OEMT311

Reg. No. | | | | | | | | | |

III Semester B.A. Degree Examination, April- 2023

MATHEMATICS

Quantitative Mathematics (Open Elective)

(NEP Scheme CBCS)

Time : 2½ Hours **Maximum Marks : 60**

Instructions to Candidates:

Answer all questions.

I. Answer any **five** questions. **(5×3=15)**

1. $\frac{4}{7}$ of a number of 84. Find the number.
2. Multiply $\left(3\sqrt{2}-5\sqrt{3}\right)$ and $\left(6\sqrt{3}+\sqrt{7}\right)$.
3. Find 'x', if $4^{2x}=\frac{1}{32}$.
4. Solve for 'x' and 'y' in $4x-y=2$ and $-3x+2y=1$.
5. Find roots for the equation $m^2-2m+2=0$.
6. A car travels a distance of 500 km in 10 hours. What is it's speed in km/hr?
7. If 'A' can do a piece of work in 10 days and 'B' can do a same work in 15 days. Then how many days they will take to do the same work if they work together.

II. Answer any **Three** questions. **(3×5=15)**

8. Find the L.C.M. of 219, 1321, 2320 and 8526.
9. If $3^x\times3^x\times9^{2y}=27$ and $2^x\times4^{-y}=\frac{1}{8}$. Then find the value of 'x' and 'y'.
10. If $5+2\sqrt{6}=\left(\sqrt{a}+\sqrt{b}\right)^2$ then find the value of 'a' and 'b'.

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11. Find the simplest form of a surd $\frac{\sqrt{3}+1}{\sqrt{3}-1}+\frac{\sqrt{3}-1}{\sqrt{3}+1}$.

12. Solve $2+\sqrt{2}+\frac{1}{2+\sqrt{2}}+\frac{1}{\sqrt{2}-2}$.

III. Answer any **Three** questions. **(3×5=15)**

13. Solve the equation $\frac{4t}{t^2-25}=\frac{1}{5-t}$.

14. Solve the equation $\frac{1}{x-2}+\frac{2}{x-1}=\frac{6}{x}$.

15. Solve the equation $3x^2+12x+9=0$ and hence find the value of 'a' in $ax^2+3x+2=7$.

16. Solve the equation $x-y=9$ and $x+y=3$ and find the value of 'k' in $2x+7y+k=3$.

17. The age of the father is 4 times that of his son. Five years ago father was 7 times as old as his son. Find their present age.

IV. Answer any **Three** questions. **(3×5=15)**

18. If 'x' is 5% of 'y' and 'y' is 24% 'z'. if 'x' = 480. Find the value of 'y' and 'z'.

19. The average weight of P, Q and R is 50 kg. If average weight of P and Q is 55 kg and average weight of Q and R is 43 kg. Find the weight of Q.

20. Two trains are running in opposite directions with te same speed. If the length of the each train is 135 m and they cross each other in 18 second what is the speed of each train?

21. A and B can do a work is 15 days, B and C in 20 days, C and A in 12 days. In how many days can they complete it if they work together.

22. Find the angle between the hour hand and the minute hand of a clock, when the time is 4 hours 35 minutes.