(b) What are the basic requirements of tool materials in EDM process? Name any four tool materials with their specific applications. Also explain the application of the following electrode material in (Electric Discharge Machining) EDM?

(i) Copper.

(ii) Graphite. (10)

7. (a) Which are the seven basis elements of work piece geometry that gauges are design to check? (5)

(b) With the help of a neat sketch describe construction and working of the coordinate measuring machine (CMM)? (5)

(c) Explain the method of AJM with help of schematic diagram. (5)

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August/September 2022

B.Tech. (ME) VI SEMESTER

Manufacturing Technology (PCC-ME-304)

Time : 3 Hours] [Max. Marks : 75

Instructions :

1. *It is compulsory to answer all the questions (1.5 marks each) of Part-A in short.*
2. *Answer any four questions from Part -B in detail.*
3. *Different sub-parts of a question are to be attempted adjacent to each other.*

PART-A

1. (a) What are the economic aspects of the use of a fixture? (1.5)

(b) What is meant by complete location? (1.5)

(c) What is the advantage of thumb jigs? (1.5)

(d) What is the rule of 10 to 1? (1.5)

(e) Write the Taylor's principle as applied to the design of limit gauges? (1.5)

(f) Define the term "Mixing ratio". (1.5)

(g) Distinguish between straightness and flatness. (1.5)

(h) What is the significance of interchangeability in manufacturing and assembly. (1.5)

(i) Explain the reasons why the unconventional machining processes are used. (1.5)

(j) Give the applications of water jet machining (WJM). (1.5)

PART-B

2. (a) How does the degree of roughness determine whether a surface is fiat, circular or irregular? (5)

(b) Locate and clamp the work piece shown in Fig. 1 use the holes as locating points. (10)

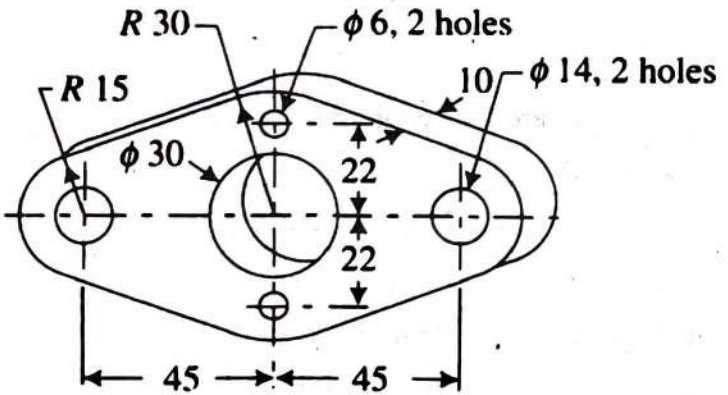

Fig-1

3. (a) Bring out the salient features of Indian standard and ISO systems of limits and fits. (5)

(b) Determine and sketch the limits of tolerance and allowance for a 45 mm shaft and hole pair designated H7–d8. The basic size lies in the range of 30-50 mm. The multipliers for grades 7 and 8 are 16 and 25 respectively. The fundamental deviation for 'd' shaft is $(-16\ D^{0.44})$ microns. (10)

4. (a) Write the 10 principle of material handling given by College Industry Council on Material Handling Education (CICMHE). (5)

(b) What do you mean by selective assembly? Explain the three general types of fits with appropriate examples? (10)

5. (a) Explain the need for the development of Unconventional Machining Process by considering any *four* simple cases of your own interest. (5)

(b) Write the names of various elements of Abrasive Water Jet Machining (AWJM) and explain them in brief. (10)

6. (a) Explain the different types of control circuits used in EDM process. (5)