CHAPTER 8

APPLICATION OF INTEGRALS

CASE BASED QUESTIONS (CBQ)





	(a) The equation of AB of the graph is			
	(i) $y = \frac{5}{2}(x+2)$			
	5			
	(ii) $x = \overline{2}(y + 3)$			
	(iii) $y = \frac{5}{2}(x - 2)$			
	(iv) $x = \frac{5}{2}(y - 3)$			
	(b) The value of $\int x-1 dx$ is			
	(<i>i</i>) $\frac{ x+1 (x-1) }{2} + C$			
	(<i>ii</i>) $\frac{ x-1 (x-1) }{2} + C$			
	(<i>iii</i>) $\frac{(x-1)^2}{2} + C$			
	(iv) x-1 + C			
	(c) The equation of BC of the graph is			
	(i) $y = -x + 9$			
	(ii) $y = x + 9$			
	(iii) $y = x - 9$			
	(iv) $y = -x - 9$			
	(d)The equation CA of the graph is			
	(i) $y = \frac{3}{2}(x-2)$			
	(ii) $y = \frac{3}{2}(x+2)$			
(ii)	(iii) y = $\frac{3}{4}(x - 2)$			
	(iv) $y = \frac{\frac{3}{4}}{4}(x+2)$			
	(e) The area of the graph by using integration method is			
	(i) 5 sq units			
	(ii) 6 sq units			
	(iii) 7 sq units			
	(iv) 9 sq units			

3
 Read the following text and answer the following questions on the basis of the same:

 A cable hangs in the form of parobola with its axix vertical. The cable is 10m high and 5 m wide at the base.

 Image: the base is the following of the parabolic cable is

 A. The equation of the parabolic cable is

 5

 (i)
$$y^2 = \frac{5}{8}x$$

 8

 9

 9

 9

 14

 15

 (i) $y^2 = \frac{5}{8}x$

 13

 14

 15

 (ii) $\frac{1}{15}$

 (iii) $\frac{1}{15}$

 (iii) $\frac{1}{15}$

 (iii) $\frac{1}{15}$

 (iii) $\frac{1}{15}$

 (iii) $\frac{1}{15}$

 (iiii) $\frac{1}{15}$

 (iii) $\frac{1}{5}$

 (iii) $\frac{1}{5}$

 (iii) $\frac{1}{5}$

 (iiii) $\frac{1}{3}$

 (iiii) $\frac{1}{3}$

 (iiii) $\frac{1}{4}$

 (iiii) $\frac{1}{4}$

 (iii) $\frac{1}{5}$

 (iiii) $\frac{1}{3}$

 (iiii) $\frac{1}{4}$

 (iv) $\frac{1}{5}$

 (iii) $\frac{1}{3}$

 (iiii) $\frac{1}{4}$

 (iv) $\frac{1}{5}$

 (iiiii) $\frac{1}{4}$
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		1) πa^2
		2) π
		3) a^2
		4) a
	c)	The area between curve f(x), lines x=a, x=b and x=axis.
		1)
		2)
		3)
		4)
	d)	The area of the region bounded by the curve y=x ² and the line y=4 is?
		1) 32
		32
		2)
		3) 3
		4) 23
6	The de	finite integral has a unique value. A definite integral is denoted by where a is called the
	lower	limit and b is called the upper limit of the integral. The definite integral is introduced
	either	as the limit of a sum or if it has a anti derivative F in the interval [a,b] then its value is the
	differe	ence between the values of F at the end points i.e. F(b)-F(a).
	a)	The definite integral
		1) Has unique value
		2) Has the value f(b)
		3) Has the value f(a)
		4) Has the value f(b)-f(a)
	b)	The value of is
		1) 0
		2) 4
		3) 8
		4) 10
	c)	The definite integral can be represented in the way of
		1) Limit of a sum



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	$\frac{ds}{dt} = v(t) = t^2 - \frac{8}{(t+1)^2} \qquad \frac{\mathrm{cm}}{\mathrm{sec}}$				
	of a particle moving along a horizontal <i>s</i> -axis for $0 \le t \le 5$.				
	A.What is the velocity at initial time?				
	i)0 ii)8 iii)-8 iv)1				
	B.The area under the curve from t=	1 to t=5 gives			
	i)acceleration, ii)speed, iii)displacement, iv)none				
	C.If initial position s(0) is 9, starting from time zero-th second, what is the displacement after 3				
	seconds				
	i)1 ii)11 iii)6 iv)4				
	D.Total displacement				
	i)32 unit ii)45 unit iii)35 ur	nit iv)53 unit			
	E. Final position of particle is at s=				
	i)35 ii)44 iii) 45 iv)31				
9	Consider the following equations o	f curves $y = \cos x$, y =	x + 1 and y = 0. On th	ne basis of above	
	information, answer the following:				
	(i) The curves $y = \cos x$, y =	x + 1 meet at			
	(A) (1, 0)	(B) (0, 1)	(C) (1, 1)	(D) (0, 0)	
	(ii) $y = \cos x$ meets the X-a	xis at			
	$\underset{\mathbf{c}}{\overset{\mathbf{a}}{\mathbf{c}}} \frac{p}{2}, 0 \overset{\mathbf{o}}{\underline{\mathbf{c}}}$	$\overset{\partial}{\overset{\partial}{\overset{\partial}{\tau}}}_{c}, 0 \overset{\ddot{\overset{\partial}{\tau}}{\overset{\partial}{\tau}}}_{a}$			
	(A) e 2 ø	(B) 62 Ø	(C) both (A) & (B)	(D) None of	
	these				
	ð	(x+1)dx			
	(iii) The value of integral -1	is			
	(4) 0	(D) 1	$\frac{1}{2}$	$(\mathbf{D}) \frac{1}{3}$	
	(A) U	(D) -1	(C) 2	(D) S	
		p/			
	(iv) The value of integral	2 is			
	(A) 0	(B) -1	(C) 2	(D) 1	
	(v) The area bounded by th	e given curves is			
	$\frac{1}{2}$	$\frac{3}{2}$	$\frac{3}{4}$	$\frac{1}{4}$	
	(A) $2 ext{ sq. unit}$	(B) 2 sq. units	(C) 4 sq. units	(D) 4 sq. units	
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ANSWER KEYS (CBQ)

QUESTION NUMBER	ANSWER
1	(a)-(i)
	(b)-(ii)
	(c)-(iii)
	(d)-(ii)
	(e)-(iii)
2	(a)-(i)
	(b)-(iii)
	(c)-(iii)
	(d)-(iii)
	(e)-(iii)
3	(a)-(iii)
	(b)-(ii)
	(c)-(iv)

	(d)-(ii)
4	(a)-(iii)
	(b)-(i)
	(c)-(iv)
	(d)-(ii)
5	(a)-(iv)
	(b)-(i)
	(c)-(i)
	(d)-(ii)
6	(a)-(i)
	(b)-(iii)
	(c)-(iv)
	(d)-(ii)
7	(a)-(iv)
	(b)-(iv)
	(c)-(i)
	(d)-(ii)
	(e)-(iii)
8	(a)-(iii)
	(b)-(iii)
	(c)-(ii)
	(d)-(iii)
	(e)-(ii)
9	(a)-(ii)
	(b)-(iii)
	(c)-(iii)
	(d)-(iv)
	(e)-(ii)
10	(a)-(v)
	(b)-(ii)
	(c)-(i)
	(d)-(iv)

	(e)-(ii)
11	(a)-(ii)
	(b)-(i)
	(c)-(ii)
	(d)-(i)
	(e)-(iv)
12	(a)-(ii)
	(b)-(i)
	(c)-(i)
	(d)-(iii)
	(e)-(iv)

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