314342

12526

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) Use of Non-programmable Electronic Pocket Calculator is permissible.

(7) 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 the various surface hardening processes.

b) Describe in brief Galvanizing process.

c) State the automotive applications of rubber.

d) State the advantages of CNC machine over conventional machine.

e) List the various plastic processing processes.

f) Define, home position and work piece zero.

g) Describe in brief Powder coating process.

P.T.O.

Marks

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

a) State the needs of heat treatment.

b) Describe effect of any four alloying elements on property of steel.

c) State the different types of surface cleaning process.

d) Select any two relevant heat treatment process which need to performed on gears and crankshaft, Justify your selection.

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

a) Describe the following heat treatment process

i) Annealing

ii) Hardening

b) Describe the procedure for developing part programming for CNC.

c) Select relevant surface finishing process for the given component with justification

i) Automotive body panels, metal components, decorative items

ii) Engine cylinders, hydraulic cylinders

d) Describe construction of injection moulding with help of neat label sketch.

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

a) Compare thermoplastics with thermosetting plastics.

b) Describe the working of Automatic tool changer (ATC) and Automatic pallet changer (APC).

c) Describe with the help of neat sketch the electroplating process.

d) Justify the statement, "Powder metallurgy (PM) is widely used in the automotive industry".

e) Describe the advantages and disadvantages of powder metallurgy.

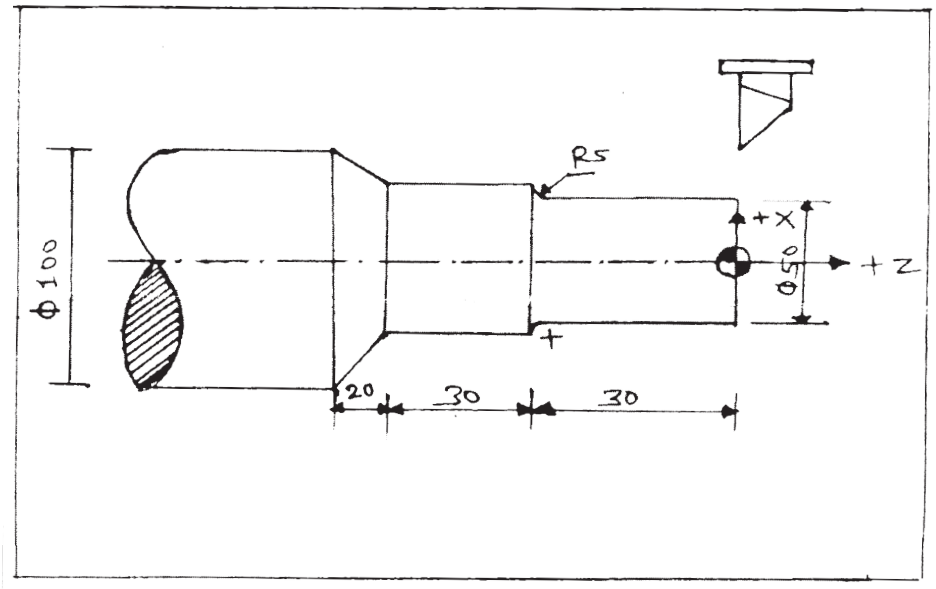
Marks

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

a) Draw neat label sketch of Iron-Iron carbide (Fe-Fe3C) equilibrium diagram.

b) Classify in detail the engineering materials. Write two examples of each type.

c) Develop a part program to manufacturer a component as shown in Fig. No.1 on a CNC lathe machine.



All dimension are in mm

Fig. No. 1

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

a) Justify the significance of following ISO codes in CNC.

i) G00

ii) G01

iii) G04

iv) M03

v) M05

vi) M06

Marks

b) Select either Glass fiber or Carbon fiber composites for the following automotive applications, Justify your selection.

i) Body panel

ii) Chassis and frame

iii) Interior components

c) Select the relevant plastic processing processes for the manufacturing of following automotive parts, Justify your selection

i) Fuel tanks, and other hollow plastic parts,

ii) Structural reinforcements, interior parts.

iii) Gaskets, seals, various molded components.