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|  | **Department of Biomedical Engineering** |
| **Faculty of Engineering and Applied Sciences** |
| **Riphah International University, Islamabad** |
|  |
| **Sample Entry Test** |
| **B.Sc. Biomedical Engineering Program** |

**(For Pre-Medical Students)**

 **Time Allowed: One Hour**

**Instructions:**

* Please write the following **Exam ID** on your **Answer Sheet**.

**80006**

1. Calculators or any other electronic gadgets are not allowed.
2. For each question, select the most appropriate answer out of the four choices and blacken the corresponding choice on your answer sheet.
3. You must blacken only one choice for each question.
4. You may use any blank space on the question paper for your rough work.
5. No student can leave the examination hall till half time of the test is over.
6. Before leaving the examination hall please return the Question Bookto the invigilator.
7. There is No Negative marking.
8. The test is divided into 3 sections as follows:

|  |  |  |  |
| --- | --- | --- | --- |
| **Section** | **Title** | **No. of Questions** | **Marks** |
| A | Biology | 25 | 25 |
| B | Physics | 25 | 25 |
| C | English | 10 | 10 |
| **Total** | **60** | **60** |

|  |  |  |
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| **Name:** | **Roll No:** | **Signature** |
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**Section- A: Biology**

**25 Questions**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1. The red cells of adult human beings are manufactured in:

|  |  |
| --- | --- |
| A. Bone marrow | B. Liver |
| C. Spleen | D. Kidneys |

 |
| 1. DNA contains all the following molecules except:

|  |  |
| --- | --- |
| A. Uracil | B. Guanine |
| C. Deoxyribose | D. Phosphate |

 |
| 1. The food of planaria consists of:

|  |  |
| --- | --- |
| A. Dead aquatic animals | B. Marine animals |
| C. Soil | D. None |

 |
| 1. Glycolysis occurs in:

|  |  |
| --- | --- |
| A. Nucleus | B. Mitochondria |
| C. Myriapods | D. E.R |

 |
| 1. The part of the brain that controls involuntary actions is known as:

|  |  |
| --- | --- |
| A. Thalamus | B. Cerebrum |
| C. Medulla | D. Cerebellum |

 |
| 1. Mode of nutrition in coelenterates is:

|  |  |
| --- | --- |
| A. Herbivores | B. Carnivores |
| C. Omnivores | D. Detritivorous |

 |
| 1. In arthropods, the organ of excretion is:

|  |  |
| --- | --- |
| A. Flame cells | B. Malpighian tubules |
| C. nephridia | D. kidneys |

 |
| 1. Moss capsule is a part of:

|  |  |
| --- | --- |
| A. Sporophyte | B. Gametophyte |
| C. Sporangium | D. Protonema |

 |
| 1. Vitamins are essential for human health because they act as:

|  |  |
| --- | --- |
| A. Enzymes | B. Cofactors |
| C. Hormones | D. Coenzymes |

 |
| 1. Cell membrane consist of:

|  |  |
| --- | --- |
| A. Proteins and nucleic acids | B. Proteins and phospholipids |
| C. phospholipids and nucleic acids | D. Amino acid and sugar |

 |
| 1. Yeast cells are rich in vitamin:

|  |  |
| --- | --- |
| A. D | B. A |
| C. B | D. C |

 |
| 1. Which one of the following is concerned with yeast?

|  |  |
| --- | --- |
| A. Pathology | B. Mycology |
| C. Virology  | D. Hepatology |

 |
| 1. Plasmodium is:

|  |  |
| --- | --- |
| A. Malarial parasite | B. Amoeba |
| C. Phaeophyta | D. Rhodophyta |

 |
| 1. Assign red algae from the followings:

|  |  |
| --- | --- |
| A. Polysiphonia | B. Spirogyra |
| C. Fucus | D. Diatom |

 |
| 1. Which of the following is true fungus?

|  |  |
| --- | --- |
| A. Plasmodium | B. Phytophythora |
| C. Physarum sp | D. Rhizopus |

 |
| 1. African sleeping sickness is caused by:

|  |  |
| --- | --- |
| A. Entamoeba | B. Trypanosoma |
| C. Pelomyxa | D. Stentor |

 |
| 1. The following cell structure contains powerful hydrolytic enzymes capable of digesting a wide range of materials:

|  |  |
| --- | --- |
| A. Endoplasmic reticulum | B. Ribosomes |
| C. Lysosomes | D. Golgi complex |

 |
| 1. The cell structure that is the site of ATP synthesis is:

|  |  |
| --- | --- |
| A. Centrioles | B. Lysosomes |
| C. Microtubule | D. Mitochondrion |

 |
| 1. Which of the following is the function of white blood cells?

|  |  |
| --- | --- |
| A. Transport oxygen | B. Maintain homeostasis |
| C. Defend against infection | D. Produce hemoglobin |

 |
| 1. Gaps in the myelin sheath are termed as:

|  |  |
| --- | --- |
| A. Synapses | B. Myelinoids |
| C. Axonal interstices | D. Nodes of Ranvier |

 |

1. Which character differentiates living things from non-living organisms?

|  |  |
| --- | --- |
| A. They live in the same ecosystem. | B. They are acted upon by the same environment |
| C. They are highly organized, and complex madeof one or more cells and contain geneticmaterial | D. Both a and b |

1. Synthetic insulin from pork was formed by which technique:

|  |  |  |  |
| --- | --- | --- | --- |
| A | Parasitology | B | Social biological techniques |
| C | Biotechnology | D | Both a and c |

1. The branch of biology which deals with the study of social behavior and communal life of human beings living in any environment is called:

|  |  |  |  |
| --- | --- | --- | --- |
| A | Environmental biology | B | Social biology |
| C | Human biology | D | Both b and c |

1. Out of 92 naturally occurring chemical elements how many are considered as bio-elements:

|  |  |  |  |
| --- | --- | --- | --- |
| A | 6 | B | 16 |
| C | 26 | D | 15 |

1. Which one is a micro-molecule?

|  |  |  |  |
| --- | --- | --- | --- |
| A | Polysaccharide | B | Protein |
| C | Hemoglobin | D | ATP |

**End of Section A**

**Section- B: Physics**

**25 Questions**

1. Which one of the following has the greatest energy gap?

|  |  |
| --- | --- |
| A. Insulator | B. Conductor |
| C. Semi-conductor | D. None |

1. Which law of motion is also called law of inertia?

|  |  |
| --- | --- |
| A. 1st law | B. 2nd law |
| C. 3rd law | D. None |

1. Two parallel wires carrying currents in the opposite directions

|  |  |
| --- | --- |
| A. Repel each other | B. Attract each other |
| C. Have no effect upon each other | D. They cancel out their individual magnetic fields |

1. Which one of the following is not an electromechanical instrument?

|  |  |
| --- | --- |
| A. Galvanometer | B. Voltmeter |
| C. Ammeter | D. AC transformer and DC generator |

1. In a multi range ammeter, what happens as the range increases?

|  |  |
| --- | --- |
| A. Shunt value decreases | B. Shunt value increases |
| C. Shunt value remains the same | D. None of the above |

1. Waves transmit \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from one place to another.

|  |  |
| --- | --- |
| A. Energy | B. Mass |
| C. Both | D. None of the above |

1. Sound waves do not travel in vacuum because

|  |  |
| --- | --- |
| A. They are transverse waves | B. They are stationary waves |
| C. They require material medium for propagation | D. They do not have enough energy |

1. If a *PN* junction is reversed biased then it acts as a,

|  |  |
| --- | --- |
| A. Capacitor | B. Inductor |
| C. On Switch | D. Off Switch |

1. Doppler effect applies to

|  |  |
| --- | --- |
| A. Sound wave only | B. Light wave only |
| C. Both sound and light waves | D. Neither sound nor light wave |

1. During fusion of hydrogen into helium

|  |  |
| --- | --- |
| A. Energy is absorbed | B. Energy is released |
| C. Mass is increased due to energy absorption | D. Mass is reduced due to energy released |

1. Which of the following the equation for Ohm Law?

|  |  |
| --- | --- |
| A. $E=I/R$ | B. $E=IR$ |
| C. $E=R/I$ | D. None of above |

1. Electrons

|  |  |
| --- | --- |
| A. Can exist inside the nucleus | B. Cannot exist inside the nucleus |
| C. Can exist both inside and outside the nucleus | D. None of the above |

1. The force between 2 charges of $2×10^{-5} C$ and $3×10^{-5} C$ with distance of $40 cm$ between them:

|  |  |
| --- | --- |
| A. $39.705N$ | B. $37N$ |
| C. $37.705N$ | D. $35N$ |

1. Electrons present in p-type material due to thermal pair generation are:

|  |  |
| --- | --- |
| A. Majority Carriers | B. Minority Carriers |
| C. Dual Carriers  | D. Blockers |

1. A particle having the mass of an electron and the charge of a proton is called a

|  |  |
| --- | --- |
| A. Antiproton | B. Positron |
| C. Gamma rays | D. Photon |

1. The diameter of a lens is called

|  |  |
| --- | --- |
| A. Focal length  | B. Principal axis |
| C. Aperture | D. Radius of curvature |

1. Image of an object 5 mm high is only 1 cm high. Magnification produced by lens is

|  |  |
| --- | --- |
| A. 0.5 | B. 0.2 |
| C. 1 | D. 2 |

1. Slope of velocity time graph is:

|  |  |
| --- | --- |
| A. Distance | B. Momentum |
| C. Acceleration | D. Force |

1. A spectrometer is used to find

|  |  |
| --- | --- |
| A. Wave length of light | B. Refractive index of the prism |
| C. Wavelength of different colors | D. All of the above |

1. Total internal reflection occurs when a wave strikes a medium boundary at an angle \_\_\_\_\_\_\_\_\_ critical angle with respect to the normal to the surface.

|  |  |
| --- | --- |
| A. Larger than | B. Smaller than |
| C. Equal to | D. All of above |

1. A body is moving with uniform velocity. Its

|  |  |  |  |
| --- | --- | --- | --- |
| A | speed changes | B | acceleration changes |
| C | direction of motion changes | D | displacement from origin changes |

1. A man is in a car is moving with velocity of 36km/hr. His speed with respect to the car is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 10m/s | B | 36m/s |
| C | Zero | D | Infinity |

1. Instantaneous and average velocities become equal when body

|  |  |  |  |
| --- | --- | --- | --- |
| A | has zero acceleration | B | has uniform acceleration |
| C | has variable acceleration | D | moves in a circle |

1. Inertia of an object is quantitative measure of its

|  |  |  |  |
| --- | --- | --- | --- |
| A | Volume | B | Density |
| C | Mass | D | Temperature |

1. Newton’s laws do not hold good for particles

|  |  |  |  |
| --- | --- | --- | --- |
| A | At Rest | B | Moving Slowly |
| C | Move with High Velocity | D | move with velocity comparable to velocity of light |

**End of Section B**

**Section- C: English**

**10 Questions**

1. Unless you hard,\_\_\_\_\_\_\_\_ you cannot pass:

|  |  |
| --- | --- |
| A. have worked | B. will work |
| C. worked | D. work |

1. This coat is \_\_\_\_\_\_\_\_\_\_\_ three thousand rupees.

|  |  |
| --- | --- |
| A. Worth | B. Available |
| C. Bought | D. Stitched |

1. When he saw me I \_\_\_\_\_\_\_\_ to college:

|  |  |
| --- | --- |
| A. went | B. was going |
| C. had gone | D. would go |

1. They usually \_\_\_\_\_\_ to Karachi in summer:

|  |  |
| --- | --- |
| A. go | B. have gone |
| C. had gone | D. went |

1. Every person must learn \_\_\_\_\_\_\_\_\_\_\_

|  |  |
| --- | --- |
| A. To make wise use of his time. | B. To using his time in a wisely manner. |
| C. Wise ways in his time's use. | D. That how wisely his time can be used. |

1. When you came in ,I \_\_\_\_\_\_\_\_ a letter:.

|  |  |
| --- | --- |
| A. was writing  | B. have written |
| C. wrote | D. write |

1. Insect:Disease::War: ?

|  |  |
| --- | --- |
| A. Chaos | B. Defeat |
| C. Army | D. Loss |

1. Synonym of LETHARGY is

|  |  |
| --- | --- |
| A .Bold | B. Serenity |
| C. Laxity | D. Active |

1. Skeleton: Body:: Grammar : ?

|  |  |
| --- | --- |
| A. Sentence | B. Education |
| C. Language | D. Meaning |

1. Those who \_\_\_\_\_\_\_\_\_\_\_ money in big ventures, are generally aware of the \_\_\_\_\_\_\_\_\_\_\_ involved in them.

|  |  |
| --- | --- |
| A. Invest; risk | B. Donate; facts |
| C. Estimate; ideas  | D. Deposit; fortune |

**End of Section C**