UNIVERSITY OF PUNE
[4364]-90
B. E. (Production)
Die and Mould Design
(2003 Pattern)

[Total No. of Questions : 12] **[Total No. of Printed Pages :4]**
[Time : 3 Hours] **[Max. Marks : 100]**

Instructions :

(1) From Section-I solve Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6 and from Section-II Q.7 or Q.8, Q.9 or Q.10, Q.11 or Q. 12.
*(2) Answers to the **two sections** should be written in **separate answer-books**.*
(3) Neat diagram must be drawn wherever necessary.
(4) Figures to the right indicate full marks.
(5) Use of electronic pocket calculator is allowed.
(6) Assume suitable data, if necessary.

SECTION-I

UNIT-I

Q1.

a) Explain with neat sketch types of rolling mill. [8]
b) What are the problems in rolling? Explain its effect on rolling process. [6]

OR

Q2.

a) Write short note on any three. [8]
   1) Tube Extrusion.
   2) Reduction, Extrusion ration, CCD and Shape factor in extrusion
b) Determine the maximum reduction possible in wire drawing, tube drawing and strip drawing assuming following data,
   Die angle = 30°
   Plug angle = 20°
   Coefficient of friction, $\mu = 0.1$ [8]

UNIT-II

Q3.

a) Explain different types of die set with neat sketch. [8]
b) Explain types of preseason the basis of types of frame used. [8]

OR

Q4.

a) What is stripper? What are the functions of stripper? Explain with neat sketch type of stripper used in press work. [8]
b) Explain difference between compound and combination die with neat sketch. [8]

UNIT-III

Q5. Design simple die for the component shown in fig.1 [16]

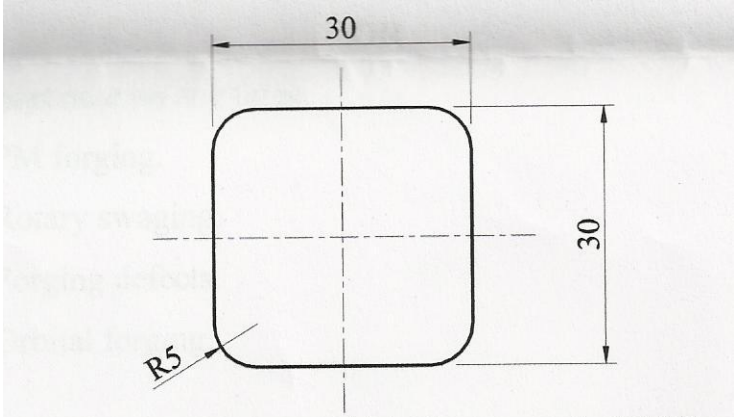

Fig.1:-- Material: 1mm thick Shear strength: 280MPa

Fig. 1 Material: 1mm thick shear strength: 280MPa

OR

Q6. Progressive die design.

1) Draw assembly drawing with locating element of a progressive die for the component shown in fig 2. [8]
2) Draw strip layout and find out material utilization. [5]
3) Find out cutting force at each station and press tonnage. [5]

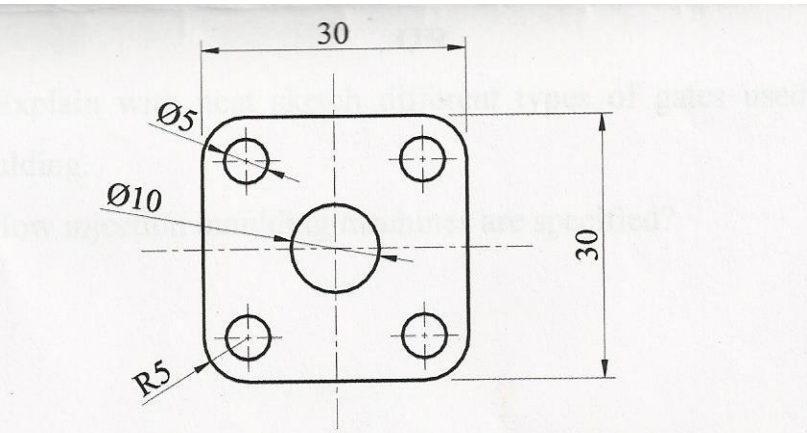

Fig.2:-- Material: 1mm thick Shear strength: 280MPa

Fig. 2 Material: 1mm thick shear strength: 280MPa

SECTION-II

UNIT IV

Q7.

a) Explain the working of Pneumatic hammer and give its advantages and disadvantages. [7]
b) What do you mean by fullering, edging, blocking and trimming in forging? [9]

OR

Q8. Write short note on any three. [16]

1) PM forging. 2) Rotary swaging.
3)Forging defects. 4) Orbital forging.

Unit V

Q9.

a) Explain with neat sketch [16]
   1) Compression moulding
   2) Thermoforming
   3) Rotational moulding
   4) Injection moulding

OR

Q10.

a) Explain with neat sketch different types of gates used in injection moulding. [10]

b) How injection moulding machines are specified? [6]

Q11. Design a single-impression injection mould for the component shown in fig.3. [18]

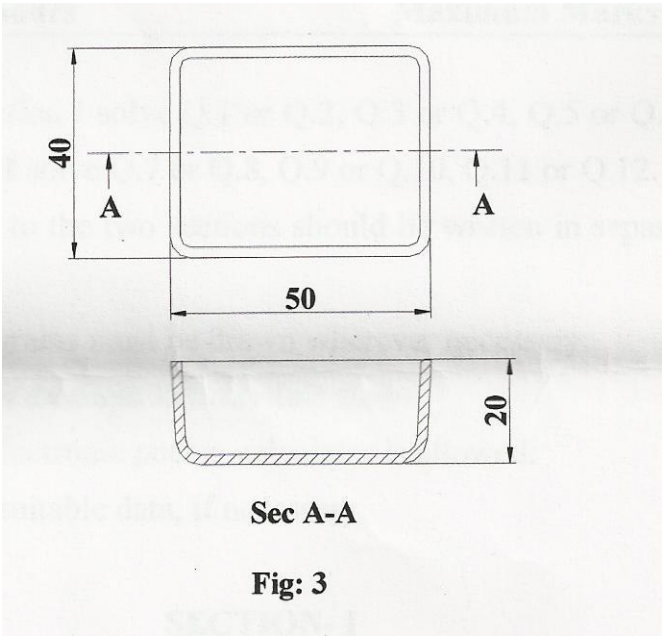

Fig: 3

Fig. 3 Sec A-A

Q12.

a) Explain different methods of mould cooling in injection moulding [10]

b) Write short note on CAD application in mould design [8]

UNIVERSITY OF PUNE

[4364]-86

B.E. (BE Production S/W)

(Semester - I) Examination - 2013

Operations Research and Management

(2003 Pattern)

Total No. of Questions : 12 **[Total No. of Printed Pages :7]**

[Time : 3 Hours] **[Max. Marks : 100]**

Instructions to the candidates:

1) Answers to the two sections should be written in separate answer books.
2) Neat diagrams must be drawn wherever necessary.
3) Figures to the right indicate full marks.
4) Use of logarithmic tables, slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.
5) Assume suitable data, if necessary.
6) All questions are compulsory.

Section - I

Q.1) a) Explain how OR leads to Optimization of problems **[4]**

b) Define following terms in L.P.P. **[6]**

i) Feasible region

ii) Basic variable

c) Explain what is meant by dual problem. **[6]**

OR

Q.1) a) $Z = 3x_1 - 2x_2 + 4x_3$, [12]

Minimize

$3x_1 + 5x_2 + 4x_3 = 7$,

$6x_1 + x_2 + 3x_3 = 4$,

$7x_1 - 2x_2 - x_3 = 10$,

Subject to $x1 - 2x + 5x_3 = 3$,

$4x_1 + 7x_2 - 2x_3 = 2$,

$x_1, x_2, x_3 = 0$.

b) Explain Big-M Method of solving L.P.P. with suitable example **[4]**

Q.2) a) Explain the difference between transportation and transhipment problem [6]

b) Explain initial basic feasible solution to the following transportation problem by i) Minimum cost method and ii) North west corner rule. State which method is better [10]

		To		**Supply**
	2	7	4	5
From	3	3	1	8
	5	4	7	7
	1	6	2	14
Demand	7	9	18	

OR

Q.2)

a) State the common and distinguishing features of assignment model and write its applications. **[6]**

b) Consider the problem of assigning five operators to five machines. The assignment costs are given below. **[12]**

		Operators				
		I	II	III	IV	V
Machines	A	10	5	13	15	16
	B	3	9	18	3	6
	C	10	7	2	2	2
	D	5	11	9	7	12
	E	7	9	10	4	12

Assign the operators to different machines so that total cost is minimized.

Q.3)

a) Explain the principal assumptions made while dealing with sequencing problems. **[8]**

b) Find the optimal order quantity for a product for which the price-breaks are as follows. **[8]**

Q	Unit cost (Rs.)
$0 < Q < 500$	Rs. 10/-
$500 < Q < 750$	Rs. 9.25/-
$750 \leq Q$	Rs. 8.75/-

The monthly demand for product is 200 units, the cost of ordering is Rs. 100/- & holding cost is 2% of the unit cost.

c) Write an equation for EOQ and explain its terms. [2]

OR

Q.3)

Solve the following sequencing problem giving an optimal solution when no passing is allowed **[8]**

		Job				
		1	**2**	**3**	**4**	**5**
Machine	A	14	7	12	8	10
	B	5	6	4	7	3
	C	3	2	4	1	5
	D	10	12	8	15	16

c) Define sequencing problem with its applications. Explain different assumptions made in sequencing problems [10]

Section – II

Q4) a) A machine costs Rs. 8000/- to install. The resale price of machine at the end of each year & running cost for each year are given in table below.

Year	-	1	2	3	4	5	6	7	8
Resale Price	-	5000	3000	2000	1200	800	500	500	500
Running Cost	-	1000	1500	2000	2500	3000	3500	4000	4500

How often should a new machine with identical characteristics be replaced in order to minimise average total cost per year? **[8]**

b) State the advantages & limitations of Simulation. **[8]**

OR

Q.4) a) What do you understand by replacement plan? Explain the procedure in detail [8]

b) What is monte-carlo simulation? Explain advantages and limitation of the procedure with suitable example [8]

Q5) a) Explain Kendall's notation for representing queuing model. **[6]**

b) Explain the costs involved in queuing system & derive an expression for Minimum Cost Service Rate. **[6]**

c) Explain in brief theory of Dominance in Games. **[4]**

OR

Q.5) a) Solve the following game by dominance. Check answer by Maximin and Minimax principle [9]

$$\begin{vmatrix} 1 & 3 & 2 & 7 & 4 \\ 3 & 4 & 1 & 5 & 6 \\ 6 & 5 & 7 & 6 & 5 \\ 2 & 0 & 6 & 3 & 1 \end{vmatrix}$$

b) Assume a single channel service system of a library in a school. From the past experiences it is known that on an average every hour 8 students visits. Issue of the books is on an average rate of 10 per hours. Determine the following.

i) Probability of the assistant librarian being idle. **[2]**

ii) Probability that there are at least 3 students in the system. **[2]**

iii) Expected time that a student is in queue. **[3]**

Q. 6)

a) The following table lists the jobs of a network along with their time estimates: **[10]**

Job i-j	To	tm	tp
1-2	3	6	15
1-6	2	5	14
2-3	6	12	30
2-4	2	5	8
3-5	5	11	17
4-5	3	6	15
5-8	1	4	7
6-7	3	9	27
7-8	4	19	28

i) Draw the project network?

ii) Calculate the length and variance of the critical path?

iii) What is the probability that the jobs on the critical path will be completed in 40 days?

iv) What is the probability that the jobs on the next most critical path will be completed by the due date of 33 days?

Z	0.4	0.5	0.6	0.7	0.8	0.9	–
Prob.	0.65	0.69	0.72	0.75	0.78	0.81	–

b) Define the following. **[8]**

i) Total float.
ii) Free float.
iii) Independent float
iv) Earliest time.
v) Latest time.
vi) Slack.

OR

Q.6) a) Differentiate between CPM and PERT [6]

b) Discuss in detail the probabilistic considerations in PERT [8]

c) Explain in brief: i) Dummy Activity ii) Earliest and Latest start of activity [4]

[4364]-89

B. E. PRODUCTION ENGINEERING 2003 COURSE

FINANCIAL MANAGEMENT AND COSTING **(411101)**

MAX. MARKS 100

1) Question 4 and Question 8 are compulsory

2) Answer **Any Two** of the remaining Questions from each Section

SECTION I

Q 1 Discuss the merits and limitations of following sources of long term finance

a) Term Loans b) Debentures c) Equity Shares d) Preference Shares **16 marks**

Q 2 Explain any two profitability ratios and liquidity ratios giving formulae and stating the importance of each ratio. You may assume suitable data **16 marks**

Q 3 Explain the following methods of evaluating capital expenditure proposals stating merits and limitations of each method- a) Internal Rate of Return approach b) Profitability Index method c) Net Present Value method d) Pay Back Period **16 marks**

Q 4 Explain in brief following terms (any nine) (two marks each)

a) Financial Management b) Balance Sheet c) Profit and Loss Account
d) Discounted Pay Back Period e) Time Value of Money f) Cost of Capital
g) Working Capital h) Stock Turnover Ratio i) Cash Flow j) Share Capital **18 marks**

SECTION II

Q 5 Explain in brief following terms (any eight) (two marks each)

a) Material Cost b) Scrap c) Labour Turnover d) Piece Rate Method
e) Reducing Balance Method of Depreciation f) Activity Based Costing
g) Process Costing h) FIFO Method i) Joint Products j) Idle Time **16 marks**

Q 6 Discuss the following terms a) Allocation of overheads b) Apportionment of overheads c) Absorption of overheads d) Machine hour rate **16 marks**

Q 7 From the following information prepare Cost Sheet of a product and find out

a) Prime Cost (4 marks) b) Cost of Production (4 marks) c) Total Cost of 1,000 units (5 marks) and d) Selling price per unit if a profit @ 20% of cost is to be earned (3 marks)

Opening Stock of Raw Material ₹. 1,40,000 Closing Stock of Raw Material ₹ 1,80,000

There was no work in progress and no stock of finished goods either at the beginning or at the end. Purchases of Raw Material ₹ 3,30,000

Direct Labour ₹ 1,68,000 and Direct Expenses ₹ 1,200

Indirect Labour ₹ 19,000 and commission to salesmen ₹ 13,800

Repairs and maintenance – factory ₹ 15,000

Office repairs and maintenance ₹ 10,000

Depreciation of machinery ₹ 50,000

Depreciation of office appliances ₹ 25,000

and Depreciation of Delivery vans ₹ 15,000 **Total 16 marks**

Q 8 ABC Ltd. produces two products - X and Y . Following information is available-

Particulars	X ₹	Y ₹
Direct Materials per unit	20	18
Direct Wages per unit	6	4
Selling Price per unit	40	30

During the period,

Fixed Overheads will be ₹ 16,000

It is a practice to include variable overheads @ 100% of direct wages.

A) Calculate the profit earned for each of the proposed sales mixes- (13 marks)

a) 1000 units of X and 2000 units of Y

b) 1500 units of X and 1500 units of Y

c) 2000 units of X and 1000 units of Y

B) Assuming that the total sales of X and Y cannot exceed 3000 units, find out the sales mix which will yield a profit of –

i) ₹ 3,000 ii) ₹ 6,000 (5 Marks) **Total 18 marks**

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B.E. (Production / S/W)
PROJECT MANAGEMENT
(411125) (2003 Course)
4364_95

Time : 3 Hours] [Max. Marks :100

Instructions to candidates:

1) Answers to the two sections should be written in separate books.
2) Neat diagrams must be drawn wherever necessary.
3) Figures to the right indicate full marks.
4) Use of logarithmic tables, slide rule, Mollier charts, electronic pocket, calculator and steam tables is allowed.
5) Assume suitable data, if necessary.

Section –I

Q.1) Define project. Explain with suitable example difference between standard routine Production and Projects. **[16]**

OR

Q.1) Explain in detail various aspects of completion of Industrial Project with suitable example **[16]**

Q.2) For the Machine tool company producing CNC Machines, explain following aspects involved. **[16]**

a) Balancing b) Modernization c) Replacement d) Expansion.

OR

Q.2) a) How will you estimate cost of a project? **[8]**

b) Point out the reasons of project failures. **[8]**

Q.3) a) Explain in detail various steps in Project formulation involving import substitution projects. **[14]**

b) What are the methods of formulating budgeting in projects. **[4]**

OR

Q.3) Explain why import substitution is essential? Explain Pre-investment decisions and project feasibility report formulation for import substitution projects **[18]**

Section-II

Q.4) a) Explain Project Appraisal for following aspects: **[16]**

i) Techno-commercial.

ii) Financial discounted cashflow

OR

Q.4) Explain the need of raising sources of finance? How Foreign Direct Investments helps this aspect. [16]

Q.5) Explain the accounting procedures involving Activity - Based Costing in detail. [16]

OR

Q.5) Enumerate different aspects of project costing, contracting for labour and equipment costs. **[16]**

Q.6) a) Explain Project Administration involving cash - flow planning. **[12]**

b) Write a note on Project Scheduling. **[6]**

OR

Q.6) Write a short note on any three: **[18]**

a) PERT b) CPM c) GANTT charts d) Project overruns costs

UNIVERSITY OF PUNE
[4364]-73
B.E.(Semester - I) Examination -2013
B.E (Production)
Manufacturing automation and control
(2003 Course)

[Time : 3 Hours] **[Max. Marks:100]**
Total No. of Questions : 12 **[Total No. of Printed Pages :3]**

Instructions :

*(1) Answer **any three** questions from each section.*
*(2) Answers to the **two sections** should be written in **separate answer-books**.*
(3) Black figures to the right indicate full marks.
(4) Neat diagrams must be drawn wherever necessary.
(5) Use of logarithmic tables, slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.
(6) Assume suitable data, if necessary.

SECTION 1

Q.1 a) Derive the expression for flow in case of swash plate type axial piston pump. [8]

b) A pump with a delivery of 25 lpm is fed into a pipe with total volume of 20 liters. if the end of pipe is suddenly blocked, calculate the rise in pressure after 4 seconds if bulk modulus is 1800mpa. [4]

c) Explain with neat sketch the hydraulic circuit showing the application of counterbalance vale [4]

OR

Q.2 a) Explain various criteria for selection of a hydraulic pump. [8]

b) A mass of 3000 kg is to be accelerated from rest to a velocity of 2 m/s over a distance of 65mm. Calculate the bore diameter of cylinder if coefficient of friction between load and guide is 0.15. [8]

Q.3 a) A hydraulic system requires 275 I/ min at 45 bar for 20 seconds and 25 I/min at 365 bar pressure for 30 seconds. Compare the efficiency of the system when operated with and without pressure intensifier. [8]

b) Explain hydraulic servo mechanism. [8]

OR

Q.4 a) Explain with neat sketch the working principle of regenerative circuit. [8]

b) A hydraulic system having total cycle time of 42 seconds required 18 I/min flow for 10 seconds. Determine the size of gas accumulator assuming isothermal expansion and compression of gas. Assume discharge pressure 150 MPa. [8]

Q.5 a) Explain the use of turbulence amplifier for logic circuit. [6]

b) Explain with neat sketch the working of a time delay valve. [6]

c) Explain the advantages of pneumatic system over hydraulic system [6]

OR

Q.6 a) Draw a pneumatic circuit to actuate the cylinder if sensors C and D are in the same state [ON or OFF] as that of sensor B and sensor A is in opposite state. [10]

b) Explain with suitable example the use of twin pressure valve as AND gate. [8]

SECTION 2

Q.7 a) How many status flag does 8085 have? Discuss the role of each flag. [8]

b) Explain the digital to analog converter as an input device. [8]

OR

Q.8 a) Explain with suitable example the use of accumulating time in PLC [8]

b) Draw ladder diagram that can be used to start a motor and then after a [8]

delay of 120 second start a pump. When the motor is switched off there should be a delay of 15 second before the pump is switched off.

Q.9 a) Explain the operation of PLC with suitable sketch. [8]

b) Explain with suitable example the use of counters in PLC. [8]

OR

Q.10 a) How would a derivative controller with $k_D = 5_s$ responds to an error that varies as 1.8 sin [0.08t]? [6]

b) Explain linear feedback control system. [10]

Q.11 a) Derive an expression for the limiting velocity of escapement of the cylindrical workpiece through a slot. [6]

b) Explain with neat sketch various rotary transfer devices. [6]

c) Explain with suitable example the gravity fed magazine, weight operated magazine, and friction fed magazine. [6]

OR

Q.12) Write short notes on : [18]

a) Turn table for orientation of workpiece

b) Non-vibratory feeders

c) Design for automated assembly

UNIVERSITY OF PUNE

[4364]-87

B. E.(Production s/w Engineering.)Examination - 2013

MECHANICS & ROBOTICS

(2003 Pattern)

[Total No. of Questions:] **[Total No. of Printed Pages :6]**

[Time : 3 Hours] **[Max. Marks : 100]**

Instructions :

*(1) Answers to the **two sections** should be written in **separate answer-books**.*

(2) Black figures to the right indicate full marks.

(3) Neat diagrams must be drawn wherever necessary.

Q1 a) Differentiate clearly between closed loop control system and open loop control system; giving advantages and limitations of each. [8]

b) Discuss the functioning of the Washing machine and draw a block diagram representing the basic elements of the control system for it. [10]

OR

Q2 a) Explain: i) Digital Multiplexer ii) Time division Multiplexing [4]

b) State and explain the signal conditioning processes. [5]

c) Discuss the following with neat sketches: [9]

i) Inverting amplifier

ii) Summing amplifier

iii) Integrating amplifier

Q3 a) Explain the following for a Microprocessor: [9]

i) Assembler ii) Memory address iii) Bus

b) Explain the use of Stack with suitable examples. Illustrate the various operations used with a stack pointer. [7]

OR

Q4 a) Explain what Logic gates might be used to compare two digital words to determine if they are exactly equal. [6]

b) Select proper kind of flip-flop and Design a circuit for the following: [10]

i) Safely alert system in which an alarm is to sound when a beam of light is interrupted and remain sounding even when the beam is no longer interrupted.

ii) A system that could be used to show a green light when the sensor input is low and a red light when it goes high and sound an alarm.

Q5 a) Explain the following instructions: [9]

i) MOV

ii) RAL

iii) LHLD

b) Explain block of microcomputer with all interfacing devices. [7]

OR

Q6 Explain the following pins of Microprocessor: [16]

i) RESETIN

ii) INTR

iii) READY

iv) HOLD

Q7 a) Explain the following, with the help of a ladder diagram: [8]

i) Latching

ii) Sequencing

b) Explain the following: [8]

i) How the direction of the core displacement is sensed in LVDT?

ii) How the direction of rotation is determined in rotary encoder?

iii) What is seedbeck effect? State the sensors based on this effect?

OR

Q8 a) Explain the following with respect to PLC: [9]

i) Internal relays

ii) Mnemonics

iii) Shift registers

b) Explain the following and state which physical parameters they can sense: i) Piezoelectric transducers ii) Capacitive transducers [7]

Q9 a) Explain the following pneumatic sensors: [9]

i) Linear Single rod Single acting

ii) Linear Single rod Double acting

iii) Linear Double rod Double acting

b) In what way are the stepper motors advantageous than the DC and AC motors? [7]

OR

Q10 a) State and explain various types of Valve bodies and Plugs. [8]

b) State and explain the various types of ball and roller bearing. [8]

Q11 a) Discuss in detail; any four Sensors and Actuators used in Robots [16]

With appropriate applications.

b) Define Yaw, Roll and Pitch of a Robot wrist? [2]

OR

Q12 a) What is a pay load? State its role in Robot design [6]

b) With a neat sketch explain the following Robots and mention their [12]

applications: i) Gantry Robot ii) Cylindrical Robot

iii) Polar Robot

UNIVERSITY OF PUNE
[4364]-91
B. E. (Production SW) Examination – 2013
ADVANCED PRODUCTION TECHNOLOGY
(411122)(Elective-I)(2003 Course)

[Total No. of Questions:12] **[Total No. Printed Pages:2]**
[Time : 3 Hours] **[Max. Marks : 100]**

Instructions :

1) *Answers to the **two sections** should be written in **separate answer-books**.*
2) *Neat diagrams must be drawn wherever necessary.*
3) *Black figures to the right indicate full marks.*
4) *Use oflogarithmic tables, slide rule, Molliercharts, electronic pocket calculator and steam tables is allowed.*
5) *Assume suitable data, if necessary.*

SECTION –I

Q1 a) Discuss 'Toyota Production system' and its basic frame work. [8]

b) What is JIT. What are pre-requisites for implementation of it? [10]

OR

Q2 a) What is KANBAN? Explain the Two-Bin System. [8]

b) Explain the steps followed in TPS for adapting demand fluctuation. [10]

Q3 a) What is the Benchmarking Process? [4]

b) Discuss the following of Benchmarking : [12]

i) Definition Keywords
ii) Types
iii) Benefits

OR

Q4 a) What are the objectives of 'Value stream mapping'? How these are fulfilled? [8]

b) Explain the following: [8]

i) Business Process Reengineering
ii) Single Minute Exchange of Die

Q5 How do we measure Productivity? State the various models of Productivity Measurement. Explain and Compare them. [16]

OR

Q6 a) State the objectives of Productivity Management [6]
b) Explain the Concept, various models and methodology of Performance objectives-Productivity (PO-P) [10]

SECTION- II

Q7 a) what is Simulation? How it is useful in manufacturing industry? [9]
b) What are the various types of Simulations? Explain. [9]

OR

Q8 a) Define Artificial Intelligence. Explain the task domains of it. [9]
b) Explain the forward and backward chaining in Artificial Intelligence with suitable example. [9]

Q9 a) State the prime characteristic attributes of the products on which its design is based. Explain each of them. [16]

OR

Q10 a) Explain : [16]
i) Dimensional Tolerance
ii) Morphology of Design

Q11 a) Explain the Technology Management concept applied to Manufacturing Industries. [8]
b) Explain the phase of Transfer of Technology Process. [8]

OR

Q12 a) What are the strategic considerations of Management of Technology? Explain [8]
b) Explain the different functions in Technology Management. [8]

[Total No. of Questions: 12] **[Total No. of Printed Pages: 2]**

UNIVERSITY OF PUNE

[4364]-93

B. E. (Prod S/W) Examination - 2013

Supply Chain Management (2003 Course)

[Time: 3 Hours] **[Max. Marks: 100]**

Instructions:

1 ***Answer Q1 or Q2, Q3 or Q4, Q5 or Q6 from Section I and Q7 or Q8, Q9 or Q10, Q11 or Q12 from Section II***

2 *Answers to the **two sections** should be written in **separate answer-books**.*

3 *Black figures to the right indicate full marks.*

4 *Your answer will be valued as a whole*

5 *Neat diagrams must be drawn wherever necessary.*

6 *Use of logarithmic tables, slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.*

SECTION -I

Unit-01

Q.1	A	Consider the supply chain involved when a customer purchases a 'Tata Tea' pack from a retail store. Identify the cycles in this supply chain and the location of the push pull boundary.	10
	B	What is meant by supply chain strategy? Illustrate with examples	08

OR

Q.2	A	Discuss the process of understanding the customer and supply chain uncertainty.	09
	B	Discuss in brief the drivers affecting the performance.	09

Unit-02

Q. 3	A	Discuss the procedure of forecasting the demand.	08
	B	What is adaptive forecasting? Discuss in brief steps involved in it.	08

OR

Q. 4	A	Which type of information is needed to aggregate planner? Which decisions are based on this information?	09
	B	How the firm can vary the 'supply' by managing capacity and inventory.	07

Unit-03

Q. 5	A	How can postponement of product differentiation are used to improve supply chain profitability.	07

	B	When the quality discounts are justified in a supply chain? Differentiate between lat size based and volume based quantity discounts?	09
		OR	
Q. 6	A	What is the role of safety inventory in supply chain? How the appropriate level of safety inventory is determined?	07
	B	Discuss the meaning of 'Product availability'. How it is measured? Describe two types of replenishment policies.	09
		SECTION II	
		Unit-04	
Q. 7	A	What modes of transportation are best suited for large, low volume shipment? Justify	08
	B	Discuss the role of transportation in supply chain. Mention the various modes of transportation with their strategic and weaknesses.	08
		OR	
Q. 8	A	Discuss the importance of information and information technology in supply chain.	08
	B	Discuss the various options available for designing of transportation network.	08
		Unit- 05	
Q. 9	A	What is bull whip effect? How the lack of coordination in supply chain affects the performance of a firm?	08
	B	Discuss the impact of E-business on customer service.	08
		OR	
Q. 10	A	What issue must be considered when designing a supply chain relationship to improve the chances of developing co-operation and trust?	08
	B	Which are the major obstacles for co-operation in supply chain? Discuss in brief.	08
		Unit- 06	
Q. 11	A	What do you understand by 'Decision Tree'? Summarize basic steps in decision tree analysis?	10
	B	Mention the ideas considered by managers to make better network design decision under uncertainty.	08
		OR	
Q. 12	A	Discuss 'Changing the distribution network affects the supply chain cost'.	10
	B	Explain in brief 'the role & importance of revenue management in supply chain'.	08