

**Maharashtra Institute of Technology, Aurangabad**

(An Autonomous Institute)

END SEMESTER EXAMINATION

**Second Year B.Tech (Mechanical Engineering) – Feb/Mar-2023**

Course Code: MED202

Course Name : Fluid Mechanics and Fluid Machines

Duration : 2 Hrs

Max. Marks: 50

Date : 06 Feb,2023

Instructions :

- i) All questions are compulsory  
 ii) Use of non programmable calculator is allowed  
 iii) Assume suitable data wherever necessary and clearly state it  
 iv) Figures to right indicate full marks

Q. 1	Answer any five(Marks:10)	Marks	CO	BL	PI
a)	Define weight density and specific gravity, write their units	2	01	I	1.1.1
b)	Define Velocity potential function and stream function	2	01	I	1.1.1
c)	State Bernoulli's theorem for ideal fluid	2	01	I	1.4.1
d)	Enlist minor losses in pipes	2	01	I	1.3.1
e)	Enlist any four properties of fluids	2	01	I	1.1.1
f)	Define manometric efficiency of pumps	2	01	I	1.4.1
g)	Define impulse and reaction turbine	2	01	I	1.1.1
h)	Enlist types of draft tubes	2	01	I	1.1.1
<b>Q.2</b>	The dynamic viscosity of an oil used for lubrication between a shaft and sleeve is 6 poise. The shaft is of diameter 0.4 meter and rotates at 190 rpm. calculate power lost in bearing for a sleeve length of 90mm. the thickness of oil film is 1.5 mm.	8	02	II	1.3.1
<b>Q.3</b>	Differentiate between 1. Venturimeter and Orifice meter 2. Steady and unsteady flow	8	03	II	1.4.1
<b>Q.4</b>	Explain with neat sketch Kaplan turbine? OR Explain with neat sketch Centrifugal pump?	8	02	II	2.1.1
<b>Q.5</b>	A Kaplan turbine runner is to be designed to develop 9100 kW. The net available head is 5.6 meters. If the speed ratio is 2.09, flow ratio 0.68 and overall efficiency =86 percent and diameter of boss is 1/3 of diameter of runner. Find the diameter of runner its speed and specific speed of the turbine OR For Laminar flow in a pipe the drop in pressure $\Delta p$ is function of pipe length L, its diameter D, mean velocity of flow V, and the dynamic viscosity $\mu$ , Using Raleigh's method, develop the expression for $\Delta p$ .	8	4,6	III	1.3.1
<b>Q.6</b>	Write a short note on (i) U tube manometer (ii) Major and Minor losses in pipes OR (i)Draft tubes (ii) Priming of pumps	8	2	III	2.1.1