14115

17306

3 Hours/100 Marks

Seat No. | | | | | | | | |

***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) **Use** of non-programmable Electronic Pocket Calculator is **permissible.***

MARKS

1. A) Attempt **any six** of the following : **12**
   a) What is Cast Iron ? State its two applications.
   b) List any four characteristics of ferrous metals.
   c) What is effect of Nickel and Cromium as alloying elements ?
   d) State composition of tool steels.
   e) State any four applications of plain carbon steel.
   f) What is stainless steel ? Where it is used ?
   g) List any four advantages of alloy steel.
   h) Give chemical composition of gun metal.

   B) Attempt **any two** of the following : **8**
   a) What is copper ? State its properties and applications.
   b) Explain what is y-alloy and duralium with their chemical composition.
   c) What is thermoplastic ? State its properties.

2. Attempt **any four** of the following : **16**
   a) Draw neat labelled sketch of Iron and Iron-carbide phase equilibrium diagram.
   b) Explain flame hardening.
   c) Define annealing. State its objectives.
   d) What is tempering ? Why it is necessary ?
   e) What is case carburizing ? State its four applications.
   f) State advantages and disadvantages of foundry process.

P.T.O.

MARKS

3. Attempt **any four** of the following : **16**
   a) What are different types of foundries and explain one in brief.
   b) Draw neat sketch of any two moulding tools and state their use.
   c) List various pattern materials. State any four factors which governs selection of pattern materials.
   d) State properties of moulding sand. Explain any two properties of sand.
   e) Explain with neat sketch any two types of cores used in moulding.
   f) State any eight casting defects. State remedies of any two defects.

4. Attempt **any four** of the following : **16**
   a) Explain with neat diagram what is centrifugal casting.
   b) What is riser in sand casting ? State its advantages.
   c) Give classification of moulding processes.
   d) Differentiate between orthogonal and oblique cutting.
   e) State type of chips formed during machining. With neat sketch explain any one type.
   f) What is tool signature ?

5. Attempt **any four** of the following : **16**
   a) What are purposes of cutting fluids ? State types of cutting fluids.
   b) Give classification of lathes.
   c) Explain terms used in lathe specifications.
   d) Explain with neat diagram any two lathe operations.
   e) What is mandrel ? State its types.
   f) State types of drilling machines.

6. Attempt **any four** of the following : **16**
   a) Draw neat labelled diagram of bench drilling machine. State function of any two parts.
   b) Draw neat labelled diagram of twist drill.
   c) With neat diagram explain working principle of milling machine.
   d) Classify standard milling cutters.
   e) Explain what is gang milling ?
   f) Explain keyway milling operation.
