M.Sc. 3rd Semester Examination, 2019

MICROBIOLOGY

PAPER – MCB-301(Gr.-A + B)

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

GROUP–A

[*Marks* : 20]

1. Answer any *two* of the following questions : 2 × 2

   (*a*) What is anaphase promoting complex ?

(*b*) What are proto-oncogenes and how they are differ from oncogenes ?

(*c*) What is the difference between apoptosis and necrosis ?

(*d*) Name two cancer causing virus.

2. Answer any *two* of the following questions : 4 × 2

(*a*) What are induced, pluripotent stem cells and discuss its potential therapeutic applications. 2 + 2

(*b*) What is tumour supressor gene ? Briefly discuss their role in cancer. 1 + 3

(*c*) Name two negative regulator of cell cycle. How did they control cell cycle ? 1 + 3

(*d*) Differentiate between gap junction and tight junction with example. Name one neuro-transmitter. 3 + 1

3. Answer any *one* of the following questions : 8 × 1

(*a*) What is caspase ? Discuss briefly about different apoptotic pathways. 2 + 6

(*b*) Discuss the role of motor proteins in microtubule assembly and disassembly. Name two CDK inhibitor. What is MPF ? 4 + 2 + 2

GROUP–B

[*Marks* : 20]

4. Answer any *two* questions : 2 × 2

(*a*) Write the utility of RFLP analysis ?

(*b*) Define chromosome walking ?

(*c*) What is restriction-modification system ?

(*d*) Mention the applications of molecular probe ?

5. Answer any *two* questions : 4 × 2

(*a*) State the principle and applications of real time PCR. 2 + 2

(*b*) State the advantages of cosmid vector over plasmid vector ? What is invitro packaging of λ -phage vector ? 2 + 2

(*c*) Describe the applications of genetic engineering in medicine. 4

(*d*) How protein-protein interaction can be experimentally proved ? 4

6. Answer any *one* question : 8 × 1

(*a*) What are the ethical issues associated with genetic engineering ? Write the salient features of BAC. Explain the utility of selectable markers of vector like PUC19. 3 + 2 + 3

(*b*) Write short notes on (any *four*) : 2 × 4

(*i*) Gene therapy

(*ii*) Knockout mice

(*iii*) Ti-plasmid and its importance

(*iv*) Thermostable DNA polymerase

(*v*) Colony hybridization

(*vi*) Application of c-DNA library.
