SENIOR 6A & 6B SUBSDIARY MATHS 1(S475/1) REVISION EXERCISES

Students are advised to do as many questions as possible.

SECTION A TYPE OF QUESTIONS. (17 questions)

1. Two events are such that P(A')= $\frac{11}{13}$, P(B')= $\frac{3}{5}$ and P(A$\cap B'$)= $\frac{2}{5}$.

   Find (a) P(A$\cap B$) (b) P(A$\cup B'$)

2. Differentiate with respect to x; (a) y= x^5 - 4x^3 - 6 (b) y= - 4x^{-2} $-\frac{1}{x^4}$

3. Two events A and B are such that P(B)=0.6 and P(A $\cup$B)= 0.94.

   Find (a) P(A) (b) P(A $\cap B'$)

4. Mary takes $^1/_{15}$ minutes to cover a distance of 0.03km. If she accelerates at 2m/s^2 ,

   Calculate the; (a) initial speed

   (b) new speed.

5. An Aeroplane lands at Entebbe International airport at 216km/hr. If the plane covers a distance of 1500 m to come to rest, find the;

   (a) time it takes to stop.

   (b) acceleration of the plane.

6. Find the gradient of the curve y= 3x^2 (5x-1) at the point B (2,4).

7. Solve the equation 2Sec$^2\theta$ +3tanθ -3= 0 such that $0° \leq \theta \leq 180°$

8.Solve the equation cosθ = sin2θ for values of θ from 0^0 to 360^0 .

9. The position vectors of points A and B are 3 **i** -5 **j** and 5 **i** +9 **j** respectively. Find the

   (a) position vector of the midpoint M of vector **BA**

   (b) angle between vector **OM** and **OB**

10. Solve the simultaneous equations; **2x -2y =1** and **x^2 - xy - 4=0**.

11. The table below shows the marks(x) and the frequency(f)

	21	23	24	45
f	4	2	3	6

Calculate the (a) mean mark

(b) standard deviation

12. The displacement vector of the particle is given by $\mathbf{r}=4t^2\,\mathbf{i}-5t\,\mathbf{j}$ metres, where t is the time in seconds. Find the speed of the particle after 2 seconds.

13. Use matrices to solve for x and y given that $A=\begin{pmatrix}3 & 2\\ 5 & 4\end{pmatrix}$, $M=\begin{pmatrix}x\\ y\end{pmatrix}$ and $C=\begin{pmatrix}1\\ -4\end{pmatrix}$ such that AM = C.

14. In the crested tower building, a lift is used for regular movements. A Lift is currently parked on the third floor and someone on the seventh floor calls for it, then gets in and travels to the ground floor. Each floor is 3.5m and the whole process takes 50 seconds. Find the (a) overall average speed of the lift.

(b) overall average velocity of the lift.

15. A car increased its velocity from 5m/s to 72km/hr in a distance of 50m. If the car moved with uniform acceleration, find its;

(a) acceleration

(b) velocity when it had covered 20m.

16. Express $3x^2+4x+6$ in the form $A(x+B)^2+C$, where A, B and C are constants. Hence find the minimum value of the expression.

17. The table below shows the grades scored by a group of seven students.

Maths	E	B	D	C	A	O	D
Physics	O	B	E	D	B	C	A

Calculate the rank correlation coefficient for the data. Comment on your result.

SECTION B TYPE OF QUESTIONS (06 questions)

18.(a) Given that matrix Q= $\begin{pmatrix} 1 & -2 \\ 3 & 1 \end{pmatrix}$, find Q^{-1}. Hence, solve the equations;

x- 2y = - 4 and 3x + y = 9.

(b) Given that α and β are the roots of the equation $\mathbf{2x^2 + 5x - 4 = 0}$, find the equation whose roots are $\alpha^3\beta$ and $\alpha\beta^3$.

19. The equation of the curve is $\mathbf{y = 3 + 2x - x^2}$.

(a)Determine the (i) coordinates and nature of the turning point of the curve.

(ii) y and x intercepts of the curve.

(b)(i) Sketch the curve (ii) Find the area enclosed by the curve and the x- axis.

20. The following are the final exam results which were scored by twelve students in Economics (x) and Geography (y)

x	35	56	65	78	49	62	22	90	77	35	52	93
y	57	72	63	76	53	100	38	82	82	19	43	79

(a) Draw a scatter diagram for the data.

(b) Draw the line of best fit and comment on the graph. If x =70, estimate the value of y from the graph.

(c) Calculate the rank correlation coefficient between x and y.

21. The table below shows the ages in years of the mothers at the time they had their first child.

Age	15-	20-	25-	30-	35-	40-45
Frequency	2	14	29	43	33	9

(a) Calculate the mode, mean and the variance of the distribution.

(b) Draw an ogive (cumulative frequency curve) and use it to estimate the

(i) median age, (ii)inter quartile range

22.The table below shows the prices (ug sh) of the items and their corresponding weights.

Item	**Price for year 2000**	**Price for year 2004**	**Weight**
Food	55000	60,000	4
Housing	48,000	52,000	2
Transport	15,000	29,000	3

Using year 2000 as base period, calculate the

(a) price relative for each item

(b) weighted aggregate price index and comment on your result

(c) weighted price index

(d) simple aggregate price index

23. A car travelling on a straight road ABCD starts from rest at A. It travels to B with uniform acceleration until it attains a speed of 12m/s after 2 seconds. It then changes to a uniform acceleration of $1m/s^2$ for 8 seconds until it reaches C. The car then retards to rest at D after a further 10 seconds.

(a) Find the (i) acceleration of the car
(ii) retardation of the car

(b) Sketch the velocity- time graph for the motion and find average speed.