**[Time: 2$\frac{1}{2}$ Hours]**                                                                 **[ Marks : 75]**

Please check whether you have got the right question paper.

N.B:   **1.   All questions are compulsory.**
2.   **All questions carry equal marks**
3.   **Draw neat, labelled diagrams wherever necessary**
4.   **Use of log books and non-programmable calculator is allowed**

**Q 1**   a)   Do as directed **any three** of the following.                                   **(03)**
i.   Give one example of normal flora of mouth.
ii.   Name one selective media for *S.typhi.*
iii.   Define Resident flora.
iv.   Give significance of DOTS.
v.   Write TRUE/FALSE- Germ free animals are more susceptible to pathogens.
vi.   Name one species of Plasmodium.

b)   Give an account of **any two** of the following.                                   **(12)**
i.   Mechanism of infection caused by *S. typhi.*
ii.   Life cycle of malarial parasite using diagram only.
iii.   Cutaneous mycoses and its five types.
iv.   Distribution of normal flora in mouth.

**Q 2**   a)   Explain **any one** of the following.                                            **(02)**
i.   Protoplast
ii.   Bactericidal antibiotic

b)   Give one example of **any one** of the following.                              **(01)**
i.   Fluoroquinolones
ii.   Beta lactam antibiotic

c)   Discuss **any two** of the following.                                                  **(12)**
i.   Mode of action of Tetracycline and Chloramphenicol.
ii.   Mechanisms of action of sulphonamides.
iii.   Selective toxicity and its significance with example.
iv.   Origin and transfer of drug resistance.

**Q 3**   a)   Explain **any one** of the following terms                                     **(02)**
i.   Null hypothesis.
ii.   Standard deviation

b)   Do as instructed **any one** of the following                                   **(01)**
i.   Calculate arithmetic mean 4, 5, 7, 8, 9, 10, 12,15,16,20.
ii.   Fill in the blank. _____is a parametric test used to test significance of means when sample size is more than 30.

**P.T.O**

c) Attempt **any two** of the following                                                    (12)
i. Discuss the steps involved in testing statistical hypothesis
ii. Explain with example mean, median and mode.
iii. The mean life time of a sample of 625 fluorescent tubes produced by a company is found to be 1500 hours with a standard deviation of 100 hours. Perform Z test to test the hypothesis that the mean life time of fluorescent tubes produced by the company is 1600 hours, against the alternate hypothesis that it is greater than 1600 hours at 5% level of significance ($Z_{(\alpha, 0.05)}$= 1.96).

iv. Find regression coefficients $b_{xy}$ and $b_{yx}$ for the following data

| X | 6 | 2 | 10 | 4 | 8 |
|---|---|---|----|---|---|
| Y | 9 | 11 | 7 | 8 | 7 |

**Q 4**   a) Define **any three** of the following                                         (03)
i. Webpage
ii. URL
iii. Database
iv. Recombinant DNA
v. HTML
vi. Browser

**Q 4**   b) Answer **any two** of the following                                          (12)
i. What is bioinformatics and state its essential components.
ii. What is DNA sequencing? Explain the procedure developed by Sanger.
iii. What is a database? Describe Nucleic acid databases.
iv. What is internet? Give a note of protocols used in bioinformatics.

**Q 5**      Write short notes on **any three** of the following.                          (15)
i. Establishing axenic life.
ii. MDR-TB
iii. Polymyxin B- mode of action.
iv. Inhibition of cell wall synthesis.
v. Types of correlation.
vi. WWW

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