AGA KHAN UNIVERSITY EXAMINATION BOARD

SECONDARY SCHOOL CERTIFICATE

CLASS X

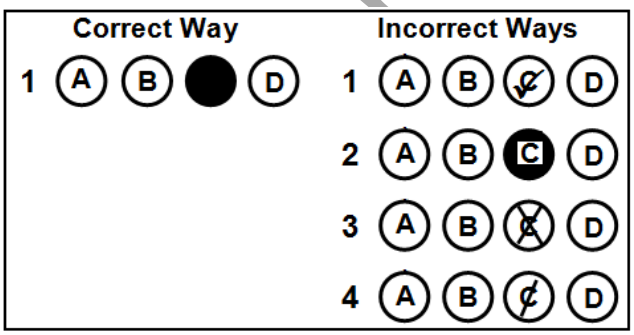
MODEL EXAMINATION PAPER 2020

Physics Paper I

Time: 45 minutes Marks: 30

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 30 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. In a transverse wave, the individual particles of the medium move

   A. in a circle.
   B. in an ellipse.
   C. parallel to the direction of propagation of the wave.
   D. perpendicular to the direction of propagation of the wave.

2. In a ripple tank, the factor(s) which change during refraction of water waves is/ are

   I. wavelength
   II. speed of wave
   III. frequency of wave

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

3. Hamid is playing a guitar. As he stops playing, the vibration of its strings gradually decreases as the

   I. frequency decreases
   II. amplitude decreases
   III. phase changes

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

4. Four vibrating objects X_1, X_2, X_3 and X_4 are producing sounds. The object that produces the loudest sound is

	Area of Vibrating Body	**Amplitude of Vibration**
A	5 m^2	4 cm
B	6 m^2	4 cm
C	10 m^2	1 cm
D	10 m^2	5 cm

5. If the intensity of a source of sound is 10^{-9} W/m^2 and the intensity of faintest audible sound is 10^{-12} W/m^2, then the sound level of the source is

   A. 1 dB
   B. 3 dB
   C. 10 dB
   D. 30 dB

6. An object is placed at a distance of 12 cm in front of a spherical mirror. As a result, the image formed behind the mirror is at a distance of 6 cm.

   The focal length of the mirror is

   A. 4 cm
   B. 6 cm
   C. 12 cm
   D. 18 cm

7. When a ray of light enters from a rare medium to a denser medium, it bends in the direction

   A. towards the normal.
   B. parallel to the normal.
   C. away from the normal.
   D. perpendicular to the normal.

8. A ray of light parallel to the principal axis is refracted by a convex lens. After refraction it passes through the

   I. optical centre
   II. principal focus
   III. centre of curvature

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

9. Double convex lens is used as a simple microscope when the object is placed

   A. on principal focus (F).
   B. on centre of curvature (2F).
   C. between principal focus (F) and optical centre (O).
   D. between principal focus (F) and centre of curvature (2F).

10. A ray of light enters into water from air. If the angle of incidence is 45°, then the angle of refraction is

    (**Note**: The refractive index of air and water is 1.00 and 1.33 respectively.)

    A. 32.1^{o}
    B. 33.8^{o}
    C. 37.3^{o}
    D. 70.1^{o}

11. When an object is placed beyond the centre of curvature (2F) of a convex lens, the image of this object will be formed

    A. at principal focus (F).
    B. at pole of the lens (P).
    C. between principal focus (F) and pole of the lens (P).
    D. between principal focus (F) and centre of curvature (2F).

12. When a glass rod is rubbed with a piece of silk cloth, then the charge distribution on them will be

	Glass Rod	**Silk Cloth**
A	negative	positive
B	negative	negative
C	positive	positive
D	positive	negative

13. The Coulomb's force between two identical charges is 80 N. If the distance between the charges is doubled, then the force will be

    A. 20 N
    B. 40 N
    C. 160 N
    D. 320 N

14. The cost of energy is Rs 12/kWh. If 100 watt light bulb glows for 8 hours a day, then the cost of energy consumed per day will be

    A. Rs 6.6
    B. Rs 9.6
    C. Rs 66
    D. Rs 96

15. The earth wire in an electrical appliance is connected to a

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

16. All of the following are the differences between conventional and non-conventional current EXCEPT

	Conventional Current	Non-conventional Current
A	Positive only	Positive or Negative
B	Flow of current is positive	Flow of current is negative
C	Measured in ampere	Measured in watt
D	Is called current	Is called electric current

17. A path in which electrons from a voltage or current source flow is called an

A. electric field.
B. electric power.
C. electric circuit.
D. electric potential.

18. Which of the following is CORRECT for the potential difference (PD) and electromotive force (e.m.f.) in a circuit?

A. They are independent of the resistance of the circuit.
B. They are measured between any two points of the circuit.
C. PD is measured in volts whereas e.m.f. is measured in Ohms.
D. PD does not remain constant whereas e.m.f. remains constant.

19. Which of the following remains constant in parallel combinations of resistors?

A. Electric voltage
B. Electric current
C. Total resistance
D. Total capacitance

20. The strength of magnetic field around a current carrying conductor

A. is weaker near the conductor.
B. is stronger near the conductor.
C. is negligible near the conductor.
D. varies unpredictably near the conductor.

21. The magnetic force experienced by a current carrying conductor in a magnetic field will be zero when the direction of current in the conductor is

A. parallel to the magnetic field.
B. perpendicular to the magnetic field.
C. at an angle of 30^o to the magnetic field.
D. at an angle of 60^o to the magnetic field.

22. In electromagnetism, according to Fleming's left hand rule, the thumb indicates the direction of

A. flux.
B. force.
C. current.
D. magnetic field.

23. All of the following are the basic operations of Boolean algebra EXCEPT

A. OR.
B. NOT.
C. AND.
D. NAND.

24. Technology is improving day by day. Now laptops' models that are light in weight, small in size and less in power consumption are available in the market.

All of the following components of information technology (IT) are used to make this possible EXCEPT

A. hard drive.
B. world wide web.
C. read only memory.
D. random access memory.

25. All of the following are the names of search engine on the internet EXCEPT

A. bing.
B. yahoo.
C. google.
D. chrome.

26. Which of the following is NOT the part of a cathode rays oscilloscope?

A. An armature
B. An electron gun
C. A deflecting plate
D. A fluorescent screen

27. According to the Rutherford model, the positive charge in an atom is

A. concentrated at its nucleus.
B. at the circular orbits of the atom.
C. uniformly spread throughout atom.
D. at a certain distance from its nucleus.

28. Isotopes of an element can be identified by their

    I. mass number (A)
    II. charge number (Z)
    III. neutron number (N)

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

29. Gamma rays have penetration power that is

    A. less than alpha and beta particles.
    B. more than alpha and beta particles.
    C. less than alpha but more than beta particles.
    D. more than alpha but less than beta particles.

30. If a radioactive element has a half-life of 60 seconds, then the quantity of the isotope after 120 seconds will be

    A. one-half.
    B. one-sixth.
    C. one-fourth.
    D. one-eighth.

END OF PAPER

Please use this page for rough work