Answer any FOUR Questions
required

Mechanical Engineering
MER6C3 Fluid Machin...

Institute of Engineering and Technology,
Devi Ahilya Vishwavidyalaya Indore
Class Test 3 **Time : 70 min. MM 20**
III B.E. Mechanical Engg.
MER6C2 Production Engg. II

Note: All questions are compulsory and carry equal marks...assume suitable data wherever necessary.

Q: 1 Explain the any three methods to evaluate surface roughness and also explain any one method to measure surface roughness.

Q:2 Explain any two methods to improve the surface roughness of metallic components.

Q:3 What are polymer matrix composites. Explain the characteristic advantages and limitations of FRP.

Mathematics

Institute of Engineering and Technology,
Devi Ahilya Vishwavidyalaya, Indore
CLASS TEST-II (24 Sept. 2022)
III BE MECHANICAL ENGINEERING
MER6C2 PRODUCTION ENGG.-II

Time: 70 min. MM: 20

Note: All questions are compulsory and carry equal marks. Answers should be to the point neatly written and supported with diagrams and figures. Assume suitable data if required.

Q:1 Explain the significance of the following : (i) Friction in Rolling (ii) Flash in impression die forging (iii) Backward extrusion (iv) lubrication in meal forming processes.

Q:2 Explain the various considerations for the design of die for **impression die forging process.**

Q:3 Derive the expression for the estimation of forging force for the **open die forging of a circular disc.**

Institute of Engineering and Technology,
Devi Ahilya Vishwavidyalaya, Indore
CLASS TEST-I (February 2022)
III BE MECHANICAL ENGINEERING
MER6C2 PRODUCTION ENGG.-II

Time: 70 min. MM: 20

Note: All questions are compulsory and carry equal marks. Answers should be to the point neatly written and supported with diagrams and figures. Assume suitable data if required.

Q:1 In an orthogonal cutting test, the following values were known or obtained... Rake angle = 20 degrees, Thrust force = 500 N, Uncut chip thickness = 0.14 mm, Width of cut = 5 mm, Cutting speed = 2 m/s, Chip thickness = 0.70 mm. If the force in the cutting-speed direction is two times that of the thrust force, calculate the average yield shear stress of the work material.

Q:2 The tool life of a high-speed steel (HSS) tool and carbide tool have the same tool life of 60 min. at a cutting speed of 75 m/min. The exponent of tool life in Taylor's equation (n) is 0.15 for HSS while it is 0.2 for carbide. Compare the life of the two tools at a speed of 90 m/min.

Q:3 Explain briefly the Ultrasonic Machining process and also explain the key elements of the process-equipment used in the USM

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$d\sigma_\theta = 2\tau \frac{d}{h}$

B-202 (24)

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MER6C2 Production Engg. II

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Institute of Engineering & Technology.
III B.E. Mechanical Engineering
Class Test II (March, 2019)
MER6C2 Production Engineering-II

Time : 70 min. **Max. Marks : 20**

Note: Attempt all questions. Supplement your answers with neat sketches wherever necessary. Each question carries equal marks. Make suitable assumptions wherever necessary.

Q:1 Derive the expression for the total forging force per unit length of the workpiece for the open die forging of a flat strip.

Q:2 The results of machining steel with two grades of tool material are given below:

Tool	Taylor's Exponent	Cutting speed for 1 min. tool life (m/min.)
A	0.20	100
B	0.25	120

What are the standard tool life equations for these tool materials? For a *180 min.* tool life, which material will be preferred, and why? If the tool grinding and changing time is *15 min.* for tool A, which of the available cutting speed *45 m/min* or *50 m/min* will be preferred?

Q:3 Differentiate between conventional and unconventional machining processes.

Q:4 State the principle of ECM, draw the schematic diagram of the equipment and state the important characteristics of the process.

Institute of Engineering & Technology.
III B.E. Mechanical Engineering
Class Test III (April, 2019)
MER6C2 Production Engineering-II

Time : 70 min. **Max. Marks : 20**

Note: Attempt all questions. Supplement your answers with neat sketches wherever necessary. Each question carries equal marks. Make suitable assumptions wherever necessary.

Q:1 Estimate the maximum force required for extruding a cylindrical aluminium billet of 75 mm diameter and 100 mm length to a final diameter of 20 mm. The average tensile yield stress for aluminium is 170 N/mm^2. What percent of the total power input will be lost in friction at the start of operation?

Q:2 Discuss the advantages and limitations of powder metallurgy.

Q:3 Explain the following terms related to powder metallurgy...

(i) Specific surface and shape of metal powders (ii) Theoretical density (iii) Green density and apparent density (iv) Compressibility and flowability (v) Blending and Mixing (vi) Lamination cracking and blowout

Q:4 Explain briefly the design considerations for the polymer matrix composites.

Institute of Engineering & Technology.
III B.E. Mechanical Engineering
Class Test I (05/02/2019)
MER6C2 Production Engineering-II

Time : 70 min. **Max. Marks : 20**

Note: Attempt all questions. Supplement your answers with neat sketches wherever necessary. Each question carries equal marks. Make suitable assumptions wherever necessary.

Q:1 Show schematically the merchant force circle in orthogonal cutting. Derive the equations for the shear and friction forces in terms of the material properties and cutting process parameters. Give in detail the assumptions made while arriving at the final equations.

Q:2 Describe the Orthogonal Rake System and the geometry of a single point cutting tool as per the ORS system. Write the equations for the conversion of tool angles between ASA and ORS system.

Q:3 In an orthogonal machining operation with a tool of rake angle 15°, the cutting force and thrust force were measured as 1200 N and 200 N respectively, under the following cutting conditions: v = 20 m/min., undeformed chip thickness = 0.5 mm, thickness of chip = 0.7 mm. Calculate the percent of total energy consumed in friction.

Q:4 What is meant by (a) built-up edge and (b) continuous chip? Explain the conditions which promote them during metal cutting.