Padasalai's Centum Coaching Team – Special Question Paper

Std-XII **Physics** **Maximum Marks: 150**

Time Allowed: 3 Hrs

PART-A

NOTE: I)Answer all the questions

II) Choose and write the correct answer

III) Choose the correct answer and write the option code & the corresponding answer:

1. Magnitude of the fundamental unit of charge is

a) 1.6×10^{-19}c b)1.5×10^{-19}c c)1.4×10^{-19}c d)1.3×10^{-19}c

2. If the medium between two charges is replaced by air, the force between them

a) Increases b) Decreasesc) becomes Zero d) Remains constant

3. Electric field intensity is $400vm^{-1}$ at a distance 2m from a point charge it will be $100Vm^{-1}$ at a distance

a) 50 cm b) 4cm c) 4m d) 1.5m

4. In parallel combination of capacitors

a) Charge on the capacitors is same

b) Potential difference across each capacitor is the same

c) Current through each Capacitor is same

d) Both a and c are correct.

5. A charge of 60c passes through an electric lamp in 2 minutes then the current in the lamp is

a) 30A b) 1A c) 0.5A d) 5A

6. Melting point of tungsten is

a) 2400^{o} C b) 3240^{o} C c) 3380^{o} C d) 3360^{o} c

7. The magnetic induction due to a current flowing a circular loop of radius 2 cm and a current 1 ampere at the centre of coil is

a) 3.14×10^{-4} T b)0.314×10^{-4} Tc)0.314×10^{-3} T d)31.4×10^{-4} T

8. Electromagnetic induction is not used in

a) Transformer b) Room heater c) AC Generator d) Choke coil

9. The output of Ac Generator is

a) Constant b) Non Sinusoidal c) sinusoidal d) any of these

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10. Which of the following cannot be stepped up in a transformer?

a) Input current b) Input voltage c) Input power d) all

11) Calculate the value of capacitive reactance offered by capacitor of capacitance 100 μF to an AC 50HZ

a) 29.4 HZ b) 29.4H c)29.4Ω d) 29.4PF

12) In an electromagnetic wave the phase difference between electric field E and magnetic field B is

a) $\frac{\pi}{4}$ b)$\frac{\pi}{2}$ c) π d) Zero

13. Dark lines in the solar spectrum are called

a) Fresnel lines b) Fraunhofer lines c) Newton lines d) Hertz lines.

14. The refractive index of glass is 1.5, the velocity of glass is

a) 2 X 10^8 ms^{-1} b)4.5X10^8 ms^{-1}c)3X10^8 ms^{-1} d)1.33 X 10^8 ms^{-1}

15. The focal length of Plano convex lens used in Newton rings is

a) Very low b) large c) medium d) small

16. The Cathode rays are

a) A Stream of electronsb) A Stream of positive ions

c) A Stream of uncharged particlesd) the same as canal rays

17. According to Bohr's postulates, which of the following quantities like discrete values?

a) Kinetic energy b) Potential energy c) Angular momentum

d) Momentum

18. The ratio of the radii of first three Bohr orbit for H_2 atom is

a) 1: $\frac{1}{2}$: $\frac{1}{3}$ b) 1:2:3 c) 1:4:9 d) 1:8:27

19. If the minimum wavelength of X-ray produced in a Coolidge tube is 0.62 A Then the operating potential is.

a)10KV b) 0.2KV c)2KV d) 20KV

20. Stopping potential of a metal surface is independent of

a) Frequency of incident radiationb) Intensity of incident radiation

c) The nature of the metal surfaced) Velocity of the electrons emitted

21. The wavelength of the matter wave is independent of

a) Mass b) Velocity c) Momentum d) Charge

22. The nuclei $_{13}Al^{27}$ and $_{14}si^{28}$Example of

a) Isotope b) Isobars c) Isotones d) Isomers

23. 1ev is equal to ….

a) 1.602X10^{-19} J b) 1.602X10^{-17} J c) 1.602X10^{-21} J d) 1.66X10^{-27} J

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24. The half life period of a certain radioactive element with disintegration constant 0.0693 per day is

a) 10 days b) 14 days c) 140 days d) 1.4 days

25. Anemia can be diagnosed by

a) $_{15}P^{31}$ b) $_{15}P^{32}$ c) $_{26}Fe^{59}$ d) $_{11}Na^{24}$

26. The potential barrier of a Germanium PN Junction is

a) 0.3V b) 3V c) 0.7V d) 7V

27. Color of light emitted by LED depend

A) Its reverse biasB) The amount of Forward current

c) Its forward biasd) Type of semiconductor material

28. An oscillator is

a) An amplifier. With feedbackb) Converting a.c to d.c

c) Nothing but an amplifier d) an amplifier without feedback

29. Printed documents to be transmitted by fax are converted into electric signals by the process of.

a) Reflection b) Scanning c) Modulation d) Light Variation

30. In FM signals has a resting frequency of 105 MHz when modulated by a signal. The carrier Suring is

a) 0.03 MHZ b) 60 KHZ c) 60 MHZ d) 0.03 KHZ

PART-B

Note:i) Answer any fifteen questions.

ii) Each answer should be in one or two sentences.

31. What is meant by Molecular polarisibility?

32.Three capacitors each of capacitance 9 PF are connected in series.What is the total capacitance of the combination?

33.Describe a carbon resistor?

34. Define electro chemical equivalent of a substance?

35.A Manganin Wire of length 2m has a diameter of 0.4mm with a resistor of 10Ω.Find the resistivity of a material?

36. How does an electric bulb works?

37.What does the core or ring of self iron in an armature of the dynamo serve?

38.What is a choke coil?

39.State the condition for obtaining clear and broad interference bands?

40.Give the uses of Polaroid's?

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41. On what factor does the wavelength X-rays depends?
42. What material is used as maser materials?
43. Find the de-Broglie wavelength of electron in the fourth orbit of hydrogen atom?
44.What is meant by i) Critical size and (ii) Critical mass of fission material?
45. What Percentage of given radioactive substance left after 5 half life Period?
46. Distinguish between PNP and NPN transistors?
47. Distinguish between positive and negative feedback?
48. Mention the advantages of IC'S?
49. What are the uses of CRO?
50. Define bandwidth in amplitude Modulation?

PART- C

Note:(i) Answer question No.54 is Compulsory.

(ii) Answer any six questions from the remaining 11 questions.

(iii) Draw diagram wherever necessary.

51. Define electric potential at a point.Obtain an expression for electric potential due to a point charge
52. The effective resistances are 10Ω, 2.4Ω when two resistors are connected in series and parallel. What are the resistances of individual resistors?
53. Explain the reactions at the electrodes of leclanche cell?
54.A) A circular coil of radius 20cm has 100 turns wire and it carries a current of 5A.Find the magnetic induction at a point along its axis at a distance of 20cm from the centre of the coil.

(Or)

b) A rectangular coil of area 20cmX10cm with 100turns of wire is suspended in a radialmagnetic field of induction 5X10-3 if the galvanometer shows an angular deflection of 15 for a Current of 1mA. Find the torsional constant of the suspension wire.

55.Obtain an expression for the mutual induction of two long solenoids.
56. Obtain an expression for the radius of the dark ring in Newton's rings experiment.
57.Calculate the distance of closest approach of X-Particles to the copper nucleus as when to the copper nucleus us when 2-particles of 5 Mev are scattered back by a thin sheet of copper of copper (2 for copper=29)

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58. Derive an expression for de Broglie wire length of matter waves.

59.Derive Einstein's man energy equivalence?

60.A reactor is developing energy at the rate of 32 Mw.Calculate the required number of fission per second of $_{32}U^{235}$. Assume that energy per fission is 200 Mev.

61. Explain the working of a half ware diode rectifier.

62.Write the Merits and demerits of digital communication.

PART-D

Note: (i) Answer any four questions is detail.

(ii) Draw diagram whenever necessary.

63.Derive an expression for electric potential due to an electric dipole.

64.Explain in detail the principle construction and theory of a tangent galvanometer.

65.Obtain an expression for the current in a circuit containing a pure inductance. Find the phase relationship between voltage and current.

66.On the basis of were theory explain total internal reflection

67.Obtain the expression for the radius of the n^{th} orbit of as electron based on Bohr's theory.

68.What are cosmic rays?Explain the latitude effect and altitude effect of cosmic rays?

69.Sketch the circuit of colpitt's oscillator Explain its working.

70.Explain about the analysis of amplitude modulated waves.

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மாணவர்கள் செய்ய வேண்டியது என்ன?

1. ***Click Here & Enter Your Details (Students Only)***
2. நமது பாடசாலை வலைதளத்தில் வழங்கப்படும் சிறப்பு வினாத்தாளை பிரிண்ட் எடுத்து விடுமுறை நாட்களில் முழுமையான, முறையான தேர்வு எழுதி வினாத்தாள் தயாரித்து வழங்கிய ஆசிரியருக்கு அனுப்பி வைக்க வேண்டும்.
3. A4 Size (Or) Legal Size உள்ள துணிக்கவர்கள் இரண்டு வாங்கிக்கொள்ள வேண்டும். ஒரு தாளில் வினாத்தாள் தயாரித்த ஆசிரியர் முகவரியை "பெறுநர்" பகுதியில் குறிப்பிட்டு அதில் தங்கள் விடைத்தாளை வைக்க வேண்டும்.
4. மற்றோரு கவரில் மாணவர்கள் தங்கள் சுயமுகவரியை "பெறுநர்" எனும் இடத்தில் எழுதி அதற்கு தேவையான அளவில் ஸ்டாம்ப்களையும் ஒட்டிய பிறகு, அக்கவரையும் விடைத்தாள் எழுதி அனுப்பும் கவருக்குள்ளேயே வைத்து அனுப்ப வேண்டும்.
5. ஒன்றுக்கும் மேற்பட்ட மாணவர்கள் இணைந்து விடைத்தாளை அனுப்பினால் மொத்தமாக ஒரே கவரில் அனுப்பலாம்.
6. ஆசிரியர்கள் தங்கள் விடைத்தாளை திருத்திய பிறகு தங்கள் சுயவிலாசமிட்ட கவரில் (Return Cover) வைத்து தங்களுக்கு விரைவில் திருப்பி அனுப்புவார்.
7. Slow Learners மீது மட்டும் கவனம் செலுத்தாமல் மீத்திறன் மிகுந்த மாணவர்களுக்கும் உதவும் நோக்கில், மாணவர்களின் நலன் கருதி, இச்சேவையில் தங்களை இணைத்துக்கொண்டுள்ள பாடசாலை ஆசிரியர் குழுவினை, மாணவர்கள் மிகுந்த பணிவுடன் தொடர்பு கொண்டு திருத்தப்பட்ட விடைத்தாள் குறித்த தங்கள் சந்தேகங்களையும், ஆலோசனைகளையும் அலைபேசி மூலமாக பெறலாம்.

இவ்வினாத்தாளுக்கான விடைகளை எழுதி அனுப்ப வேண்டிய முகவரி-

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