B.E - Mechanical - CBSGS - Sem-VII - PPC - 15/12/16 - 11-2

Q. P. Code : 793402

(3hours) **Total Marks:** 80

Instructions:

1. Q.1. is compulsory
2. Solve any three out of remaining five questions
3. Figures to the right of the question indicate full marks.
4. Assume the suitable data wherever necessary.

Q1. Solve any Four **20**

a) What are the functions of PPC

b) What kind of pre-requisite data is a must to actually begin with the activities of PPC?

c) Explain the different types of production system and their characteristics.

d) State the objectives and Inputs of an MRP system.

e) Explain computer aided process planning.

f) Briefly explain Gantt chart

Q2.

a) Explain the process of preparing work orders in different types of production units. **10**

b) Annual requirement of an item is 2400 units. Each item costs the company Rs. 6/unit. The manufacturer offers discount of 5% if 500 or more quantities are purchased. The ordering cost is Rs 32 /order and inventory cost is 16% Whether it is advisable to accept the discount? Comment: **10**

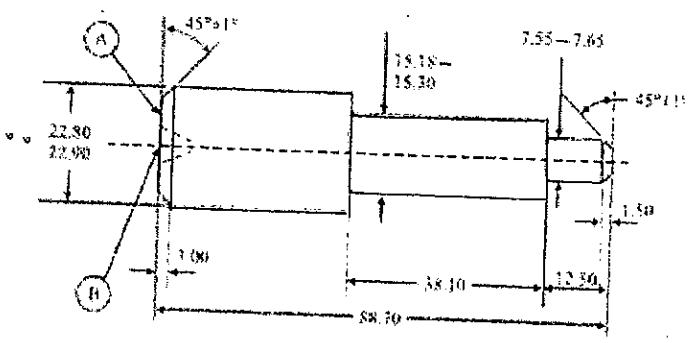
Q3.

a) Following table shows the sales forecast of internet connections in a city for last ten years **10**

Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Sales	110	115	123	131	141	149	160	168	176	186

1. Find the forecast for the year 2017 using appropriate method
2. How do you justify the method adopted is correct

b) A part drawing is shown in the figure is a Gear shaft for water pump. Prepare the process sheet with sequence of operation, description of operation, Machine required, tools required, fixtures required and process pictures. **10**



Gear Shaft for Water Pump
Material: 25 mm diameter SAE 1030 cold drawn steel.
All Tolerances: ±0.05 unless specified
All dimensions are in mm. Number of parts required: 05.

[TURN OVER]

Q4. a) A company has the facility to produce power amplifiers and preamplifiers. Th· 10
resources are limited and the company should produce the appropriate number of
power and pre amplifiers in order to maximize the profit from these produc·
The power amplifier fetches a profit of Rs. 400 per unit and Pre-amplifi·
fetches a profit of Rs.1000 per unit. At the most 80 preamplifiers can
manufactured in a day. There are 480 hours of assembly time available each
Furthermore, each power amplifier requires 2.4 hours for assembly and ea·
Pre-amplifier requires 8 hrs. Finally there are 162 work-hrs available for
inspection and testing each day and it requires 1 work-hr for power-amp an
work-hr for pre-amp respectively.

i. Formulate this problem as a LP model
ii. Find the optimal solution by any suitable method.

b) Construct the network diagram for the activities given in the table below.
three time estimates for each activity are given in the table and are provid·
weeks.

i. Draw the network diagram
ii. Determine the critical path and expected project duration
iii. Compute the variance on the critical path
iv. What is the probability of completing the project in twenty weeks?

	Duration (Weeks)		
Activities	optimistic	Most	pessimistic
1-2	5	6	13
2-3	2	2	2
2-4	2	5	8
2-5	6	8	10
3-5	3	5	7
4-5	1	3	5
5-6	2	3	10

Q5 a) Consider a network problem for which the data is given the below table.
systematically the activities and determine the optimum project duration an·
Indirect cost is Rs. 70 per day.

	Normal		Crash		
Activity	Time (days)	Cost(Rs)	Time (days)	Cost (Rs)	Slope
1-2	8	100	6	200	50
1-3	4	150	2	350	100
2-4	2	50	1	90	40
2-5	10	100	5	400	60
3-4	5	100	1	200	25
4-5	3	80	1	100	10

[T1

b) There are seven jobs each of which has to go the machines A and B in the order AB. Processing times in hours are given as **10**

Jobs	1	2	3	4	5	6	7
Machine A	3	12	15	6	10	11	9
Machine B	8	10	10	6	12	1	3

Determine the sequence of these jobs that will minimize the total elapsed time T. Also, give the idle time for machine A and Machine B

Q6 a) What are the principle functions of Dispatching? What are the documents generally prepared while performing Dispatching function? **10**

b) What are the significant causes of failure of a product? What are the essentials of the product planning? **10**
