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ANNA UNIVERSITY (UNIVERSITY DEPARTMENTS)

B.E. (Full Time) - END SEMESTER EXAMINATIONS, APRIL / MAY 2024

PRINTING AND PACKAGING TECHNOLOGY

Sixth Semester

PT5603 Gravure and Screen Printing

(Regulation 2019)

Time:3hrs

Max.Marks: 100

CO1	To introduce the principles of gravure printing process and cylinder preparation techniques
CO2	To gain knowledge on components of gravure printing machines.
CO3	To understand the principles of screen printing process and stencil preparation method.
CO4	To learn about the types of screen printing machines.
CO5	To know about the print problems & quality control techniques in gravure and screen printing process.

BL – Bloom's Taxonomy Levels

(L1-Remembering, L2-Understanding, L3-Appling, L4-Analysing, L5-Evaluating, L6-Creating)

PART- A (10x2=20Marks)

(Answer all Questions)

Q. No.	Questions	Marks	CO	BL
1	How does the angle of the stylus used for engraving the gravure cylinder influence the quality of printed image?	2	1	2
2	What is known as 'wrap around plates' used in gravure process?	2	1	1
3	State the need for back-up blade in the wiping assemblies of doctor blade.	2	2	2
4	Why does the Impression roller deflect in the gravure machine?	2	2	1
5	Does the hardness of the squeegee blade have an impact on the amount of ink deposit and how?	2	3	2
6	List out the variables that controls ink deposit in screen printing.	2	3	1
7	How stencil is created in 'wax resist method' used in screen printing?	2	4	2
8	What are the different ink drying mechanisms adopted in screen printing process?	2	4	1
9	Write down the technical comparison between gravure and screen printing process.	2	5	2
10	List out the causes and remedial measures for 'early stencil breakdown' in direct method of stencil preparation.	2	5	1

PART- B (5x 13=65Marks)

(Restrict to a maximum of 2 subdivisions)

Q. No.	Questions	Marks	CO	BL
11 (a) (i)	Briefly explain the parts of the gravure cylinder and different cylinder design stating their merits and demerits	8	1	4
(ii)	List out and explain the different methods adopted to reuse the gravure cylinder.	5	1	3
OR				
11 (b) (i)	List the different methods followed to prepare gravure image carrier preparation and discuss on the method that uses	8	1	4

	computers to prepare image carrier.			
(ii)	Mention the purpose of gravure cylinder inspection system and explain on the components of cylinder inspection system	5	1	3
12 (a) (i)	List out the types of inking systems used in gravure machine. With neat diagram, explain two of them in detail and discuss their advantages and disadvantages.	8	2	4
(ii)	With neat sketches, discuss the different press configuration used in gravure press.	5	2	3
OR				
12 (b) (i)	Briefly explain the positioning of doctor blade and list out its merits and demerits	7	2	4
(ii)	With diagram, discuss the various inline converting operations carried out in gravure printing machine	6	2	3
13 (a) (i)	List out and explain briefly about the basic essential components of screen printing.	6	3	3
(ii)	List out and explain the different fabric terminology used for mesh classification.	7	3	4
OR				
13 (b) (i)	Discuss on the types of flat substrates used in screen printing (any four)?	5	3	3
(ii)	Briefly discuss on the variables related to the squeegee that affect the ink deposit.	8	3	4
14 (a)	With sketches, briefly explain the graphic and textile presses used for screen printing	13	4	3
OR				
14 (b)	Explain the different steps involved in the preparation of stencil using direct/indirect photo stencil and also discuss on the difference with capillary method used for stencil preparation.	13	4	3
15 (a) (i)	Briefly explain the various environmental issues in gravure printing process and state the methods to overcome such issues.	7	5	3
(ii)	Discuss on the different ways of waste disposal from gravure and screen printing unit.	6	5	4
OR				
15 (b) (i)	State the need for maintenance and discuss the maintenance procedure to be followed for safe running of the press	8	5	3
(ii)	Explain the various quality control aspects to be carried out in gravure printing.	5	5	4

PART- C (1x 15=15Marks)
(Q.No.16 is compulsory)

Q. No.	Questions	Marks	CO	BL
16 (i)	Twenty lakh copies of chips wrappers has to be printed using gravure process. List out the technical requirements for printing chips wrappers.	5	1	5
(ii)	Mention the steps to be followed, starting from material selection for gravure cylinder preparation, gravure image carrier preparation till the wrappers are delivered to the customer stating the justification.	10	1	6

