Uva Wellassa University, Sri Lanka

End Semester Examination – January 2010

ENG 405-2 Manufacturing Technology

Time: Two (02) hours

Total 05 Questions

Answer **four (04)** questions only

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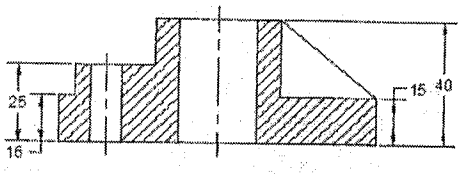
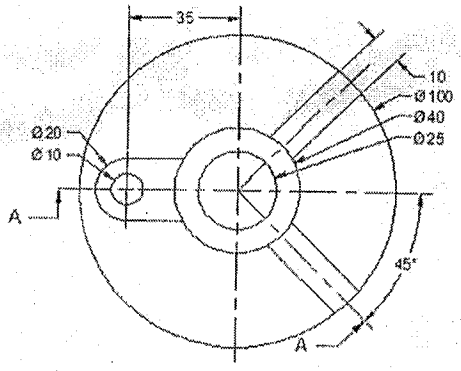
1. Consider the object in the Fig Q1 bellow. All dimensions given are in millimeters.



SECTIONAL FRONT VIEW ON A-A



PLAN

Fig Q1

I. Explain in detail, the sand casting bench molding procedure for the object giving details of the pattern, cores and all other relevant details.

(15 marks)

II. Write short notes on **two (2)** of the following topics.

a. Patterns in sand casting.
b. Cores in sand casting.
c. Sand casting defects.

(10 marks)

2. Answer any **four (4)** questions from the following.
   I. Describe the effect of power density of the heat source and the heat input to the work piece on the selection of a welding process for a given application.
   II. Name and draw figures of the three types of flames used in Oxy-Acetylene Gas Welding and discuss the applications of each flame.
   III. Write a short note on Shielded Metal Arc Welding giving details of the weld pool, use of the electrode, advantages and disadvantages etc.
   IV. What are the different polarities that can be used in Gas-Tungsten Arc Welding? Discuss the applications of each type.
   V. What is key-holing in Plasma Arc Welding?

(25 marks)

3. Conventional machining processes are very much important even in the modern industry. Select **four (4)** topics and write short notes on the following.
   I. Different kinds of lathe operations and geometry that can be obtained using each operation.
   II. Various kinds of milling cutters used for milling and their geometry.
   III. Explain the cylindrical grinding operation with emphasis on its application.
   IV. Boring operation and tools used for the operation.
   V. Compare the three different kinds of milling machines based on their applications.

(25 marks)

4. There are different types of operations carried out on sheet metals. Giving details of applications and sketches where necessary, discuss **four (4)** of the sheet metal operations given below.
   I. Spinning.
   II. Blanking.
   III. Shearing.
   IV. Deep Drawing.
   V. Roll forming.

(25 marks)

5. There are a lot of modern manufacturing techniques employed today producing high accuracy products. Write short notes on **four (4)** topics given below related to modern manufacturing techniques.
   I. Centrifugal casting.
   II. Blow molding.
   III. Stereolithography.
   IV. Electrical Discharge Machining (EDM).
   V. Thermoforming (vacuum forming).

(25 marks)