Register Number:……..

KUMARAGURU
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GENERAL INSTRUCTIONS TO THE CANDIDATES

1. Candidates are instructed to answer the questions as per Bloom's Taxonomy knowledge level (K_1 to K_6)
2. Candidates are strictly instructed not to write anything in the question paper other than their roll number.
3. Candidates should search their pockets, desks and benches and handover to the Hall Superintendent/ Invigilator if any paper, book or note which they may find therein as soon as they enter the examination hall.
4. Candidates are not permitted to bring electronic watches with memory, laptop computers, personal systems, walkie-talkie sets, paging devices, mobile phones, cameras, recording systems or any other gadget / device /object that would be of unfair assistance to him / her.
5. Corrective measures as per KCT examination policies will be imposed for malpractice in the hall like copying from any papers, books or notes and attempting to elicit the answer from neighbours.

B.E DEGREE EXAMINATIONS: DEC 2015

(Regulation 2014)

Third Semester

MECHANICAL ENGINEERING

U14MET305: Manufacturing Technology - I

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. Match List I with List II and select the correct answer using the codes given below the lists: CO1 [K_1]

List I	List II
A. Chaplet	i. . A replica of the casting to be made
B. Cope	ii. Stores hot liquid metal
C. Pattern	iii. Support's core
D. Riser	iv. Upper part of the mold

	A	B	C	D
a)	iii	i	ii	iv
b)	iii	iv	i	ii
c)	iv	iii	i	ii
d)	i	iv	iii	ii

2. Which of the following are the requirements of an ideal gating system? CO1 [K_2]

(i) The molten metal should enter the mold cavity with as high a velocity as possible

(ii) It should facilitate complete filling of the mold cavity

(iii) It should be able to prevent the absorption of air or gases from the surroundings in the molten metal while flowing through it

Select the correct answer using the codes given below:

a) (i), (ii) and (iii) b) (i) and (ii)

c) (ii) and (iii) d) (i) and (iii)

3. In oxyacetylene gas welding, for complete combustion, the volume of oxygen required per unit volume of acetylene is CO2 [K_1]

a) 1 b) 1.5

c) 2 d) 2.5

4. Which of the following joining methods does not use filler metal? CO2 [K_1]

a) Gas welding b) Arc welding

c) Resistance welding d) Soldering

5. Consider the following operations in forging a hexagonal bolt from a round bar stock Whose diameter is equal to bolt diameter CO3 [K_1]

1. Flattering 2. Upsetting 3. Swaging 4. Cambering

The correct sequence of these operations is

a) 1,2,3,4 b) 2,3,4,1

c) 2,1,3,4 d) 3,2,1,4

6. Assertion (A): To obtain large deformations by cold working intermediate annealing is not required CO3 [K_1]

Reason (R): Cold working is performed below the recrystallization temperature of the work material.

a) Both A and R are true and R is the correct explanation of A

b) Both A and R are true but R is NOT the correct explanation

c) A is true but R is false

d) A is false but R is true

7. Consider the following characteristics about a rolling process: CO3 [K_1]

(i) It shows work hardening effect

(ii) Its surface finish is poor

(iii) Heavy reduction in area can be obtained

Which of these characteristics are associated with hot rolling?

a) (i) and (ii) b) (i) and (iii)

c) (ii) and (iii) d) (i), (ii) and (iii)

8. Indirect extrusion can produce a hollow section by using a CO3 [K_1]

(i) Solid ram (ii) Hollow ram

(iii) Mandrel

Of these

a) (i) is true b) (ii) true

c) (iii) is true d) (i)and (ii) are true

9. Deep drawing can be used to produce CO4 [K_1]

(i) Cooking pots (ii) Beverage cans

(iii) Automobile fuel tanks (iv) Connecting rods

Of these

a) (i) and (ii) are true b) (iii) and (iv) are true

c) (i), (ii) and (iii) are true d) (i), (ii), (iii) and (iv) are true

10. Which of the following processes are classified as high energy-rate forming processes? CO4 [K_1]

a) Shear spinning b) Redrawing

c) Explosive forming d) Bending

PART B (10 x 2 = 20 Marks)

(Answer not more than 40 words)

11. List the essential properties considered in the selection of cores sand. CO1 [K_2]

12. Mention any two merits and demerits of die casting. CO1 [K_2]

13. List common work holding devices and accessories in sheet metal forming. CO5 [K_2]

14. Differentiate brazing and soldering. CO2 [K_2]

15. Write down the advantage of cold working process. CO3 [K_2]

16. Why the crank shaft usually made by forging rather than casting? CO3 [K_2]

17.	Why more force required in direct extrusion than indirect extrusion?		CO3	[K_2]
18.	Define formability.		CO4	[K_2]
19.	What are the applications of stretch forming process?		CO4	[K_2]
20.	Write a short notes on magnetic pulse forming.		CO4	[K_2]

Answer any FIVE Questions:-
PART C (5 x 14 = 70 Marks)
(Answer not more than 300 words)

Q.No. 21 is Compulsory

21.	(i) Explain the working principle of investment casting	(7)	CO1	[K_2]
	(ii) Discuss the casting defects and their inspection methods.	(7)	CO1	[K_2]
22.	(i) What are the functions of flux coating in SMAW electrodes?	(5)	CO2	[K_2]
	(ii) Sketch the three types of Oxy-acetylene flames and state their characteristics and applications.	(9)	CO2	[K_2]
23.	(i) List the differences between open die and closed die forging process.	(5)	CO3	[K_2]
	(ii) Discuss with neat sketch any three forging operations.	(9)	CO3	[K_2]
24.	Describe the principle of rolling. Write the various kinds of rolling mills along with their applications.		CO3	[K_2]
25.	(i) Explain the features and applications of rubber pad forming process.	(7)	CO4	[K_2]
	(ii) Describe the principle and applications of explosive forming process with neat sketch.	(7)	CO4	[K_2]
26.	Describe the hydro forming process with the help of neat diagram.		CO4	[K_2]

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