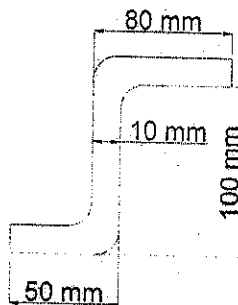


**Bachelor of Construction Engineering 4<sup>th</sup> Year 2<sup>nd</sup> Semester Examination, 2019**  
**Fabrication Technology, Part - II**

**Maximum Marks: 50**

- Notes:**
1. Read the questions carefully before answering.
  2. Answers should be brief and precise.
  3. Use of IS: 800 – 2007 and SP 6-1 (1964) is allowed.
  4. Any other relevant data can be assumed suitably, if required.
  5. Attempt all the questions.

1. Discuss the relative merits and demerits of hot-working and cold-working processes of metals. [5]
2. (a) What is the basic difference between polishing and buffing? [2]  
 (b) What is the function of a *Jenny* calliper? [2]  
 (c) What is MAPP? Where is it used? [2]  
 (d) Calculate the length of blank required to form the bracket shown below. Given that neutral line lies at a distance  $0.42T$  from inside bend radius ( $r$ ) and  $r = 2.5T$ , where thickness of metal  $T = 10$  mm.



3. (a) Though HSFG bolts are less ductile than black bolts, they are still preferred in steel construction. Why? [4]  
 (b) Why punching is not preferred for making holes for bolts? [2]  
 (c) What is a *header plate connection*? Where is it used? Draw a neat sketch illustrating such connection. [2]  
 (d) What do you mean by *turn-of-the-nut-tightening* of bolts? [4]  
 (e) Two ISMB300 section are to be spliced using bolted connection to transfer a factored bending moment of 150 kNm and a factored shear of 100 kN. As per the availability only M20 grade class 8.8 bolt can be used. Determine the number of bolts required to design the flange splice connection. Will the design be safe if the thickness of the flange splice plate is limited to 12 mm? If not, then what will be your recommended solution? [2]  
 [10]
4. What do you mean by Quality Assurance Plan in fabrication?  
 A steel column has been fabricated and erected at a site over a pedestal. List what are some of the quality control checks you would be performing as a site engineer. [5]
5. (a) What is crevice corrosion? How it can be prevented? [3]  
 (b) What kind of protective coating would you recommend for steel structures within an oil refinery? [2]  
 (c) A 6 bay gable framed warehouse is being constructed at a site having a maximum height of the apex from the base as 8.5 m. Discuss and annotate with sketches what kind of bracing system you would adopt during the erection of the structure. [5]

## B. Construction Engineering 4<sup>th</sup> Year 2<sup>nd</sup> Semester Examination 2019

Time : Three hours

### Fabrication Technology

Full Marks : 100

#### Part I

Answer All Questions. Maximum Marks is 50

Answer should be to the point and explained with neat sketches

1. a) Discuss the metallurgical terms **Ferrite, Cementite, pearlite and Austenite** with respect to Iron-Iron carbide diagram of steel. [CO1] 5  

OR

 b) Discuss the stress-strain behaviour of structural steel. [CO1] 5
  
2. Discuss the following activities
  - i. Different methods of **Surface Cleaning** in shop fabrication [CO2] 10  

Or
  - ii. **Sequence of activities** in fabrication shop [CO2] 10
  
3. Discuss the advantage of **Weld fastening techniques** for making joints. [CO3] 5
  
4. a) i) What are the different Arc Welding **Processes**? [CO4] 5  
 ii) Discuss the **Important elements of Weld Procedure**. [CO4] 5  

Or

 b) i) Mention the factors for choice of **Edge Preparation**. [CO4] 5  
 ii) What do you mean by **Weldability** of Steels and discuss **HAZ** [CO4] 5
  
5. a) Discuss in brief the factors affecting the quality of weld connections [CO4] 10  

Or

 b) i) Discuss **Residual Stresses** in weldments. [CO4] 5  
 ii) Mention the classification of Distortion and its **Remedial Measure** [CO4] 5
  
6. a) Discuss different defects of **Weld**. [CO5] 5  

OR

 b) Discuss different methods of **NDT techniques** for Welding Inspection [CO5] 5
  
7. a) What are the different **Corrosion Prevention** approaches in steel structures? [CO6] 5  

OR

 b) Discuss **the accepted criteria for welded joints**. [CO6] 5