

B.TECH. SEM -VII PRODUCTION 2014 COURSE (CBCS) :
SUMMER - 2018
SUBJECT: MECHATRONICS AND MANUFACTURING AUTOMATION

Day: **Wednesday**
Date: **23/05/2018**

S-2018-2525

Time: **02.30 PM TO 05.30 PM**
Max Marks: 60

N.B.:

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks
- 3) Assume suitable data, if necessary.

- Q.1 a)** Explain the mechatronics design process. (05)
b) Explain the working principles of bimetallic strip. (05)

OR

- Q.1 a)** Justify the camera system is the best example of mechatronics system. (05)
b) How does eddy current proximity sensor work. (05)

- Q.2** Describe the time constant of a first order system. (10)

OR

- Q.2** Write a short note on
a) Bode plot (05)
b) Phase linearity (05)

- Q.3 a)** Describe operation of a non-inverting amplifier using a neat diagram. (05)
b) Explain with figure quantizing theory in data acquisition. (05)

OR

- Q.3 a)** What is pulse modulation? (05)
b) Explain digital to Analog conversion with diagram. (05)

- Q.4 a)** Draw a plant Layout of any automated system used in industry. (10)

OR

- Q.4 a)** Differentiate special purpose machine and general purpose machine. (05)
b) What are the different types of automation? (05)

- Q.5** Draw the precedence diagram and carry out line balancing using RPW method (in 5 work stations). (Take cycle time as 90 sec.) (10)

Task	Work station	Predecessor	Task time/unit(in sec)
A	1	-	70
B	2	A	80
C	3	A	40
D		A	20
E	4	A	40
F		B, C	30
G	5	D	50
H	6	D, E, F, G	50
		Total	380

OR

- Q.5 a)** Describe group technology with its use, merits, demerits and applications. (05)
b) Explain transfer liner with its working, advantages and limitations. (05)

- Q.6 a)** Explain the use of internal relays in PLC with the help of suitable examples. (05)
b) Discuss logic gates and control. (05)

OR

- Q.6 a)** Develop and explain ladder diagram for the following. (10)

A motor is put on by the START button which is NO.A pump is started after a delay of 100 second after starting the motor. The motor is switched off by STOP button. When the motor is switched off there should be delay of 10sec before the pump is switched off.