AGA KHAN UNIVERSITY EXAMINATION BOARD

SECONDARY SCHOOL CERTIFICATE

CLASS X

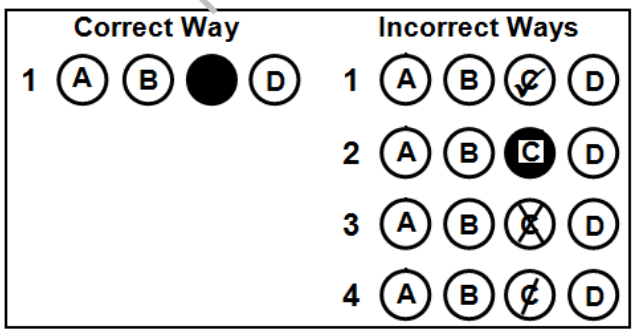
ANNUAL EXAMINATIONS (THEORY) 2025

Physics Paper I

Time: 1 hour 10 minutes Marks: 40

INSTRUCTIONS

1. Read each question carefully.
2. Answer the questions on the separate answer sheet provided. DO NOT write your answers on the question paper.
3. There are 100 answer numbers on the answer sheet. Use answer numbers 1 to 40 only.
4. In each question there are four choices A, B, C, D. Choose ONE. On the answer grid black out the circle for your choice with a pencil as shown below.



Candidate's Signature

5. If you want to change your answer, ERASE the first answer completely with a rubber, before blacking out a new circle.
6. DO NOT write anything in the answer grid. The computer only records what is in the circles.
7. You may use a simple calculator if you wish.

1. If the acceleration of a vibrating body is directed towards its mean position and directly proportional to the displacement, then the body is executing

   A. random motion.
   B. translatory motion.
   C. circulatory motion.
   D. simple harmonic motion.

2. Which of the following pendulums has the maximum time period?

Pendulum	Length	Mass
A	50 cm	50 gm
B	60 cm	40 gm
C	70 cm	30 gm
D	80 cm	10 gm

3. The total energy of a particle executing simple harmonic motion depends upon

   I. velocity
   II. amplitude
   III. frequency

   A. I only.
   B. II only.
   C. I and III.
   D. II and III.

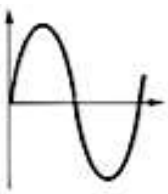
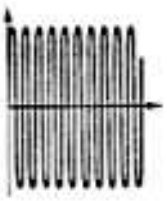
4. If a periodic wave of wavelength 0.5 m has a frequency of 2 Hz, then the speed of the wave will be

   A. 4.0 m/s.
   B. 2.5 m/s.
   C. 1.5 m/s.
   D. 1.0 m/s.

5. Wars on Earth are very noisy affairs but a war in space will be very quiet because

   A. space is very far from the Earth.
   B. sound waves cannot travel through a vacuum.
   C. sound waves are blocked by the planets in space.
   D. sound waves lose energy as they reach the Earth.

6. Which of the following figures represents the loudest sound with the highest frequency?

	
A	B
	
C	D

7. Graveness or shrillness of a sound depends on its

A. velocity.
B. frequency.
C. amplitude.
D. wavelength.

8. All of the following are the MAJOR sources of noise pollution EXCEPT

A. transportation.
B. construction sites.
C. musical instruments.
D. machines used in industries.

9. Consider the given ray diagram.

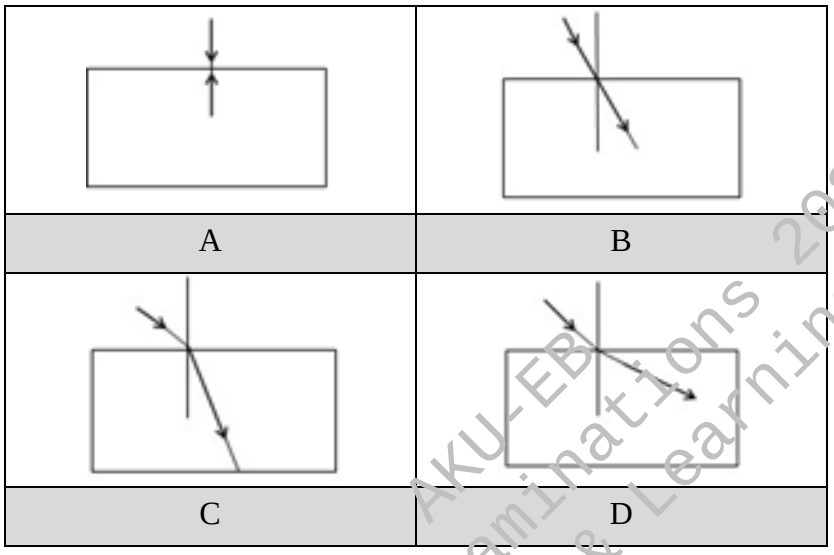
Where should an object be placed to get a magnified and erect image?

A. At point F
B. Beyond 2F
C. Between F and P
D. Between F and 2F

10. Short sightedness can be removed by the use of

    A. convex lens.
    B. concave lens.
    C. double-convex lens.
    D. concavo-convex lens.

11. Which of the following diagrams represents the correct phenomenon of the refraction of light, if each block shows a glass slab?

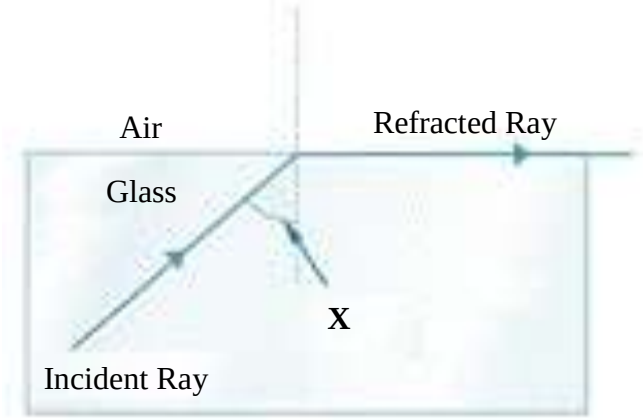


12. When a white coloured light passes through a prism it bends into seven different colours.

    This bending of colours increases as the

    A. frequency decreases.
    B. wavelength decreases.
    C. frequency remains the same.
    D. wavelength remains the same.

13. Consider the given diagram.



The label **X** is a/ an

A. right angle.
B. critical angle.
C. angle of deviation.
D. angle of reflection.

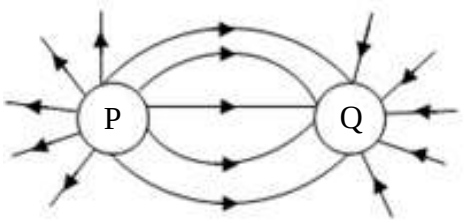
14. A force of attraction is directly proportional to the product of charges and inversely proportional to the square of separation between them is called

A. Coulomb's law.
B. Newton's law.
C. Gauss's law.
D. Ohm's law.

15. The electric field intensity of a point charge is

A. directly proportional to the distance from the charge.
B. inversely proportional to the distance from the charge.
C. directly proportional to the square of the distance from the charge.
D. inversely proportional to the square of the distance from the charge.

16. Consider, two charges are placed near to each other.



The option which is CORRECT for the given charges is that

A. both are positively charged.
B. both are negatively charged.
C. P is positively and Q is negatively charged.
D. P is negatively and Q is positively charged.

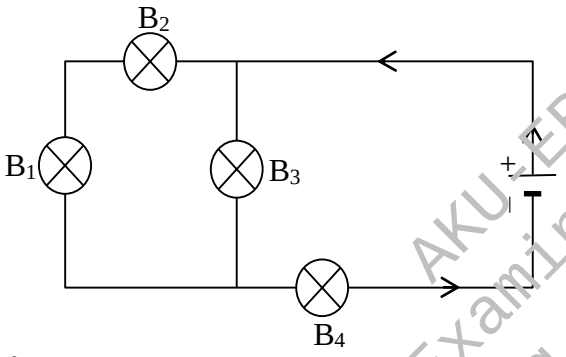
17. If two capacitors $C_1 = 6\ \mu F$ and $C_2 = 12\ \mu F$ are connected in series, then the equivalent capacitance will be

A. 2 µF.
B. 4 µF.
C. 6 µF.
D. 18 µF.

18. The resistance of a conductor does NOT depend on its

A. mass.
B. length.
C. resistivity.
D. cross-sectional area.

19. In the given diagram, all of the following bulbs will NOT glow if we remove bulb



A. B_1
B. B_2
C. B_3
D. B_4

20. If a 100 Watt bulb glows for 200 hours, then the energy consumed by it will be

A. 2 kWh.
B. 20 kWh.
C. 100 kWh.
D. 300 kWh.

21. The earth wire in electrical appliance is connected to a

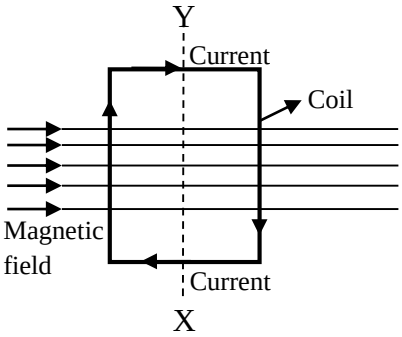
A. fuse.
B. metal case.
C. switch button.
D. plastic handle.

22. The factor which is independent of the electromotive force (e.m.f.) induced in the secondary coil of a transformer is the

A. resistance of the primary coil.
B. voltage applied to the primary coil.
C. number of turns of the primary coil.
D. number of turns of the secondary coil.

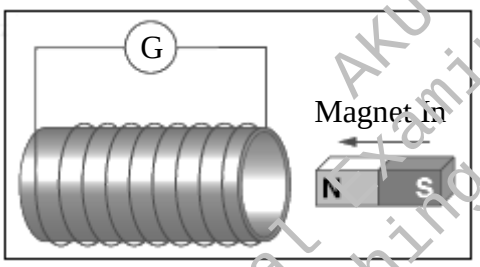
23. A current carrying coil is placed in a magnetic field as shown in the given figure.

In which direction will the coil move?



A. From X to Y
B. Turns about the axis XY
C. Along the magnetic field
D. Across the magnetic field

24. In the given diagram, a bar magnet is pushed into a coil of a wire. The coil is connected to a sensitive metre that can detect a small amount of current.



What will happen if the bar magnet is passed through a coil?

A. Current is detected, but not until the magnet enters the coil.
B. Current is detected if the magnet is placed in the coil and held still.
C. No current is detected because the circuit does not have a battery in it.
D. Current is detected provided the magnet is moving back and forth in the coil.

25. The working principle of an AC generator is an example of

A. inductor.
B. impedance.
C. mutual induction.
D. electromagnetic induction.

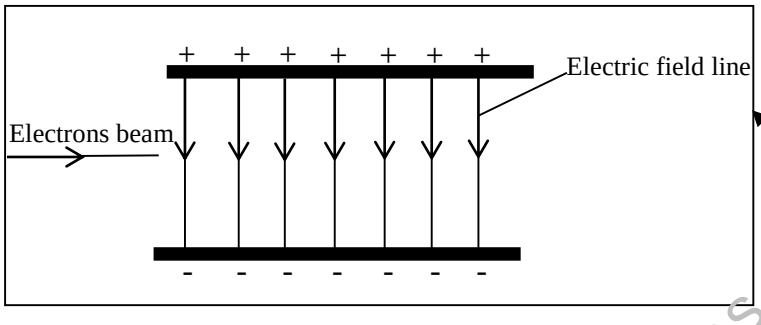
26. A transformer will work as a step-up transformer if the number of turns in the primary coil is

A. less than in the secondary coil and connected to the DC supply.
B. less than in the secondary coil and connected to the AC supply.
C. more than in the secondary coil and connected to the AC supply.
D. more than in the secondary coil and connected to the DC supply.

27. The material that is commonly used for thermionic emission in a vacuum tube is

A. silver.
B. copper.
C. tungsten.
D. aluminium.

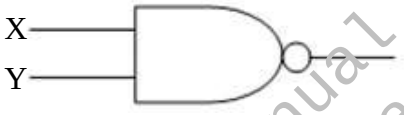
28. The given diagram shows a beam of electrons entering into a region between two charged plates.



In which of the following directions will the electrons beam deflect?

A. Upward
B. Downward
C. Into the page
D. Out of the page

29. The name of the logic gate shown in the given diagram is



A. OR
B. NOT
C. NOR
D. NAND

30. When two inputs, P and Q, of a NAND Gate has an output '0', then

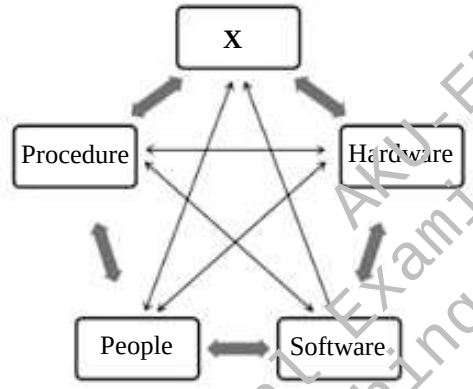
A. P will only be 0.
B. Q will only be 0.
C. both P and Q will be 0.
D. both P and Q will be 1.

31. The given truth table is TRUE for

Input A	Input B	Output
0	0	0
0	1	0
1	0	0
1	1	1

A. OR gate.
B. AND gate.
C. NOT gate.
D. XOR gate.

32. In the given diagram, the missing component **X** of information technology is



A. data.
B. storage.
C. processing.
D. controlling.

33. In radio, television and mobile phone, information is sent through space in the form of

A. sound waves.
B. analog signals.
C. electrical signals.
D. electromagnetic waves.

34. The MOST powerful communicating tool in today's world is

A. radio
B. internet.
C. television.
D. telephone.

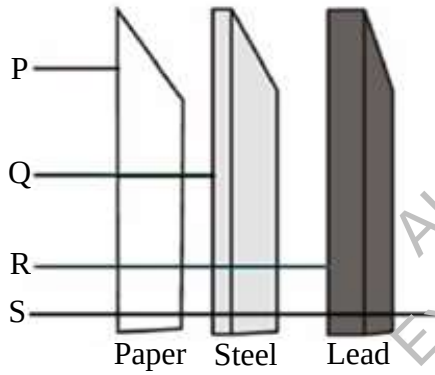
35. Compact disc (CD) is an information storage device. The stored data in it can be read with the help of

A. X-rays.
B. laser beam.
C. microscope.
D. digital camera.

36. The number of electrons in the isotope of uranium $_{92}U^{238}$ is

A. 54
B. 92
C. 146
D. 238

37. In the given diagram, sheets of different materials are placed in front of nuclear radiation P, Q, R and S.



The gamma ray is represented by

A. P
B. Q
C. R
D. S

38. Which one of the following DOES NOT occur in natural radioactivity?

A. Changing in mass.
B. Releasing of radiation.
C. Rearrangement of electrons.
D. Formation of new elements.

39. Consider the following nuclear reaction.

$$_{Z}X^{A} \longrightarrow {}_{Z+1}X^{A} + {}_{-1}Y^{0}$$

Symbol Y represents

A. alpha particle.
B. beta particle.
C. gamma ray.
D. X-ray.

40. The atomic bomb is an example of

A. controlled nuclear fusion.
B. controlled nuclear fission.
C. uncontrolled nuclear fusion.
D. uncontrolled nuclear fission.

END OF PAPER

Please use this page for rough work