MANIPAL UNIVERSITY
JAIPUR
*(University under Section 2(f) of the UGC Act)*

FIRST STATE PRIVATE UNIVERSITY IN RAJASTHAN
A+ NAAC
3.28 SCORE

## B.TECH SECOND YEAR

**ACADEMIC YEAR: 2022-2023**

# COURSE NAME: ENGINEERING MATHEMATICS-III

COURSE CODE : MA 2101

LECTURE SERIES NO :

CREDITS : 3

MODE OF DELIVERY : ONLINE (POWER POINT PRESENTATION)

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PROPOSED DATE OF DELIVERY:

MANIPAL UNIVERSITY
JAIPUR

**VISION**
Global Leadership in Higher Education and Human Development

**MISSION**
- Be the most preferred University for innovative and interdisciplinary learning
- Foster academic, research and professional excellence in all domains
- Transform young minds into competent professionals with good human values

**VALUES**
Integrity, Transparency, Quality,
Team Work, Execution with Passion, Humane Touch

# SESSION OUTCOME

"PROPERTIES OF GRAPH "

# ASSESSMENT CRITERIA'S

ASSIGNMENT

QUIZ

MID TERM EXAMINATION –I & II

END TERM EXAMINATION

# PROGRAM OUTCOMES MAPPING WITH CO2

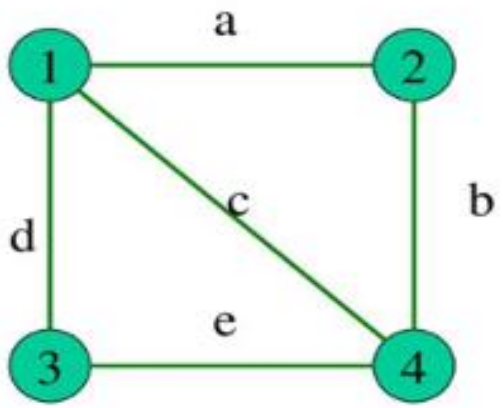
**PO 1**

**ENGINEERING KNOWLEDGE: APPLY THE KNOWLEDGE OF MATHEMATICS, SCIENCE, ENGINEERING FUNDAMENTALS, AND AN ENGINEERING SPECIALIZATION TO THE SOLUTION OF COMPLEX ENGINEERING PROBLEMS.**

# Subgraphs

- Graph H=(U,F) is **subgraph** of graph G=(V,E), if U μ V and F μ E.
- **Warning!** It is important that (U,F) is indeed a graph! For each edge from F must have both of its endpoints in U.

# Subgraphs - Example




- G=(V,E)
- VG ={1,2,3,4}
- EG = {a,b,c,d,e}

Let: U = {1,2,3}, W = {2,3,4}, F = {b}, P = {a,d}. Then (U,P) and (W,F) are subgraphs while (U,F) and (W,P) are not.

If a subgraph ***H*** is drawn by

- removing only a **few** (or **all**) **edges**
- but retaining **all** the ***vertices*** (points) of a graph **G** ,

the subgraph ***H*** is called as a Spanning Subgraph.

Have a look at the three graphs ***G***, ***H*** and ***H'*** given below.

I've obtained ***H*** by retaining **all vertices** and deleting just **one edge (3)**. Hence **H** is a **subgraph** whic is also a **spanning subgraph**.

In the case of ***H'*** I've drawn it by deleting a ***vertex 'e'*** and the ***edges (4,5)*** which are incident to it. I've **not retained** all the vertices of **G**. Hence **H'** is **not a spanning** subgraph. It's a just a **subgraph** .