Scheme – G

Sample Question Paper

Course Name : Diploma in Automobile Engineering

Course Code : AE

Semester : Third **17306**

Subject Title : Materials and Manufacturing Processes

Marks : 100 **Time: 3Hrs**

Instructions:

1. All questions are compulsory.
2. Illustrate your answers with neat sketches wherever necessary.
3. Figures to the right indicate full marks.
4. Assume suitable data if necessary.
5. Preferably, write the answers in sequential order.

Q.1A). Attempt any SIX of following **12 Marks**

a) State any four types of engineering materials.
b) What do you mean by C.I? Give one example with its composition.
c) State two engineering applications of Brass and Aluminum
d) What is 'Duralumin'? Where is it used?
e) What is thermosetting plastic?
f) What are basic types of rubber? Give one application of each.
g) State any two properties of Polypropylene.
h) Give two different properties of Ceramic materials and two applications in the industry

Q.2B) Attempt any TWO of following **08 Marks**

a) What is Plain carbon steel? State its types and composition of any one and also state where it is used.
b) What are different alloys of Copper? State its important characteristics? Discuss any two in brief.
c) What are properties of Thermoplastics? Explain any two in brief.

Q.2 Attempt any FOUR of following **16 Marks**

a) What is Phase-transformation diagram? What information it gives? Explain with sketch
b) What are different Heat treatment processes? State any four general purposes of heat treatment.
c) What is Annealing? Give its two main purposes
d) What is case Carburizing? Give four applications of case carburizing.
e) What are different types of foundries? Explain one in brief

f) What is Pattern? Why is it required?

Q.3 Attempt any FOUR of following 16 Marks

1. Sketch any two types of Patterns and explain it in brief
2. What are different pattern materials? State any four factors for the selection of pattern material.
3. Draw any two moulding tool with simple sketch and explain its use
4. What are different types of moulding sands? Explain any one type of sand in brief
5. What are different moulding processes? Explain any one in detail
6. What is Pressure die casting? What are its types? Explain any one with sketch

Q.4 Attempt any FOUR of following 16 Marks

1. What is purpose of Gating System in case of casting? Explain with sketch
2. Give any two defects in casting and explain why they occur and remedies to avoid them
3. What are different types of chips formed during machining? explain any one with sketch
4. What is orthogonal cutting? Explain with sketch and give example of orthogonal cutting.
5. What are different types of tool materials? State their specific use.
6. What are different types of cutting fluid? State any four properties of cutting fluid

Q.5 Attempt any FOUR of following 16 Marks

1. You are going to machine stainless steel on lathe. Which type of tool material you will select considering following parameters i) surface finish ii) ease in machining iii) long life of tool
2. How lathe machines are classified? What is working principle of lathe?
3. Draw a neat sketch of three jaw chuck and explain why is it more convenient than four jaw chuck
4. State any four accessories used on lathe? Explain with neat sketch use of faceplate
5. What are different operations performed on lathe? Give any four and explain one with neat sketch.
6. How drilling machines are classified? Explain drilling operation principle in brief.

Q.6 Attempt any FOUR of following 16 Marks

1. Draw neat sketch of bench drilling machine and name its parts. Write function of any two part in brief
2. What is the working principle of milling machine? Explain with neat sketch
3. Draw a neat sketch of column and knee type milling machine and explain function of any two parts in brief
4. What is plain milling? Which cutters are generally used in plain milling?
5. State any four different types of milling cutters and Draw a sketch of any one and give its application.
6. You are going to carry following operations on milling give which cutter you will use for them. a) key way b) slot c) gear tooth d) rounding of corner