17306

15162

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) Mobile Phone, Pager and any other Electronic Communication devices are ***not permissible*** *in Examination Hall.*

Marks

1. A) Attempt **any six** of the following : **12**
a) State any four properties of tool steel material.
b) Explain the meaning of C.I. Give one example with its composition.
c) State two engineering applications of aluminum and copper.
d) What is 'Y' alloy and where is it used ?
e) What is thermoplastics ? State types of thermoplastics.
f) What is ceramic ? Give its properties.
g) State any four non-metalic materials.
h) What is phase-transformation diagram ?

B) Attempt **any two** of the following : **8**
a) How engineering materials are classified ? Give one example of each.
b) What are different alloys of copper ? State its important properties.
c) Define Rubber. Give its types, properties and applications.

2. Attempt **any four** of the following : **16**
a) Draw iron-carbon equilibrium diagram and label it.
b) Define heat treatment. State the any three purposes of heat treatment process.
c) Differentiate between annealing with normalising.
d) Explain the principle of carburizing with its automobile components application.
e) What are different types of foundries ? Explain one in brief.
f) Explain types of pattern (any four).

3. Attempt **any four** of the following : **16**
a) What are the common allowances provided on pattern and describe draft allowance with neat sketch.
b) State the common materials used for pattern-making and how they are selected ?
c) List different tools and equipments used in foundries and its application.

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Marks

d) Explain properties of moulding sand.

e) State meaning of coreprint and core-boxes used in foundry.

f) Draw a neat sketch of Gating System and label it.

4. Attempt **any four** of the following : **16**

a) What are the common defects of casting ? State their causes and remedies.

b) State the advantages of shell moulding process.

c) Differentiate between orthogonal and oblique cutting. (any four).

d) What are different types of chips formed during machining ? Explain any one with sketch.

e) Why cemented carbide is considered as an useful tool material ?

f) What are different types of cutting fluid ? State any four properties of cutting fluid.

5. Attempt **any four** of the following : **16**

a) Classify the following as single point cutting tool or multi-point cutting tool.
   i) Turning tool ii) Reamer iii) End mill cutters iv) Boring tool

b) How lathe machines are classified ? Write a name of parts used in lathe machines. (any four).

c) How a Lathe machine is specified ?

d) Why chucks are used ? List various types chucks used in Lathe. Describe any one in brief.

e) Draw a neat sketch of Taper turning attachment in a Lathe.

f) How drilling machines are classified ? State various operation performed on drilling machine.

6. Attempt **any four** of the following : **16**

a) Draw a neat sketch of bench drilling machine and label it.

b) Explain different operation performed in a milling machine (any four).

c) What are the different standard milling cutter ? Describe suitability of each cutter.

d) Classify milling machines and list them accordingly. How milling differs from Lathe ?

e) Draw a neat sketch of column and knee type milling machine and explain functions of any two parts in brief.

f) You are going to carry following operations on milling. Give which cutter you will use for them.
   i) Key-way milling ii) 'T' slot milling
   iii) Gear cutting iv) Rounding of corner

   Draw a neat sketch of any one milling cutter.
