2017

ZOOLOGY

[Honours]

PAPER – IV

Full Marks : 90

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 wherever necessary

[NEW SYLLABUS]

GROUP – A

Answer **two** questions of the following :   15 × 2

1. Describe the different phases of microbial growth with a growth curve. What are growth rate and

generation time ? How generation time of a microorganism can be determined ? Narrate the different environmental requirements for microbial growth. $5 + 2 + 4 + 4$

2. What are simple and grouped frequency distribution ? Define class limits, class boundaries and class mark. The following are the amounts of diastolic blood pressure (mm Hg) levels of some persons :

Diastolic blood pressure (x)

82, 74, 70, 72, 90, 87, 85, 78, 73, 88
71, 84, 83, 91, 77, 72, 86, 89, 76, 90
88, 90, 70, 72, 75, 80, 88, 67, 78, 89

(*i*) Represent the above observations by a frequency table.

(*ii*) Calculate the percentage of persons who have blood pressure levels 80 and above.

(*iii*) Calculate the number of persons have blood pressure level less than 80. $2 + 6 + (4 + 2 + 1)$

3. What is mordant ? Name different mordants used in haematoxylin staining method. Mention the background principle of different parts of tissue staining by haematoxylin-eosin double staining method. What is blueing of haematoxylin stain and how it can be achieved ? Compare and contrast Harris's and Delafield's haematoxylin.

$$2 + 2 + 4 (1 + 2) + 4$$

4. What are the functional parts of pituitary gland ? Describe the histoarchitecture of the different types of secretory cells found in anterior pituitary. Mention the cell types which are responsible for the secretion of Leutinizing hormone, prolactin and gonadotropic hormone. $4\frac{1}{2} + 6 + 4\frac{1}{2}$

5. Write short notes on *three* of the following : 5×3

   (*i*) Differences between IDDM and NIDDM

   (*ii*) Addison's disease

   (*iii*) Ex PASY

   (*iv*) Similarity matrix of proteins

   (*v*) Millon's reaction.

(Turn Over)

(4)

GROUP – B

Answer **five** questions of the following :   8 × 5

6. (*a*) The following are the uric acid concentration
     (*x* mg/dl) of some persons and after using a
     medicine (*y* mg/dl) :

     x 7.0 8.8 10.0 9.5 10.2 7.9 8.5 10.6 9.0 8.0
     y 4.2 6.0 8.4 9.0 10.4 7.4 8.5 6.6 7.0 7.2

     Does intake of medicine effective in reducing
     uric acid ?

     $$[t_{0.05(9)} = 2.262; t_{0.02(9)} = 2.821; t_{0.01(9)} = 3.250]$$

    (*b*) Why is a high level of significance, say
     95% set for making decision in a test of
     significance ?   5 + 3

7. Name the source of electron in an electron
    microscope. Design with diagram the pathway
    of electron beam in a transmission electron
    microscope.   1 + 7

8. Classify viruses on the basis of their nucleic acid compositions with example for each case. Compare lytic and lysogenic phases.   6 + 2

9. Describe the methodology of histochemistry of PAS reaction mentioning its significance.   8

10. In a study the role of rotifer (x) on the hatching success of *Argulus* the following results are obtained :

$\Sigma x = 455$; $\Sigma y\ 448$; $\Sigma xy = 2562\cdot9$; $\Sigma x^2 = 14225$; $\Sigma y^2 = 13875$; $n = 25$

Are these two parameters correlated ? If so estimate the correlation coefficient. Test whether the above correlation coefficient is significant at 5% level. [Given $t_{0\cdot001(23)} = 3\cdot77$].   1 + 4 + 3

11. Give a brief account on internet with special reference to its use in information collection. Write a note on FASTA format.   4 + 4

12. What is testicular feminization ? Mention the cause and consequences of such disorder. 2 + 3 + 3

13. Describe the histological structure of a mammalian kidney with a labelled illustration.   6 + 2

14. Define chromatography. State the principle of separation of molecules by gel-filtration and ion-exchange chromatography. In get filtration chromatography larger proteins are moving faster than the smatter proteins. — Explain.

$$1+1\frac{1}{2}+1\frac{1}{2}+4$$

GROUP – C

Answer **five** questions of the following :   4 × 5

15. Mention the functions of Graafian follicle and Sertoli cells.   2 + 2

16. Write a note on Pasteurization.   4

17. What is F factor. Explain the importance of F factor in bacterial conjugation.   1 + 3

18. Compare Binomial and Poison distribution.   4

19. State the difference between one tail and two tail 't' test.   4

(*Continued*)

20. What do you mean by hypothalamus hypophyseal feedback loop ? State its function. $2 + 2$

21. What is Gene-Bank ? State its use. $2 + 2$

22. Write down the principle of Sudan Black B staining. 4

23. Write a short note on SDS-polyacrylamide gel electrophoresis. 4

24. Briefly describe the functions of adrenaline and nor-adrenaline. 4

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