PAPER ID-310778

Subject Code: KPI051

Roll No: | | | | | | | | | | | | | |

B. TECH.
(SEM-V) THEORY EXAMINATION 2020-21
ADVANCE MANUFACTURING SCIENCE

Time: 3 Hours ***Total Marks: 100***

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 10 = 20

Q no.	Question	Marks	CO
a.	What is the need for unconventional machining processes?	2	CO1
b.	Distinguish between traditional and non- traditional machining processes.	2	Co1
c.	Why is the servo-controlled system needed in EDM?	2	Co1
d.	What are the properties are expected from the electrolyte used in the ECM?	2	CO1
e.	Explain contour roll forming.	2	CO2
f.	Differentiate between conventional forming and advance forming methods.	2	CO2
g.	What do you mean by ceramic cell casting?	2	CO3
h.	Write down the CO_2 Moulding.	2	CO3
i.	What do you mean by unconventional hybrid machining process?	2	CO5
j.	What are the important functions of abrasive particles used in ECG?	2	CO5

SECTION B

2. Attempt any *three* of the following:

Q no.	Question	Marks	CO
a.	With a neat sketch explain the process of AJM? Explain the process control measures to be taken to control quality and MRR.	10	CO1
b.	In an EDM process using RC relaxation circuit, a12 mm diameter through hole is made in a steel plate of 50 mm thickness using a graphite tool and kerosene as a dielectric. Assume discharge time is to be negligible. Machining is carried out under the following conditions. Resistance = 40 ohm Capacitance = 20μF Supply voltage = 220V Discharge Voltage = 110V Find Time for one cycle in millisecond and average power input in KW.	10	CO1
c.	Explain the principle of high energy rate forming (HERF) methods. Also explain stretch forming in detail.	10	CO2
d.	Explain the principle of Friction welding. Also explain friction stir welding with help of neat sketch	10	CO4
e.	What are the three methods of metal removal by electrolyte action in combination with rubbing of work piece in ECG process? Explain the diagram. What are the conditions to be satisfied to ensure high effectiveness of ECG method of machining?	10	CO5

SECTION C

3. Attempt any *one* part of the following:

Q no.	Question	Marks	CO
a.	Discuss the effects of the following parameters on MRR and surface finish in USM:	10	CO1

	i) amplitude and frequency ii) Abrasive size iii) Concentration of abrasives iv) Material hardness		
b.	What is the fundamental principle of abrasive jet machining? Briefly explain with a neat diagram, the AJM process. In AJM, how is material removal rate increased?	10	CO1

4. Attempt any *one* part of the following:

Q no.	Question	Marks	CO
a.	Explain the mechanism of material removal of electrochemical spark machining process. Also derive the formula of Material Removal rate.	10	CO1
b.	Explain the features of EBM unit. Explain the effect of increasing the accelerating potential on MRR.	10	CO1

5. Attempt any *one* part of the following:

Q no.	Question	Marks	CO
a.	With help of neat sketch explain electrohydraulic forming. Also write down their product applications.	10	CO2
b.	Explain the principle of explosive forming process. What are the limitations of explosive forming?	10	CO2

6. Attempt any *one* part of the following:

Q no.	Question	Marks	CO
a.	Explain the continuous casting process with the help of suitable example. Also state its advantages and product applications.	10	CO3
b.	With the help of suitable diagram explain Laser welding process. Also explain the different methods for production of Laser.	10	CO4

7. Attempt any *one* part of the following:

Q no.	Question	Marks	CO
a.	With the help of suitable diagram explain principle of Electrochemical spark machining process. Also Explain main components of electrochemical spark machining.	10	CO5
b.	With the help of neat sketch explain wire electro discharge machining. Also explain the process parameters of wire electro-discharge machining process.	10	CO5