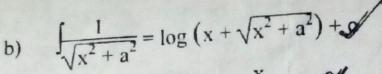
	up 'A'
1.	A man can send 3 of lissons to 6 different colleges in the to.
2.	a) 12 ways b) 18 ways c) 120 ways d) 720 ways P(n, n-r) =
	(a) $n!$ b) $(n-r)!$ c) $\frac{n!}{(n-r)!}$ d) $\frac{n!}{(n-r)!}$
	the triangle ABC, a sinA – b sinB is equal to b) $c cos(A-B)$ c) $a^2 + b^2$ b) $c cos(A-B)$ d) $a^2 - b^2$
4.	For any triangle ABC, $\frac{b+c}{a} \sin \frac{A}{2}$ is equal to
	For any triangle ABC, $\frac{b+c}{a} \sin \frac{A}{2}$ is equal to a) $\cos \frac{B+C}{2}$ b) $\sin \frac{B+C}{2}$ c) $\sin \frac{B-C}{2}$ d) $\cos \frac{B-C}{2}$ Euler's form of the complex no. $\frac{1}{i}$ is a) $e^{\pi/4i}$ b) $e^{3\pi/2i}$ c) $e^{\pi/2i}$ d) $e^{\pi i}$ If f is continuous function on $[a, b]$ and ϕ is an antiderivatives of f , then
5.	Euler's form of the complex no. \frac{1}{i} is
	a) $e^{\pi/4i}$ b) $e^{3\pi/2i}$ c) $e^{\pi/2i}$ d) $e^{\pi i}$
6.	If f is continuous function on [a, b] and ϕ is an antiderivatives of f, then
	$\int_{a}^{b} f(x) dx \text{ is equal to}$
	a) $\phi(x) - \phi(a)$ b) $\phi(b) - \phi(a)$ c) $\phi(a) - \phi(b)$ d) $\phi(b) - \phi(a) + c$
7.	If $f(x) = x + \frac{1}{x}$ then the value of $f(x)$ is
	a) $x^2 + \log x + c$ b) $\frac{x^2}{2} + \log x + c$
	$\frac{x}{2} + \log x + c$ d) $\frac{x^2}{2} - \frac{1}{x^2} + c$

Which one of the following is not correct?

8.



c)
$$\int \frac{1}{\sqrt{x^2 + a^2}} dx = \cos h^{-1} \frac{x}{a} + c$$

d)
$$\int \frac{1}{x^2 - a^2} dx = \frac{1}{2a} \log \frac{x - a}{x + a} + c$$

Group 'B'

9. a) A person want to buy a car. There are two brands of car available in the market and each brand has 3 variant models and each model comes in five different colours. In how many ways a person can choose a car to buy?

[1] b) Evaluate $\frac{n!}{r! (n-r)!}$ when for any n with r = 3?

c) If
$$\frac{1}{7!} + \frac{1}{8!} = \frac{A}{9!}$$
 then find the value of A. [2]

[3] Prove that ${}^{n}P_{r} = {}^{n-1}P_{r} + r \times {}^{n-1}P_{r-1}$

42] 10. a) Define cosine law. -

b) In any triangle, prove that

$$\frac{\cos A}{a} + \frac{a}{bc} = \frac{\cos B}{b} + \frac{b}{ca} = \frac{\cos C}{c} + \frac{c}{ab}.$$
 [3]

Frove that:

4
$$\left(bc \cos^2 \frac{A}{2} + ca \cos^2 \frac{B}{2} + ab \cos^2 \frac{C}{2} \right) = (a + b + c)^2$$
. [3]

11. a) Find the product of two complex numbers $z_1 = r_1(\cos \theta_1 + i \sin \theta_1)$ [2] and $z_2 = r_2 (\cos \theta_2 + i \sin \theta_2)$.

b) Express $(\sqrt{3} + i)$ in polar form and Euler form. [2+1]

State De-moivre's theorem. Using De-moivre's theorem, evaluate

 $(1-\sqrt{3}i)^6$. [1+2]

12. a)/Evaluate:

$$\int_{\mathbf{x}^2 - \mathbf{a}^2} \frac{1}{\mathbf{d}\mathbf{x}} \, \mathrm{d}\mathbf{x} \tag{2}$$

b) Evaluate: $\int_{1+x-x^2}^{1} dx$ [3]

c) Evaluate:
$$\int_{3+2x-x^2}^{(2x+2)} dx$$