

MANIPAL INSTITUTE OF TECHNOLOGY

A Constituent Institution of Manipal University

# VII SEMESTER B.TECH. (PRINT AND MEDIA TECHNOLOGY) **END SEMESTER EXAMINATIONS, NOV/DEC 2016**

SUBJECT: PRINT MAINTENANCE ENGINEERING [PME 429]

### **REVISED CREDIT SYSTEM** (06/12/2016)

Time: 3 Hours

MAX. MARKS: 50

# Instructions to Candidates:

- Answer ANY FIVE FULL questions.
- ✤ Missing data may be suitable assumed.
- 1A. Explain the significance of following test targets in printing press maintenance.
  - a) Ladder target c) Image fit target
  - **b)** Star target d) Transfer Grids
- **1B.** List and explain the functions of a lubricant.
- 1C. How an Ultrasonic test is used to test the materials in maintenance programme? Explain the different methods of Ultrasonic test with neat diagrams.

# [04 + 03 + 03]

2A. Five different machines can do any of the required five jobs with different profit resulting from each assignment as given below. Find out the maximum profit possible through optimal assignment.

Jobs	Machines							
	Α	В	C	D	Ε			
1	30	37	40	28	40			
2	40	24	27	21	36			
3	40	32	33	30	35			

- 2B. With neat explain the different mechanisms used for lubricating sprocket chain drives.
- 2C. List and explain the different control valves used in pneumatic systems with neat diagrams.

[04 + 03 + 03]

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- **3A.** Explain in detail the four conventional tests that are conducted for lubricants.
- **3B.** With a suitable diagram explain the working of Liquid penetrating inspection used to test the materials. List the Advantages and disadvantages of this method in comparison with Magnetic particle test method.
- **3C.** With neat diagrams explain the working and significance of following valves used in hydraulic systems.
  - a) Pressure relief valve
  - **b)** Pressure reducing valve
  - c) Volume control valve

[04+03+03]

- **4A.** The annual consumption of 8 items is given below:
  - **a)** Classify items into A, B and C categories
  - b) Find percentage of items in each category
  - c) Calculate percentage of total value in each class.

Sr. No	Part No	Price / Unit	Annual consumption(Units)
1	P 101	40.00	3000
2	P 102	500.00	2000
3	P 103	0.30	4000
4	P 104	30.00	5000
5	P 105	0.05	700
6	P 106	0.90	1300
7	P 107	200.00	2000
8	P 108	0.80	7000

- **4B.** How does a single stage regulator control the discharge pressure in pneumatic system? Explain with a neat diagram.
- **4C.** Differentiate between the followings
  - a) Needle bearings are different than oil less bearings.
  - **b)** Angular contact ball bearings and self-aligning ball bearings.
- **4D.** Explain the importance and method of using following devices in offset printing press maintenance.
  - a) Areometer b) Nip pressure indicator

#### [03+03+03+01]

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**5A.** Explain the following bearing failures.

a) Loose fits b) False brinelling c) Overheating

- **5B.** How to get variable speeds from a cone type pulley drive? Explain with neat diagram.
- **5C.** In a packaging industry which works 12 hours a shift, the operator of folding machine takes every day 20 minutes for cleaning and daily maintenance of the machine. On a particular day there were 4 job change overs and for each job changeover he took 30 minutes and produced 45000 packages per shift at a rate of 10000 packages per hour, in which 2400 packages were rejected due to quality problems. The folding machine recorded two breakdowns, each of 25 minutes' duration and machine was waiting for printed sheets for 35 minutes during this shift. Calculate the overall equipment efficiency.
- **5D.** Explain the importance and method of using following devices in offset printing press maintenance.
  - a) Torque wrench b) Packing Gauge

# [03+03+03+01]

- **6A.** Yearly consumption of a stitching wire in a binding section is 2000 rolls. The demand is known and it is fixed. Stitching wire cost per roll is Rs 250 to buy. The inventory carrying cost and ordering cost have been estimated at 3% per month and Rs. 155 per order respectively. Calculate EOQ quantity, total annual inventory cost and ordering costs.
- **6B.** Differentiate between the advantages and disadvantages of bush bearings and antifriction bearings.
- 6C. Differentiate between single acting and double acting hydraulic motors.
- **6D.** Explain the Manual centralized manifold lubricating system devices with neat diagram.

## [03 + 03 + 02 + 02]