M.Sc. 1st Semester Examination, 2023

PHYSIOLOGY

(*Human Physiology*)

PAPER – PHY-103.1 & 103.2

Full Marks : 50

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

PAPER – PHY-103.1

[Marks : 20]

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

1. What meant by first order partial correlation ? 2

2. What is covariance ? What do you mean by H_0 and H_a ? 1 + 1

3. What is added variance component ? 2

4. What is nonparametric test ? State its importance. 1 + 1

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

5. Define '*r*'. Describe the significance of 'magnitude' and 'direction' of *r*. Can '*r*' be designated as a predictive statistic ? 1 + 1 + 1 + 1

6. Write down the significance of drawing partial correlation. What is meant by zero order partial *r* ? 3 + 1

7. Write the formula for computing omega square. What is its importance ? 2 + 2

8. State the significance of Wilcoxon Signed rank test. Mention its inaccuracies. 2 + 2

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

9. (*a*) Mention the applications of small groups in Mann-Whitney U test.

(*b*) Determine the simple linear regression equation of systolic blood sugar [SBP] (mm-Hg) on low density lipoprotein cholesteerol [LDLC] ($mg.dL^{-1}$) in eight individuals, as follows :

Individuals	1	2	3	4	5	6	7	8
SBP (mm-Hg)	130	115	144	140	120	118	128	160
LDLC ($mg.dL^{-1}$)	110	85	150	146	86	82	98	155

$r = +0.945$*. 4 + 4

10. Explain Model I and Model II ANOVA with examples. How do you compute total sum of squares (SS) ? What is Scheffe's F test ? 4 + 2 + 2

PAPER — PHY-103.2

[Marks : 20]

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

1. State the difference between "SAVE" and "SAVE AS". 2

2. What is logical function of the computer ? 2

3. Write the components of bioinformatics. 2

4. What is operation code ? What is binary number system ? 1 + 1

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

5. (*i*) $(10110)_2 - (11000)_2 = ?$

(*ii*) Convert the decimal number 62 to its binary equivalent. 2 + 2

6. Mention the goals of bioinformatics. State the application of Bioinformatics in gene expression analysis. 2 + 2

7. (*i*) What are numeric and string variables ? Give examples.

(*ii*) Correct the error of the following :
A$ = P + 3D

(*iii*) What is the BASIC equivalent of the following : $X^2 = B^2 - 4AC$. 2 + 1 + 1

8. Classify the computer based on working principle and state the characteristic of them. 2 + 2

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

9. State the difference between READ and INPUT statements of BASIC programming. What is IF ... THEN statement ? Write a computer program to find out the highest value of weight of 10 persons. $2 + 2 + 4$

10. Write about Pascal calculator. Write the details of first and fifth generation computer. How do you insert a column and a row in an already existing table in MS-Word document ? $2 + (2 + 2) + 2$

[Internal Assessment — 10 Marks]