Đ 40113 (Pages : 2) **Name**.....

Reg. No.....

SIXTH SEMESTER B.Sc. DEGREE EXAMINATION, MARCH/APRIL 2018

(CUCBCSS—UG)

Microbiology

MBY 6B 14—MICROBIAL GENETICS AND GENETIC ENGINEERING

Time : Three Hours **Maximum : 120 Marks**

Part A

Answer **all** *the following.*
Each question carries ½ mark.

1. The chiasmata become visible during the ———— stage of prophase I of meiosis.
2. In the gene therapy for ADA- SCID, the therapeutic gene used was ————.
3. Sickle-cell disease occurs when the sixth amino acid, ———— is replaced by valine.
4. The karyotype 47,XX,+21 represent the condition called ———— .
5. ———— check point ensures that the cell underwent all of the necessary changes during the S and G2 phases and is ready to divide.
6. If a black sheep and a white sheep mate and have a grey sheep, the condition is an example for
7. The major event in S-phase is ———— .
8. T DNA is ———— .
9. As ABO blood group gene has three alleles, it is an example for ———— .
10. In ———— step of PCR, addition of dNTP take place.
11. No phosphodiester bond formation occur after addition of ddNTP due to the absence of ————.
12. In blue white screening, cells without recombinant DNA will appear as ———— .

(12 × ½ = 6 marks

Part B (Short Answer Type Questions)

Answer **all** *the following.*
Each question carries 3 *marks.*

13. Explain process involved at each step of PCR.
14. Describe application of X-gal and IPTG.

Turn over

15. Describe role of Cyclin Dependent Kinases.
16. Write notes on golden rice.
17. Describe importance of G2-M checkpoint.
18. Explain recombination frequency.
19. Describe lethal alleles.
20. Explain epistasis.
21. Explain important features of expression vector.
22. Describe polyploidy.

(10 × 3 = 30 marks)

Part C (Short Essay Type Questions)

Answer any **six** *of the following.*
Each question carries 8 *marks.*

23. Explain sex-linked inheritance.
24. Describe induced and spontaneous mutation.
25. Describe terminator gene technology.
26. Explain crossing over and its molecular mechanism.
27. Discuss mitosis with meiosis.
28. Describe gene mutations.
29. Explain DNA sequencing methods.
30. Describe cell disruption techniques.

(6 × 8 = 48 marks)

Part D (Essay Type Questions)

Answer any **two** *questions.*
Each question carries 18 *marks.*

31. Write an essay on mutation, its types, molecular mechanism and detection.
32. Explain methods used in recombinant DNA technology.
33. Describe programmed cell death.

(2 × 18 = 36 marks)