

Register No:  
Date:



**ST. JOSEPH'S COLLEGE (AUTONOMOUS), BANGALORE**  
**II SEMESTER EXAMINATION, MARCH-APRIL 2018**  
**M.SC. BIG DATA ANALYTICS**  
**BDA 2116 : FOUNDATION OF DATA SCIENCE**

**TIME 2 1/2 HRS**

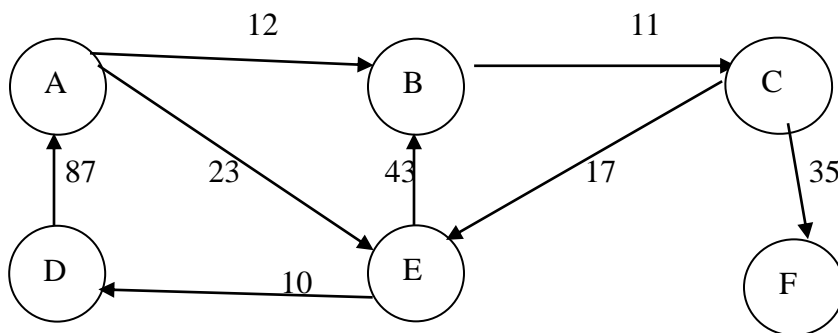
**MAX MARKS 70**

**This Question Paper Contains one printed paper**

**ANSWER ANY SEVEN QUESTIONS**

**7 X10 = 70**

1. Using Dijkstra's algorithm find the shortest path of the given directed graph between A to F .



2. Explain prim's algorithm with example.
3. (a) What is the volume of a unit cube in d-dimensions (a unit cube has side-length one in each dimension)? (2)  
 (b) Verify the formula
- $$V(d) = 2 \int_0^1 V(d-1)(1-x_1^2)^{\frac{d-1}{2}} dx_1$$
- for d = 2 and d = 3 by integrating and comparing with V (2) = π and V (3) = (4/ 3)π. (4+4)
4. Explain properties of High dimensional space.
5. a) State and prove law of large number.  
 b) What do you mean by giant Component? (7+3)
6. Write and explain the algorithm for finding SVD using Power method.

7. Find SVD,  $A = \begin{bmatrix} 5 & 5 \\ -1 & 7 \end{bmatrix}$

8. What do you mean by reflection principle? Explain with suitable example.

9. a) What is stream model? How is it different from DBMS?

b) Give three different applications of stream model.

(5+5)