

B-4-Y

Roll No.

Total No. of Questions : 22]

[Total No. of Printed Pages : 8

XIIARJKUT23

9104-Y

POLITICAL SCIENCE

Time : 3 Hours]

[Maximum Marks : 100

SECTION-A

(Very Very Short Answer Type Questions)

1 each

1. ~~(a)~~ What is NATO ?

~~(b)~~ What is Multipolarity ?

~~(c)~~ SAFTA is an agreement signed by members of :

(A) UN

(B) SAARC

(C) ASEAN

(D) EU

~~(d)~~ Correct and rewrite the statement :

Shimla agreement was carried out between Nepal and Burma under the leadership of A.B. Vajpayee and Mujeeb Rehman.

~~(e)~~ What is Global poverty ?

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B-4-Y

Turn Over

- (f) Globalisation means free flow of, people and exchange of
- (g) What do you mean by Valuable Resources ?
- (h) Due to the there was a tremendous production of milk and its products in Gujrat.
- (i) Name any *two* leading persons associated with :
- (A) Congress Party
- (B) Communist Party of India
- (j) Operation Blue Star was carried out in Amritsar in the year :
- (A) 1977 (B) 1980
- (C) 1984 (D) 1989
- (k) What is Gender Justice ?
- (l) was the President of Mandal Commission.
- (m) Who led the 'Narmada Bachao Andolan' ?
- (A) Medha Patkar (B) Rajni Sharma
- (C) Shabana Azmi (D) Meera Kumar

(n) In 1989 who formed the Govt. at Centre ?

(A) BJP

(B) Congress

(C) CPI

(D) National Front

(o) Who was the Chairman of 2nd Backward Classes Commission ?

(A) B.P. Mandal

(B) V.P. Singh

(C) Ch. Charan Singh

(D) Arun Mehta

SECTION-B

(Very Short Answer Type Questions)

2 each

2. What do you mean by Environmental issues ?

Or

How is oil a scarce resource ?

3. What effects can water have as a resource ?

Or

What do you mean by Indigenous People ?

4. What do you mean by Regional Aspirations ?

5. Give two main reasons for rise of regional parties.

Or

What do you mean by Insurgency ? Explain.

6. Who are Dalits in India ? What is their main problems ?
7. What is Coalition Politics in India ? Explain
8. Write short note on downfall of Congress Party.

Or

What do you mean by Caste Politics ?

SECTION-C

(Short Answer Type Questions)

4 each

9. What are the major irritants in Sino-Indian relations ?

Or

Mention any *four* common features of European Union.

10. What does SAARC stand for ? Highlight its any *three* main objectives.

Or

✓ Explain any *two* factors responsible for Pakistan's failure in building a stable democracy.

11. Briefly explain the role of opposition parties in India.
12. How has Technology contributed to globalisation ? Explain.
13. How did planned development lead to expansion of Public Sector in India ?

Or

"Private sector development has a key role in the development of Indian industrialisation sector." Discuss.

SECTION-D

5 each

(Passage/Map Questions)

14. Read the following passage and answer the questions given below :

India is not the only country to have experienced the democracy of one party after independence. If we look around the world, we find many other examples of one party dominance. But there is a crucial difference between these and Indian experience. In the rest of the cases the dominance of one party was ensured by compromising democracy. In some countries like China, Cuba and Syria the constitution permits only a single party to rule the country.

Questions :

1. Which Political party dominated the political scene of India after independence and how long ?
2. How did the one-party dominance in India differ from that of China or Cuba ?

15. Read the passage and answer the following questions given below :

Indira Gandhi changed the Congress into highly centralised and undemocratic party organisation, from the earlier federal, democratic

and ideological formation that Nehru had led But this could not have happened had not Indira Gandhi changed the entire nature of politics. This new populist politics turned political ideology into a more electoral discourses, use of the various slogans not meant to be translated into governmental policies. (Sudipta Kaviraj)

Questions :

- (a) What is the difference between the strategies of Nehru and Indira Gandhi according to the author ?
- (b) Why does the author says the Congress Party affect other political parties also ?

✓ 16. In the outline Map of the World, show the appropriate position of the following countries of the world :

- ✓ (a) Germany
- ✓ (b) France
- ✓ (c) China
- ✓ (d) Israel
- ✓ (e) Ukraine

SECTION-E

(Long Answer Type Questions)

6 each

✓ 17. Why was the end of the Second World War considered to be the beginning of Cold War ? Explain.

Or

What is Cold War ? What was the effect of Cold War era on newly independent states ? <https://www.jkboseonline.com>

✓ 18. Explain, how did the collapse of the Soviet Union affect the World Politics ?

Or

What is meant by 'Shock Therapy' ? Assess its consequences on the post-communist regimes ?

✓ 19. What do you know about :

(a) Gulf War of 1990

(b) 'Bandwagon Strategy' ?

Or

✓ Analyse the role of USA in Global War on terrorism after the 9/11 attack in 2001.

20. Describe what kind of party system has developed in India and how is it different from the past ?

Or

Suggest ways and means by which the Congress party regain its past position, again in India ?

21. What are the main objectives of Indian Foreign Policy ? Discuss in detail.

Or

What do you understand by :

(a) Panchsheel

(b) India's approach to NTP ?

22. Describe any *four* circumstances for proclamation of emergency in 1975.

Or

Discuss in detail the factors which led to the rise of Janta Party.

B-21-X

Roll No.

Total No. of Questions : 26]

[Total No. of Printed Pages : 4

XIIARJKUT23

9121-X

PHYSICS

Time : 3 Hours]

[Maximum Marks : 70

SECTION-A

1 each

1. Why are resistances connected in series and in parallel ?
2. Why can a d.c. ammeter not read an a.c. ?
3. Why are electromagnetic waves called so ?
4. What is the effect of decrease in wavelength of incident light on the velocity of photoelectrons ?
5. What type of charge carriers are there in a *p*-type semiconductor ?

SECTION-B

2 each

6. What is maximum value of angle of dip ? At what places does it occur ?

Or

Why do two parallel conductors carrying current exert force on each other ?

XIIARJKUT23-9121-X

Turn Over

B-21-X

7. State and explain Fleming's right hand rule.
8. What does an electromagnetic wave consist of ? On what factors does its velocity in vacuum depend ?
9. If amplitude of two coherent sources producing interference is in the ratio of 1 : 2, find ratio of $I_{\max}$ to $I_{\min}$.
10. (a) What is Demodulation ?
(b) Draw a labelled block diagram for demodulation of amplitude modulated wave.

SECTION-C

3 each

11. Explain how you will compare the e.m.f.'s of two cells by a potentiometer ?
12. Find an expression for the electric field at any point outside a uniformly charged thin spherical shell.

Or

Explain, what is meant by quantization of charge ?

13. A wire has a resistance of 10.5Ω at 21°C and 16.4Ω at 147°C . Find the value of co-efficient of resistance.
14. Using Biot-Savart's law, calculate the magnetic field at the centre of a circular coil.
15. Obtain an expression for torque acting on a rectangular current loop, when placed inclined at an angle ' θ ' with the direction of magnetic field ' B '.

16. A ray of light is incident on the surface of glass plate of refractive index 1.5 at the polarising angle. What is the angle of refraction ?
17. Write the postulates of Bohr's model of hydrogen atom.
18. Define binding energy of a nucleus. Draw a curve between mass number and binding energy per Nucleon.
19. What is Photoelectric effect ? Derive the Einstein's equation.
20. Distinguish between an intrinsic semiconductor and *p*-type semiconductor. Why is *p*-type semiconductor crystal neutral ?
21. How is Junction diode formed ? Discuss the working of a function diode as full wave rectifier. <https://www.jkboseonline.com>
22. Explain the sky wave propagation of radio waves.

SECTION-D

4

23. Ram is using yellow light in a single slit diffraction experiment with slit of width 0.6 mm. The teacher replaces yellow light by X-rays. Now he is not able to observe diffraction pattern. He feels sad. Again the teacher replaces X-rays by yellow light and the diffraction pattern appears again. The teacher now explains the facts :

Questions :

- (a) Which value is displayed by the teacher ?
- (b) Give the necessary conditions for diffraction.

SECTION-E

5 each

24. (a) What is an electric dipole and electric dipole moment ?
- (b) Derive an expression for electric potential at a point due to an electric dipole. Also discuss the special cases.

Or

- (a) Define capacitance of a capacitor. Give its S.I. unit.
- (b) Prove that the total electrostatic energy stored in a parallel plate capacitor is $\frac{1}{2}cv^2$.

25. With the help of a labelled diagram, explain the construction and working of an a.c. generator. Find an expression for e.m.f. produced by the generator.

Or

Derive an expression for impedance and phase angle for series LCR a.c. circuit. How does impedance differ from ohmic resistance ?

26. Stating the assumptions made and convention of signs used, derive the lens maker's formula in case of a double convex lens.

Or

Define fringe width. Derive an expression for fringe width in Young's double slit experiment of interference of light.

B-21-Y

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XIIARJKUT23

9121-Y

PHYSICS

Time : 3 Hours]

[Maximum Marks : 70

SECTION-A

1 each

- ✓ 1. Why are connecting wires made of copper ?
- ✓ 2. What is the basic cause of induced e.m.f. ?
3. Which part of electromagnetic spectrum has largest penetrating power ?
4. What determines the strength of photoelectric current ?
- ✓ 5. Why are semiconductors doped ?

SECTION-B

2 each

- ✓ 6. What are magnetic lines of force ? Why two such lines do not cross each other ?

Or

Why should an ammeter have as low a resistance as possible ?

Explain.

XIIARJKUT23-9121-Y

B-21-Y

Turn Over

7. What is self-induction ? Give its S.I. unit.
8. Can an electromagnetic wave be deflected by magnetic or electric field ? Explain.
9. If amplitude of two coherent sources producing interference is in the ratio of 1 : 2, find ratio of $I_{\max}$ to $I_{\min}$.
10. (a) Define amplitude modulation.
- (b) Write any two factors which justify the need for modulating a signal.

SECTION-C

3 each

11. Derive the principle of Wheatstone bridge using Kirchhoff's law.
12. Find an expression for the electric field at a point due to a line charge using Gauss's theorem.

Or

13. Explain conservation of charge giving two examples.
13. A wire has a resistance of 10.5Ω at 21°C and 16.4Ω at 147°C . Find the value of co-efficient of resistance.
14. Using Biot-Savart's law, calculate the magnetic field at the centre of a circular coil.
15. Obtain an expression for torque acting on a rectangular current loop, when placed inclined at an angle ' θ ' with the direction of magnetic field ' B '.

- ✓ 16. A ray of light is incident on the surface of glass plate of refractive index 1.5 at the polarising angle. What is the angle of refraction ?
- ✓ 17. Write the postulates of Bohr's model of hydrogen atom.
- ✓ 18. Define binding energy of a nucleus. Draw a curve between mass number and binding energy per Nucleon.
- ✓ 19. What is Photoelectric effect ? Derive the Einstein's equation.
- ✓ 20. Distinguish between an intrinsic semiconductor and *p*-type semiconductor. Why is *p*-type semiconductor crystal neutral ?
- ✓ 21. How is Junction diode formed ? Discuss the working of a function diode as full wave rectifier. <https://www.jkboseonline.com>
- ✓ 22. Explain the sky wave propagation of radio waves.

SECTION-D

4

- ✓ 23. Ram is using yellow light in a single slit diffraction experiment with slit of width 0.6 mm. The teacher replaces yellow light by X-rays. Now he is not able to observe diffraction pattern. He feels sad. Again the teacher replaces X-rays by yellow light and the diffraction pattern appears again. The teacher now explains the facts :

Questions :

- (a) Which value is displayed by the teacher ?
- (b) Give the necessary conditions for diffraction.

SECTION-E

5 each

24. (a) What is an electric dipole and electric dipole moment ?
 (b) Derive an expression for electric potential at a point due to an electric dipole. Also discuss the special cases.

Or

- (a) Define capacitance of a capacitor. Give its S.I. unit.
 (b) Prove that the total electrostatic energy stored in a parallel plate capacitor is $\frac{1}{2}cv^2$.

25. With the help of a labelled diagram, explain the construction and working of an a.c. generator. Find an expression for e.m.f. produced by the generator.

Or

Derive an expression for impedance and phase angle for series LCR a.c. circuit. How does impedance differ from ohmic resistance ?

26. Stating the assumptions made and convention of signs used, derive the lens maker's formula in case of a double convex lens.

Or

Define fringe width. Derive an expression for fringe width in Young's double slit experiment of interference of light.

B-21-Z

Roll No.

Total No. of Questions : 26]

[Total No. of Printed Pages : 4

XIIARJKUT23
9121-Z
PHYSICS

Time : 3 Hours]

[Maximum Marks : 70

SECTION-A

1 each

1. Why is constantan or manganin used for making standard resistors ?
2. From where does the electric energy come in a generator ?
3. Which part of electromagnetic spectrum is used in operating a RADAR ?
4. What is the effect of intensity of incident light on photo-electric current ?
5. Which type of doping creates a hole ?

SECTION-B

2 each

6. What is probable cause of earth's magnetism ?

Or

Why is soft iron core used in a moving coil galvanometer ?

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B-21-Z

Turn Over

SECTION-E

5 each

24. (a) What is an electric dipole and electric dipole moment ?
(b) Derive an expression for electric potential at a point due to a electric dipole. Also discuss the special cases.

Or

- (a) Define capacitance of a capacitor. Give its S.I. unit.
(b) Prove that the total electrostatic energy stored in a parallel plate capacitor is $\frac{1}{2} CV^2$.
25. With the help of a labelled diagram, explain the construction and working of an a.c. generator. Find an expression for e.m.f. produced by the generator.

Or

Derive an expression for impedance and phase angle for series LCR a.c. circuit. How does impedance differ from ohmic resistance ?

26. Stating the assumptions made and convention of signs used, derive the lens maker's formula in case of a double convex lens.

Or

Define fringe width. Derive an expression for fringe width in Young's double slit experiment of interference of light.

7. What is mutual induction ? Give its S.I. unit.
8. How are infrared waves produced ? Why are these called heat waves ?
9. If amplitude of two coherent sources producing interference is in the ratio of 1 : 2, find the ratio of $I_{\max}$ to $I_{\min}$.
10. What is Communication ? Name *three* basic units of communication.

SECTION-C

3 each

11. State and explain Kirchhoff's laws for electrical circuit.
12. Find an expression for the electric field at a point due to an infinite sheet of charge.

Or

State Coulomb's law of force in electrostatics. Also define one Coulomb of charge.

13. A wire has a resistance of 10.5Ω at 21°C and 16.4Ω at 147°C . Find the value of co-efficient of resistance.
14. Using Biot-Savart's law, calculate the magnetic field at the centre of a circular coil. <https://www.jkboseonline.com>
15. Obtain an expression for torque acting on a rectangular current loop, when placed inclined at an angle ' θ ' with the direction of magnetic field ' B '.

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B-21-Z

16. A ray of light is incident on the surface of glass plate of refractive index 1.5 at the polarising angle. What is the angle of refraction ?
17. Write the postulates of Bohr's model of hydrogen atom.
18. Define binding energy of a nucleus. Draw a curve between mass number and binding energy per Nucleon.
19. What is Photoelectric effect ? Derive the Einstein's equation.
20. Distinguish between an intrinsic semiconductor and *p*-type semiconductor. Why is *p*-type semiconductor crystal neutral ?
21. How is Junction diode formed ? Discuss the working of a junction diode as full wave rectifier.
22. Explain the sky wave propagation of radio waves.

SECTION-D

4

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Questions :

- (a) Which value is displayed by the teacher ?
- (b) Give the necessary conditions for diffraction.

Turn Over

D-14-A

Roll No.

Total No. of Questions : 26]

[Total No. of Printed Pages : 7

12thARJKLK23

9614-A

PHYSICS

Time : 3 Hours]

[Maximum Marks : 70

SECTION-A

(VERY-VERY SHORT ANSWER TYPE QUESTIONS) 1 each

1. Of metals and alloys which have greater temperature coefficient of Resistance ?
2. Which has smaller wavelength microwaves or infra-red waves ?
3. Name the spectral series of hydrogen atom having least wavelength.
4. How will photocurrent change on decreasing wavelength of incident light ?
5. Define Doping of a Semiconductor.

12thARJKLK23-9614-A

D-14-A

Turn Over

SECTION-B

(VERY SHORT ANSWER TYPE QUESTIONS) 2 each

6. Define mutual induction and coefficient of mutual inductance.

Or

A $5\ \mu\text{F}$ capacitor is connected to a 50 Hz a.c. supply. Calculate its capacitive reactance.

7. Give some important uses of U-V rays.
8. Define dispersive power of prism. Write its formula.
9. What are Isotopes ? Give some examples.
10. Define Frequency Modulation.

SECTION-C

(SHORT ANSWER TYPE QUESTIONS) 3 each

11. Find an expression for the energy stored in a capacitor.

Or

Explain superposition principle of forces.

12. Discuss variation of resistance with temperature and hence define temperature coefficient of resistance.
13. A battery of emf 10 V and internal resistance $3\ \Omega$ is connected to a resistor. If the current in circuit is 0.5 A; what is resistance of resistor? What is the terminal voltage of battery when circuit is closed ?
14. Two moving coil galvanometers M_1 and M_2 having the following particulars :

$$R_1 = 10\ \Omega, N_1 = 30, A_1 = 3.6 \times 10^{-3}\ \text{m}^2, B_1 = 0.25\ \text{T}$$

$$R_2 = 14\ \Omega, N_2 = 42, A_2 = 1.8 \times 10^{-3}\ \text{m}^2, B_2 = 0.50\ \text{T}$$

(The spring constants are same for two meters).

Determine ratio of :

(i) Current Sensitivity

(ii) Voltage Sensitivity of M_2 and M_1

15. What are Eddy Currents ? Give some important applications of eddy currents.
16. What is meant by resonance in A.C. circuits ? Derive expression for resonant frequency in series L.C.R. circuit.
17. A ray of light suffers minimum deviation, while passing through a prism of refractive index 1.5 and refracting angle of 60° . Calculate angle of minimum deviation and angle of incidence.
18. Using Einstein's Photoelectric Equation explain laws of photoelectric effect.
19. State radioactive decay law and hence obtain equation $N = N_0 e^{-\lambda t}$.
20. Draw circuit diagram of full wave rectifier. Explain its working and draw its input and output waveforms. <https://www.jkboseonline.com>
21. What is AND gate ? Write its symbol Boolean expression and truth-table.
22. Explain sky wave propagation and space wave propagation.

SECTION-D**(VALUE BASED QUESTION)**

4

23. Sushma decided to give a camera as gift to her younger brother on his birthday. She visited a shop for purchasing camera. The shopkeeper showed her some cameras and advocated a beautiful camera having power of lens equal to that of another high priced camera. She asked shopkeeper as to why this beautiful camera was low priced. The shopkeeper told her an equivalent lens has been used in camera. He said that he judged her to be a student and thought to suggest low budget camera to be good option. Sushma being science student happily purchased the camera. Now answer the following questions :

- (a) What is an equivalent lens ?
- (b) What is the relation of power of equivalent lens ?
- (c) What do you think about the moral values of shopkeeper ?

SECTION-E

(LONG ANSWER TYPE QUESTIONS)

5 each

24. Define electric potential energy. Derive an expression for electric potential energy of a system of two point charges.

Or

Explain the principle on which Vandegraff generator works ? Draw labelled diagram and describe its construction and working.

25. What is Cyclotron ? Discuss its construction, working and theory.

What are its limitations ?

Or

State Ampere Circuital Law. Derive an expression for the magnetic field due to a straight current carrying solenoid.

26. What is an Astronomical Telescope ? Draw course of rays through it and hence derive expression for magnifying power in it when final image is formed at least distance of distinct vision.

Or

Derive an expression for fringe-width in Young's double slit experiment.

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12thARJKLK23—9614—A

D-14-A

D-14-B

Roll No.

Total No. of Questions : 26]

[Total No. of Printed Pages : 7

12thARJKLK23

9614-B

PHYSICS

Time : 3 Hours]

[Maximum Marks : 70

SECTION-A

(VERY-VERY SHORT ANSWER TYPE QUESTIONS) 1 each

1. Of which material is a potentiometer wire normally made of ?
2. Which of the spectral series of hydrogen lie in visible part of electromagnetic spectrum ?
3. Which has greater frequency X-rays or Gamma-rays ?
4. If maximum kinetic energy of photoelectron is 3 eV, what is its stopping potential ?
5. What is Forward Biasing ?

12thARJKLK23-9614-B

D-14-B

Turn Over

SECTION-B

(VERY SHORT ANSWER TYPE QUESTIONS) 2 each

6. Define self-induction and coefficient of self-inductance.

Or

One micro-farad capacitor is connected to 50 Hz A.C. source.

Calculate its capacitive reactance.

7. Give some uses of X-rays.
8. Explain angular-dispersion in a prism.
9. What are Isobars ? Give examples of Isobars.
10. Define Amplitude Modulation.

SECTION-C

(SHORT ANSWER TYPE QUESTIONS) 3 each

11. What are equipotential surfaces ? Write its important properties.

Or

Define electric potential. Derive relation between electric field and potential gradient.

12. What is Drift Velocity ? Find relation between Current and Drift Velocity.
13. A battery of emf 10 V and internal resistance $3\ \Omega$ is connected to a resistor. If the current in circuit is 0.5 A, what is resistance of resistor ? What is the terminal voltage of battery when circuit is closed ?
14. Two moving coil galvanometers M_1 and M_2 having the following particulars :

$$R_1 = 10\ \Omega, N_1 = 30, A_1 = 3.6 \times 10^{-3}\text{ m}^2, B_1 = 0.25\text{ T}$$

$$R_2 = 14\ \Omega, N_2 = 42, A_2 = 1.8 \times 10^{-3}\text{ m}^2, B_2 = 0.50\text{ T}$$

(The spring constants are same for two meters).

Determine ratio of :

(i) Current Sensitivity

(ii) Voltage Sensitivity of M_2 and M_1

15. What are Eddy Currents ? Give some important applications of eddy currents.
16. What is meant by resonance in A.C. circuits ? Derive expression for resonant frequency in series L.C.R. circuit.
17. A ray of light suffers minimum deviation, while passing through a prism of refractive index 1.5 and refracting angle of 60° . Calculate angle of minimum deviation and angle of incidence.
18. Using Einstein's Photoelectric Equation explain laws of photoelectric effect. <https://www.jkboseonline.com>
19. State radioactive decay law and hence obtain equation $N = N_0 e^{-\lambda t}$.
20. Draw circuit diagram of full wave rectifier. Explain its working and draw its input and output waveforms.
21. What is AND gate ? Write its symbol Boolean expression and truth-table.
22. Explain sky wave propagation and space wave propagation.

SECTION-D**(VALUE BASED QUESTION)****4**

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SECTION-E

(LONG ANSWER TYPE QUESTIONS)

5 each

24. Define electric potential energy. Derive an expression for electric potential energy of a system of two point charges.

Or

Explain the principle on which Van de Graaff generator works ? Draw labelled diagram and describe its construction and working.

25. What is Cyclotron ? Discuss its construction, working and theory.

What are its limitations ?

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State Ampere Circuital Law. Derive an expression for the magnetic field due to a straight current carrying solenoid.

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D-14-C

Roll No.

Total No. of Questions : 26]

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12thARJKLK23
9614-C
PHYSICS

Time : 3 Hours]

[Maximum Marks : 70

SECTION-A

(VERY-VERY SHORT ANSWER TYPE QUESTIONS) 1 each

1. Magnin or Constantan is used for making standard resistance coils, why ?
2. Which has greater wavelength Radiowaves or X-rays ?
3. In which part of the electromagnetic spectrum, wavelengths of Lyman series lie ?
4. Two metals A and B have work function 4 eV and 10 eV. Which metal has greater threshold wavelength ?
5. What is Reverse Biasing ?

12thARJKLK23-9614-C

D-14-C

Turn Over

SECTION-B

(VERY SHORT ANSWER TYPE QUESTIONS) 2 each

6. State laws of electromagnetic induction.

Or

A 100 Hz A.C. is flowing in 14 mH coil. Find its inductive reactance.

7. Give some uses of γ -rays.
8. Explain Dispersion of light.
9. What are Isotones ? Give example.
10. Draw block diagram of communication system.

SECTION-C

(SHORT ANSWER TYPE QUESTIONS) 3 each

11. Explain conservation of electric charge.

Or

State and explain Coulomb's law of electrostatic force in vector form.

12. State and explain Kirchhoff's voltage law.
13. A battery of emf 10 V and internal resistance $3\ \Omega$ is connected to a resistor. If the current in circuit is 0.5 A, what is resistance of resistor? What is the terminal voltage of battery when circuit is closed ?
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SECTION-D**(VALUE BASED QUESTION)**

4

23. Sushma decided to give a camera as gift to her younger brother on his birthday. She visited a shop for purchasing camera. The shopkeeper showed her some cameras and advocated a beautiful camera having power of lens equal to that of another high priced camera. She asked shopkeeper as to why this beautiful camera was low priced. The shopkeeper told her an equivalent lens has been used in camera. He said that he judged her to be a student and thought to suggest low budget camera to be good option. Sushma being science student happily purchased the camera. Now answer the following questions :

- (a) What is an equivalent lens ?
- (b) What is the relation of power of equivalent lens ?
- (c) What do you think about the moral values of shopkeeper ?

SECTION-E

(LONG ANSWER TYPE QUESTIONS)

5 each

24. Define electric potential energy. Derive an expression for electric potential energy of a system of two point charges.

Or

Explain the principle on which Vandegraff generator works ? Draw labelled diagram and describe its construction and working.

25. What is Cyclotron ? Discuss its construction, working and theory.

What are its limitations ?

Or

State Ampere Circuital Law. Derive an expression for the magnetic field due to a straight current carrying solenoid.

26. What is an Astronomical Telescope ? Draw course of rays through it and hence derive expression for magnifying power in it when final image is formed at least distance of distinct vision.

Or

Derive an expression for fringe-width in Young's double slit experiment.

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E-1-A

Roll No.....

Total No. of Questions : 26]

[Total No. of Printed Pages : 4

XIIAPBIAJKLK23

9801-A

PHYSICS

Time : 3 Hours]

[Maximum Marks : 70

Section-A

1 each

1. What is the order of resistivity of an insulator ?
2. Weber is the unit of which physical quantity ?
3. Can an electromagnetic wave be deflected by magnetic or electric field ?
4. What is the energy associated in joules with a photon of wavelength $4000\text{\AA}$?
5. Doping of silicon with indium leads to which type of semiconductor ?

Section-B

2 each

6. The magnetic field at a point near the centre but outside a current carrying solenoid is zero. Explain, why ?

Or

Why is a cyclotron not suitable for accelerating electrons ?

XIIAPBIAJKLK23-9801-A

E-1-A

Turn Over

7. Calculate inductive reactance of a coil of 1 mH at a frequency of 50 Hz.
8. What are Microwaves ? Give their *two* uses.
9. When does Snell's law in refraction fail ?
10. Explain the function of a repeater in communication system.

Section-C

3 each

11. Two point charges equal to $+10 \mu\text{C}$ and $+20 \mu\text{C}$ are 1 m apart. What is the amount of work done to bring them closer to each other by 50 cm ?
12. Draw the circuit diagram of Wheatstone bridge. Under what condition no current flows through its galvanometer ?

Or

Distinguish between electromotive force and terminal potential difference of a cell. What are their units ?

13. It is found the 125 cm length of a potentiometer wire is required to balance the e.m.f. of a Daniel cell but that only 100 cm of wire is required for balance if poles of the cell are joined to a resistance of 2 ohm. Calculate the internal resistance of cell.
14. Name the elements of the earth's magnetic field at a place. Explain their meaning.
15. A galvanometer of 50 ohm shows a full scale deflection for a current of 2 mA. Calculate the value of resistance required to convert it into a voltmeter of range 0-5 V and ammeter of range 0-5 A.

XIIAPBIAJKLK23-9801-A
E-1-A

16. In Young's double slit experiment of interference of light, the ratio of intensity of maxima and minima pattern is 25 : 9. What will be the ratio of amplitude of two waves producing interference ?
17. Explain laws of photoelectric emission.
18. On the basis of Bohr's atomic model, find an expression for radius of n th orbit of hydrogen atom.
19. What is alpha decay, beta decay and gamma decay ?
20. Explain the forward and reverse bias characteristic curve of a pn junction.
21. With the help of circuit diagram, explain the action of a $n-p-n$ transistor. <https://www.jkboseonline.com>
22. What is Demodulation ? Draw a labelled circuit diagram for detection of amplitude modulated wave.

Section-D

4

23. One day Chetan's mother developed severe ache all of a sudden. She was rushed to the doctor who suggested for an immediate endoscopy test and gave an estimate of expenditure for the same. Chetan immediately contacted his class teacher and shared the information with her. The class teacher arranged for the money and rushed to the hospital. On realising that Chetan belonged to a below average income group family, even the doctor offered concession for the test fee. The test was conducted successfully. Now answer the following questions :
 - (a) Which principle in optics is made use of in endoscopy ?

- (b) Briefly explain the values reflected in the action taken by the teacher.
- (c) In what way do you appreciate the response of the doctor on the given situation ?

Section-E

5 each

24. Define Capacitance. Derive an expression for the capacitance of a parallel plate capacitor having a dielectric slab between its plates.

Or

Define electric dipole moment. Is it scalar or vector ? Derive an expression for electric field of a dipole at a point on the equatorial line of the dipole.

25. Give the principle, construction and working of an a.c. generator.

Or

Derive an expression for average power of an a.c. circuit containing L, C and R.

26. Define polarized and unpolarised light. State and explain Brewster's law of polarization of light.

Or

What is a Compound Microscope ? With the help of a ray diagram, explain the working of compound microscope. Find an expression for its magnifying power.

E-1-B

Roll No.....

Total No. of Questions : 26]

[Total No. of Printed Pages : 4

XIIAPBIAJKLK23

9801-B

PHYSICS

Time : 3 Hours]

[Maximum Marks : 70

Section-A

1 each

1. Why is a slide wire bridge also called a metre bridge ?
2. Henry is the unit of which physical quantity ?
3. Write an expression for speed of electromagnetic waves in free space.
4. Calculate frequency associated with a photon of energy 3.3×10^{-20} J.
5. What is Electron Mobility ?

Section-B

2 each

6. State the rule that is used to find the direction of field acting at a point near a current carrying straight conductor.

Or

Define one Tesla. Under what conditions does a charge moving in a uniform magnetic field experience a maximum force ?

XIIAPBIAJKLK23—9801-B

E-1-B

Turn Over

7. Calculate the capacitive reactance of $5 \mu\text{F}$ capacitor for a frequency of 50 Hz.
8. What are ultra-violet rays ? Give their *two* uses.
9. Why does a tank fill with water appear shallow ?
10. What is modulation index and what is its importance ?

Section-C

3 each

11. Two point charges of $+20 \mu\text{C}$ and $+80 \mu\text{C}$ are placed 18 cm apart. Find the position of the point where electric field is zero.
12. Derive an expression for drift velocity of free electrons in a conductor in terms of relaxation time.

Or

Draw a circuit diagram of metre bridge arranged to find the value of an unknown resistance. Write the formula used.

13. It is found the 125 cm length of a potentiometer wire is required to balance the e.m.f. of a Daniel cell but that only 100 cm of wire is required for balance if poles of the cell are joined to a resistance of 2 ohm. Calculate the internal resistance of cell.
14. Name the elements of the earth's magnetic field at a place. Explain their meaning.
15. A galvanometer of 50 ohm shows a full scale deflection for a current of 2 mA. Calculate the value of resistance required to convert it into a voltmeter of range 0-5 V and ammeter of range 0-5 A.

XIIAPBIAJKLK23-9801-B

E-1-B

16. In Young's double slit experiment of interference of light, the ratio of intensity of maxima and minima pattern is 25 : 9. What will be the ratio of amplitude of two waves producing interference ?
17. Explain laws of photoelectric emission.
18. On the basis of Bohr's atomic model, find an expression for radius of n th orbit of hydrogen atom.
19. What is alpha decay, beta decay and gamma decay ?
20. Explain the forward and reverse bias characteristic curve of a pn junction.
21. With the help of circuit diagram, explain the action of a $n-p-n$ transistor. <https://www.jkboseonline.com>
22. What is Demodulation ? Draw a labelled circuit diagram for detection of amplitude modulated wave.

Section-D

4

23. One day Chetan's mother developed severe ache all of a sudden^(c). She was rushed to the doctor who suggested for an immediate endoscopy test and gave an estimate of expenditure for the same. Chetan immediately contacted his class teacher and shared the information with her. The class teacher arranged for the money and rushed to the hospital. On realising that Chetan belonged to a below average income group family, even the doctor offered concession for the test fee. The test was conducted successfully. Now answer the following questions :

(a) Which principle in optics is made use of in endoscopy ?

- (b) Briefly explain the values reflected in the action taken by the teacher.
- (c) In what way do you appreciate the response of the doctor on the given situation ?

Section-E

5 each

24. Define Capacitance. Derive an expression for the capacitance of a parallel plate capacitor having a dielectric slab between its plates.

Or

Define electric dipole moment. Is it scalar or vector ? Derive an expression for electric field of a dipole at a point on the equatorial line of the dipole.

25. Give the principle, construction and working of an a.c. generator.

Or

Derive an expression for average power of an a.c. circuit containing L, C and R.

26. Define polarized and unpolarised light. State and explain Brewster's law of polarization of light.

Or

What is a Compound Microscope ? With the help of a ray diagram, explain the working of compound microscope. Find an expression for its magnifying power.

E-1-C

Roll No.....

Total No. of Questions : 26]

[Total No. of Printed Pages : 4

XIIAPBIAJKLK23

9801-C

PHYSICS

Time : 3 Hours]

[Maximum Marks : 70

Section-A

1 each

1. What is significance of direction of electric current ?
2. Tesla is the unit of which physical quantity ?
3. Write down Maxwell's equation for steady electric field.
4. Find momentum of a photon of wavelength $0.1 \text{ \AA}$.
5. Which type of doping creates a hole ?

Section-B

2 each

- 6. In what respect does a wire carrying a current differ from a wire which carries no current ?

Or

Why does not a charged particle moving at right angle to the direction of a magnetic field undergo any change in kinetic energy ?

XIIAPBIAJKLK23-9801-C

E-1-C

Turn Over

7. A coil has an inductive reactance of 160 ohm at frequency of 50 Hz. Calculate the self inductance of the coil.
8. What are infra-red rays ? Give their *two* uses.
9. How does refraction of light affect the length of the day ?
10. What is Bandwidth ? Give an expression for it in AM transmission.

Section-C

3 each

11. A point charge of 10^{-7} Coulomb is situated at the centre of a cube of 1 m side. Calculate the electric flux through its surface.
12. Discuss the various situations which describe the failure of Ohm's law.

Or

Draw a circuit diagram of a metre bridge arranged to compare two resistances. Explain the principle of the experiment.

13. It is found the 125 cm length of a potentiometer wire is required to balance the e.m.f. of a Daniel cell but that only 100 cm of wire is required for balance if poles of the cell are joined to a resistance of 2 ohm. Calculate the internal resistance of cell.
14. Name the elements of the earth's magnetic field at a place. Explain their meaning.
15. A galvanometer of 50 ohm shows a full scale deflection for a current of 2 mA. Calculate the value of resistance required to convert it into a voltmeter of range 0-5 V and ammeter of range 0-5 A.

XIIAPBIAJKLK23-9801-C
E-1-C

16. In Young's double slit experiment of interference of light, the ratio of intensity of maxima and minima pattern is 25 : 9. What will be the ratio of amplitude of two waves producing interference ?
17. Explain laws of photoelectric emission.
18. On the basis of Bohr's atomic model, find an expression for radius of n th orbit of hydrogen atom.
19. What is alpha decay, beta decay and gamma decay ?
20. Explain the forward and reverse bias characteristic curve of a pn junction.
21. With the help of circuit diagram, explain the action of a $n-p-n$ transistor. <https://www.jkbboseonline.com>
22. What is Demodulation ? Draw a labelled circuit diagram for detection of amplitude modulated wave.

Section-D

4

23. One day Chetan's mother developed severe ache all of a sudden. She was rushed to the doctor who suggested for an immediate endoscopy test and gave an estimate of expenditure for the same. Chetan immediately contacted his class teacher and shared the information with her. The class teacher arranged for the money and rushed to the hospital. On realising that Chetan belonged to a below average income group family, even the doctor offered concession for the test fee. The test was conducted successfully. Now answer the following questions :
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- (b) Briefly explain the values reflected in the action taken by the teacher.
- (c) In what way do you appreciate the response of the doctor on the given situation ?

Section-E

5 each

24. Define Capacitance. Derive an expression for the capacitance of a parallel plate capacitor having a dielectric slab between its plates.

Or

Define electric dipole moment. Is it scalar or vector ? Derive an expression for electric field of a dipole at a point on the equatorial line of the dipole.

25. Give the principle, construction and working of an a.c. generator.

Or

Derive an expression for average power of an a.c. circuit containing L, C and R.

26. Define polarized and unpolarised light. State and explain Brewster's law of polarization of light.

Or

What is a Compound Microscope ? With the help of a ray diagram, explain the working of compound microscope. Find an expression for its magnifying power.

B-4-X

Roll No.

Total No. of Questions : 22]

[Total No. of Printed Pages : 8

XIIARJKUT23

9104-X

POLITICAL SCIENCE

[Maximum Marks : 100

Time : 3 Hours]

SECTION-A

(Very Very Short Answer Type Questions)

1 each

1. (a) What is Third World ?

(b) What is Collective Security ?

(c) Where was First SAARC Summit held ?

(A) Dhaka

(B) New Delhi

(C) Colombo

(D) Male

(d) Following statement is right or wrong :

The USA and China play an important role in South Asian politics.

(R/W)

(e) What do you mean by Security Threats ?

XIIARJKUT23-9104-X

B-4-X

Turn Over

- (f) is the best way to deal with threat.
- (g) What do you mean by Natural Environment ?
- (h) was the architect of Indian Planning.
- (i) Name the Political parties with whom the following persons are associated.:
- (A) Yashwant Sinha
- (B) Raj Nath Singh
- (j) Under which article J & K was given greater autonomy but is scrapped now ?
- (A) Article 37Q (B) Article 350
- (C) Article 356 (D) None of these
- (k) Name any two Socio-Religious Movements.
- (l) The decision of NF Govt. to implement the report has shaped the politics of OBCs.
- (m) Where Chipko Movement began ?
- (A) Haryana (B) Goa
- (C) Uttarakhand (D) Himachal

(n) Which leader of BJP called Mohammed Ali Jinnah as a secular leader ?

- (A) Sushma Swaraj (B) Yashwant Sinha
(C) Lal Krishan Advani (D) Pramod Mahajan

(o) What is Dalit Politics ?

SECTION-B

(Very Short Answer Type Questions)

2 each

2. What is marine and coastal degradation ?

Or

Give two main causes of Water Pollution.

3. Define Indigenous Population.

Or

What do you know about Earth Summit of 1992 ?

4. Describe briefly Kashmir dispute between India and Pakistan.

5. Describe the role of regional parties in National Politics.

Or

Mention any four names of states of North-East India.

6. Write short note on Sardar Sarovar Project.
7. Write short note on the effects of Mandal Commission Report.
8. What are the ill-effects of Communalism ?

Or

What are the main *two* reasons you think of rise of BJP in India.

SECTION-C

(Short Answer Type Questions)

4 each

9. What are the major irritants in Sino-Indian relations ?

Or

Mention any *four* common features of European Union.

10. What does SAARC stand for ? Highlight its any *three* main objectives.

Or

Explain any *two* factors responsible for Pakistan's failure in building a stable democracy.

11. Briefly explain the role of opposition parties in India.
12. How has Technology contributed to globalisation ? Explain.
13. How did planned development lead to expansion of Public Sector in India ?

Or

"Private sector development has a key role in the development of Indian industrialisation sector." Discuss.

SECTION-D

(Passage/Map Questions)

14. Read the following passage and answer the questions given below.

India is not the only country to have experienced the democracy of one party after independence. If we look around the world, we find many other examples of one party dominance. But there is a crucial difference between these and Indian experience. In the rest of the cases the dominance of one party was ensured by compromising democracy. In some countries like China, Cuba and Syria the constitution permits only a single party to rule the country.

Questions :

- (i) Which Political party dominated the political scene of India after independence and how long ?
- (ii) How did the one-party dominance in India differ from that of China or Cuba ?

15. Read the passage and answer the following questions given below :

Indira Gandhi changed the Congress into highly centralised and undemocratic party organisation, from the earlier federal, democratic

and ideological formation that Nehru had led But this could not have happened had not Indira Gandhi changed the entire nature of politics. This new populist politics turned political ideology into a more electoral discourses, use of the various slogans not meant to be translated into governmental policies.

(Sudipta Kaviraj)

Questions :

- (a) What is the difference between the strategies of Nehru and Indira Gandhi according to the author ?
- (b) Why does the author says the Congress Party affect other political parties also ? <https://www.jkbosenonline.com>

16. In the outline Map of the World, show the appropriate position of the following countries of the world :

- (a) Germany
- (b) France
- (c) China
- (d) Israel
- (e) Ukraine

SECTION-E

(Long Answer Type Questions)

6 each

17. Why was the end of the Second World War considered to be the beginning of Cold War ? Explain.

Or

What is Cold War ? What was the effect of Cold War era on newly independent states ?

18. Explain, how did the collapse of the Soviet Union affect the World Politics ?

Or

What is meant by 'Shock Therapy' ? Assess its consequences on the post-communist regimes ?

19. What do you know about :

- (a) Gulf War of 1990
- (b) Bandwagon Strategy ?

Or

Analyse the role of USA in Global War on terrorism after the 9/11 attack in 2001.

20. Describe what kind of party system has developed in India and how is it different from the past ?

Or

Suggest ways and means by which the Congress party regain its past position, again in India ?

21. What are the main objectives of Indian Foreign Policy ? Discuss in detail.

Or

What do you understand by :

(a) Panchsheel

(b) India's approach to NTP ?

22. Describe any *four* circumstances for proclamation of emergency in 1975.

Or

Discuss in detail the factors which led to the rise of Janta Party.