

**M.Sc. 1st Semester Examination, 2015**

**HUMAN PHYSIOLOGY**

**PAPER —H.PHY - 103(Unit - 05 & 06)**

*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*

**UNIT—05**

1. (a) What is meant by coefficients of variation (CV) ? Write the cases where CV is suitable and unsuitable.
- (b) Find the relative variability of the serum

( Turn Over )

( 2 )

cholesterol (X) and diastolic blood pressure (Y) given below :

Serum cholesterol :  $\bar{X} = 160.5$  mg/dl  
 $S_x = 17.8$

Diastolic blood pressure :  $\bar{Y} = 88.4$  mm Hg  
 $S_y = 10.6$   
3 + 2

Or

- (a) What do you mean by percentile, quartile, and decile ?
- (b) Write the formula for computing percentile.  
3 + 2
2. (a) What are dependent and independent variables in simple linear regression ?
- (b) Mention two properties of simple linear regression.
- (c) What is scattergram ? (1 + 1) + 2 + 1

Or

- (a) Differentiate bivariate and multivariate statistics.

(b) Determine the Pearson's Product Moment correlation coefficient between following data of pulmonary ventilation (Litres per minute) and  $O_2$  consumption (ml per minute) using unbiased SD. Also test for its significance.

1 + 4

	Pulmonary Ventilation ( Litres per minute)	$O_2$ Consumption (ml per minute)
1.	7.32	290
2.	9.10	405
3.	6.80	285
4.	6.00	248
5.	8.50	332
6.	8.10	327
7.	7.90	320
8.	6.65	278
9.	7.40	292
10.	9.00	390

( 4 )

Critical  $t$  scores :

$$t_{0.10(8)} = 1.860, t_{0.10(9)} = 1.833$$

$$t_{0.05(8)} = 2.306, t_{0.05(9)} = 2.262$$

$$t_{0.01(8)} = 3.355, t_{0.01(9)} = 3.250$$

$$t_{0.001(8)} = 5.041, t_{0.001(9)} = 4.781$$

3. (a) How chi-square test of independence can be worked out from contingency table ?

(b) What is Yate's correction ?  $3\frac{1}{2} + 1\frac{1}{2}$

Or

(a) Describe the computation steps for Wilcoxon Signed Rank Test.

(b) Mention the inaccuracies of this test.  $3\frac{1}{2} + 1\frac{1}{2}$

4. (a) What do you understand by model I, II and III anova ? Give example for each model.

(b) What is randomization of treatment ?  $4 + 1$

( 5 )

Or

(a) Write one assumption of Kruskal-Wallis anova.

(b) Apply Kruskal-Wallis non-parametric anova to find whether there is a significant difference between the strength of knee-jerk reflex ( degree of arc ) of the following groups :

1 + 4

Gr. I(Boys) : 37 36 19 28 26 30 22 30 31

Gr. II(Girls) : 10 24 27 31 21 14 11 20 14 26 35

$$(\chi^2_{0.05(1)} = 3.84 ; \chi^2_{0.01(1)} = 6.46)$$

### UNIT-06

1. (a) What is machine language ? Explain 'op code' with example.

(b) What is Assembly language ?

(c) What do you mean by standard application program ?

3 + 1 + 1

( 6 )

*Or*

(a) State the advantages of PROM and EPROM.

(b) What do you mean by fifth generation computer ?

(c) Write a brief note on optical character recognizer (OCR). 2 + 1 + 2

2. (a) What is binary number system ? Convert the decimal number 37 into its binary equivalent.

(b)  $(10111)_2 - (11100)_2 = ?$  (1 + 2) + 2

*Or*

(a) What is subscripted variable ?

(b) Write a program in BASIC to find the pulse pressure of 10 persons from systolic and diastolic pressure. 1 + 4

3. (a) What do you mean by LAN and WAN ?

( 7 )

(b) Write about different types of modem used in internet.

(c) What is search engine ? 2 + 2 + 1

*Or*

(a) Write the steps of generating a line diagram using MS Excel.

(b) How do you take print-out in the following cases :

(i) printing specific pages

(ii) printing a small part of the text

(iii) current page of the document. 2 + 3

4. (a) Why computer is essential for bioinformatics ?

(b) Explain scripting language and Markup language with examples. 1 + (2 + 2)

*Or*

(a) What are bioinformatics tools ?

( 8 )

(b) State the uses of BLAST.

(c) Write the main features of RasMol. 1 + 2 + 2

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