Exam No: _____

GANPAT UNIVERSITY

M. TECH SEM- II (AMS)

CBCS (NEW) REGULAR EXAMINATION APRIL - JUNE 2017

3ME203 ADVANCED MANUFACTURING PROCESS-II

MAX. TIME: 3 HRS **MAX. MARKS: 60**

Instructions: (1) This Question paper has two sections. Attempt each section in separate answer book.
(2) Figures on right indicate marks.
(3) Be precise and to the point in answering the descriptive questions.
(4) Assume suitable data if necessary.

Section: I

Q.1 **[10]**

[A] Differentiate between green sand moulding and dry sand moulding process. Also discuss causes and remedies of sand casting. (4)

[B] What are pattern allowances? Discuss in detail. Also discuss importance of selection of pattern materials. (4)

[C] Explain match plate pattern in detail. (2)

OR

Q.1 **[10]**

[A] In a simple vertical gating of a green sand mould, the metal flowrate required at the top section of the sprue is 1200 cm^3/sec. The area of cross section of the down sprue is 4.8 cm^2. The height of the liquid metal in the pouring basin is 7.2 cm. What is the length of the sprue that meet the metal flow requirement? (4)

[B] Differentiate between top, bottom and parting line gates. Also discuss the importance of gating ratio with respect to gating design of casting. (4)

[C] The volume of an aluminum casting is 3600 cm^3. The volume shrinkage of Al during solidification is 6.6%. How much minimum volume of riser required for Al casting? (2)

Q.2 **[10]**

[A] Explain the functions of gating system and risering in details. (4)

[B] What is solidification? Explain progressive and directional solidification. Explain importance of Chills and Padding in casting. (4)

[C] What is air aspiration? Explain preventive measures for it. (2)

OR

Q.2 **[10]**

[A] Explain investment casting process along with advantages & limitation of process. (4)

[B] Differentiate between hot chamber die casting and cold chamber die casting process along with advantages and limitations. (4)

[C] Explain any two major defects of die casting with causes and remedies. (2)

Q.3 **[10]**

[A] Explain degassing in detail for aluminum alloy casting. (4)

[B] Explain importance of grain refinement in case of Al-Si alloy casting. (4)

[C] Explain importance of modification in case of Al-Si alloy casting. (2)

Section: II

Q.4 **[10]**

[A] Discuss the effect of voltage, current, polarity and traveling speed on weld profile in case of shielded metal arc welding. (5)

[B] Enlist the functionality of flux during welding. Give three reasons why damp flux coated electrodes should not be used for welding of steel. (5)

OR

Q.4 **[10]**

[A] Describe principle, working and application of Gas Tungsten Arc Welding. What are the possible difficulties in it and how it can be dealt? (5)

[B] Define weldability of material and discuss the factors on which weldability depends. (5)

Q.5 **[10]**

[A] a) Enlist various testing methods used in welding and describe the any two methods with neat sketch. State the limitations of each. (5)

b) With the aid of neat sketch, show heat affected zone and respective mechanical and metallurgical property in welded joint.

[B] Explain, with the aid of sketch, how the level of dilution of a butt welded joint may be determined. State the importance and application of dilution ratio. (5)

OR

Q.5 **[10]**

[A] Discuss the general defects observed during welding with neat sketch. Also suggest remedies to avoid it. (5)

[B] a) Enlist and explain the various parameters which has to be consider while selecting power source for any welding process. (5)

b) Give three probable causes of poor quality resistance spot welds.

Q.6 **[10]**

[A] How does solid state welding differs from fusion welding? Explain Friction Stir Welding process with its application & limitations. (4)

[B] Explain the term 'transferred modes' and 'non-transferred modes' used in plasma Arc welding. What is 'Plasma'? Describe plasma arc welding. (4)

[C] A heat source transfers 3000 W to the surface of a metal part. The heat impinges the surface in a circular area, with intensities varying inside the circle. The distribution is as follows: 70% of the power is transferred within a circle of diameter=5 mm, and 90%is transferred within a concentric circle of diameter=12 mm. What are the power densities in (a) the 5-mm diameter inner circle and (b) the 12-mm-diameter ring that lies around the inner circle? (2)

End of Paper