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**Reg. No. :**

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**Question Paper Code: 96702**

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2022

Sixth Semester

Mechanical Engineering

19UME602 - SMART MANUFACTURING

(Regulations 2019)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. When Industry 4.0 starts? CO1- U  
(a) 2007                      (b) 2010                      (c) 2013                      (d) 2015
2. When did the 3rd industrial revolution prompted? CO1- U  
(a) 1950                      (b) 1960                      (c) 1970                      (d) 1980
3. which of the following is latest technology CO2- R  
(a) Manual Prototyping                      (b) Virtual Prototyping  
(c) soft prototyping                      (d) Rapid Prototyping
4. Which one of the process is subtractive prototyping? CO2- R  
(a) CNC                      (b) AWJM                      (c) AJM                      (d) Stereo lithography apparatus
5. Which one of the following is the solid based additive manufacturing system? CO3- U  
(a) Stereo lithography                      (b) Solid ground curing  
(c) Fused deposition modeling                      (d) Electron beam melting
6. Processes in which we turn raw materials into standard stock. CO3- U  
(a) secondary process    (b) primary process    (c) subtractive process    (d) Machining
7. Robot is derived from Czech word CO4- U  
(a) Robota                      (b) Rotor                      (c) Rotation                      (d) Revolution

8. Robot is a CO4- U  
 (a) Programmable      (b) zeroth pass      (c) Both a & b      (d) ALL of the above
9. Which of the following is a contact type of automated inspection method? CO5- U  
 (a) Inspection probe      (b) Laser scanning  
 (c) Electric field      (d) All of the above
10. Which of the following is an example of Digital Image Processing? CO5- U  
 (a) Computer Graphics      (b) Pixels  
 (c) Camera Mechanism      (d) All of the mentioned

PART – B (5 x 2= 10 Marks)

11. Classify drivers of industry 4.0 and explain in detail CO1- U
12. Classify the AM process? CO2- U
13. Write the products of FDM? CO3- U
14. List out the few robot applications area in manufacturing. CO4- U
15. Write the classification of AVI system . CO5- U

PART – C (5 x 16= 80 Marks)

16. (a) Demonstrate Cyber physical systems CO1- U      (16)  
 Or  
 (b) Illustrate difficult and challenges in adaption of industry 4.0 CO1- U      (16)
17. (a) Write a note on the benefits and applications of AM. CO2- U      (16)  
 Or  
 (b) Differentiate the liquid based and solid based AM systems. CO2-U      (16)
18. (a) Write the steps in pre build and post-build process for LOM? CO3- U      (16)  
 Or  
 (b) Write the working principles, details of process of Electron Beam Melting. CO3- U      (16)
19. (a) Write the roles in assembly and inspection of robots CO4- App      (16)  
 Or  
 (b) Identify and discuss about social and labor issues related to robotic applications in manufacturing industry number of teeth on all the gears and their speeds. CO4- App      (16)

20. (a) Write the classification of AVI system with proper explanation CO5- App (16)

Or

(b) Explain histogram and give its equalization CO5- App (16)

