

Question Bank For PG Course

Mathematics Paper-10B(ii)(Old) Special Paper: Applied Mathematics MAGNETOHYDRODYNAMICS : PGMT-XB(OLD)

Question 1

What is the current continuity equation ?

Question 2

What is the differential form of the Biot-Savart law?

Question 3

When the thrust of MFD submarine is obtained from Lorentz force?

Question 4

What is time, for a conducting liquid, for which the flux of the magnetic field through a closed circuit of a fluid particles move with fluid?

Question 5

What is statement of Faraday's Law?

Question 6

What is the behaviour of the normal component of electric displacement and tangential component of electric field across the interface?

Question 7

Which one of the following statement is true?

P. Alfvén waves are transverse waves and are propagated in incompressible fluids

Q. Alfvén waves are longitudinal waves and are propagated in incompressible fluids

Question 8

Name the flow for steady laminar flow of a viscous conducting liquid between two horizontal parallel plates in a transverse magnetic field.

Question 9

What is the expression of the Hartmann number M ?

Question 10

What is the expression of magnetic Reynolds number η ?

Question 11

What is expression of magnetic Mach number?

Question 12

Which one of the following statement is true?

P: For a gas, if the Mach number (M) is less than 1, its flow is said to be subsonic. &

Q: For a gas, if the Mach number (M) is greater than 1, its flow is said to be supersonic.

Question 13

What is the expression of magnetic Prandtl number?

Question 14

What is the behaviour of magnetic lines of force in the fluid?

Question 15

Which one is magnetic field in the case of magnetohydrodynamics Couette flow?

Question 16

What is the total electrostatic energy?

Question 17

What are the equations for fundamental laws of magnetostatics?

Question 18

Which law states that the electromagnetic force induced in a circuit is equal to the negative of the rate of increase of flux of magnetic field B through the circuit?

Question 19

What is the Navier-Stokes equation of motion of a viscous fluid?

Question 20

Which one is the Alfvén's velocity?

Question 21

What is the behaviour of the normal component of current density across the interface?

Question 22

Which one of the following statements is true?

- P. The motion of the fluid affects the magnetic field
- Q. The magnetic field affects the fluid motion.

Question 23

The magnetic field of the star can be steady provided that it is symmetrical about the axis of rotation and each line of force lies on the surface which is also symmetrical about the same axis and rotates with uniform angular velocity.

Which law has the above statement?

Question 24

When the gas is called polytropic?

Question 25

What is the expression of Hartmann number M ?

Question 26

What is the expression of solenoidal jump condition?

Question 27

Which one of the following statements is true?

P: For thermodynamical requirement entropy cannot decrease across a shock front

Q: For thermodynamical requirement entropy can decrease across a shock front

Question 28

What is the expression of magnetic Prandtl number?

Question 29

What are the no-slip conditions on the non-conducting boundaries of the plate of thickness ?

Question 30

What is the expression of magnetic Reynolds number?