Ex/Met/T/423/2018

B.E.Metallurgical and Material Engineering Fourth year 2nd Semester Exam-2018

Subject: Metal Joining and Powder Metallurgy

Time : Three Hours **Full Marks: 100**

Answer any one from (a) and (b)

1. 10

(a) Define "welding" and write the different advantages and disadvantages of welding process.

(b). Explain the conditions for obtaining satisfactory welds . 20

2. Explain SMAW process with schematic diagram. Write the various advantages and disadvantages of the above process with applications.

Answer any two(2) from (a),(b) and (c). 10+10

3. (a). What is the effect of AC and DC in arc welding?

(b). What is coating on electrode and write its functions?

©. Write the importance of welding and its applications

Answer any one(1) from (a) and (b). 6+4

4. (a). Explain Thermit welding process. State the advantages and limitations of thermit welding with its specific applications.

(b) Describe in brief the equipment required for oxy-acetylene welding. How are oxidizing, reducing and neutral flames obtained in a welding torch.

[Turn over

5. Answer any two(2) from (a), (b) and (c) 7+5+8

(a). i). State the various factors which influence the strength of weld joint in solid state welding

ii). State the principle of Spot welding?

iii). Explain Seam welding processes 12+8

(b). i). Write and explain the various powder production methods.

ii). A dispersion-strengthened SAP aluminium alloy is produced from metal powder particles having a diameter of 0.01 mm. The Al_2O_3 film on the surface of each particle is spheroidized during the powder metallurgy manufacturing process. If the SAP contains 15vol% Al_2O_3. Calculate the original thickness of the oxide film on the aluminium powder particles.

©. i). State the various defects which usually appear in fusion weld with schematic diagram . 10+10

ii). Write the various causes of weld defects and their remedies