# M.Sc. 1st Semester Examination, 2019

## HUMAN PHYSIOLOGY

PAPER – PHY-103

*Full Marks* : 40

*Time* : 2 hours

Answer **all** questions

*The figures in the right hand margin indicate marks*

*Candidates are required to give their answers in their own words as far as practicable*

*Illustrate the answers wherever necessary*

**Write the answers to questions of each Paper in separate books wherever necessary**

UNIT– PHY-103.1

**1.** Answer any *two* questions : $2 \times 2$

(*a*) What is standard deviation ?

(*b*) What is multiple comparison test ?

(*c*) What is meant by 'paired scores' in correlation ?

(*d*) Mention the basic characteristics of non-parametric tests.

**2.** Answer any *two* questions from the following : 4 × 2

(*a*) Differentiate 'dependent' and 'independent' variable in simple linear regression. Write down the expression of the co-efficient of simple linear regression. 1 + 1 + 2

(*b*) How Wilcoxon signed rank test can be computed for large samples. 4

(*c*) Explain model I and model II ANOVA with examples. 4

(*d*) What is partial correlation ? What is its significance ? Write down the formula for 'Second order partial *r*. (2 + 1) + 1

**3.** Answer any *one* question from the following : 8 × 1

(*a*) (*i*) Write down the definitions of 'correlation' and 'correlation co-efficient'.

(*ii*) Why correlation is considered as non-predictive statistics ?

(*iii*) 'Sample errors affect correlation'– Justify .

(*iv*) Write down the formula of $r$ from raw scores. $\left(1\frac{1}{2}+1\frac{1}{2}\right)+2+2+1$

(*b*) (*i*) When Mann-Whitney U test is applied ?

(*ii*) How the computation of the test can be performed ?

(*iii*) The strength of the knee jerk reflex (in degrees of arc) under relaxed condition was found to be as follows for a group of 9 athelets and another group of 11 non-athelets. Do the two sexes differ significantly in this respect ($\alpha = 0{\cdot}05$) ?

Athlets : 31, 30, 22, 30, 26, 28, 19, 36, 37

Non-athlets : 35, 26, 14, 20, 11, 14, 21, 31, 27, 24, 10.

$1 + 3 + 4$

UNIT – PHY-103.2

4. Answer any *two* questions from the following : 2 × 2

(*a*) What are the functions of control unit of a computer ?

(*b*) What is op-code ? Give example.

(*c*) Write some important rules for numeric variables.

(*d*) How can you perform mathematical calculation in MS-Excel ?

5. Answer any *two* questions from the following : 4 × 2

(*a*) (*i*) State the differences between RAM and ROM.

(*ii*) State the characteristics of different kinds of ROM. 1 + 3

(*b*) (*i*) Write the advantages of using MS-Word.

(*ii*) How can you create a table of 4 column and 5 rows in MS-Word ? 2 + 2

(*c*) (*i*) State the differences between hardware and software ?

(*ii*) What is Assembly language ?

(*iii*) What is software package ? 2 + 1 + 1

(*d*) Discuss the main popular languages used in bioinformatics. 4

**6.** Answer any *one* question from the following : 8 × 1

(*a*) (*i*) Explain FOR-NEXT loop with an example.

(*ii*) Write a computer program to find out the highest value of weight among three persons without using FOR-NEXT loop.

(*iii*) Write the BASIC equivalent of the following arithmatic expression :

(*A*) $a^2 - 4bc + b^2 + 4bc$

(*B*) $\dfrac{p^3 \div q^3 + 2pq}{(m^3 - n^3)(m^3 + n^3)}$. 2 + 4 + 2

(*b*) (*i*) What is binary number system ? Convert the following decimal number to its binary equivalent : 46

(*ii*) Workout the following binary arithmatic :

(*A*) 100110 + 111011

(*B*) 10010 − 11001

(*iii*) What is Hexadecimal number system ?

3 + 4 + 1