

Total No. of Questions : 12]

SEAT No. :

P1079

[4659]-153

[Total No. of Pages : 4

**B.E.(Production Sandwich)
ADVANCED PRODUCTION TECHNOLOGY
(2008 Pattern)(Semester-I)**

Time : 3 Hours]

[Max. Marks : 100

Instructions to the candidates:

- 1) *Answers to the two sections should be written in separate answer books.*
- 2) *Answer any three questions from each section.*
- 3) *Neat diagrams must be drawn wherever necessary.*
- 4) *Figures to the right side indicate full marks.*
- 5) *Use of Calculator is allowed.*
- 6) *Assume suitable data if necessary.*

SECTION-I

- Q1) a)** Discuss following features of high speed machining: **[6]**
- i) Cutting tool technology.
 - ii) Type of machining operations.
- b) Discuss criteria of High speed/High velocity machining for machine spindle, tool interface cutting tools. **[6]**
- c) Compare tool life for dry and wet drilling on different workpiece materials. **[4]**

OR

- Q2) a)** Explain in detail physical aspects and application of Hard part machining. **[8]**
- b) Explain factors that need to be consider for Dry machining, Near Dry (MQL) Machining, flood cooling using circular supplying system. **[4]**
 - c) Explain characteristics and application of Minimal Quantity Lubrication [MQL]. **[4]**

P.T.O.

Q3) Explain with neat sketch following fine finishing processes: [16]

- a) Abrasive Flow Machining (AFM)
- b) Magnetic Abrasive Finishing (MAF)

OR

Q4) a) Explain with neat sketch magnetic float polishing (MFP). [8]

b) Explain 'Nano Metrology'. [8]

Q5) a) Explain Online/ In-process and online/post-process and off-line inspection methods. [10]

b) Explain Material Resource Planning. [8]

OR

Q6) Write a short note on: [18]

- a) Part classification and coding.
- b) Production flow analysis.
- c) Cellular Manufacturing system.

SECTION-II

Q7) a) Explain frame work of Toyota Production System. [8]

b) Explain Automated Storage and Retrieval System. [8]

OR

Q8) a) Write components of AGVS, Types of AGVS, AGVS guidance system, Application of AGVS, AGVS control system. [10]

b) Explain Linear transfer mechanism and Rotary transfer mechanism. [6]

- Q9) a)** A mass of 25000 N is to be accelerated from rest to a velocity of 2.5m/s over a distance of 100 mm. Calculate the bore diameter of cylinder if coefficient of friction between load and guide is 0.2. [8]
- b) Explain with neat sketch swatch plate type pump. [8]

OR

- Q10)a)** What size of accumulator is necessary to supply 4197 cm³ of fluid in a hydraulic system of maximum operating pressure of 207 bar, which drops to minimum 103.5 bar? Assume nitrogen gas precharge of accumulator as 67 bar, obtain both Isothermal and adiabatic solution. [8]
- b) Explain with neat sketch pressure compensated vane pump. [8]

Q11)A machine slide is moved by means of a hydraulic cylinder, the motion of the cylinder is as follows: [18]

- a) Initially it moves through a distance of 200 mm against a load of 15 KN in about 3 sec.
- b) It is followed by a working stroke of 100 mm against an effective load of 40 KN. The feed rate during this part of the stroke is required to be 0.5 to 1m/min. The return stroke is to be as fast as possible.

A meter out type of circuit is used. Draw a circuit which will fulfil these requirements, select different components you have used in this circuit from the data given.

OR

Q12) Explain with neat sketch and draw pneumatic circuit by using [18]

- a) OR Gate Valve
- b) AND Gate valve

Data for Question No.11

1. Suction Strainer :

Model	Flow Capacity (/pm)
S1	38
S2	76
S3	152

2. Pressure Gauge :

Model	Range (bar)
PG1	0-25
PG2	0-40
PG3	0-100
PG4	0-160

3. Vane Pump :

Model	Delivery in /pm		
	at 0 bar	at 35 bar	at 70 bar
P1	8.5	7.1	5.3
P2	12.9	11.4	9.5
P3	17.6	16.1	14.3
P4	25.1	23.8	22.4
P5	39.0	37.5	35.6

4. Relief Valve :

Model	Flow Capacity (/pm)	Max Working Pressure & bar
R1	11.4	70
R2	19	210
R3	30.4	70
R4	57	105

5. Flow Control Valve :

Model	Working Pressure (bar)	Flow Range (/pm)
F1	70	0-4.1
F2	105	0-4.9
F3	105	0-16.3
F4	70	0-24.6

6. Directional Control Valve :

Model	Max Working Pressure (bar)	Flow Capacity (/pm)
D1	250	19
D2	210	38
D3	210	76

7. Check Valve :

Model	Max Working Pressure (bar)	Flow Capacity (/pm)
C1	210	15.2
C2	210	30.4
C3	210	76

8. Pilot Operated Check Valve :

Model	Max Working Pressure (bar)	Flow Capacity (/pm)
PO1	210	19
PO2	210	38
PO3	210	76

9. Cylinder-(Max Working Pressure-210 bar) :

Model	Bore dia. (mm)	Rod dia (mm)
A1	25	12.5
A2	40	16
A3	50	35
A4	75	45
A5	100	50

10. Oil Reservoirs :

Model	Capacity (litres)
T1	40
T2	100
T3	250
T4	400
T5	600

