Q.P. Code :01237

[Time: Two and half 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, labeled diagrams wherever necessary
         4.   Use of log books and non-programmable calculator is allowed

Q.1 a) Define **any three** of the following   03
    i.   Contact- dependent signaling
    ii.   Trans-autophosphorylation
    iii. DAG
    iv.   Calmodulin
    v.   RTK
    vi.   Gap junctions

Q.1 b) Discuss **any two** of the following   12
    i.   Structure of GPCR and G proteins.
    ii.   Significance of nuclear receptors in cell signaling.
    iii. Use fo binding assays to determine Kd values of receptors.
    iv.   Endocrine signaling in comparison with synaptic signaling.

Q.2 a) Name of the following (**Any Three**)   03
    i.   The phase of cell cycle in which DNA duplication occurs.
    ii.   Example of cells that normally do not divide but can be induced to begin DNA synthesis with appropriate stimulus.
    iii. Process of cell death due to acute injury that spill their contents.
    iv.   A multiprotein complex formed in cytosol during intrinsic pathway of apoptosis.
    v.   Process by which cancer cells invade blood vessels and are carried to other tissues.
    vi.   Mechanisms that a cell possesses that halts the progress of the cell cycle.

Q.2 b) Give an account of **any two** of the following
    i.   Stages of cell cycle.
    ii.   Receptor mediated pathway of apoptosis.   12
    iii. Maturation promoting factor and its role in cell cycle.
    iv.   Role of caspases and their targets in apoptosis.

Q.3 a) Do as directed (**Any three**)
    i.   Define Protoplast.
    ii.   Give one example of drug used to treat systemic mycoses.   03
    iii. State True of False- In immunocompromised patients, bacteriostatic drugs may be less efficacious.
    iv.   Fill in the blank- The MIC is the _____ concentration of drug that kills the pathogen.
    v.   Name the microorganism that produces Polymyxins.
    vi.   Give one example of β lactam antibiotic.

E06CB7C8CB9342A145005F7885ACBB19   TURN OVER

Q.3 b) Answer **any two** of the following
   i.   Explain the mode of action of antimetabolites giving two examples.
   ii.   What is selective toxicity? Explain with the help of two examples.
   iii.   Elaborate on the mechanisms of drug resistance.
   iv.   Give an account of mechanism of action of Vancomycin and Bacitracin.

03

Q.4 a) Do as instructed **(Any three)**
   i.   Calculate median :-12,14,5,6,17,8,21,45,34,10,11
   ii.   State true or false:- Z test is parametric test used to test significance of mean for sample size more than 30.
   iii.   _____ is the positive square root of the arithmetic mean of the squares of deviations of the various items from the arithmetic mean of the series.
   iv.   Explain perfect positive correlation.
   v.   State Null hypothesis.
   vi.   Choose the correct option: The ratio between experimental and observed results is represented by
      a) Theta Value
      b) Chi-square
      c) Variance ratio
      d) None of these

Q.4 b) Attempt **any two** of the following
   i.   Illustrate and explain the representation of data using diagrams and graphs.
   ii.   Discuss: Dependent and Independent variables, regression lines and equations with reference to regression analysis.
   iii.   The heights of 10 children selected at random from a given locality had a mean of 63cm. and a variance of 6.25 cm. Using t-test at 5% level of significance the hypothesis that the children of the given locality are on the average less than 65 cm. (Given $t_{0.05, 9}=1.83$)
   iv.   Calculate the coefficient of correlation to establish the relationship between the length of pea pods and number of seeds in each pod.

12

Length of pea pod	4.0	5.3	3.7	6.2	4.8
No. of seeds in each pod	5	7	5	8	5

Q.5 Write short notes on **any three** of the following
   i.   Desirable properties of a new antimicrobial agent.
   ii.   Mode of action of Quinolones.
   iii.   Tumor suppressor genes.
   iv.   Role of morphogens in cell signaling.
   v.   Types of extracellular messengers.
   vi.   Chi-square test.

15

****