CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

Examination	:	B.Tech IV Sem Supplementary Examinations January-2025
Course Name	:	Measurements & Instrumentation
Course Code	:	A402307
Branch	:	Electrical & Electronics Engineering
Date & Session	:	07-01-2025 AN Duration: 3 hours Max. Marks: 60

(Note: Assume suitable data if necessary)

PART-A
Answer all TEN questions
Each question carries ONE mark.   10x1=10M

1. Give the classification of electrical measuring Instruments.   1 M
2. List the advantages and disadvantages of PMMC Instruments.   1 M
3. How a potentiometer is used to calibrate voltmeter?   1 M
4. Write down the formulas for ratio and phase angle errors of a current transformer. 1 M
5. What is error and compensation in energy meter?   1 M
6. Mention errors in dynamometer wattmeters.   1 M
7. How the DC bridge is balanced?   1 M
8. Write down bridge balance equation for Maxwell's bridge.   1 M
9. Define the Gauge Factor of a Strain Gauge.   1 M
10. What are the advantages of Digital multimeter.   1 M

PART-B
Answer the following. Each question carries TEN Marks.   5x10=50M

11.A). Explain the construction details of Repulsion – attraction type moving iron instrument. Derive the torque equation for moving iron instrument.   10M

OR

11. B). Explain in detail about deflecting, damping and control torque.   10M

12. A). Explain the operation of polar and coordinate type AC potentiometer.   10M

OR

12. B). Derive the ratio and phase angle errors of a potential transformer.   10M

13. A). Explain trivector meter and maxiumum demand meter.   10M

OR

13. B). Draw the neat diagram and explain the operation of three phase energy meter. 10M

14. A). Explain the procedure of measuring a low resistance with the help of Kelvin's double bridge. Derive the necessary relation for finding the unknown resistance under balanced condition of the bridge.   10M

OR

14. B). Describe working of Schering bridge. Derive the equation of capacitance and dissipation factor.   10M

15. A). Explain the principle of operation of Strain Gauge and its advantages.   10M

OR

15. B). Explain how CRO helps in various measurements. Explain how frequency is measured from Lissajous patterns in CRO.   10M

*****

CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

Examination	:	B.Tech IV Sem Supplementary Examinations January-2025
Course Name	:	Power Systems-II
Course Code	:	A402308
Branch	:	Electrical & Electronics Engineering
Date & Session	:	09-01-2025 AN Duration: 3 hours Max. Marks: 60

(Note: Assume suitable data if necessary)
PART-A
Answer all TEN questions
Each question carries ONE mark.   **10x1=10M**

1.	Draw the nominal π network.	1 M
2.	A,B,C & D constant of nominal-T network.	1 M
3.	Define Sag.	1 M
4.	Write formula for power loss due to corona.	1 M
5.	What are the specifications of a traveling wave?	1 M
6.	List any two disadvantages of low power factor.	1 M
7.	Define load compensation.	1 M
8.	List any two load characteristics of overhead lines.	1 M
9.	Write any two severe faults.	1 M
10.	Write ascending order of possibility of occurrence of different faults.	1 M

PART-B
Answer the following. Each question carries TEN Marks.   **5x10=50M**

11.A).	A single phase transmission line has a resistance of 0.2Ω and an inductance of 0.4Ω. Solve the voltage at the sending end to give 500KVA at 2KV at the receiving end at load power factor of i) unity ii) 0.707 lagging.	10M

OR

11. B).	What do you mean by medium transmission line? Derive necessary formulas with neat diagram.	10M
12. A).	A string of 6 insulator units has a self-capacitance equal to 10 times the pin to earth capacitance. Solve voltage distribution across various units as a percentage of total voltage across the string?	10M

OR

12. B).	Summarize the effect of wind and ice loading is taken into account while determining the sag stress of an overhead line conductor.	10M
13. A).	Define power factor. Write three different formulae of PF. Explain the effect of poor power factor with the help of phasor diagrams.	10M

OR

13. B).	Discuss the travelling wave phenomenon in lines terminated through resistance and capacitance.	10M

(P.T.O..)

14. A). Write briefly about uncompensated transmission line.   10M

OR

14. B). i) Write the advantages of per unit system.   5M
        ii) Model one-line diagram representing per-unit system L3.   5M

15. A). Discuss fault calculation of LG and LLG faults.   10M

OR

15. B). Describe the significance of symmetrical components.   10M

*****

CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

Examination	:	B.Tech IV Sem Supplementary Examinations January-2025
Course Name	:	Fluid Mechanics & Hydraulic Machinery
Course Code	:	A401201
Branch	:	Electrical & Electronics Engineering
Date & Session	:	10-01-2025 FN Duration: 3 hours Max. Marks: 60

(Note: Assume suitable data if necessary)

PART-A
Answer all TEN questions
Each question carries ONE mark. 10x1=10M

1.	Distinguish between real fluids and ideal fluids.	1 M
2.	What is the relation between absolute pressure and gauge pressure?	1 M
3.	Define stream lines and streak lines.	1 M
4.	Write the forces considered in the formulation of Euler's equation.	1 M
5.	Enlist the major loses and minor loses in a fluid flow.	1 M
6.	What do you mean by Boundary layer thickness? Sketch.	1 M
7.	Distinguish between reaction and impulse turbines.	1 M
8.	What is water hammer?	1 M
9.	What is an air vessel? Write its importance in reciprocating pumps.	1 M
10.	Define specific speed of a centrifugal pump. Write the mathematical expression.	1 M

PART-B
Answer the following. Each question carries TEN Marks. 5x10=50M

11.A).	Two horizontal flat plates are placed 0.15 mm apart and the space between them is filled with an oil of viscosity I poise. The upper plate of area $1.5m^2$ is required to move with a speed of 0.5 m/s relative to lower plate. Determine the necessary force and power required to maintain this speed.	10M

OR

11. B).	An inverted differential manometer containing an oil of specific gravity 0.9 is connected to find the difference of pressures at two points of a pipe containing water. If the manometer reading is 40 cm, find the difference of pressures.	10M

12. A).	Define the equation of continuity. Obtain an expression for continuity equation for three dimensional flow.	10M

OR

12. B).	Write Euler's equation of motion along a stream line and integrate it to obtain Bernoulli's equation. State all the assumptions.	10M

13. A).	Explain what is meant by separation of boundary layer. Describe with sketches the methods to control separation.	10M

OR

13. B).	With help of a neat sketch explain the working of Venturi meter and derive the expression for calculating the discharge.	10M

(P.T.O..)

14. A). i) Give classification of hydraulic turbines. Discuss the different factors that form basis of selection of the type of turbine. 5M

ii) Define cavitation and causes for creating the cavitation. Mention the effects of cavitation and methods of its prevention. 5M

OR

14. B). A jet of water coming out of a nozzle of 25 cm^2 with a velocity of 35 m/s strikes to a flat plate inclined at 300 to the axis of the jet. Find the force exerted on the plate normal to the axis of the plate. Also, the ratio of discharge gets divided after striking the plate. 10M

15. A). A centrifugal pump of 40 cm outer diameter is running at 1440 rpm. The exit vane angle is 35^0. The radial velocity of flow is constant and equal to 2m/s. Find the work done by the impeller if the flow is 100 lit/sec and exit relative velocity of water. 10M

OR

15. B). A single acting reciprocating pump has a 20 cm cylinder with a stroke of 40 cm. The suction pipe is 10 cm diameter and 5m long. If the speed of the pump is 30 rpm. Determine the maximum suction lift if separation occurs at 2.5m water (abs). Assume atmospheric pressure = 10.0m of water (abs). 10M

*****

CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

Examination	:	B.Tech IV Sem Supplementary Examinations Jan-2025	
Course Name	:	Electrical Machines-II	
Course Code	:	A402304	
Branch	:	EEE	
Date & Session	:	25-01-2025 FN Duration: 3 hours	Max. Marks: 60

(Note: Assume suitable data if necessary)
PART-A
Answer all TEN questions
Each question carries ONE mark. 10x1=10M

1.	Write the principle of operation of the 3-Φ Induction Motor.	1 M
2.	Mention the applications of three-phase Induction Motors.	1 M
3.	What is the phenomenon of crawling in an Induction Motor?	1 M
4.	List three starting methods of 3-phase induction motors.	1 M
5.	What is the difference between concentrated and distributed windings?	1 M
6.	What is an armature reaction in an alternator?	1 M
7.	List any three conditions for parallel operation of alternators.	1 M
8.	What is a synchronous condenser?	1 M
9.	Write the advantages of a universal motor.	1 M
10.	Draw the equivalent circuit of a single-phase induction motor.	1 M

PART-B
Answer any FIVE questions. One question from each unit either A or B (Compulsory)
Each question carries TEN Marks. 5x10=50M

11. A.	Explain the construction of a 3-phase induction motor with a neat sketch.	10M

OR

11. B.	Describe the principle of operation of a 3-phase induction motor with the help of producing a rotating magnetic field.	10M

12. A.	Discuss the torque-slip characteristic of an induction motor working at rated Voltage and frequency with a neat diagram.	10M

OR

12. B.	Explain different speed control methods of 3-phase Induction Motor.	10M

(P.T.O.)

13. A. Explain in detail the constructional features and working principle of a three-phase alternator.   10M

OR

13. B. Explain the procedure to calculate the voltage regulation of an alternator by E.M.F method.   10M

14. A. Explain the effect of change of excitation and mechanical power input in synchronous machine.   10M

OR

14. B. Explain hunting of synchronous machines and methods of its prevention.   10M

15. A. i. Explain the working of single-phase induction motor.   5M

    ii. Describe the principle of operation of Shaded Pole motor.   5M

OR

15. B. i. Discuss why single-phase induction motors do not have a starting torque.   5M

    ii. Explain the working of AC series motor.   5M