BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: BE **SEMESTER :VII**
BRANCH: PRODUCTION **SESSION : MO/17**

SUBJECT: PE7009 ADVANCED WELDING TECHNOLOGY

TIME: 3. Hours **FULL MARKS: 60**

INSTRUCTIONS:
1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a) What is meant by cold welding? Which materials can be welded by cold welding? [2]
Q.1(b) Differentiate between friction welding and inertia welding. [4]
Q.1(c) With a neat sketch, explain ultrasonic welding set-up. Mention its applications. [6]

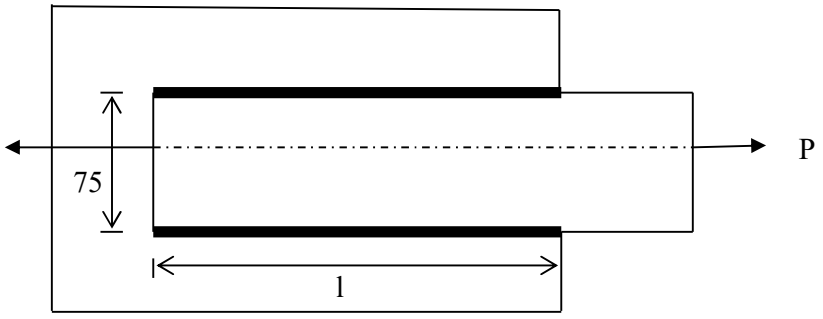
Q.2(a) Why vacuum is required in electron bean welding? [2]
Q.2(b) Sketch and label the major components of an electron beam gun. [4]
Q.2(c) What are the different forms of lasers? Explain the principle of operation in laser beam welding. [6]

Q.3(a) What are the process parameters in underwater welding? [2]
Q.3(b) Discuss the problems associated with underwater welding. [4]
Q.3(c) Explain in brief, Dry underwater welding processes. [6]

Q.4(a) Why residual stresses generate in welds? [2]
Q.4(b) How residual welding stresses can be controlled? [4]
Q.4(c) Discuss the effect of metal properties on welding distortion. [6]

Q.5(a) Define weldability. [2]
Q.5(b) What are difficulties in welding of malleable cast iron? [4]
Q.5(c) Compare the weldability characteristics of austenitic, ferritic and martensitic stainless steels. [6]

Q.6(a) What are the types of loading on welded joints? [2]
Q.6(b) State the factors those influences the selection of suitable joints for a particular type of weldment. [4]
Q.6(c) A plate 75 mm wide and 10 mm thick is joined with another steel plate by means of single transverse and double parallel fillet welds as shown in figure. The joint is subjected to a maximum tensile force of 55 kN. The permissible tensile and shear stresses in the weld material are 70 and 50 N/mm^2. Determine the required length of each parallel fillet weld. [6]



Q.7(a) What is flexible automated welding? [2]
Q.7(b) What are the basic functions of a welder those can be automated? [4]
Q.7(c) Explain and distinguish between welding mechanization and welding automation. [6]

:::::08-12-2017 M:::::