



Note: Answer 5 Questions Only

- Q1 :- (10 marks)**
a- Discuss the effect of geometry distribution of reinforcement phase on properties of composite.
b- Sketch flow chart for aircraft composite design process.
c - State types of fracture surface.
- Q2:- (10 marks)**
a- Sketch and defined critical fiber length?
b- Determine the main different between SiC whisker and glass fiber.
c- How can microstructure design be improve for ceramics matrix composite(CMC)?
- Q3 :- (10 marks)**
a- Draw and state types of columns in construction.
b- Explain briefly advantage of ceramic matrix composites.
c- Determine basic mechanisms used for designing tough ceramics matrix composite (CMC).
- Q4 :- (10 marks)**
a-Draw construction elements and analysis the structure.
b- Using Combustion Synthesis method several groups of TiC/TiB₂ ceramics can be done, explain briefly.
c- Explain briefly the effect of particle size on composite reinforcement properties.
- Q5:- (10 marks)**
a- How does SiC fiber protective when it used in oxidic atmospheres at high temperatures?
b- Explain and draw on what failure criterion depend in compression stress for aligned continuous fiber composite, what is the work acting on the fibers ?
- Q6 :- (10 marks)**
a- Draw automated fiber placement device .
b- State chemical vapor infiltration (CVI) technique types for ceramic matrix composites.
c- Explain briefly fracture stress for short fiber composites failed, what its effective volume fraction of fiber?

.....GOOD LUCK.....