

Winmeen Tnpsc Group 1 & 2 Study Materials

Tnpsc Group 2 Complete Syllabus : <https://goo.gl/fNSnMN>

Tnpsc Group 2 Previous Questions : <https://goo.gl/PYqsd7>

Tnpsc Group 2 Model Questions : <https://goo.gl/xQvyTk>

17. Magnetic Effect of Electric Current and Light

1. Give detail on Oersted?

Name : Oersted

Born : 14th August 1777

Birth place : Langeland Denmark

Died : 9th March 1851

Best known for : The study of electromagnetism

2. What is magnetic field?

The region surrounding the magnet, in which the force of the magnet can be experienced, is called magnetic field.

3. What is magnetic line of force?

The lines along which the iron filings align themselves represent magnetic lines of force.

4. What do the magnetic field have?

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Magnetic field is a quantity that has both magnitude and direction. The direction of the magnetic field is taken to be the direction in which a north pole of the compass needle moves inside it.

5. Which indicates magnetic field magnitude?

If the current is increased, the deflection also increases. It indicates that the magnitude of the magnetic field produced at a given point increases as the current through the wire increases.

6. Which produces magnetic field?

An electric current flowing through a conductor produces a magnetic field. The field so produced exerts a force on a magnet placed in the vicinity of a conductor.

7. What is Fleming's left hand rule?

When the direction of the current and that of the magnetic field are perpendicular to each other, the force is perpendicular to both of them. Stretch the thumb, forefinger and middle finger of your left hand such that they are mutually perpendicular. If the forefinger points in the direction of magnetic field and the middle finger points in the direction of current, then the thumb will point in the direction of motion or the force acting on the conductor.

8. What is electric motor?

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An electric motor is a rotating device that converts electrical energy into mechanical energy.

9. What is commutator?

A device that reverses the direction of flow of current through a circuit is called a commutator. In electric motors the split ring acts as a commutator.

10. What electromagnetic induction?

The emf produced in this way is called an induced emf and the phenomenon is known as electromagnetic induction.

11. What is induced current?

The induced emf will cause a current to flow through the conductor. Such a current is known as induced current.

12. What makes conductor moves?

When a current-carrying conductor is placed in a magnetic field, it experiences a force. This force causes the conductor to move.

13. What is Fleming`s right hand rule?

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Stretch the thumb, forefinger and middle finger of right hand so that they are mutually perpendicular to each other. If the forefinger indicates the direction of the magnetic field and the thumb shows the direction of motion of conductor, then the middle finger will show the direction of induced current.

14. What is electric generator?

In an electric generator, mechanical energy is used to rotate a conductor in a magnetic field to produce electricity.

15. What is AC?

Alternating Current

16. What is DC?

Direct Current

17. What is advantage of AC over DC?

An important advantage of AC over DC is that electric power can be transmitted over long distances without much loss of energy

18. What is light?

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An object reflects light that falls on it. This reflected light when received by our eyes, enables us to see things.

19. What is reflection of light?

A highly polished surface, such as a mirror, reflects most of the light falling on it.

20. What are laws of light?

(i) The angle of incidence is equal to the angle of reflection($i = r$)

(ii) The incident ray, the normal to the mirror at the point of incidence and the reflected ray, all lie in the same plane

21. What is concave mirror?

A spherical mirror whose reflecting surface is curved inwards is called a concave mirror.

22. What is convex mirror?

A spherical mirror whose reflecting surface is curved outwards is called a convex mirror.

23. What is pole?

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The centre of the reflecting surface of a spherical mirror is a point called the pole. It is represented by the letter P.

24. What is centre of curvature?

The reflecting surface of a spherical mirror forms a part of a sphere. This sphere has a centre. This point is called the centre of curvature of the spherical mirror. It is represented by the letter C.

25. What is radius of curvature?

The radius of the sphere of which the reflecting surface of a spherical mirror forms a part, is called the radius of curvature.

26. What is principal of axis?

The imaginary straight line passing through the pole and the centre of curvature of a spherical mirror is called the principal axis.

27. What is principal focus?

The reflected rays appear to come from a point on the principal axis. This point is called the principal focus of the convex mirror. The principal focus is represented by the letter F.

28. What is focal length?

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The distance between the pole and the principal focus of a spherical mirror is called the focal length. It is represented by the letter f .

29. What is aperture?

The effective diameter of the reflecting surface of spherical mirror is called its aperture.

30. What are the uses of convex mirrors?

Convex mirrors are commonly used as rear-view mirrors in vehicles. These mirrors are fitted on the sides of the vehicle, enabling the driver to see traffic behind him/her to facilitate safe driving. Convex mirrors are preferred because they always give an erect image. Also they have a wider field of view as they are curved outwards.

While dealing with the reflection of light by spherical mirrors, we shall follow a set of sign conventions called the New Cartesian Sign Convention. In this convention, the pole (P) of the mirror is taken as the origin. The principal axis of the mirror is taken as the X axis ($X'X$) of the coordinate system. The conventions are as follows.

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(i) The object is always placed to the left of the mirror.

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(ii) All distances parallel to the principal axis are measured from the pole of the mirror.

(iii) All the distances measured to the right of the origin (along +X axis) are taken as positive while those measured to the left of the origin (along -X axis) are taken as negative

(iv) Distances measured perpendicular to and above the principal axis (along +Y axis) are taken as positive.

(v) Distances measured perpendicular to and below the principal axis (along -Y axis) are taken as negative.

31. What is mirror formula?

In a spherical mirror, the distance of the object from its pole is called the object distance (u). The distance of the image from the pole of the mirror is called the image distance (v). You already know that the distance of the principal focus from the pole is called the focal length (f). There is a relationship between these three quantities given by the mirror formula which is expressed as $1/v + 1/u = 1/f$ This formula is valid in all situations.

32. What is refraction of light?

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The observations of light indicate that light does not travel in the same direction in all media. It appears that when travelling obliquely from one medium to another, the direction of propagation of light in the second medium changes. This phenomenon is known as refraction of light.

33. What is laws of refraction?

Refraction of light is due to change in the speed of light as it enters from one transparent medium to another. Experiments show that the refraction of light occurs according to certain laws. The following are the laws of refraction of light.

- (i) The incident ray, the refracted ray and the normal to the interface of two transparent media at the point of incidence, all lie in the same plane.
- (ii) The ratio of sine of angle of incidence to the sine of angle of refraction is a constant, for the light of a given colour and for the given pair of media. This law is also known as Snell's law of refraction.

34. What is lens?

A transparent material bound by two surfaces, of which one or both surfaces are spherical, forms a lens.

35. What is power of lens?

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The power of a lens is defined as the reciprocal of its focal length.

36. What is diopetre?

The SI unit of power of a lens is 'diopetre'. It is denoted by the letter D.

37. What is retina?

The human eye is like a camera. Its lens system forms an image on a light-sensitive screen called the retina.

38. What are the defects of vision?

There are mainly three common refractive defects of vision. These are:

- (i) Myopia (near - sightedness)
- (ii) Hypermetropia (far-sightedness)
- (iii) Presbyopia

39. What is Myopia?

Myopia is also known as nearsightedness.

40. What is hypermetropia?

Hypermetropia is also known as farsightedness

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41. What is presbyopia?

The power of accommodation of the eye usually decreases with ageing. For most people, the near point gradually recedes away. They find it difficult to see nearby objects comfortably and distinctly without corrective eye - glasses. This defect is called Presbyopia.

