QP CODE: 21100226

21100226

Reg No : .....

Name : .....

B.Sc DEGREE (CBCS) EXAMINATION, FEBRUARY 2021

Fifth Semester

Core Course - MM5CRT04 - ENVIRONMENTAL MATHEMATICS & HUMAN RIGHTS

B.Sc Mathematics Model I,B.Sc Mathematics Model II Computer Science

2017 Admission Onwards

96874B65

Time: 3 Hours Max. Marks : 80

Part A

*Answer any **ten** questions.*

Each question carries 2 marks.

1. What do you mean by mining?
2. What is a balanced diet?
3. What do you mean by alternative energy?
4. What are the remedies of air pollution?
5. What is soil pollution?
6. What do you mean by natural calamities?
7. Find the solution of Recurrence Relation $a_n = 2a_{n-1}$ with $a_0 = 1$
8. State Lame's theorem.
9. Evaluate $lim \frac{F_n}{F_{n+1}}$.
10. Solve the differential equation $y'' - y' - 1 = 0$.
11. Describe the three generations of human rights?
12. What is CERD? Describe how it functions?

(10×2=20)

Part B

*Answer any **six** questions.*

*Each question carries **5** marks.*

13. What are the problems of dams?
14. What are minerals? What are its uses?

15. Write a short note on Source Reduction Techniques.

16. Write a short note on nuclear accidents and nuclear holocaust.

17. Verify that $F_{2n} = F_n L_n$, for n = 4 and n = 7.

18. Express the gcd as a linear combination of 2024 and 1024.

19. Let C divide line segment AB in the Golden ratio, AC being the larger segment. Show that $BC = \frac{1}{\alpha^2}$ and $AC = \frac{1}{\alpha}$.

20. Let A and B be two circles tangential at the point O. Let a and b (a > b) be their radii. Prove that $\frac{a}{b}$ satisfies the equation $x^2 - x - 1 = 0$.

21. What is ICESCR? What are its major provisions?

(6×5=30)

Part C

*Answer any **two** questions.*

*Each question carries **15** marks.*

22. Explain the essentials of Air Prevention and Control of Pollution Act and Water Prevention and Control of Pollution Act.

23. a) Explain the relation between Fibonacci numbers and Compositions of positive integers expressing as a sum of 1s and 2s

    b) Prove that $f(n) = g(n + 1)$, $n \geq 1$, if f(n) denotes the total number of 1s in various compositions of n and g(n) denotes that of 2s

24. Do there exists triangles ABC and PQR that have five of their six parts congruent, but still not congruent? How many solutions are there and how are they related?

25. Describe the fundamental rights included in the constitution of India.

(2×15=30)