2007

HUMAN PHYSIOLOGY

PAPER-VII

FullMarks : 100

Time : 4 hours

*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 whenever necessary

Write **the answers** to Questions of each Unit **in separate books**

UNIT-13

Answer Q. No. 1 and any two from the rest

1. Write short notes on any *two* of the following : 5x2

   (a) The dinoflagellates

   (b) Anaerobic **bacteria**

   (c) Type I Hypersensitivity

   (d) Inflammation

   (e) Complements

2. (a) Distinguish between flagella and pilus of bacteria.

(b) What is the significance of large surface area of a bacterial cell ?

(c) Why capsulated bacteria usually becomes more pathogenic than noncapsulated bacteria?

(d) Mention one important identifying feature of pathogenic *Staphylococcusaureus.*

(e) What is toxic shock syndrome? 5+2+5+2+6

3. **Discuss the (i)** characteristic **feature, (Ii) pathogenesis and *(iii)* diagnosis of Hepatitis B virus. What are other hapatitis producing viruses** ? (5+5+5)+5

4. (a) What are the primary and secondary lymphoid **organs ?**

(b) State what happens in them to mount **an immune response.**

(c) Distinguish between a B-cell receptor and T-cell receptor complex.

(d) Describe **the antigen processing and presenta-**tion. 3+3+6+8

S. (a) Explain the autocrine, paracrine and pleiotrophic functions of cytokines.

(b) Describe the biological action of TNF.

(c) Distinguish the primary and secondary antibody response.

(d) Differentiate between the antigen peptide- **binding** clefts of MHC class I and class II molecules.

(e) What happens after the activation of transcription factors? 3+5+3+5+4

UNIT-14

Answer all the questions

1. Answer both Question *(a)* and Question *(b):* 5+5

(a) Write briefly about any one of the following:

(i) Biserial r

***(ii)* Kendall's rank correlation**

***(iii)* Skewness.**

***(b)* Write briefly on any *one* of the following :**

(i) CPU

(ii) **Scanner**

***(iii)* Standard toolbar** of MS word.

2. Answer *either* Question *(a) or* Question *(b) :*

***(a) (i)* Explain** with the help of an **example what you understand** by a first-order partial r.

(ii) Find whether or not there is a significant partial linear correlation between cardiac stroke volume *(X)* and venous return *(4)* when the effect of vascular peripheral resistance (X) is partialled out, using the following product-moment r values between the respective variables in a sample of43humans. (a=001.)

I2=+0 72, r3=-025; r23=-020; n=43

Critical t values : 'P61 (40) = 2,704; ta m (41) = 2701 ; $m (42) =2.698-

UK) Describe different models of analysis of variance.

(iv) Work out one-way anova to find whether or not there is a significant difference between the blood sugar scores (mg/dl) of the following two groups of animals exposed to two respective levels of a hypoglycemic agent (a=0.05)

Group 1 (X) : 85,110,100,120,85,90,120, 100, 90.

Group 2 (X) : 50,70,60, 100, 55, 70, 80, 55, 60.

Critical Fvalues: F005(l 17)=4.45; 005 0. 16) = 4 49 ; Fo05 (2, 17) ° 3-59; Fo05 (2, 16) = 3.63

4+6+4+6

(b) (i) Discuss the properties of binomial probability distributions.

(ii) Work out the binomial probability of random occurrence of 8 males and 2 femels in a sample of 10 humans from a population in which each of the two sexes has a proportion of 0.50.

(iii) Describe the assumptions for using the product-**moment correlation** coefficient.

(iv) Compute product-moment *r* for finding whether or not there is a significant linear correlation between blood sugar scores (X mg/dl) and serum cholesterol scores (Ymg/dl) of the following sample of humans. (a=0.01)

Individual	*X*	*Y*
1	180	200
2	210	250
3	100	170
4	140	210
5	200	260
6	80	150
7	90	160
8	120.	180
9	80	145
10	100	175

Critical t scores : 601(19)=2861; tool (18) **=2.878;**
61(8) = 3-355; 7001 (**9) = 3.250**.

6+4+4+6

3. Answer *either* Question *(a)* or Question *(b) :*

(a.) (i) What are the components of bioinformatics? Discuss different fields of application of bioinformatics.

(ii) What do **you mean** by Excel **function? Explain** SUM and MAX **functions in MS Excel.**

(iii) What do you mean by low level language and high level **language** ? What are the differences between compiler and interpreter? 7+7+6

(**b) (i) Explain TAB function in BASIC programming.**

(ii) Write a computer program to compute the frequency of boys **in the following groups according to their heights-**

Group A=101-110 cm
Group B= 111-120 cm
Group C=121-130 cm

Let, you are given the values of heights of n number of boys.

(ill) What is hexadecimal number system? Subtract the binary number 10101 from 11101 and convert the result into its decimal equivalent.

(*iv*) What is type mismatch? Explain with example. 3+7+7+3
