22307

23242

3 Hours / 70 Marks Seat No. | | | | | | | | |

Instructions – (1) All Questions are *Compulsory.*

(2) Answer each next main Question on a new page.

(3) Illustrate your answers with neat sketches wherever necessary.

(4) Figures to the right indicate full marks.

(5) Assume suitable data, if necessary.

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

Marks

1. Attempt any FIVE of the following: **10**

a) List any four types of cast iron.

b) Enlist types of surface hardening processes.

c) State four factors on which pattern material is selected.

d) Define :

i) Depth of cut

ii) Feed

e) Write four functions of cutting fluid.

f) List operations performed on drilling machine.

g) Write any four types of lathe machines.

Marks

2. Attempt any THREE of the following: **12**

a) Distinguish between ferrous and nonferrous metals with respect to main constituents, conductivity, resistance to corrosion, machinability.

b) Draw and label Fe-C phase transformation diagram.

c) State advantages and disadvantages of pressure die casting process.

d) Explain taper turning by swivelling the compound rest method.

3. Attempt any THREE of the following: **12**

a) Describe plain carbon steel with it's composition and properties.

b) Write the procedure for heat treatment given to crank shaft with justification.

c) State the composition, properties and applications of 18 : 4 : 1 H.S.S.

d) State four allowances provided on pattern. Explain distortion allowance.

4. Attempt any THREE of the following: **12**

a) Identify the type and properties of material used for connecting rod with justification.

b) Give the reason why piston pin should be made from case hardened low carbon steel and not from fully hardened medium carbon steel.

c) State the common defects in casting. State their causes and remedies.

d) Enlist types of moulding sand and state their properties and applications.

e) State the properties and applications of aluminium alloys.

Marks

5. Attempt any TWO of the following: **12**

a) Describe the mechanism of chip formation. Enlist different types of chips formed during machining.

b) Draw neat labelled sketch of single point cutting tool with it's nomenaclature and state the meaning of single point cutting tool 0-7-6-8-15-16-0.8 according to ASA system.

c) Following operations are to be carried out on milling machine. Select the cutter used for these operations

i) Keyway

ii) Gear tooth

iii) Rounding of corner

Justify your answer.

6. Attempt any TWO of the following: **12**

a) Write the procedure of cutting threads on screw used in screw jack.

b) Draw neat sketch of bench drilling machine and name it's parts. State function of each part.

c) Explain the general steps taken for sand moulding.