Roll No. _____

END SEMESTER EXAMINATION
SEMESTER- (New/Old Course)

COURSE CODE : ME 504 | **DURATION : 2 (TWO)HRS**
COURSE TITLE : Machine Design & Drawing | **MAXIMUM MARKS : 50**
SESSION : JULY-DEC' 2021 | **PASS MARKS : 35 %**

NOTE: *1. Attempt any **5 (five)** questions.*
2. Mark for each question is shown against it.
3. Assume suitable logical data wherever necessary.

1. **(a)** Define machine design. Give brief description about the basic procedure of machine design with the help of flow chart diagram. **(5)**
(b) Find the number of R20/4 (100……..1000) derived series. **(5)**

2. **(a)** Define: i) limits ii) Fits iii) Tolerance. Illustrate in diagram. **(5)**
(b) Define basic-hole system and basic-shaft system. **(5)**

3. **(a)** Define Shaft, Axle and Spindle. What are the two types of shaft from machine design subject point of view? **(4)**

(b) Find the diameter of a solid steel shaft to transmit 20kW at 200 rpm. The ultimate shear stress for the steel may be taken as 360 MPa and factor of safety as 8. **(6)**
If a hollow shaft is to be used in place of the solid shaft, find the inside and outside diameter when the ratio if inside to outside diameter is 0.5.

4. **(a)** Obtain the expression of torque required to raise the load for screw jack **(7)**
(b) Define maximum efficiency of screw jack? **(3)**

5. **(a)** Show the diagram of typical ***double riveted double strap butt joint*** and indicate ***Pitch, Back Pitch, Diagonal Pitch*** and ***Margin*** in the diagram. **(4)**

(b) A triple riveted double strap butt joints has 4 rivets in each row width of the plates is 100 mm and thickness of plates is 10mm.Diameter of shank of rivets is 12mm.Tensile strength is 140 MPa and Shear strength is 100 MPa. Find the maximum applicable load on the plates and the joint efficiency. **(6)**

6. **(a)** Define bearing and writes its classification. **(5)**
(b) What is anti-friction Bearing? Write short note on its type. **(5)**

7. **(a)** Find out the dimension of a flanged joint for a cast iron pipe 250mm diameter to carry a pressure of 0.7 N/mm^2. **(10)**

8. **(a)** Write any four types of materials and their uses for Pipes. **(5)**
(b) Write short note on Pulley drive with suitable sketches. **(5)**

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