MASTER’S P.U COLLEGE, HASSAN, 573201.

KCET ONLINE TEST-24, MAY-2020  **MATHEMATICS**  **TIME: 45Mins MARKS: 30**

**TOPIC**: **INTRGRATION(COMPLETE) DATE: 16/05/2020**

**KEY**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| **B** | **B** | **C** | **A** | **D** | **B** | **D** | **A** | **C** | **D** | **D** | **A** | **B** | **A** | **D** |
| 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| **C** | **B** | **B** | **B** | **C** | **A** | **B** | **D** | **C** | **D** | **B** | **B** | **D** | **B** | **D** |

**HINTS AND SOLUTIONS**

1. (b) 

.

1. (b) 



1. (c) Differentiation ofis  then



Integrate by parts 

 

 

.

1. (a) 

 and  an arbitrary constant.

1. (d) 
2. (b)  
3. (d) Put  and 

 

.

1. (a) Putting  



.

1. (c) Put  and 

So, 



.

1. (d)   

  .

1. (d) 

const.

const.

Comparing with the given integral, we get

   const.

1. (a) Let 









.

1. (b) 

. 

1. (a) **** .....(i)

 .....(ii)

Now,  

; .

1. (d) Let 



Therefore, 

 

**Trick :** By inspection,

 .

1. (c) 

.

.



 .....(i)

Now given that



Equating it to (i), we get constant.

1. (b) 

Put  then it reduces to .

1. (b)  





.

1. (b)  

 ⇒ .

1. (c) 

 



 .

1. (a) 

Differentiating *w.r*.*t* *x*, we get 

⇒ 

∴ .

1. (b) 

Put  

 .

1. (d) 



1. (c) ⇒ ⇒ ⇒ 

⇒  and . So, .

1. (d)  

 is periodic with period  and in 

.

1. (b) 

⇒  

  …..(i)

 ……(ii) 

Adding (i) and (ii), we get

 

Put ⇒ 

.

1. (b)  in 

∴  is an increasing function, hence  has greatest value at 

∴ Greatest 

.

1. (d) For , we have  and for , we have 

  for  and  for 

  and 

  and .

1. (b) ……(i) Replacing *x* by  in (i), we get 

…..(ii)

Eliminating  from (i) and (ii), we get

 ⇒ 



.

1. (d) , (Given)

 ⇒ ⇒ 

 ⇒  

 ⇒ 

or  

but does not satisfy the equation, 

Now,  ⇒ 

 or  ⇒  ⇒ 

Hence ⇒ , ⇒ .