



## **BRAINWARE UNIVERSITY**

## Term End Examination 2023-2024 Programme - Dip.ME-2021 Course Name - Design of Machine Elements Course Code - DME602 ( Semester VI )

Full Marks: 60

[The figure in the margin indicates full marks. Candidates are required to give their answers in their

own words as far as practicable.]

## Group-A 1 x 15=15 (Multiple Choice Type Question) Choose the correct alternative from the following: (i) Select Factor of safety is defined as the ratio of b) Compressive stress / Tensile stress a) Ultimate stress / Permissible stress d) Tensile strain / Compressive stress c) Ultimate stress / Shear stress (ii) Identify the material which has maximum ductility b) Nickel a) Mild steel d) Aluminium c) Copper (iii) Choose the percentage of carbon in cast iron varies from b) 0.5 to 1 a) 0.1 to 0.5 d) 1.7 to 4.5 c) 1 to 1.7 (iv) Select Slenderness ratio is defined as the ratio of b) effective length of column to width of a) maximum size of column to minimum size column of column d) effective length of column to least radius of c) width of column to depth of column gyration of the column (v) Select the pipe joint, mostly used for pipes carrying water at low pressures b) spigot and socket joint a) socket joint d) nipple joint c) union joint (vi) Choose the application of Cotter joints b) Axial tensile load a) Axial tensile or compressive load d) Twisting load c) Axial compressive load (vii) Choose the application of bushed-pin type flange coupling b) For small shafts rotating at slow speeds a) For intersecting shafts d) For parallel shafts c) When the shafts are not in exact alignment (viii) Choose the application of Maximum principle stress theory a) Cast iron shafts b) Steel shafts

d) Plastic shafts

c) Aluminum shafts

(IX) Identity, the theory which gives satisfactory resu	alts for brittle materials	
<ul> <li>a) Maximum shear stress theory</li> <li>c) Shear strain energy theory</li> <li>(x) Identify, the property which is essential for sprir</li> </ul>	b) Maximum principle stress theory d) None of the mention	
a) Stiffness c) Resilience (xi) Choose the parameter that control the maximus	b) Ductility d) Plasticity	
a) Lead angle of screw c) Pitch of screw (xii) Select the category of Antifriction bearings	b) Friction angle d) Nominal diameter of screw	
<ul><li>a) Ball and Roller bearings</li><li>c) thin lubricated bearings</li><li>(xiii) The contact ratio is defined as</li></ul>	b) sleeve bearings d) None of these	
a) Length of arc of recess to the circular pitch	b) Length of path of contact to the circu pitch	lar
c) Length of arc of contact to the circular pitch	d) Length of arc of approach to the circupitch	ılar
(xiv) Select the unit of strain		
<ul><li>a) N-mm</li><li>c) mm</li><li>(xv) Choose the key that is used to transmit torque in</li></ul>	b) N/mm d) no unit	
a) Tangent key c) Saddle key	b) Kennedy key d) Taper key	
Group (Short Answer Te		
(Short Answer Ty	pe Questions)	3 x 5=15
<ol> <li>Write a short note on Factor of safety.</li> <li>Define durability</li> <li>Write a short note on S-N Curve.</li> <li>Explain the application of knuckle joint</li> <li>Justify the statement The hollow shaft has greater equal weight.</li> </ol>	strength and stiffness than solid shaft of	(3) (3) (3) (3)
OR		
Explain the different types of couplings.		(3)
<b>Grou</b> (Long Answer Ty	Programme and the second secon	5 x 6=30
<ol> <li>Write a short note on Fatigue</li> <li>Illustrate and draw the creep curve.</li> <li>Explain the differences between open belt and creep.</li> <li>State Hooke's Law and explain its importance.</li> <li>Explain Maximum Shear Stress Theory.</li> <li>Explain the causes of stress concentration.</li> </ol>	oss belt drive.	(5) (5) (5) (5) (5)
OR Explain the advantage and drawback of contributes		(-)
Explain the advantage and drawback of centrifuga	il Clutch	(5)

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