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BME-057

**DIPLOMA IN MECHANICAL
ENGINEERING (DME)**

Term-End Examination

December, 2019

BME-057 : CNC MACHINES

Time : 2 Hours

Maximum Marks : 70

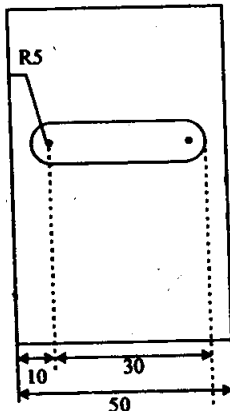
Note : Answer any five questions. All questions carry equal marks. Use of scientific calculator is permitted.

1. (a) What are the basic components of NC machines ? Explain. 7

(b) What are the advantages of CNC over conventional method of machine controls ? Also list out the application of CNC machine. 7

2. (a) What are the different co-ordinate systems used in NC systems ? Explain with suitable examples. 7
- (b) Explain the operation of DNC machine with neat sketch. 7
3. (a) What are the design features of CNC machine tools ? Differentiate between CNC and DNC control systems. 7
- (b) What are the various driving systems used in NC control machines ? Explain any one of them. 7
4. (a) What are the various controlled axes in milling and drilling machines ? Explain briefly any one with the help of sketch. 7
- (b) Explain about AC servomotor and stepper motors used in CNC machines. 7
5. (a) What are the fundamental elements required for developing manual part programming ? 7
- (b) Describe the rapid positioning with neat sketch. 7

6. (a) Describe the punch card programming format in CNC machine with suitable example. 7
- (b) What are the parameters required for linear interpolation and circular interpolation ? Explain with suitable examples. 7
7. (a) What are the different work holding devices for CNC machines ? Explain briefly. 7
- (b) Write a part programming for machining on CNC milling centre of the component shown in Fig. : 7



All dimensions are in mm.

8. Write short notes on any *four* of the following :

$3\frac{1}{2}$ each

- (a) Automatic tool changer
- (b) Work setting and offsets
- (c) Absolute and Incremental co-ordinate system
- (d) Spindle function and feed function
- (e) Driving systems
- (f) Machine tool zero point setting.