

- N.B. : (1) Question No.1 is compulsory.  
(2) Attempt any three questions out of remaining five questions.  
(3) Figures to the right indicate full marks.  
(4) Assume suitable data if required.

1. Explain in brief :— 20  
(a) Pultrusion process of composite manufacturing  
(b) Electron beam machining (EBM)  
(c) Gear shaving and Gear grinding process  
(d) Grit, grade and structure of grinding wheel.
2. (a) Differentiate between parallel action and progressive action multi spindle automats. 5  
(b) Write a brief note on Centerless grinding. 5  
(c) Discuss classification of unconventional machines. Briefly discuss the principle of operation, advantages, limitations and applications of L.B.M. 10
3. (a) Briefly describe the processes of thread whirling and thread rolling. 10  
(b) Differentiate between gear hobbing and gear shaping. 10
4. (a) Briefly explain the resin transfer moulding and filament winding processes of composite manufacturing. 10  
(b) Enumerate the advantages of unconventional machining processes over conventional machining and write applications of L.B.M.; E.D.M and A.J.M. 10
5. (a) Explain in detail the factors affecting the selection of grinding wheel. 10  
(b) Describe the capabilities and characteristics of machining centers. 10
6. (a) Briefly explain the principle of operation, construction, advantages, limitations and applications of (i) A.J.M (ii) E.D.M. 20