KATHMANDU UNIVERSITY
End Semester Examination [C]
July, 2017

Marks scored:

Level : B.E.
Year : II

Course : MEEG 217
Semester : I

Exam Roll No. :

Time: 30 mins.

F. M. : 20

Registration No.:

Date JUL 1 8 2017

SECTION "A"
[20 Q × 1=20 marks]

Choose the most appropriate answer and mark [X].

1. Acetylene gas is stored in cylinders in
[ ] Solid form [ ] Gaseous form [ ] Liquid form [ ] Any one of these

2. Which of the following methods can be used for manufacturing 2 meter long seamless metallic tubes?
[ ] Drawing [ ] Extrusion [ ] Rolling [ ] Extrusion and rolling

3. In a four high rolling mill, the diameter of backing up rolls is _____ the diameter of working rolls.
[ ] Equal to [ ] Smaller than [ ] Larger than [ ] None of these

4. The tolerance produced by shell moulding process of casting is
[ ] +0.05 mm [ ] ±0.2 mm [ ] +0.5 mm [ ] ±1 mm

5. Green sand is a mixture of
[ ] 30% sand and 70% clay [ ] 50% sand and 50% clay
[ ] 70% sand and 30% clay [ ] 90% sand and 10% clay

6. In TIG arc welding, the welding zone is shielded by an atmosphere of
[ ] Helium gas [ ] Argon gas [ ] Either (A) or (B) [ ] None of these

7. Spot welding is used for welding
[ ] Lap joints in plates having 0.025 mm to 1.25 mm thickness
[ ] Lap joints in plates having thickness above 3 mm
[ ] Butt joints in plates having 0.025 mm to 1.25 mm thickness
[ ] Butt joints in plates having thickness above 3 mm

8. The centrifugal casting method, is used for casting articles of
[ ] Symmetrical shape about vertical axis [ ] Symmetrical shape about horizontal axis
[ ] Irregular shape [ ] Nonferrous metal only

9. The process extensively used for making bolts and nuts is
[ ] Hot piercing [ ] Extrusion [ ] Cold peening [ ] Cold heading

10. The work or surface speed for cylindrical grinding varies from
[ ] 5 to 10 m/min [ ] 10 to 20 m/min [ ] 20 to 30 m/min [ ] 40 to 60 m/min

11. A broach has
[ ] Roughing teeth
[ ] Semi-finishing teeth
[ ] Finishing teeth
[ ] All of these

12. The angle made by the face of the tool and the plane parallel to the base of cutting tool is called
[ ] Rake angle [ ] Cutting angle [ ] Clearance angle [ ] Lip angle

13. The tool made of cemented carbide wear out faster at
[ ] Slow speeds [ ] Medium speeds [ ] Fast speeds [ ] Very fast speeds

14. Which of the following tool is used for turning?
[ ] Multi point cutting tool
[ ] Single point cutting tool
[ ] Hand tool
[ ] End cutting tool

15. A tool has a life of 9 min when cutting at 250 m/min. Calculate the cutting speed for the same tool to have a tool life of 160 min. Take Taylor tool life parameter n=0.22.
[ ] 133 m/min [ ] 153 m/min [ ] 163 m/min [ ] 173 m/min

16. Tool life of 9 min was obtained during straight turning of a 24 mm diameter steel bar at 300 rpm with HSS tool. When the same bar was turned at 250 rpm, the tool life increased to 48.5 min. What will be the tool life at a speed of 280 rpm?
[ ] 13 min [ ] 17 min [ ] 21 min [ ] 27 min

17. A mild steel work piece is being machined by two different tools A and B under identical machining conditions. The tool life equations for these tools are: For tool A: $VT^{0.32}=42.5$ & For tool B: $VT^{0.45}=88.6$ Where V and T are in m/sec and sec respectively. Determine the cutting speed above which tool B will give better tool life.
[ ] 1 m/sec [ ] 3 m/sec [ ] 5 m /sec [ ] 7 m/sec

18. Knurling is an operation of
[ ] cutting smooth collars
[ ] under cutting
[ ] roughing the surface for hand grip
[ ] none of the above

19. Counter boring is the operation of
[ ] enlarging the end of a hole cylindrically
[ ] cone-shaped enlargement of the end of a hole
[ ] smoothing and squaring the surface around a hole
[ ] sizing and finishing a hole

20. A connecting rod is made by
[ ] casting [ ] drawing [ ] forging [ ] extrusion

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SECTION "B"

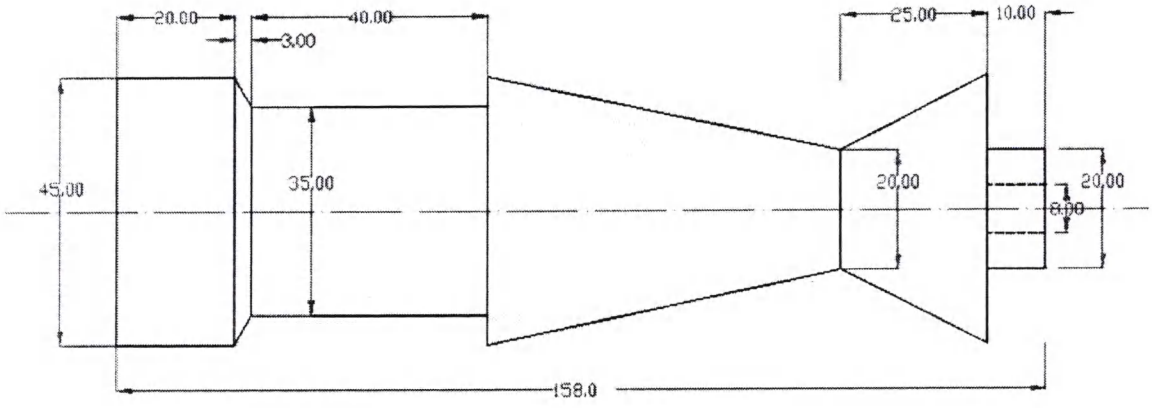
Attempt *ALL* questions. Supply figures wherever necessary. Assume data, if missing.

1. Describe the various kinds of pattern in use. What are the allowances provided when making a pattern? How does the pattern differ from casting required? [4]

2. Write short notes on *ANY THREE* of following: [2×3=6]
   a) Soldering
   b) Brazing
   c) Centrifugal casting
   d) Die casting process

3. What are the main ingredients of molding sand? List the important properties of molding sand. [4]

4. A 200mm long mild steel rod of dia.50mm is to be machined to generate the shape with the dimensions as given in the figure below. How do you prepare the work piece on the lathe? Write down in detail the process with required calculations involved in machining the rod in a speed lathe. [8]



5. Explain with neat sketch the features and uses of neutral, reducing and oxidizing flames in case of oxy-acetylene gas welding? [4]

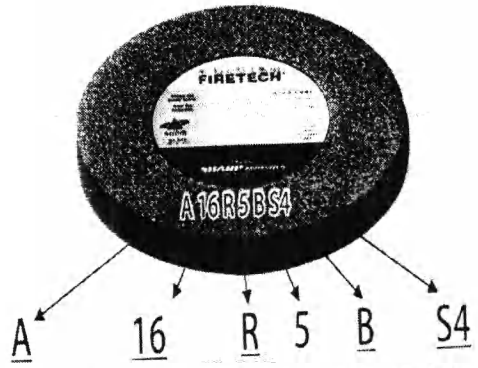
6. How is an arc obtained in arc welding? What is the different power sources used in the welding? What are the limitations and advantages of each. [5]

7. With the help of schematic sketch, describe the basic working principle milling machine. Differentiate between up-milling and down-milling. [5]

8. What is Extrusion? Differentiate between forward and backward extrusion process with suitable sketches. [4]

9. A work piece of 300 mm diameter and 600 mm length is to be turned down tp 282 mm for the entire length. The suggested feed is 1.2 mm/revolution and the cutting speed is 162 m/min. The maximum allowable depth of cut is 4.5 mm. Calculate the following:
(i) Spindle r.p.m.
(ii) Feed speed.
(iii) Material removal rate.
(iv) Cutting time. [4]

10. Classify types of Grinding Machine according to the quality of surface finish & type of surface to be ground. List the composition of wheel material. Name the have listed marking system listed by manufacturers for the figure shown below of Grinding wheel. [2+2+2=6]



11. Figure below shown is Tool Geometry of Single point (Right hand) cutting tool. Name the different angles of it. [5]