10) The unit of K_e (Coulomb's constant) is:

a- $N^2.C^2$ b- N.m/C c- N. m^2/C^2 d- N^2. m^2/C^2

11) Charge is:

a- Conserved b- Quantized c-Invariant d- All of them

12) In the next equation $(qvBsin\theta)$, θ is the angle between the magnetic field and.....

a- The velocity of the charge b-The voltage c- The area vector d- None of them

13) The resistance is defined as

a- (voltage) / (current) b- (current) / (voltage) c- (current) x (voltage) d-None of them

14) What charge appears on the plates of a 4-μF capacitor when it is charged to 200V?

a- 50 μC b- 400 μC c- 200 μC d- 800 μC

15) A coulomb per second is the same as:

a- Volt/second b-Volt x second c- Amper d-Watt

16) Three resistors of 2, 4 and 6 Ω are connected parallel. The equivalent resistance is:

a- 11Ω b -12/11 Ω c- 0 Ω d- 12 Ω

17) Which of the following is not a vector?

a- Electric force b- Velocity c- Electric charge d- Electric field

18) Which law of reflection states that the incident ray, reflected ray, and normal lie in the same plane?

a- Snell's law b- Second law of reflection

c- First law of reflection d- No correct answer

19) What is the total charge inside a solid sphere of radius 0.15 m with a uniform volume charge density ($\boldsymbol{\rho = 80\,\mu C/m^3}$) ? (Use the volume of a sphere $\boldsymbol{V = \frac{4}{3}\pi r^3}$)

a-1.13μC b- 4.52 μC c- 3.39 μC d- 2 μC

20) The physical methods to charge a body are:

a-By rubbing b- Conducting c-Inductance d- all the previous

21) The rule stating that the sum of potential differences around a closed circuit is zero is called:

a- Kirchhoff's second rule b- Kirchhoff's first rule

c- Amper's law d- Joul's law

22) What current is flowing if 0.67 C of charge pass a point in 0.30 sec?

a- 0.2A b- 0.67 A c- 0.3 A d- 2.23 A

23) On an irregularly shaped conductor, the charge tends to accumulate:

a- On flat areas b- Away from edges c- In the center d- At sharp points

24) A force of 10 N acts on a charge of 5μC when it is placed in a uniform electric field. The magnitude of this electric field is:

a- 50×10^6 N/C b- 2×10^6 N/C c- 0.5×10^6 N/C d- 1000×10^6 N/C

25) Four resistors of 12, 3, 5, and 4 Ω are connected in series. A 12-V battery is connected to the combination. What is the current through the battery?

a- 0.50 A b- 1.5 A c- 1 A d-2 A

Second Question: Put sign (√) or (x) for the next sentences on answer sheet:

26) The net electric flux through a closed surface depends on the size and shape of the surface.

27) Total internal reflection can only occur when light travels from a denser medium to less dense medium.

28) When a dielectric material is inserted between the plates of a capacitor, its capacitance decreases.

29) The electric field lines can cross or touch each other.

30) The unit of electric force is Kg. m/sec^2.

31) The electric field strength is the force that acted by the field on a negative test charge located at this point.

32) The capacitance of an isolated sphere is inversely proportional to its radius.

33) The equivalent capacitance for a parallel combination is always less than any individual capacitance in the combination.

34) Light is essential for transmitting information about objects in the universe.

35) The Sum of the potential differences across all elements around any opened circuits loop must be zero.

36) The force between two-point charges is unaffected by the presence of other nearby charges.

37) The total flux through a cube Gaussian surface is changed when the surface is changed to spherical surface.

38) If the charge inside the surface is tripled, the flux is also tripled.

39) The angle of incidence is equal to the angle of reflection.

40) The capacitance of a parallel plate capacitor is directly proportional to the area of its plates.

41) The electric force on a charged particle is independent of the particle's speed.

42) Charging by induction requires direct contact between two objects.

43) Electric flux (F) is represented by the number of electric field lines penetrating some surface.

44) Light traveling perpendicular to a glass surface is refracted.

45) Insulators: Materials that do not allow transport of electric charge

46) 1Tesla = 10 KG.

47) The region of space surrounding any magnetic substance or surrounding a moving charge includes a magnetic field.

48) The unit of surface charge density (σ) is Ω/m2

49) Materials that do not obey Ohm's law are called non-Ohmic.

50) To decrease the electrical capacitance for capacitors, they are connected in series

End of Exam

With My Best Wishes:

Dr. Susan Abdel Wahab Amin

Δ Remember ■Understand •Apply ◊Analysis *Evaluate ◯Create

	Assiut University- Faculty of Science **Frist Semester- Final Exam 2025-2026** **Physics Department**	**Program: General Physics** **Level : (1)** **Date: 5/1/2026** **Time: 2 h**	
Course Title: General Physics		**Code: P105**	
Instructors: Dr. Susan Abdel-Wahab Amin			
Important:	**No. of pages 4**	**No. Of questions 50**	**Total Mark:50 degree**

Physical constants:

Electron charge (e^-) = $1.6\,x\,10^{-19}\,C$ & $K_e = 9 \times 10^9\ N.m^2/C^2$ $\varepsilon_0 = 8.85 \times 10^{-12}\ C^2/N.m^2$

First Question: Shaded the correct choice on answer sheet

1) The smaller negative electric charge is the charge of:
a- Proton b- Neutron c- Electron d- Alfa particle

2) A charged particle moves with velocity (v) in a magnetic field B. The magnetic force on the particle is maximum when v is:
a- parallel (∥) to B b- (⊥) to B c- zero d- None of them

3) A negatively charged rod is placed near one end of an uncharged metal bar. The end of the bar farthest from the rod becomes charged:
a- Positive b- Negative c- Neutral d-None of them

4) The equation for electric flux is:
a- $\varphi = \vec{E}.\vec{A}$ a- $\varphi = \vec{E}.\vec{Q}$ c- $q = \vec{E}.\vec{A}$ d- $V = \vec{E}.\vec{d}$

5) If a closed surface contains no charge, the net electric flux through it is:
a- Positive b- Negative c- Zero d- None of them

6) Materials in which electrons can move freely inside the material are called:
a- Insulators b- Conductors c- Semiconductors d- Superconductors.

7) What is the force that acting on an electron moves in an electric field of $4 \times 10^4\ N/C$?
a- 16×10^{-24} N b- 2.5×10^{23} N c- 6.4×10^{-15} N d- 4×10^4 N

8) When light passes from air into glass, it bends toward:
a- Away from the normal b- Toward the normal c Along the surface d- None of them

9) 5μF, 10μF, and 50μF capacitors are connected in parallel across a 12 V battery. The potential difference across the 10-μF capacitor is:
a- 1.25 V b- 2.5 V c- 12 V d- 5V

Δ Remember ■Understand •Apply ◊Analysis *Evaluate ◯Create

CO