

Day **Friday**  
Date **19/01/2018**

Time **02.30 PM TO 05.30 PM**  
Max. Marks : **80**

**W-2017-2617**

**N.B.**

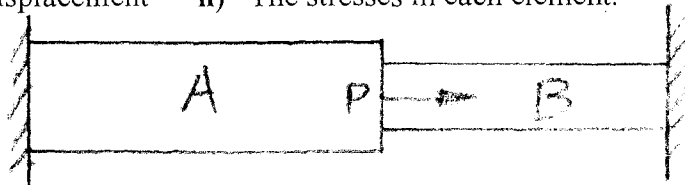
- 1) **Q.1 and Q.5 are COMPULSORY.** Out of the remaining attempt any **TWO** questions from each Section.
- 2) Figures to the right indicate **FULL** marks.
- 3) Answers to both the sections should be written in **SEPARATE** answer book.

**SECTION – I**

- Q.1** a) Explain the role of CAD in optimizing the cost of production. (05)  
b) Distinguish between CSG and B-Rep techniques. (05)  
c) Discuss different classes of logical input devices used in PHIGS. (04)
- Q.2** a) A rectangle ABCD is represented by vertices A(20, 20), B(100,70), C(80, 115), D(20,83). The rectangle is rotated by  $30^\circ$  clockwise about the vertex A. Determine the new vertex position A', B', C' and D'. The transformed rectangle is then to be mirrored about a line joining the diagonal vertices of the rectangle. (07)  
b) What is parametric programming? Explain with the suitable example. How parametric programming can be used for increasing CAD productivity? (06)
- Q.3** Give geometric representation of Hermite Cubic spline curve. Explain its usage for surface modeling features in Pro E with neat sketch and equations, justify use of B-spline curve for surface modeling in Pro-E. (13)
- Q.4** a) Explain following CAD/CAM data exchange standards: (07)  
i) IGES ii) GFS iii) PHIGS  
b) How does traditional design process is transformed into CAD process. (06)

**SECTION – II**

- Q.5** a) Explain the role of finite element method in product design and manufacturing. (05)  
b) Explain with neat sketch 3D printing. (05)  
c) Differentiate Sequential Engineering Vs Concurrent Engineering. (04)
- Q.6** a) Explain the concept of 'Navigation' in Pro E and hence elaborate the Dynamic Navigation system used in Pro E. (07)  
b) Consider the bar as shown in figure No.: 01. Determine (06)  
i) Nodal displacement ii) The stresses in each element.



Area  $A = 2400\text{mm}^2$ ,  $B = 800\text{mm}^2$   
Modulus  $E_A = 70\text{GPa}$ ,  $E_B = 200\text{GPa}$ .  
Axial load  $P = 200\text{kN}$ .

- Q.7** a) Explain with neat sketch LOM. Give the steps required to convert a Rook model into LOM prototype. (07)  
b) Explain the application of rapid tooling methods in press tool manufacturing; justify with suitable methods and example. (06)
- Q.8** a) Explain in detail NIST-AMRF hierarchical and ESPRIT—CIM OSA model of CIM, with its advantages and limitations. (08)  
b) What are the pre-requisites required for implementation of concurrent engineering. (05)