

KATHMANDU UNIVERSITY
End Semester Examination [C]
November/December, 2023

Marks Scored:

Level : B.E.

Year : II

Exam Roll No. :

Time: 30 mins.

Course : MEEG 217

Semester : I

F. M. : 20

Registration No.:

Date 07 DEC 2023

SECTION "A"

[20 Q. × 1 = 20 marks]

Choose and mark [X] in the most appropriate option.

- In which of the following welding method pool of molten metal is used?
 Carbon arc welding Submerge arc welding
 TIG welding MIG welding
- Oxygen to acetylene ratio, in case of neutral flame in oxy acetylene welding is
 8:1 1:1 1:2 2:1
- One of the assumptions behind calculating orthogonal cutting forces is,
 that the rake angle is positive.
 that the tool is only cutting with one edge and one point.
 the shear plane is a function of before and after chip thicknesses.
 that the rake angle is null.
- Which one of the following is a permanent fastening process in which two metals pieces are joined together form a single piece.
 Brazing Casting Riveting Screw fasteners
- In metallic arc welding when the electrode is connected to negative terminal of electric supply, maximum heat is produced at ,
 Electrode tip Work piece Electrode holder Connecting wires
- The strength of a brazed joint
 Decreases with increase in gap between the two joining surfaces.
 Increases with increase in gap between the two joining surfaces.
 Decreases up to certain gap between the two joining surfaces beyond which it increases.
 Increases up to certain gap between the two joining surfaces beyond which it decreases.
- Drilling is an example of
 Simple Oblique Orthogonal Uniform
- In case of a shaper, the feeding of the job is done,
 At the start of forward stroke At the middle of the forward stroke
 At the end of the forward stroke At the end of the return stroke
- Which of the following is not the part of the shaper
 Clapper Box Cross slide Ram Tool Head

10. Two streams of liquid metal which are not hot enough to fuse properly result into a casting defect known as
 Sand wash Swell Cold shut Scab
11. The usual ratio of the forward and return stroke in shaper is,
 2:1 1:2 2:3 3:2
12. One of the most specifications of the lathe is,
 Swing over tool post Swing over tool bed
 Bed length Distance between centers
13. In an orthogonal cutting, the depth of cut is halved and the feed rate is double. If the chip thickness ratio is unaffected with the changed cutting conditions, the actual chip thickness will be
 Doubled Quadrupled Halved Unchanged
14. The device which is fastened to the headstock end of the work to be done between the centers is called a
 Face plate Lathe dog Chuck Steady rest
15. In which of the following operation of a lathe, spindle speed will be minimum.
 Knurling Threading Taper turning Parting Off
16. In blanking _____ stresses are induced,
 Shear Tensile
 Compression Both Tension and compression
17. The lathe centers are provided with standard taper known as
 Morse taper Chapman taper
 Seller's taper Brown and Sharpe taper
18. In which of the following resistance welding process continuous weld is produced,
 Spot welding Projection welding
 Seam welding Tag welding
19. Which of the following process uses non-consumable electrodes? ,
 TIG Welding Forward welding
 MIG welding Plasma Arc Welding
20. Capability of sand mould withstanding higher temperature without fusing is :
 Refractoriness Porosity Adhesiveness Cohesiveness

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07 DEC 2023

Level : B.E.
Year : II
Time : 2 hrs. 30 mins.

Course : MEEG 217
Semester : I
F. M. : 55

SECTION "B"
[5Q × 11 = 55 marks]

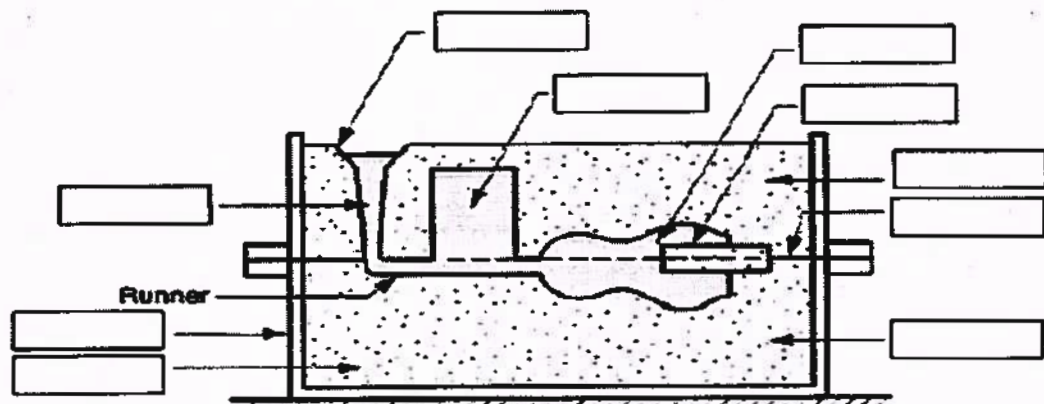
Attempt *ALL* questions. Assume data if missing.

1.
 - a. Describe Engineering product design process in detail. [5]
 - b. On value addition of a product from raw to final production, value addition is done by various manufacturing process, describe Material removal, addition and deformation process in detail with suitable examples. [3]
 - c. What is work (strain) hardening describe with graphical illustrations. [3]

2.
 - a. Calculate the angle at which the compound rest would be swiveled for cutting a taper on a work piece having a length of 180 mm and outside diameter 90 mm. The smallest diameter on the tapered end of the rod should be 60 mm and the required length of the tapered portion is 100 mm. [3]
 - b. Describe the differences between cold, warm and hot forging of metals. [5]
 - c. What is the difference between extrusion and drawing? [3]

3.
 - a. How can you tell whether a certain part is forged or cast? [4]
 - b. A plate of copper (the melting point is 1080°C) is rolled at the temperature of 500°C. Determine whether the process is cold rolling or hot rolling. [3]
 - c. Explain why cold extrusion is an important manufacturing process. Is lubrication necessary in extrusion? If so, why? [4]

4.
 - a. In sand casting process the sand must have characteristic of flow ability, green strength and permeability. Explain the meaning and importance of those characteristics. [5]
 - b. Copy the figure below and complete the sand casting nomenclature. [3]



- c. What are the consideration on riser design in sand casting mould? [3]

5.

- a. What is the function of lubricants in metal forming? What are the considerations in choosing a lubricant for a metal forming process? [4]
- b. What are the Properties of moulding sand? Describe the cooling and solidification effect on pure metal and alloy with labeled diagram and graphical representation? [5]
- c. State the disadvantages to pouring liquid metal either very slowly or too quickly in sand casting operation. [2]