S.3 MATHEMATICS 456/2

Paper 2

Time: 2 hrs 30mins

INSTRUCTIONS

This paper has **two** sections: section **A** and **B**

SECTION A

1. Find the LCM and HCF of 12,15 and 8
2. Find the value of $\log_3 27 - \frac{1}{2} \log_3 \frac{1}{9} + \log_3 81$
3. Given that f(x)=3x-5, find $f^{-1}(10)$
4. The position vectors of P and Q are $\binom{1}{3}$ *and* $\binom{5}{1}$ *respectively*. If point M is on PQ such that PQ:PM=2:1. Determine the position vector of M
5. On a map, a forest of area 75km^2 is represented by 12cm^2, find the representative fraction of the map
6. Solve the equation: $\frac{6}{x^2} + \frac{5}{x} + 1 = 0$
7. Solve the following simultaneous equations

$$3y-7x+2=0$$

$$y+2x=8$$

8. Solve the equation : $3^{x+2}=27$
9. Find the value of $125^{\frac{-4}{3}}$

10. Express 504 as a product of its prime factor

SECTION B

Answer only three questions

11.a) Draw a graph of $y=2^x$ in the range $-2 \leq x \leq 3$. Use the graph to

i) find the appropriate value of $2^{2.5}$

ii) solve the equation $2^x=5$

12.a) Draw a graph of $y=2x^2-x-3$ for $-3 \leq x \leq 3$

b) use your graph to solve:

i) $2x^2-x-3=0$

ii) $x^2-3x+2=0$

c) state the minimum value of $2x^2-x-3$

13. a) using a ruler,pencil and a pair of compasses only. Construct a triangle ABC such that AB=7.1cm,angle ABC=105^0 and angle CAB=$45^{0.}$ Measure the length AC

b) construct a perpendicular onto AC from B to meet it at D.

c) circumscribe triangle BCD and measure the

i) length BD

ii) radius of the circle

14.The following are marks of 35 students from a mathematics examination from a certain school

30	60	70	80	90	69	53
72	40	92	51	61	82	71
51	73	59	88	60	74	76
79	38	67	55	99	48	66
65	68	79	67	73	66	83

a) construct a frequency distribution table with 30-39,40-49 etc
b) calculate the modal mark
c) calculate the median mark
d) calculate the mean mark

15. a) Given that $213_n=351_n$ when n is a base. Find n

b) Given that f(x)=$\frac{3x-1}{4}$ and g(x)=$\frac{x+2}{3}$, determine the values of x for which fg(x)=$\frac{x^2+4x+1}{12}$

------END-------

HAPPY X-MASS AND NEW YEAR