

**F. Y. B.ARCH. SEM – I (2010 COURSE) :WINTER - 2017**  
**SUBJECT: THEORY OF STRUCTURES & BUILDING MATERIALS -I**

Day: **Monday**  
Date: **06/11/2017**

**W-2017-3245**

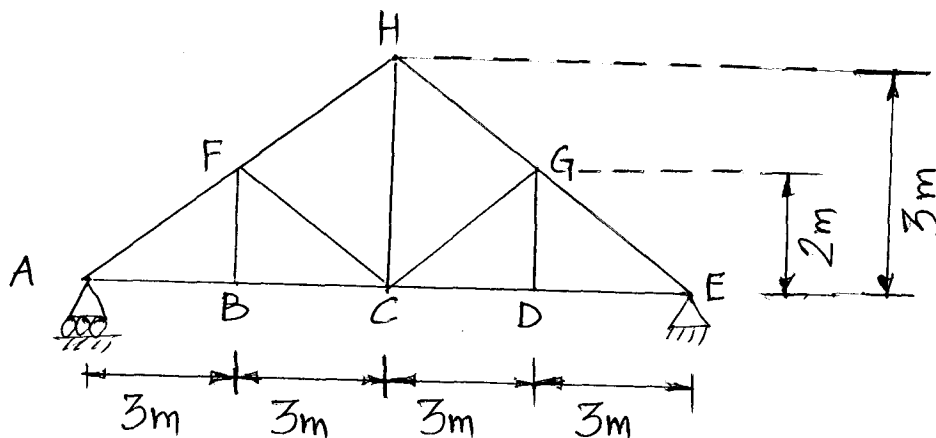
Time: **02.00 PM TO 05.00 PM**  
Max. Marks: 100

**N.B.:**

- 1) **Q. No. 1 is COMPULSORY.** Out of the remaining attempt any **THREE** questions from section –I. All questions in Section -II are **COMPULSORY.**
- 2) Figures to the right indicate **FULL** marks.
- 3) Answers to both the sections should be written in **SEPARATE** answer books.

**SECTION-I**

- Q.1** Answer any **THREE** of following: (15)
- a) Explain different types of force system with neat sketch.
  - b) Explain law of parallelogram theorem with sketch.
  - c) What is Bow's notation?
  - d) State and explain Lamis Theorem.
- Q.2** a) Explain graphical method to find resultant of coplanar non concurrent force system with neat sketch. (08)
- b) Find reactions of cantilever beam UDL on whole span  $3\text{N/m}$  and point load on beam  $5\text{N}$  and  $15\text{N}$  acting at  $2\text{m}$  and  $3\text{m}$  from free end. The span of beam is  $6\text{m}$ . (07)
- Q.3** a) Five forces of magnitude  $20\text{N}$ ,  $30\text{N}$ ,  $40\text{N}$  and  $70\text{N}$  are acting at a point and towards point at an angle  $45^\circ$ ,  $90^\circ$ ,  $135^\circ$ ,  $270^\circ$  &  $180^\circ$  respectively with positive x axis. Find resultant. (08)
- b) State and explain the assumptions for analysis of truss. (07)
- Q.4** a) Draw SFD and BMD for S.S. Beam having span  $12\text{m}$ . The loads on beam as follows.  $13\text{N}$ ,  $14\text{N}$ ,  $20\text{N}$  acting at  $1.5\text{m}$ ,  $3\text{m}$ ,  $6\text{m}$ , from right support and UDL on beam  $10\text{N/m}$  from left support to centre. (08)
- b) Two forces  $15$  and  $20\text{N}$  are acting at a point. The angle between two forces is  $35^\circ$ . Find resultant and Alfa angle. (07)
- Q.5** Find forces in all members of truss by using analytical method. (15)



P. T. O.

## SECTION-II

**Q.6** Answer any **ONE** of the following: **(15)**

- a) Differentiate between Load Bearing and Frame Structure.
- b) Explain Good Qualities of Bricks and differentiate between English Bond and Flemish Bond.

**Q.7** Write short notes on any **THREE** of the following: **(15)**

- a) Lime mortar
- b) Bulking of Sand
- c) Materials used for D. P. C.
- d) Properties of good Aggregate
- e) Explain Plastering
- f) Dressing of Stone

**Q.8** Draw/ Sketch and define the following terms any **TWO** of the following: **(10)**

- a) Lintel and Chajja / Weather shed.
- b) Key stone.
- c) 'V' Pointing.
- d) Explain types of 'Dressing of stone'
- e) English Bond and Flemish Bond "T" Joining

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