20U 0083

Reg. No. : .....

Name : .....

VI Semester B.Sc. Degree (CBCSS-Reg./Supple./Improv.) Examination, April 2020
(2014 Admission Onwards)
CORE COURSE IN BIOTECHNOLOGY
6B13BTC : Genetic Engineering

Time : 3 Hours Max. Marks : 40

SECTION – A

Write about **each** of the following in **2** or **3** sentences. **Each** question carries **1** mark. **(6×1=6)**

1. The key components of hybridization buffer.
2. What do you mean by Hanahan transformation ?
3. What are the sources of thermostable DNA polymerases with proofreading (3´ – 5´ exonuclease) activity ?
4. Uses of X gal.
5. Site specific recombinases.
6. What is expression vector ?

SECTION – B

Write short notes on **any three** of the following. **Each** question carries **2** marks. **(3×2=6)**

7. What is the role of Pharmacogenomics in pharmaceutical industry ?
8. Differentiate between yeast and bacterial promoters.
9. Uses of genetically modified mice.
10. Advantages of cosmid vectors.
11. How do monoclonal antibodies work ?

P.T.O.

SECTION – C

Write short notes on **any three** of the following. **Each** question carries **4** marks. **(4×3=12)**

12. Briefly explain transfection with advantages and disadvantages.
13. Application of comparative genomics in generation of new gene structures.
14. Explain kinship analysis with its application.
15. Explain the safety concern associated with selectable marker.

SECTION – D

Write essay on **any two** of the following. **Each** question carries **8** marks. **(2×8=16)**

16. Explain gene cloning and its application in agriculture, gene subtraction and addition techniques. Discuss the problems associated with gene cloning.
17. Explain the cloning in bacteria other than *E coli*.
18. Production of recombinant protein from cloned gene, general problems with the production of recombinant protein in *E coli*.
19. Explain the various vectors employed in gene cloning with diagram, advantages, disadvantages and application.

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K20U 0084

Reg. No. : .....

Name : .....

VI Semester B.Sc. Degree (CBCSS-Reg./Supple./Improv.) Examination, April 2020
(2014 Admission Onwards)
CORE COURSE IN BIOTECHNOLOGY
6B14 BTC : Developmental Biology

Time : 3 Hours

Max. Marks : 40

SECTION – A

Write about **each** of the following in **2** or **3** sentences. **Each** question carries **1** mark.

1. Pollination
2. Notogenesis
3. Metamorphosis
4. Blastocoel
5. Delamination
6. Morphogen.

(6×1=6)

SECTION – B

Write short notes on **any three** of the following. **Each** question carries **2** marks.

7. Germ layers
8. Structure of sperm
9. Induction and competence
10. Neurula.

(3×2=6)

P.T.O.

SECTION – C

Write short essay on **any three** of the following. **Each** question carries **4** marks.

11. Discuss the importance of pollen pistil interaction.
12. Explain acrosome reaction in mammals.
13. What are the four stages of embryonic development ?
14. Explain dorsal-ventral polarity in development.
15. Explain cloning. **(3×4=12)**

SECTION – D

Write essay on **any two** of the following. **Each** question carries **8** marks.

16. Discuss oogenesis.
17. Explain the mechanism of organ formation.
18. Describe the signal transduction pathways during embryonic development.
19. Discuss the cellular basis of morphogenesis. **(2×8=16)**

K20U 0085

Reg. No. : .....

Name : .....

VI Semester B.Sc. Degree (CBCSS – Reg./Supple./Improv.) Examination, April 2020
(2014 Admission Onwards)
CORE COURSE IN BIOTECHNOLOGY
6B15 BTC : Plant Biotechnology

Time : 3 Hours

Max. Marks : 40

SECTION – A

Write about **each** of the following in **2** or **3** sentences. **Each** question carries **1** mark : **(6×1=6)**

1. Endosperm culture
2. Importance of hairy root culture
3. Cybrids
4. Cell theory
5. In vitro pollination
6. Totipotency.

SECTION – B

Write short notes on **any three** of the following. **Each** question carries **2** marks : **(3×2=6)**

7. Cell suspension culture
8. Lipofection
9. Transgenic plants
10. Organogenesis.

P.T.O.

SECTION – C

Write short essay on **any three** of the following. **Each** question carries **4** marks : **(3×4=12)**

11. Advantages and limitations of edible vaccines.
12. RFLP.
13. Explain agrobacterium mediated gene transfer.
14. Terminator gene technology.
15. Significance of artificial seeds.

SECTION – D

Write an essay on **any two** of the following. **Each** question carries **8** marks : **(2×8=16)**

16. Describe somatic hybridization and its applications in detail.
17. Explain plant tissue culture media, types and constituents.
18. Explain somaclonal variation : Factors affecting production, isolation and limitations.
19. Explain gene transfer methods in detail.

SECTION – C

Write short notes on **any three** of the following. **Each** question carries **4** marks. **(4×3=12)**

12. Briefly explain Chorionic villus sampling with advantages and disadvantages.
13. What is the significance of loss of function of tumour suppressor gene ?
14. Macroscopic changes in Huntington's disease.
15. Why TIFFA scan is important during pregnancy ? Justify your answer.

SECTION – D

Write essay on **any two** of the following. **Each** question carries **8** marks. **(2×8=16)**

16. Write in detail about the detection of bacterial, viral and parasitic pathogens by modern molecular techniques.
17. Explain autosomal and X linked diseases with mechanisms involved in it.
18. Explain the use of DNA profiling for clinical diagnosis.
19. Stem cell therapy in cancer and AIDS.

K20U 0086

Reg. No. : .....

Name : .....

VI Semester B.Sc. Degree (CBCSS-Reg./Supple./Improv.) Examination, April 2020
(2014 Admission Onwards)
CORE COURSE IN BIOTECHNOLOGY
6B16BTC : Medical Biotechnology

Time : 3 Hours Max. Marks : 40

SECTION – A

Write about **each** of the following in **2** or **3** sentences. **Each** question carries **1** mark. **(6×1=6)**

1. NCV in diagnosis of CMT.
2. What do you mean by SKY analysis ?
3. Role of FMR1 gene in fragile X syndrome.
4. Dyes used in real time PCR.
5. Bloom syndrome.
6. What do you mean by Fanconi anaemia ?

SECTION – B

Write short notes on **any three** of the following. **Each** question carries **2** marks. **(3×2=6)**

7. Diagnosis and therapy of Turner syndrome.
8. Vectors used for gene therapy.
9. Recombinant vaccines.
10. Give a description on triplex antisense RNA technology.
11. Give a comparative description on translocation and inversion with example.

P.T.O.