

Duration: 3 Hours

Total Marks- 80

- 1) First Question (Q.1) is Compulsory.
- 2) Attempt any 3 questions from the remaining 5 (Q.2 - Q.6) questions.
- 3) Figures to the right indicate full marks
- 4) Proportionate and labelled free-hand sketches would do

- Q. 1** Solve any **Four out of Six.** **20**
- a) Explain shell moulding process.
 - b) Explain adhesive bonding process.
 - c) Write short note defects in rolling process.
 - d) Explain Internet of Things.
 - e) Discuss Laser beam machining process.
 - f) With the help of neat sketch explain working of compound die.
- Q. 2** a) What is riser? Write the functions of risers. List types of risers and explain any one. **10**
- b) Explain working oxy-acetylene gas welding. Sketch three types of flames and write its uses. **10**
- Q. 3** a) Explain working, advantages and limitations of electro-discharge machining. **10**
- b) Define extrusion process. With the help of neat sketch write the difference between direct extrusion and indirect extrusion. **10**
- Q. 4** a) Explain construction and working of centre lathe. **10**
- b) The tool life equation for machining C40 steel with a 18:4:1 H.S.S. cutting tool at a feed of 0.2mm/min and depth of cut 2mm is given by $VT^n = C$, where n and C are constants. The following observations have been noted :
- | | | |
|----------|----|----|
| V, m/min | 25 | 35 |
| T, min | 90 | 20 |
- Calculate n and C. **10**
- Hence recommend the cutting speed for a desired tool life of 60 minutes. **10**
- Q. 5** a) Explain the various steps in powder metallurgy. **10**
- b) Write the classifications of sheet metal operations. Explain any four sheet metal operations with neat sketch. **10**
- Q. 6** Write short notes on (**Any four**) **20**
- a) Write the difference between shaper and planer.
 - b) Classify Production Processes.
 - c) Write the difference between hot working and cold working.
 - d) Laser beam machining.
 - e) Gear hobbing.
 - f) Cloud manufacturing.
