



Skill India
कौशल भारत - कुशल भारत



Sample Test Project

India Skill National Competitions

Skill – Print Technology

Category: Information and Communication Technology

Table of Contents

A. Preface	3
B. Test Project.....	Error! Bookmark not defined.
C. Marking Scheme	Error! Bookmark not defined.
D. Infrastructure List.....	4
E. Instructions for candidates	Error! Bookmark not defined.
F. Health, Safety, and Environment	Error! Bookmark not defined.

Section - A

A. Preface

Skill Explained:

Printing technologists are responsible for printing text and images on diverse materials. Working in a team, they usually perform all production steps from beginning to end. They receive orders from customers or from the prepress unit, from checking the documents, preparing for the print, set up machines, measure the inks, mount the material to be printed, monitor the printing process and take action if malfunctions occur. Printing technologists are required to comply with health and safety at work rules as well as environmental protection legislation. They are familiar with the risks involved in working with chemicals, for instance. They protect themselves by wearing gloves and filter masks. They dispose of waste products correctly in order to protect co-workers and the environment.

Eligibility Criteria (for India Skills 2018 and World Skills 2019):

Competitors born on or after 01 Jan 1997 are eligible to attend the Competition.

Total Duration: 12 Hrs

- Task 1 : 2.30 Hours
- Task 2 : 1.30 Hours
- Task 3: 1.30 Hours
- Task 4: 45 Minutes
- Task 5: 1.15 Hours
- Task 6: 1.15 Hours
- Task 7: 1 Hour
- Task 8: 45 Minutes
- Task 9: 45 Minutes
- Task 10: 45 Minutes

Day 1. : Task 1 to 3 (5.5 Hours)

Day 2 : Task 4 to 7 (4.25 Hours)

Day 3: Task 8 to 10 (2.25 Hours)

D. Infrastructure List

Printing Equipment:

- Offset Printing Machine : Heidelberg SM 52 4 colour
- Polar Cutting Machine
- X rite Spectrophotometer
- Ink Proofing Kit
- 1 gm count Digital Weighing scale
- Canon Digital Printing Machine
- Paper Cutter
- Ink Mixing Knives
- Glass 2x2 Feet
- Standard PC / Laptop
- Saddle Stitching Machine

Materials and Consumables:

- 12 x 18 130 GSM Art paper 2000 sheets
- 12 x 18 250 GSM paper 1000 sheets
- Ink Pigments CMYK 100 Gm x4
- Ink Medium 1 Kg

General Requirements:

- 18-inch steel scale
- Paper Cutters

TASK ONE LEAFLET PRINTING (M 1.1)

MODULE A/ OFFSET PRINTING

Criterion: A Offset Printing

Sub Criterion: A1 Initial setup of offset press and process control
 A2 Ink density to standard
 A3 Ink density to standard run two
 A4 Good copies, time, registration, cleaning

DESCRIPTION

This Job is printed Offset and will run 4/4 front and back using the Work and Turn Imposition – Competitor to punch, bend, mount plates, establish registration and pre-set the press for high quality and productivity, save the required number of press sheets. Turn the job and print the second side so that front to back registration is correct and colour meets density requirements with no marking. Wash up the units (rollers, plates, and blanket and impression cylinders with automatic program) and clean wash up blades.

Job: A 01	Leaflet Printing, 4/4
Number of copies	600
Set-up waste	500
Total amount of paper	1,100
Colours	4/4 – CMYK Process/CMYK Process
Paper size	Sheet size 305 x 457 mm
Finished size	Not Applicable
Paper	130 g/m2 Gloss Coated
Ink	Process Colours; C, M, Y, K
Machinery (Printing Press)	Heidelberg Speedmaster SM-52-4
Job status	Content proof and target density values supplied at press
Available time for the total task	2.5-hours
During the printing	FIRST PRINTED SIDE

Competitor will achieve color and registration, provide one sheet to the Experts for quality verification, and stop production. Upon receiving approval from Experts that the sheet is 'OK sheet', competitor will set counter to zero, turn on the counter, turn in make ready sheets, and continue press run with empty trolley. Competitor will pull (1) sample sheet for evaluation during printing at 300, and 600 (+/- 50) sheets printed. Identify (1) with sample with the quantity on the sheet. Immediately give the sample pull to the Expert for colour scanning.

Competitors will be evaluated against posted density value

Competitor will turn all the first side finished printed sheets and make ready for second side.

SECOND PRINTED SIDE Competitor will achieve color and registration front and back, provide one sheet to the Experts for quality verification, and stop production. Upon receiving approval from Experts that the sheet is 'OK sheet', competitor will set counter to zero, turn on the counter, turn in make ready sheets,

TASK TWO INVITATION CARDS (M 2.1)

MODULE B/DIGITAL PRINTING

Criterion: B Digital Printing

Sub Criterion: B1 Digital toner printing, variable data

DESCRIPTION:

This job is printed Digital Variable data – competitor will receive digital file via desktop and load it into digital RIP/server. Following instruction on job ticket they will load drawer(s) with correct stock, Merge data fields with 4/0 image to print variable data Tent Cards.

Job: B 01

Variable Data Invitation Cards

Number of copies

20 Invitation cards

Set-up waste

10

Colours

4/0 – CMYK

Paper size:

Sheet size 297 mm x 420 mm (A3)

Finished size

148 mm x 210 mm (A5)

Paper

250 g/m2 Art card

Ink

CMYK

Machinery (Digital Printing Press)

Canon Digital Press

Job status

Digital Files on desktop of RIP

Available time for the total task

15 minutes to preflight file
60 minutes to print – **No Overtime will be allowed**

This includes loading digital files. Creating layout, sizing the layout to fit the paper, setting paper drawers, completing quantity

Before the printing

Preflight the file using a computer off-line from the press. Open the "Invitation 2018.pdf" file and the "data_Invitations" file listing the number and names to be imprinted on the cards.

Make note of the font, size and position information.
See data to be imported and organize a plan.

Production on work station, select the "Invitation 2018.pdf" file and use the data file to format the files for variable data printing, on A3 paper
Print Job info, bleed trim marks, 100% size

Perform Calibration for the appropriate paper

You will be given 30 sheets of 250 g/m2 Digital paper.

Competitors will load specified paper into press and set up.

During the printing

Monitor Quality – verify the correct names and ALL names being printed are accounted for – have technician fix machine jams if they occur

After printing

Give required quantity to judges

TASK THREE PRINT TECHNOLOGY BOOKLET SELF COVER (M 3.1) MODULE B/DIGITAL PRINTING

Criterion: B Digital Printing Sub Criterion: B2 Digital toner printing, 16 pages self-cover saddle stitch

DESCRIPTION:

This job is printed Digital – Competitor will receive digital file via desktop and load it into digital RIP/server.

Job: B 02	Saddle Stitched 16 page What is Printing Technology Book
Number of copies	15 Books
Set-up waste	10 sheets
Colours	4/4 all pages
Paper size:	Sheet size SRA3 320 x 450
Finished size before cutting	SRA4 320 x 225
Finished Size after trimming	A5 210 x148.5
Paper	130 g/m2 Coated Digital
Ink	CMYK
Machinery (Digital Printing Press)	Canon Digital Press
Job status	Digital Files on desktop of RIP and preflight computer
Available time for the total task	15 minutes to prepare preflight File 60 minutes to print – No Overtime will be allowed
	This includes calibration, registration, loading digital files. Creating layout, setting paper drawers, completing quantity
Before the printing	You will make a 16-page booklet Preflight Using a computer off-line from the press. Open the “What is Printing” booklet file to perform preflight. Make note of page size, trim size and bleeds Production Perform Calibration with appropriate paper You will need to perform a front to back registration test and adjust images accordingly. The booklet will print 4/4 on all pages –Ensure that you have 3 mm bleeds and the bleeds are correct at the gutter. Competitors will load specified papers into press and set up. They shall produce 75 finished copies from supplied PDF, ensuring that the image is correct on sheet.
During the printing	Monitor Quality – call for technician to fix machine jams if they occur
After printing	Give required quantity to judges

TASK FOUR DEFECT DETECTION (M 3.2)

MODULE C/MAINTENANCE

Criterion: C Maintenance

Sub Criterion: C2 – Print Defect Detection

DESCRIPTION:

This is a timed event. When you are ready to begin you will notify the judge to start the clock. When the clock starts, you may open your packet and begin to inspect each of the (9) press sheets. You are to circle all defects you find on each of the press sheets – and – indicate on the marking sheet what type, and how many defects you found on each of the sheets. When you are finished notifying the judge to stop the clock.

Job: C 02	Identify common offset printed defects
Number of copies:	1 each of (9) different defective press sheets
Machinery	Loop – Magnifying glass and permanent marker
Job status	Complete
Available time for the total task	45 minutes – No Overtime will be allowed

Competitor will be timed. The competitor with the fastest time will receive full time marks. Competitor with the slowest time will receive 0 time marks. Each competitor in between fast and slow will receive their fraction of the time mark.

During this task
When you are ready to begin, notify the judge and begin when the judge tells you to start. Open your packet. Review each of the nine press sheets. Using the permanent marker, circle each of the defects you find on each of the sheets. Locate the corresponding box for each sheet and record the number of defects, the classification of defect found for that sheet, and what colour of ink or plate that the defect was located.

After this task
When you have completed the task notify the judges to stop the clock. Place your sheets and marking sheet back into the packet and give them to the judge for marking.

Each of the defective sheets in the packet will have a minimum of (1) defect and a maximum of (4) defects.

The defects that may or may not be on the sheets are limited to these types:

Front-to-Back registration is when the image on side A of the press sheet does not align with side B – or – the image on one side of the sheet is not correctly oriented for when the printed sheet is finished.

Hickeys are caused by dirt, paper fibers or hardened specks of ink on the printing plate or blanket.

Incorrect color of ink is when the wrong plates are placed on the wrong printing unit or the plates have been installed on the wrong unit.

Additional knowledge

Incorrect placement of paper in the feeder is when there is a specific characteristic of the paper that requires that it must be placed correctly into the feeder. Such as a coated one sided sheet, or one of several other instances

Registration Defects are when one or more of the colors being printed do not align properly.

Scratches are caused when something rubs against the plate at any time, it may scratch the surface making it ink receptive. Those scratches will print on the paper.

Scumming appears when a non-image area such a reverse type begins to fill in with color due to poor ink and water balance

Smashed Blanket will show an area of missing image by not transfer ink to the surface of the paper.

Task Five Ink Mixing (m 4.1) Module D/Additional Tasks

Criterion: D Additional Tasks Sub Criterion: D1 Mix (2) Special Pantone Colours for production run

DESCRIPTION:

Mix an appropriate quantity of Pantone ink, match reference, safety and cleanliness evaluated

Job: D 01

Mix Special Pantone Colour

Work Area

Work bench

Equipment available

Range of pantone inks
ink scale
pantone book
calculator
ink knives
X-Rite exact hand held

Available time for the total task

75 minutes to solve the task – **No Overtime will be allowed**

Task to be done

Competitor will have to mix:
450 grams of PMS 302

Competitor will have to mix
450 grams of PMS 375

you will measure each colour of ink with the eXact hand held spectrodensitometer. When you have reached the LaB you like call the judge for final reading and provide a sample of your measured value to the judge

All mixed ink must be placed in container

After solving the task

Upon completion of ink mixing, place product into supplied container.

Additional knowledge

Work area must be left clean.

No ink waste allowed.

Safety and cleanliness evaluated

TASK SIX INK VERIFICATION (M 4.2)

MODULE D/ADDITIONAL TASKS

Criterion: D Additional Tasks Sub Criterion: D2 (2) Pantone ink mix color verification on hand proofer

DESCRIPTION:

Verify Mixed Pantone Ink color to reference by using the Proof press. Print specified quantity of test sheets. Print 2/0 adhesive stickers on a two colour press using ink the competitor mixed in task nine. The competitor will be judged on print quality, colour consistency and LAB accuracy. Competitor with the most color spots with the lowest Delta E will receive full marks. Competitor may adjust the ink formula but may Not mix a new batch of ink.

Job: D 02	Proofing on hand press
Number of copies:	10
Set-up waste	5
Total amount of paper	15
Colours:	2/0 – PMS 302 and PMS 375
Paper size:	Sheet size 35 x 50 cm
Paper	Gloss Adhesive Paper
Ink	2/0 – PMS 302 and PMS 375 – The ink you mixed for the mixing completion
Machinery (Printing Press)	Heidelberg SX 52 2
Job status	Supplied offset plates you will punch and bend– Follow the instructions for the placement of plate and ink in correct printing unit
Available time for the total task	75 minutes, NO Over time is allowed

TASK SEVEN INK MIXING (M 4.3) MODULE D/ADDITIONAL TASKS

Criterion: D Additional Tasks

Sub Criterion: D3 Mix Special Colour

DESCRIPTION:

Mix an appropriate quantity of Pantone ink, match reference LaB, safety and cleanliness evaluated.

Job: D 03

Mix Special Colour shade

Work Area

Work bench

Equipment available

Range of base inks ink
scale
pantone book
calculator
ink knives
exact spectro densitometer

Available time for the total task

60 minutes to solve the task – **No Overtime will be allowed**

Task to be done

150 grams of PMS 363

you will measure colour of ink with the eXact hand held spectrodensitometer. When you have reached the LaB you like call the judge for final reading and provide a sample of your measured value to the judge

After solving the task

Upon completion of ink mixing, place all product into supplied container.

Additional knowledge

Work area must be left clean.
No ink waste allowed.
Safety and cleanliness evaluated

TASK 08 CUTTING EXERCISES (M 4.4)

MODULE D/ADDITIONAL TASKS

Criterion: D Additional Tasks
image job

Sub Criterion: D4 Cutting Digital toner variable

DESCRIPTION:

Prepare cutting plans and cutting printed sheets according specifications.

Job: D 04

Cutting Exercises

Number of exercises:

Exercise one will require trimming Invitation Cards

Machinery (Paper Cutter)

Polar Paper Cutter

Signature size:

Signature size 297mm x 420mm

Finished size

210mm x 148.5mm

Available time for the total task

45 minutes to complete cutting for task 12 – **No Overtime will be allowed**

Tasks to be done

1. Indicate cutting with a drawn line on one, printed sheet
Number the lines to indicate the order of cutting
Checking of the trim size.
2. Carry out the cutting plan, program cutter and cut the tent cards
according to the trim marks printed on the sheet.
3. Keep finished product in sequence order
4. **KEEP ALL WASTE** this a LIVE VDP job any waste will have to be
identified and reprinted

After solving the tasks

Indicate to Judge when you have completed the exercise.

Additional knowledge

Perform cutting practices in safest possible manner

TASK 09 CUTTING EXERCISES (M 4.4) MODULE D/ADDITIONAL TASKS

Criterion: D Additional Tasks
image job

Sub Criterion: D4 Cutting Digital toner variable

Job: D 05

“What is Printing “ Booklet Cutting Exercises

Number of exercises:

Exercise will require cutting of 15 pre-printed 16 page books

Machinery (Paper Cutter)

Polar Paper Cutter

Press signature size:

Signature size 297mm x 420mm420mm SRA4

Finished book size:

210mm x 148.5mm

Available time for the total task

45 minutes to complete cutting for task 13 – **No Overtime will be allowed**

Tasks to be done

1. Indicate cutting plan with a drawn line on one printed sheet
Number the lines to indicate the order of cutting
Checking of the trim size
2. Trim head & foot & front of digital book according to prototype
Final product must be centred
3. Upon completion, the cutting plan must be place on top of the finished
trimmed books

After solving the tasks

Indicate to Judge when you have completed the exercise.

Additional knowledge

Disposal of the trim waste
Perform cutting practices in safest possible manner

TASK 10 CUTTING EXERCISES (M 4.4)

MODULE D/ADDITIONAL TASKS

Criterion: D Additional Tasks
image job

Sub Criterion: D4 Cutting Digital toner variable

Job: D 06

Cutting Exercises

Number of exercises:

Exercise will require cutting of 75 books

Machinery (Paper Cutter)

Polar Paper Cutter

Press finished signature size:

Sheet size 297mm x420mm

Finished size

210mm W X 148.5 H

Available time for the total task

45 minutes to complete cutting for tasks 14 – **No Overtime will be allowed**

Tasks to be done

1. Indicate cutting plan with a drawn line on one printed sheet
Number the lines to indicate the order of cutting
Checking of the trim size
2. Trim head and foot of digital book according to prototype
Final product must be centred
3. Upon completion, the cutting plan must be place on top of the finished
trimmed postcards

After solving the tasks

Indicate to Judge when you have completed the exercise

Additional knowledge

Disposal of the trim waste
Perform cutting practices in safest possible manner

