

MAHARASHTRA STATE BOARD OF VOCATIONAL EXAMINATIONS, MUMBAI

Examination, July 2014

CERTIFICATE COURSE IN CAD-CAM OPERATOR

[ἔργ—3 iḗ°é]

(BEÚÉ NÖÉ—100)

$$E\dot{d}\{\overset{a}{E} \otimes B\}_{b\div}^{\cdot} \overset{a}{E} \dot{c} S_{\dot{e}}^{(R)} M \quad (\hat{E} E + ^{(R)} - 2)$$

- [illegible]

NÖÖ

20

1. **MÉE³Éä^aÉE VÉÉMÉE |É®Ú :-**

(+) °fO.BxÉ.°fO. "É¶ÉXÉ"ÉvEÖ.E JÖESaÉ½±ÉSÉE+EO iEEÉb+iEEaÉ iEEaÉ Éh+aEEÖEE 0
aEE ÉJÖhÉÉSÉE ÉÉEÉ®ü Eö®üEEiÉ.

(Stop / Emergency stop / Closed).

(4) $\circ \Gamma_0(B)x\Gamma_0 \cdot \circ \Gamma_0 \cdot \overline{\text{E}\Gamma_0x\Gamma_0} \in \nu Q_{\Gamma_0} \subseteq]\Gamma_0[\dots \text{affine } \text{Edh}\Gamma_0 \text{ BEd}\Gamma_0\text{E} = \text{E}\Gamma_0 + \text{E}\Gamma_0 + \circ \Gamma_0\text{E}\Gamma_0\text{E}$
 $] \Gamma_0[= \text{E}\Gamma_0\Gamma_0 /] \Gamma_0[= \text{E}\Gamma_0\text{E}\Gamma_0 /] \Gamma_0[\frac{1}{2}ab^{\otimes 2})$.

[illegible]

(^o) $\mathbb{R}^n \times \mathbb{R}^n \rightarrow \mathbb{R}^n \times \mathbb{R}^n$ / $\langle \mathbb{R}^n \times \mathbb{R}^n \rangle \rightarrow \mathbb{R}^n \times \mathbb{R}^n$.

(b) CAM 1/2 in EVLä

(COMPUTER AIDED MANUFACTURING / CERTAIN ATOM
MANUFACTURING / COMPUTER ANIMATED
MANUFACTURING).

[illegible]

(MPG / JOG / MDI).

(j) oE0.BxÉ.oE0. "EE9Exé É®0ÉE oEWéhEoEsafé {Eb-ÉÉ®0ÉE ;AC9Exésfá {EWléE Gó'ÉExlá
{EE9abaféofé 0 afé x70EESÉE EEÉ®ú EoWíííí.

(Enter / Cursor / Page up and Down).

(M) °fO.BxÉ.°fO. °EE°ExÉ`ÉvE0+E EbAE0ME, Ede>A] 0°°EE0ME +ÉéhÉ É®°ÉME Eo°m°EE`EE`0
..... °ofaÉE0+E °EEÉ®°EEÉ.

(Canned cycle / Finishing cycle / Internal diameter grooving cycle).

(1/2) JÉÉÉÉÉ É IÉÉÉÉ Éh^aÉÉÉÉ É EÉÉÉÉ ÉÉÉÉÉ ÉÉÉÉÉ.

(M01 / M02 / M00).

(a) G01 E~~E~~SÉE ÉÉÉ® °ÉÉ` Ø EØ®ÉÉÉ.

(Circular interpolation / Dwell time / Linear interpolation).

[illegible] $(X / F / M).$

2. $J_{EE+EO+E} |E_{q} x_{EE+EO} = k_{E}^{\circ} a_{E+E/2} (E_{chEiE/2}) n_{EE}$:- 16
- (+) सी.एन.सी. मशीन टूलसाठी वापरल्या जाणाऱ्या वेगवेगळ्या प्रकारच्या डी.सी. $\cdot E_{E} \cdot E_{E+EO} x_{EE} E_{a} \cdot E_{EE+EO} \cdot E_{EE+EO} E_{E+E/2}$.
- (म्) सर्वसामान्यपणे वापरल्या जाणाऱ्या अॅक्सीस फिड ड्राईव्हच्या रचनांचे वर्णन करा.
- (Eo) $\circ E_{O} \cdot Bx_{E} \cdot \circ E_{O} \cdot \cdot E_{q} E_{OXE}] \cdot E_{E} \cdot E_{VEO+E} [\cdot E_{EC} \cdot E_{EE}] \cdot E_{EE} \cdot \circ G_{USEE} EE(E_{E} \cdot \circ E_{EE+EO}$.
3. $J_{EE+EO+E} |E_{q} x_{EE+EO} = k_{E}^{\circ} a_{E+E/2} (E_{chEiE/2}) n_{EE}$:- 16
- (+) $\circ E_{O} \cdot Bx_{E} \cdot \circ E_{O} \cdot \cdot E_{q} E_{OXE}] \cdot E_{E} \cdot E_{SEa} E_{d} \cdot E_{EC} i_{EK} E_{E} \cdot E_{EXEEI} \cdot E_{EO} + E_{EbiEO} \cdot E_{V/2} \circ [E'] \circ E_{O} E_{O}$.
- (म्) मॅचिंग सेटर व्हर्साटाईल करण्यासाठी वापरल्या जाणाऱ्या दोन सह उपकरणांची $x_{EE} E_{a} \cdot \circ E_{EE+EO} \cdot E_{EE+EO} \cdot E_{O} [E'] \circ E_{O} E_{O}$.
- (Eo) $\circ E_{O} \cdot Bx_{E} \cdot \circ E_{O} \cdot] \cdot E_{OXE} \cdot E_{q} E_{XESa} \cdot E_{MEEO} \cdot E_{O} E_{O} \cdot E_{O} [E'] \circ E_{O} E_{O}$.
4. $J_{EE+EO+E} |E_{q} x_{EE+EO} = k_{E}^{\circ} a_{E+E/2} (E_{chEiE/2}) n_{EE}$:- 16
- (+) $n_{EE}] \cdot E_{E}] \cdot E_{O} \circ + \circ E_{Ea} \cdot E_{EE} \circ E_{O} \cdot Bx_{E} \cdot \circ E_{O} \cdot \pm E_{a} E_{E} \cdot E_{q} E_{XESa} j \cdot E_{a} E_{na} E_{E+E/2}$.
- (म्) $\circ E_{O} \cdot Bx_{E} \cdot \circ E_{O} \cdot E_{Ea} E_{b} < \cdot b \cdot E_{B} \cdot E_{E} \cdot E_{q} E_{XESa} E_{E} \cdot E_{O} i_{EK} E_{E} \cdot E_{EE+EO} E_{E+E/2}$.
- (Eo) सर्वसाधारण मशीनच्या तुलनेत फॅब्रिकेशनसाठी वापरल्या जाणाऱ्या कॉम्प्युटर $x_{a} E_{O} E_{O} \cdot E_{O} \cdot E_{a} E_{a} E_{E} \cdot E_{q} E_{XESa} j \cdot E_{a} E_{na} E_{E+E/2}$.
5. $E_{q} E_{EE} E_{E+E/2} (E_{chEiE/2}) S_{EE}$:- 16
- (+) Peak Drilling Cycle ($E_{EE} E_{O} E_{bA} E_{O} E_{EE} E_{O} E_{E}$)
- (म्) Threading Cycle ($m_{E} E_{O} E_{O} E_{EE} E_{O} E_{E}$)
- (Eo) Production Index ($E_{EE} E_{O} E_{XESa} < E_{O} E_{O}$)
- (b) Flexible Manufacturing System ($) \pm E_{MZEO} E_{E} E_{E} \cdot E_{a} E_{O} E_{CSSE} E_{O} E_{O} [E'] \circ E_{O} E_{O}$)
- (<) CNC Tapping ($\circ E_{O} \cdot Bx_{E} \cdot \circ E_{O} \cdot] \cdot E_{O} E_{O}$).
6. $J_{EE+EO+E} |E_{q} x_{EE+EO} = k_{E}^{\circ} a_{E+E/2} (E_{chEiE/2}) n_{EE}$:- 16
- (+) सर्वसामान्यपणे वापरल्या जाणाऱ्या टूल मॅगझीनच्या प्रकाराबद्दल माहिती लिहा. $i_{a} E_{EE+EO} E_{EE} [E'] \circ E_{a} E_{E+E/2}$.
- (म्) $\frac{1}{2} E_{a} E_{b} E_{E+E} S_{EEa} E_{O} E_{EE} E_{E} E_{O} E_{a} E_{O} E_{EE} E_{a}?$
- (Eo) $\circ E_{O} \cdot Bx_{E} \cdot \circ E_{O} \cdot \cdot E_{q} E_{OXE}] \cdot E_{E} \cdot E_{V} E_{a} E_{E} ; o_{b} E_{EO} = (E_{EO} E_{EE+EO} E_{EE} E_{O} E_{a} = (E_{a} E_{EE} + \circ E_{iEEa}?)$

(ENGLISH)

[TIME ALLOWED — 3 HOURS]

(MARKS — 100)

COMPUTER AIDED MANUFACTURING (THEORY-II)

- Instructions.*—(1) Attempt *all* questions.
 (2) Figures to the right indicate *full* marks.
 (3) Illustrate your answers with neat sketches wherever necessary.

- | | Marks |
|--|--------------|
| 1. Fill in the blanks :— | 20 |
| (a) In CNC Machine all the movement of tools can stop immediately With the help of button.
(Stop / Emergency stop / Closed). | |
| (b) In CNC Machine Tools are assemble at
(Tool box / Tool magazine / Tool Holder). | |
| (c) In special features CNC Machine type of motor is used.
(Stepper Motor / Induction Motor / Servo Motor). | |
| (d) CAM means
(COMPUTER AIDED MANUFACTURING / CERTAIN ATOM MANUFACTURING / COMPUTER ANIMATED MANUFACTURING). | |
| (e) With the help of hand wheel manually movement of tool mode is used.
(MPG / JOG / MDI). | |
| (f) On CNC computer screen, for observing Function pages sequentially key iused.
(Enter / Cursor / Page up and Down). | |
| (g) In CNC milling machine for drilling, countersinking and reaming is used.
(Canned cycle / finishing cycle / internal diameter grooving cycle). | |
| (h) For STOP the program code is used.
(M01 / M02 / M00). | |
| (i) G01 code is used for
(Circular interpolation / Dwell time / Linear interpolation). | |
| (j) In block sequence number, Movements of machine tool numbering with letter
(X / F / M). | |
| 2. Answer the following questions (any <i>two</i>) :— | 16 |
| (a) What are the various types of DC motors used in a CNC machine tools ? | |
| (b) Describe the two common arrangements for axis feed drive. | |
| (c) Why are the ball recirculating screws used in CNC machine tools ? | |

[Turn over]

3. Answer the following questions (any *two*) :— 16
- (a) Describe with the aid of a neat sketch the principle of working of a CNC machine tool.
 - (b) Name and describe the two accessories which make matching centers versatile.
 - (c) Describe the classification of CNC turning machines.
4. Answer the following questions (any *two*) :— 16
- (a) What are the advantages of having two tool turrets on a CNC lathe ?
 - (b) Describe a CNC wired EDM machine.
 - (c) List the applications of computer numerical control for fabrication operations other than machining.
5. Write a short note (any *four*) :— 16
- (a) Peak Drilling Cycle
 - (b) Threading Cycle
 - (c) Production Index
 - (d) Flexible Manufacturing System
 - (e) CNC Tapping.
6. Answer the following questions (any *two*) :— 16
- (a) What are the common types of tool magazines ? What are their desirable characteristics ?
 - (b) How does a hydraulic chuck work ?
 - (c) What are the purposes of a feed back device in a CNC machine tool ?
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