University of Mumbai
Examination 2021 under cluster 9 (FAMT)
Examinations Commencing from 1st June 2021
Program: Mechanical Engineering
Curriculum Scheme: Rev 2019
Examination: SE Semester IV
Course Code: MEC404 and Course Name: CAD/CAM
Time: 2 hour Max. Marks: 80
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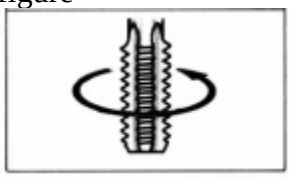
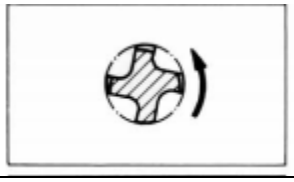
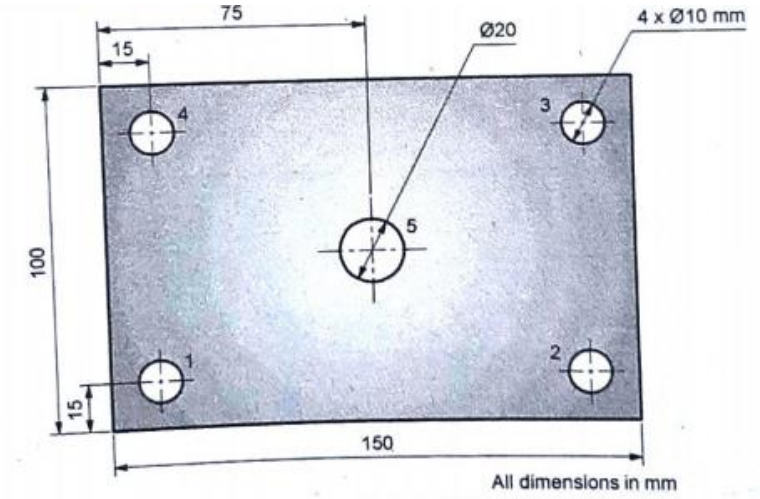
Q1.	**Choose the correct option for following questions. All the Questions are compulsory and carry equal marks**
1.	Which gives calculation of properties like mass, volume etc.
Option A:	Wireframe modeling
Option B:	Solid modeling
Option C:	Sketching
Option D:	Drafting
2.	Which of the following modeling type includes Boolean operations?
Option A:	Surface modeling
Option B:	Wireframe modeling
Option C:	CSG Modeling
Option D:	Bezier curve plotting
3.	The coordinate of a point A(4,6) when reflected about Y axis will be
Option A:	(4,6)
Option B:	(-4, 6)
Option C:	(4, -6)
Option D:	(-4, -6)
4.	In Standard 3D transformation , a geometry is rotated about a
Option A:	Point
Option B:	Line
Option C:	Plane
Option D:	Solid
5.	Which of the technique is a contact type imaging technique to get internal data?
Option A:	Ultrasound
Option B:	CT
Option C:	CBCT
Option D:	MRI
6.	Which of the following is slicing software which can be used for printing BioCAD model?
Option A:	Cura
Option B:	3D Slicer
Option C:	Solidworks
Option D:	Blender
7.	Which of the following technique will provide an image with best visibility in

	terms of resolution?
Option A:	Ultrasound
Option B:	Radiography
Option C:	Fluoroscopy
Option D:	MRI
8.	Which of the following is a variable length binary format?
Option A:	.hrd
Option B:	.nii
Option C:	.mnc
Option D:	.dcm
9.	---------- miscellaneous function is used to turn the spindle as shown in figure  
Option A:	M04
Option B:	M05
Option C:	M03
Option D:	M06
10.	Designation of main axes (X,Y,and Z) used in Turning Center is based on the Right Hand Rule, Assign the correct sequence of axis for the index finger, middle finger and thumb of the right hand.
Option A:	Z-Y-X
Option B:	Y-Z-X
Option C:	X-Y-Z
Option D:	Y-X-Z
11.	What purpose does support material serve in 3D printing?
Option A:	It increases the durability of the final product
Option B:	It allows easier assembly and post-processing
Option C:	It reduces waste
Option D:	It supports layers as they are printed, functioning as scaffolding
12.	Material in form of filament is used in
Option A:	SLA
Option B:	SLS
Option C:	LOM
Option D:	FDM
13.	Following ……is one of the type of additive manufacturing process
Option A:	Drilling
Option B:	Milling
Option C:	Forging
Option D:	Polyjet Modeling
14.	……is the prepossessing of rapid prototyping technology.

Option A:	Part building
Option B:	Support generation
Option C:	Cleaning
Option D:	Finishing
15.	Which of the following process gives more dimensional accuracy in a product
Option A:	SLA
Option B:	FDM
Option C:	SLS
Option D:	LOM
16.	In STL, a valid model would be one whose one edge is shared by .....facets only.
Option A:	1
Option B:	2
Option C:	3
Option D:	4
17.	Process of converting STL file model in to layers is called……..in RP.
Option A:	Chopping
Option B:	Slicing
Option C:	Cutting
Option D:	Trimming
18.	---------- considered as a tool which offers visualization for Virtual Manufacturing.
Option A:	Magnifying Lens
Option B:	Virtual Reality
Option C:	Atomic Microscope
Option D:	Electronic Microscope
19.	Which statement best defines “Augmented Reality”
Option A:	Technology that overlays digital information on top of real world items
Option B:	Technology that turns physical objects into digital objects
Option C:	Technology that puts users in a new digital environment
Option D:	Technology that can achieve a human level understanding of images.
20.	The ---------- leads the physical movements of the employees, labor and material resources in the organization has been reduced and converted to the digital movements.
Option A:	Subtractive Manufacturing
Option B:	Virtual Manufacturing
Option C:	Additive Manufacturing
Option D:	Conventional Manufacturing

Q2 (20 Marks)	Solve any Two Questions out of Three (10 marks each)
A	Determine the equation and degree of a Bezier Curve defined by a control polygon with vertices P_0 (2, 3), P_1 (3, 4), P_2 (3, 2), P_3 (4, 0). Generate at least five points on the curve.
B	A triangle ABC having vertices A (10, 5), B (20, 15) and C (25, 30) is reflected about a line y = -x. Determine the composite transformation matrix and the new coordinates of the triangle.
C	Write a manual part program to drill all the holes on component as shown in figure. The thickness of the component is 10 mm. Assume suitable data of speed and feed. 

Q3 (20 Marks)	Solve any Four out of Six (5 marks each)
A	Explain 2D and 3D computer graphics representation.
B	State the matrices to align a 3D vector with Z axis.
C	Explain the difference between CT Scan and MRI imaging techniques.
D	State the comparison between CNC and DNC machines.
E	Explain post processing activities in rapid prototyping.
F	Explain the benefits of Virtual manufacturing to the Manufacturing Industries.