

22338

23242

3 Hours / 70 Marks

Seat No.

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- 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) Define Lathe machine.
 - b) State the importance of material removal.
 - c) List the operations performed on drilling machine.
 - d) Define milling machine.
 - e) Draw the following grinding wheel shapes.
 - i) Straight grinding wheel
 - ii) Dish cup grinding wheel
 - f) Draw a neat sketch of gear hob.
 - g) List the operations carried out on boring machine.

P.T.O.

- 2. Attempt any THREE of the following:** **12**
- a) A plain surface 30 mm wide and 210 mm long is to be milled on a horizontal milling machine with cutter diameter 90 mm and cutting speed 60 m/min. Take feed per tooth as 0.10 mm and number of teeth on cutter as 14. Calculate machining time.
 - b) Describe mechanism of metal cutting.
 - c) Explain gear shaving with its advantages.
 - d) A hole of 45 mm diameter and 80 mm depth is to be drilled. Consider feed as 1.6 mm/rev and cutting speed as 60 m/min. assuming suitable tool approach and lower travel, calculate machining time.
- 3. Attempt any THREE of the following:** **12**
- a) Describe the nomenclature of twist drill with neat sketch.
 - b) Describe grinding wheel selection procedure.
 - c) Explain compound indexing with suitable example.
 - d) Compare simple indexing and compound indexing.
- 4. Attempt any THREE of the following:** **12**
- a) Classify the drilling machine and discuss the specifications of drilling machine.
 - b) Explain universal dividing head with neat sketch.
 - c) Explain broach nomenclature with suitable sketch.
 - d) Describe the basic parts of horizontal broaching machine with its functions.
 - e) Compare pull broach and push broach.

- 5. Attempt any TWO of the following:** **12**
- a) Find the time required for one complete cut on a workpiece 625 mm long and 55 mm diameter. The cutting speed is 40 m/min and feed is 0.7 mm/rev.
 - b) Describe the suitable milling process to convert a batch of circular plates into hexagonal shape.
 - c) Explain working of Centerless grinding with its advantages and disadvantages.
- 6. Attempt any TWO of the following:** **12**
- a) Explain the following Lathe operations with neat sketch.
 - i) Taper turning using compound slide.
 - ii) Grooving
 - b) Explain with neat sketch following operations.
 - i) Up milling
 - ii) Down milling
 - c) Compare dressing and truing of grinding wheel.
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