**VPG (4)–Bot (13)**
**Cyto. & Crop**

**2016-18**

*Full Marks* : 70

*Time* : 3 hours

Answer any **five** questions. **Q.No.1** is compulsory.

*The questions are of equal value.*

*Candidates are required to give their answers in their own words as far as practicable.*

**1.** Choose the *correct* answer :

(*a*) Nobel prize winning work on cell cycle of yeast was accomplished by

(*i*) J. D. Watson
(*ii*) P. Nurse
(*iii*) F. H. C. Crick
(*iv*) T. H. Morgan

(*b*) Identify the protein that increases consistently till G2-M phase of cell cycle

(*i*) Cyclosporin
(*ii*) Proteases
(*iii*) Esterases
(*iv*) Cyclins









(*c*) Synaptonemal complex is a

(*i*) Tetrapartite structure
(*ii*) Tripartite structure
(*iii*) Bipartite structure
(*iv*) Monopartite structure

(*d*) DNA damage is perceived by a master gene known as

(*i*) p21
(*ii*) p35
(*iii*) p53
(*iv*) GADD45

(*e*) Purine rich 'Shine Dalgarno' sequence is found in

(*i*) mRNA
(*ii*) tRNA
(*iii*) rRNA
(*iv*) Plasmid DNA

(*f*) 'Gene-battery model' of eukaryotic gene regulation was put forward by

(*i*) Jacob and Monod

(*ii*) Britten and Davidson

(*iii*) Watson and Crick

(*iv*) Cohen and Boyer

(*g*) Reverse breeding refers to production of

(*i*) A heterozygous from a heterozygous stock



(*ii*) A homozygous from a heterozygous stock

(*iii*) A heterozygous from a homozygous stock

(*iv*) All mentioned above

2. Describe different types of RNA, and salient features of post-transcriptional modification in eukaryotes.

3. What is heterochromatin. Describe the modern concept of structure of chromatin.









4. Discuss a popular model of gene expression in eukaryotes.

5. What is heterosis ? Discuss important methods of raising disease-resistant plants.

6. What is euploidy ? Discuss various methods of producing autoploids and their usefulness in plant breeding.

7. What is positive allelopathy ? With suitable examples describe how it is useful in raising quality products.

8. Describe various types of mutagens. Describe salient common steps of how these agents may be used for breeding quality crop varieties .

9. Write short notes on any *two* of the following :

(*i*) RNA polymerases

(*ii*) Balbiani rings

(*iii*) Nucleosomes

(*iv*) Climate resilient plants

(*v*) Prospects of allelopathy