22338

21819

3 Hours / 70 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.

(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 four parts of center lathe and their functions.

b) Explain nose radius and its effects.

c) Describe specifications of drilling machine.

d) Explain slitting operation on milling machine.

e) Explain the need of balancing of grinding wheels.

f) Write two advantage of gear shaving.

g) List four applications of broaching.

Marks

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

a) A plain surface 75 mm wide and 320 mm long is to be milled on a horizontal milling machine with outer diameter 80 mm and cutting speed 40 m/min. Take feed over tooth as 0.10 mm and number of teeth on cutter as 12. Calculate machining time.

b) Describe the griding wheel dressing and truing process.

c) It is required to divide the periphery of a job into 48 equal divisions. Find the crank moment using.

Plate No I	15	16	17	18	19	20
Plate No II	21	23	27	29	31	33
Plate No III	37	39	41	43	47	49

d) A hole of 24 mm diameter and 72 mm depth is to be drilled. Consider feed as 1.2 mm/rev. and cutting speed as 50 m/min. assuming suitable tool approach and minimum travel, calculate machining time. Take work material as mild steel.

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

a) Explain the nomenclature of twist drill using neat sketch.

b) Describe the procedure of selecting grinding wheel.

c) Explain gear shaping principle with sketch.

d) Explain compound indexing method.

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

a) Differentiate between reaming and boring operation.

b) Explain universal dividing head and indexing using it.

c) Explain broach nomenclature with neat sketch.

d) Classify various broaching machines and state specifications of broaching machine.

e) Describe working of table type horizontal boring machine with simple sketch.

Marks

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

a) Find the time required for one complete cut on a piece of work 400 mm long and 40 mm diameter. The cutting speed is 40 m/min and the feed is 0.4 mm/rev.

b) State the nomenclature of standard milling cutter with sketch.

c) Recommend the grinding wheels for grinding of:

(i) Super alloys

(ii) Cast iron

(iii) Aluminium and its alloys

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

a) Explain the mechanism of metal cutting and describe effects of various cutting parameters.

b) Differentiate clearly between up milling and down milling

c) Suggest and describe the typical grinding process for grinding of printer rollers of steel.