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(UGC AUTONOMOUS)

Examination	:	B.Tech IV Semester Supplementary Examinations Nov/Dec-2025
Course Name	:	Electrical Machines-II
Course Code	:	A402304
Branch	:	Electrical & Electronics Engineering
Date & Session	:	08-12-2025 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. A three phase 6-pole 50Hz induction motor runs at 960 rpm. Find Synchronous speed.   1 M
2. State the term rotor frequency of the induction motor.   1 M
3. Define cogging.   1 M
4. List the types of starters used for starting of an induction motor.   1 M
5. Define voltage regulation of an alternator.   1 M
6. In a 4-pole, 3-phase alternator, armature has 36 slots. It is using an armature winding which is short pitched by one slot. Calculate its coil span factor.   1 M
7. Name any two methods of starting a Synchronous motor.   1 M
8. Define synchronizing power torque.   1 M
9. List the types of single phase motors.   1 M
10. How can reverse the rotation of a 1-phase, split-phase motor?   1 M

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

11.A). Define rotor e.m.f, rotor frequency, rotor reactance, rotor current and power factor at standstill and during operation.   10M

OR

11. B). In the case of an 8-pole induction motor the supply frequency was 50 Hz and the shaft speed was 735 rpm. Compute (i) Synchronous speed, (ii) Slip speed and (iii) Percentage slip.   10M

12. A). Draw and explain the torque slip characteristics of 3 phase induction motor.   10M

OR

12. B). Mention the speed control methods of induction motor and explain any one of them.   10M

13. A). Write short notes on integral slot winding, fractional slot winding, distributed winding and concentrated winding.   10M

OR

13. B). Discuss the MMF and EMF voltage regulation methods.   10M

14. A). Write short notes on parallel operation of alternators.   10M

OR

14. B). Explain the principle of operation of Synchronous Motor.   10M

15. A). Explain double revolving field theory.   10M

OR

15. B). Explain the working principle of capacitor start capacitor run induction motor.   10M

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Examination	:	B.Tech IV Semester Supplementary Examinations Nov/Dec-2025
Course Name	:	Measurements and Instrumentation
Course Code	:	A402307
Branch	:	Electrical & Electronics Engineering
Date & Session	:	09-12-2025 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.	What are the different types of torques in measuring instruments?	1 M
2.	What is the purpose of damping torque?	1 M
3.	Define potentiometer.	1 M
4.	Define the secondary winding of instrument transformer.	1 M
5.	State the importance of braking system in energy meter.	1 M
6.	Write the expression for torque in electro-dynamometer type wattmeter.	1 M
7.	Define the sensitivity of wheat stone's bridge.	1 M
8.	Draw the circuit diagram of Hay's bridge.	1 M
9.	What is gauge factor?	1 M
10.	Define thermo coupling effect.	1 M

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

11.A).	Draw and explain the operation of PMMC instrument with neat sketch.	10M
	OR	
11. B).	Derive the deflecting torque equation of MI instruments.	10M
12. A).	What is potentiometer and explain the operation of DC Crompton potentiometer with neat sketch.	10M
	OR	
12. B).	How to construct a Potential Transformer(PT) and also explain its operation.	10M
13. A).	Analyze the operation 1-phase induction type energy meter.	10M
	OR	
13. B).	i) Write differences between UPF and LPF type watt meters.	5M
	ii) Write the types of errors and compensations in single phase induction type energy meter.	5M
14. A).	How to balance a bridge and also measure unknown resistance using Kelvin double bridge.	10M
	OR	
14. B).	Describe the Schering bridge and also measure the unknown capacitance.	10M
15. A).	Explain the constructional details and working principle of LVDT with a neat sketch.	10M
	OR	
15. B).	i) State piezo electric effect in transducer.	3M
	ii) Derive the expression for the gauge factor of a electrical strain gauge.	7M

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Examination	:	B.Tech IV Semester Supplementary Examinations Nov/Dec-2025
Course Name	:	Power Systems-II
Course Code	:	A402308
Branch	:	Electrical & Electronics Engineering
Date & Session	:	10-12-2025 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.	Classify overhead transmission line as per length of the lines.	1 M
2.	Draw equivalent circuit of nominal-T network.	1 M
3.	Define sag.	1 M
4.	List out the factors effecting the mechanical design of an overhead transmission line.	1 M
5.	What are the specifications of a traveling wave?	1 M
6.	List any two disadvantages of poor power factor.	1 M
7.	Recall significance of per unit system.	1 M
8.	Write formula for per unit quantity of a parameter.	1 M
9.	Write any two severe faults.	1 M
10.	What are the reasons for LG faults?	1 M

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

11.A). Solve A,B,C,D constants for a 3-phase 50Hz transmission line 200km long having the following parameters l=1.2 mH/km   c=8 nanoF/km   r=0.15 Ω/km. Use nominal T-Method.   10M

OR

11. B). What do you mean by medium transmission line? Derive A, B, C & D Constants.   10M

12. A). An overhead transmission line has a span of 220meters, the conductor weighing 604kg/km. Solve the maximum sag if the ultimate tensile strength of conductor is 5758kg? Assume a factor of safety=2.   10M

OR

12. B). A string of 4 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

13. A). Interpret any two methods of improving power factor with the help of figures and phasor diagrams?   10M

OR

13. B). Explain the process of attenuation of travelling waves.   10M

(P.T.O..)

14. A). Write briefly about load compensation. 10M

OR

14. B). i) List out advantages of per unit system. 5M
ii) Model one-line diagram representing a per-unit system. 5M

15. A). Discuss The LLG fault calculation, in detail. 10M

OR

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

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Examination	:	B.Tech IV Semester Supplementary Examinations Nov/Dec-2025
Course Name	:	Fluid Mechanics & Hydraulic Machinery
Course Code	:	A401201
Branch	:	Electrical & Electronics Engineering
Date & Session	:	06-12-2025 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.	State Newton's law of viscosity.	1 M
2.	Illustrate by sketch a single column manometer and enlist its advantages.	1 M
3.	Distinguish between laminar and turbulent flows.	1 M
4.	Enlist different forces present in a fluid flow	1 M
5.	Recall displacement thickness in boundary layer.	1 M
6.	Sketch Hydraulic gradient line and total energy line. Show the relation between them in sketch.	1 M
7.	Recall Cavitation and its effect in hydraulic turbines.	1 M
8.	Enlist the functions of draft tube.	1 M
9.	Recall priming. Enlist its importance.	1 M
10.	Why a reciprocating pump is called as positive displacement pump?	1 M

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

11.A). A shaft of diameter 74.90 mm rotates in a bearing of diameter of 95 mm and length of 125 mm. The annular space between the shaft and the bearing is filled with oil having coefficient of viscosity 0.16 stokes and specific gravity 0.90. Determine the power in overcoming viscous resistance in this bearing at 1800 RPM.   10M

OR

11. B). (i) What is differential manometer? Explain how it works.   5M

(ii) Distinguish between piezometer and pressure gauge with sketch.   5M

12. A). Derive Bernoulli's equation from first principles indicating the assumptions made at the appropriate stage of the derivation.   10M

OR

12. B). The stream function and velocity potential function for a certain flow have been   10M

$$\psi = \left(\frac{x^4}{12}\right) + \left(\frac{y^4}{12}\right) + 2xy - \left(\frac{x^2y^2}{2}\right)$$

identified as

$$\phi = x^2 - y^2 + \left(\frac{xy^3}{3}\right) - \left(\frac{x^3y}{3}\right)$$

Is the fluid flow continuous or discontinuous? Is the flow rotational or irrotational?

(P.T.O..)

13. A). In a pipe of 300 mm diameter and 800 m length an oil of specific gravity 0.8 is flowing at the rate of 0.45 m³/s. Find: (i) Head lost due to friction, and (ii) Power required to maintain the flow. Take kinematic viscosity of oil as 0.3 stoke.   10M

<center>OR</center>

13. B). Formulate Darcy's weisbach equation from first principles.   10M

14. A). A water jet with of 75 mm diameter with a velocity of 40 m/s strikes a blade moving with a velocity of 20 m/s. The jet makes an angle of 30^0 with the direction of motion of the blade at inlet and leaves at an angle of 90^0 to the direction of motion of the blade at outlet. Find out the blade angle at inlet and outlet, so that the water enters and leaves the blade without shock.   10M

<center>OR</center>

14. B). (i) Classify Hydraulic turbines with a flowchart and explain   5M
(ii) What are the characteristic curves of a hydraulic turbine? How are they useful to practical engineer?   5M

15. A). The inlet and outlet diameters of a impeller of a centrifugal pump are 30 cm and 50 cm. The velocity of flow at the outlet is 2.5 m/s and vane outlet angle is 45^0. Find the minimum speed of the pump required to start the flow. Take manometric efficiency = 0.75.   10M

<center>OR</center>

15. B). A double acting reciprocating pump runs at 90 rpm. The diameter and stroke are 100mm and 250mm respectively. The suction pipe is 250mm diameter and 6m long. Calculate the maximum permissible suction lift assuming no air vessel is fitted and separation occurs at 2m of water absolute.   10M

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