical Radiometry Imaging      d. Magnetic Resonance Imaging
10. EEG is study which deals with CO5 K2  
a. brain      b. heart      c. bone      d. kidney

**Part B**  
**Answer ALL questions**  
**Each answer should not exceed 400 words or two pages**

**5 x 6 = 30**

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|---|--------|
| 11.a. Explain the mechanism by which the body temperature is regulated.<br>(or)         | CO1 K2 |
| 11.b. Explain the role of ATP as energy currency of cell.                               | CO1 K2 |
| 12.a. Give short notes on errors of refraction and correction of vision faults.<br>(or) | CO2 K2 |
| 12.b. Give brief notes on membrane potential and resting potential.                     | CO2 K1 |
| 13.a. Discuss on hearing abnormalities.<br>(or)   | CO3 K2 |
| 13.b. Explain how retinal sensitivity is regulated.                                     | CO3 K2 |
| 14.a. Discuss the principle and applications of IR spectroscopy.<br>(or)                | CO4 K3 |
| 14.b. List out the applications of Raman spectra.                                       | CO4 K3 |
| 15.a. Brief out the role of X ray in diagnosis.<br>(or)                                 | CO5 K3 |
| 15.b. Give a note on MRI and electrocardiogram.   | CO5 K1 |

**Part C**  
**Answer ALL questions**  
**Each answer should not exceed 800 words or four pages**

**5 x 12 = 60**

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|--|--------|
| 16.a. Explain the metabolic rate and factors affecting BMR and body temperature.<br>(or) | CO1 K2 |
| 16.b. Explain the different forms of energy.   | CO1 K2 |
| 17.a. Explain the photochemistry of vision.<br>(or)                                      | CO2 K2 |
| 17.b. Describe the functions of retina.  | CO2 K2 |
| 18.a. Discuss the mechanism of working and types of hearing aids.<br>(or)                | CO3 K2 |
| 18.b. Elaborate on nerve action potential and mechanism of its propagation.              | CO3 K2 |
| 19.a. Explain the principle and instrumentation of mass spectroscopy.<br>(or)            | CO4 K1 |
| 19.b. Explain the principle and applications of fluorescence spectroscopy.               | CO4 K3 |
| 20.a. Explain the role and significance of ultrasound scan and CAT scan.<br>(or)         | CO5 K3 |
| 20.b. Describe the role of PET scan in health care.                                      | CO5 K3 |

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