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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-Engineering Students)**

**Time Allowed: One Hour**

**Instructions:**

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

**80003**

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 response 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 | Mathematics | 25 | 25 |
| B | Physics | 25 | 25 |
| C | English | 10 | 10 |
| **Total** | | **60** | **60** |

|  |  |  |
| --- | --- | --- |
| **Name:** | **Roll No:** | **Signature** |
|  |  |  |

**Section- A: Mathematics**

**25 Questions**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1. Which from the following is NOT a function?  |  |  | | --- | --- | | A. *xy*2 – 2 = 0 | B. *x*2*y* – 2 = 0 | | C. 2*x*2 – *y* = 0 | D. All are functions |  1. What is the vector from (2,–6,4) to (1,2,7) ?  |  |  | | --- | --- | | A. . | B. | | C. | D. | |
| 1. What is the sum of odd numbers smaller than 20:  |  |  | | --- | --- | | A. 97 | B. 99 | | C. | D. | |

1. 42 + |4| + |−4| − 42 = ?

|  |  |
| --- | --- |
| A. -4 | B. 0 |
| C. 4 | D. 8 |

1. At present, the age of Alice is x–10 years. What will be her age after 12 years?

|  |  |
| --- | --- |
| A. x-2 | B. x+12 |
| C. x+2 | D. x-12 |

|  |
| --- |
| 1. (8/Z)+(6/ Z) × (40/Z) =? If Z=2; |

|  |  |
| --- | --- |
| A. 27 | B. 32 |
| C. 40 | D. 64 |

1. The vector whose magnitude is 1 is called

|  |  |
| --- | --- |
| A. null vector | B. unit vector |
| C. free vector | D. scalar |

1. A matrix is said to be a row matrix if,

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

1. When three coins are tossed then total outcomes are:

|  |  |
| --- | --- |
| A. | B. 6 |
| C. | D. |

1. If a2 - 9 = 0 What is the value of a, when a can never be negative

|  |  |
| --- | --- |
| A. | B. |
| C. 3 | D. 9 |

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

1. If 3y + 15 = 36 what is the value of y + 5?

|  |  |
| --- | --- |
| A. 3 | B. 6 |
| C. 9 | D. 12 |

1. If 4/3 of a number is 22 then what is 8/3 of that number:

|  |  |
| --- | --- |
| A. 44 | B. 22 |
| C. 11/9 | D. 11/6 |

1. Sum of weights of a class of 20 is 290 Kg. Another student of weight 25 Kg is also enrolled. Find the new average of the class?

|  |  |
| --- | --- |
| A. 13 Kg | B. 15 Kg |
| C. 17 Kg | D. 19 Kg |

1. If we list numbers from 1 to 15 then the numbers divisible by 2 are

|  |  |
| --- | --- |
| A. 2 | B. 7 |
| C. 5 | D. 15/2 |

1. When a coin is tossed the probability of tail is:

|  |  |
| --- | --- |
| A. 0 | B. 1 |
| C. 1/2 | D. 2 |

1. If the average value of 8, 7, 12, 15, and x is 11 then what is x?

|  |  |
| --- | --- |
| A. 13 | B. 15 |
| C. 17 | D. 19 |

1. If x > y > z then which of the following statements cannot be true:

|  |  |
| --- | --- |
| A. x + y > z | B. x - y = z |
| C. y + z < xy | D. z > xy |

1. Derivative of is,

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

1. If X:Y = 2:3, Y:Z = 4:5. Find X:Y:Z.

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

1. A set has ---------- objects.

|  |  |
| --- | --- |
| A. Identical | B. Not well-defined |
| C. Distinct | D. None |

1. Minimum number of equation for any system of equations are:

|  |  |
| --- | --- |
| A. 2 | B. 3 |
| C. 4 | D. 5 |

1. The squate matrix A is ske- Symmetric when At= ------

|  |  |
| --- | --- |
| A. A | B. 0 |
| C. -A | D. None |

1. Quadratic equation will be perfect square if its roots are -----

|  |  |
| --- | --- |
| A. Real and Equal | B. Real and unequal |
| C. Complex | D. None |

1. A card is slipped out of 15 cards numbered 1 2 3 4 ----------15 the probability of a card number that is divisible by 2 is:

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

**End of Section A**

**Section- B: Physics**

**25 Questions**

1. A second is defined as the duration of vibration of

|  |  |
| --- | --- |
| A. Carbon atom | B. Cesium atom |
| C. Radium atom | D. Nitrogen atom |

1. Gamma rays are not easily stopped by matter because

|  |  |
| --- | --- |
| A. They have no charge | B. They have no rest mass |
| C. They exert no coulomb force | D. All of the above |

1. Momentum of the body is equal to

|  |  |
| --- | --- |
| A. Vector product of mass and velocity | B. Dot product of mass and velocity |
| C. Product of mass & velocity | D. None of these |

1. If an object is placed in front of a diverging lens, then the image will be

|  |  |
| --- | --- |
| A. Virtual | B. Real and erect |
| C. Virtual and erect | D. Virtual and inverted |

1. Pressure exerted by a perfect gas is equal to

|  |  |
| --- | --- |
| A. Mean K.E per unit volume | B. Half of mean K.E per unit volume |
| C. One third of mean K.E per unit volume | D. Two third of mean kinetic energy per unit volume |

1. Electric flux through a medium can be

|  |  |
| --- | --- |
| A. Zero | B. Maximum |
| C. Minimum | D. All of these |

1. To move a unit positive charge over an equipotential surface, the required value of amount of work done is

|  |  |
| --- | --- |
| A. Positive | B. Negative |
| C. Zero | D. None of these |

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

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

1. Nuclear forces are

|  |  |
| --- | --- |
| A. Long range forces | B. Short range forces |
| C. Both long & short range forces | D. None of the these |
|  |  |

1. Compton effect shows that

|  |  |
| --- | --- |
| A. x-raysarewaves | B. x-rays have highenergy |
| C. x-rays canpenetratematter | D. Photon havemomentum |

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

|  |  |
| --- | --- |
| A. | B. |
| C. | D. R = VI |

1. Which of the three forces gravitational, electrostatic and nuclear is/are able to provide attraction between two neutrons?

|  |  |
| --- | --- |
| A. Electrostaticandnuclear | B. Gravitational and nuclear |
| C. Electrostaticandgravitational | D. Only nuclear |

1. The force between 2 charges of and with distance of between them:

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

1. The rate of emission of photoelectrons from a metal surface depends on

|  |  |
| --- | --- |
| A. Work function ofthemetal | B. Wave length of radiation |
| C. Electric potential ofthemetal | D. Intensity of radiation |

1. A photon v in vacuum. Its final speed will be

|  |  |
| --- | --- |
| *ev* /*m*  A.  *2ev* /*m* | B. *ev* / 2*m* |
| C. | D. *ev* /*m* |

1. Which of the following has maximum frequency?

|  |  |
| --- | --- |
| A. x-rays | B. Infrared rays |
| C. Violetrays | D. Radio waves |

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. Energy obtained when 1mg mass is completely converted into energy is

|  |  |
| --- | --- |
| A. 3x102J | B. 3x1010 J |
| C. 9x1010J | D. 9x102J |

1. An electron in motion is associated with

|  |  |
| --- | --- |
| A. Only amagneticfield | B. Only an electric field |
| C. Either electric ormagneticfields | D. Both electric and magneticfield |

1. Escape velocity of the earth is

|  |  |  |
| --- | --- | --- |
| A. 11.7km/s | | B. 11.9 km/s |
| C. 11.2km/s | | D. None |
|  | |

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 |
|  | |

**End of Section B**

**Section- C: English**

**10 Questions**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1. Insect:Disease::War: ?  |  |  | | --- | --- | | A. Chaos | B. Defeat | | C. Army | D. Loss |  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 |

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. Synonym of LETHARGY is

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

1. Skeleton: Body:: Grammar : ?

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

**End of Section C**