

UMMUL QURA HIGH SCHOOL
AROWONA BUS-STOP, AMULOKO-AKANRAN ROAD, IBADAN.
2020/2021 SECOND TERM EXAMINATION

SUBJECT: Physics
CLASS: SS 1

DURATION : 2hrs : 30mins
INSTRUCTION: Attempt section A and B

OBJECTIVES

1. A catapult is used to project a stone. Which of the following **energy conversions** takes place as the stone released?
 - A. The kinetic energy of the stone is converted to gravitational potential energy
 - B. The gravitational potential energy is converted to kinetic energy of the stone
 - C. The elastic potential energy of the catapult is converted into gravitational potential energy of the stone
 - D. The elastic potential energy of the catapult is converted into the kinetic energy of the stone
2. Which of the following **units** is equivalent to joule?
 - A. Nm^{-1}
 - B. Nm
 - C. Ns
 - D. Nm^{-2}
3. The diameter of a wire, small ball or the thickness of a paper is **best** measured with
 - A. Vernier caliper
 - B. Metre rule
 - C. Tapes
 - D. Micrometer screw gauge
4. A car travelling at 30ms^{-1} overcomes a frictional resistance of **100N** while moving. **Calculate** the power developed by the engine ($1\text{ hp} = 0.75\text{Kw}$)
 - A. 0.23 hp
 - B. 0.4 hp
 - C. 4.00 hp
 - D. 4.40 hp
5. The **S.I unit** of power is
 - A. N
 - B. Pa
 - C. W
 - D. J
6. When an elastic material is stretched by a force, the **energy** stored in it **is**
 - A. kinetic
 - B. potential
 - C. thermal
 - D. electrical
7. A body of mass **Mkg** rests on a plane inclined at angle θ to the horizontal. The component of the weight of the body parallel to the plane **is**
 - A. $Mg \sin \theta$
 - B. $Mg \cos \theta$
 - C. $Mg \tan \theta$
 - D. $Mg \sec \theta$
8. Which of the following pairs of **physical quantities** is made up of vectors?
 - A. Speed and displacement
 - B. Mass and force
 - C. Displacement and acceleration
 - D. Momentum and length

9. A car starts from rest and covers a distance of 40m in 10s, *calculate* the magnitude of its acceleration
- 0.25ms^{-2}
 - 0.80ms^{-2}
 - 3.20ms^{-2}
 - 4.00ms^{-2}
10. The slope of *linear* distance time graph represents
- Acceleration
 - Displacement
 - Speed
 - Velocity
11. Solid friction, *like* viscosity *is*
- independent of the surface areas in contact
 - independent of the relative motion between layers
 - dependent on normal reaction
 - in opposition of motion
12. Which of these is equivalent to *watt*?
- Kgms^{-2}
 - $\text{kgm}^2\text{s}^{-3}$
 - $\text{kgm}^2\text{s}^{-2}$
 - $\text{kgm}^2\text{s}^{-1}$
13. Which of the following statements is *not* correct?
- Acceleration is metre per second per second
 - Energy is watt
 - Momentum is newton second
 - Tension is newton
14. Which of the following are *contact* forces?
- Force of tension
 - Force of friction
 - Magnetic force
 - Force of reaction
- I, II and III only
 - I, II and IV only
 - I, III and IV only
 - II, III and IV only
15. The reading *accuracy* of a vernier calliper?
- 1.00cm
 - 0.10cm
 - 0.01cm
 - 0.001cm
16. A satellite in circular motion around the earth *does not* have
- an acceleration
 - a gravitational force
 - a uniform velocity
 - a centripetal force
17. Which of the following *statements* about energy transformation is *not* correct?
- Steam engine converts heat energy to mechanical energy
 - Dynamo converts mechanical to electrical energy
 - Microphone converts electrical energy to sound energy
 - Battery converts chemical energy to electrical energy
18. A boy drags a bag of rice along a smooth horizontal surface with a force of 2N applied at angle 60° to the floor. The workdone after a distance of 10m is
- 10J
 - 6J
 - 5J
 - 4J
19. Under which of the following conditions is workdone?
- A man support a heavy load above his head with his hand
 - A woman hold a pot of water
 - A boy climbs into a table

- D. A bag of cocoa stands on a platform
20. An object at rest is *said* to possess
- potential energy
 - kinetic energy
 - gravitational energy
 - electrical energy
21. The dimension of *pressure* is
- ML^{-2}
 - MLT^{-2}
 - $ML^{-1}T^{-2}$
 - $ML^{-2}T^{-2}$
22. A chemical balance is used for *measuring*
- volume
 - mass
 - thickness
 - density
23. Which of the following *statements* about solid friction are *correct*? it
- is a force
 - occurs between the surfaces of two bodies in contact
 - depends in the area of contacts
- I only
 - I, II and III
 - I and II only
 - II only
24. Find the *potential energy* of a boy of mass 10kg standing on a building floor 15m above the sea level.
- 1500J
 - 150J
 - 100J
 - 25J
25. A man of mass 50kg *ascends* a flight of stairs 5m high in 5secs. If the acceleration due to gravity is $10ms^{-2}$, the power expended *is*
- 200W
 - 250W
 - 400W
 - 500W
26. For a freely falling body
- the ratio of kinetic energy to potential energy is constant
 - the sum of kinetic and potential energy is constant
 - the total energy is entirely kinetic:
- Which of the above *statements* is *correct*?
- I only
 - II only
 - I and II only
 - I, II and III
27. An object of **400g** attached to the end of a string is whirled round in a horizontal of radius 200 cm with a constant speed of $8ms^{-1}$. *Calculate* the angular velocity of the object.
- 0.8rads^{-1}
 - 2.0rads^{-1}
 - 4.0rads^{-1}
 - 8.0rads^{-1}
28. *One* of the following is *not* an example of fundamental quantities
- Current
 - Temperature
 - Momentum
 - Time
29. Long distance such as the length or width of a football field can be *measured* with
- metre rule
 - vernier calipers
 - steel tapes
 - micrometer screw guage

30. A train covers a distance of 12km in 10minutes. **Calculate** the average speed the train in ms^{-1} .
- 1.2ms^{-1}
 - 12ms^{-1}
 - 20ms^{-1}
 - 120ms^{-1}
31. **Another** term for vibratory motion is
- oscillatory
 - rectilinear
 - translational
 - rotational
32. The motion of a flying kite is an **example** of
- translatory motion
 - random motion
 - vibratory motion
 - rotational motion
33. Power is defined as the
- product of force and time
 - energy expended per unit time
 - product of force and distance
 - product of energy and time
34. The capacity of a body to do work is **known** as
- Strength
 - Power
 - Momentum
 - Energy
35. A pump engine lifts 500kg of water through a height of 90m in 20sec. **What** is the **power** of the engine?
- 22.5kw
 - 2.25kw
 - 45kw
 - 0.225kw
36. Which of the **quantities** has the same unit as force?
- Work
 - Power
 - Weight
 - Energy
37. A body dropped from a certain height above the ground level falls with uniform
- speed
 - velocity
 - acceleration
 - retardation
38. Which of the following **sources of energy** is renewable?
- Sun
 - Petroleum
 - Coal
 - Water
39. A body starts from rest and accelerates **uniformly** at 5ms^{-2} until it reaches a velocity of 25ms^{-1} . **Calculate** the time taken to attain this velocity
- 2.5s
 - 5s
 - 10s
 - 125s
40. Which of the following is **NOT** an example of force?
- Tension
 - Weight
 - Friction
 - Mass
41. Electric motor primarily converts
- electrical energy into chemical energy
 - electrical energy into heat energy
 - kinetic energy into potential energy
 - mechanical energy into light energy
42. Which of the following **sources of energy** is renewable?

- A. Petroleum
 - B. Charcoal
 - C. Hydro
 - D. Nuclear
43. A stone of mass 2.0kg is thrown upwards with a velocity of 20.0ms^{-1} , **calculate** the initial kinetic energy
- A. 200J
 - B. 400J
 - C. 800J
 - D. 1600J
44. The engine of a train **produces** a force of 3000N when moving at 30ms^{-1} . **Calculate** the power of the engine.
- A. $1.00 \times 10^2\text{W}$
 - B. $3.00 \times 10^4\text{W}$
 - C. $9.00 \times 10^4\text{W}$
 - D. $3.00 \times 10^5\text{W}$
45. Which of the following is an **electro-mechanical** device?
- A. Pressing iron
 - B. Electric fan
 - C. Electric kettle
 - D. Electric cooker
46. Which of the following energy **sources** are used to generate electricity in Nigeria **except**
- A. Solar
 - B. Hydro
 - C. Nuclear
 - D. Natural gas
47. The motion of a tennis ball in play is
- A. translational only
 - B. translational and vibrational
 - C. translational and rotational
 - D. rotational only
48. Velocity
- I. a scalar quantity
 - II. measured in metre per second
 - III. time rate of change of displacement
- Which of the **statements** above is/are **correct**?
- A. II only
 - B. III only
 - C. I, II and III
 - D. II and III
49. The quantity of matter or material substance is **known** as
- A. Force
 - B. Volume
 - C. Mass
 - D. Weight
50. The **unit** of luminous intensity is
- A. Mole
 - B. Kelvin
 - C. Candela
 - D. Weber

SECTION B: THEORY PART

INSTRUCTION: ANSWER ANY FOUR QUESTIONS

- 1(a). Define the terms **potential** energy and **kinetic** energy
- (b). Give **three** examples of each

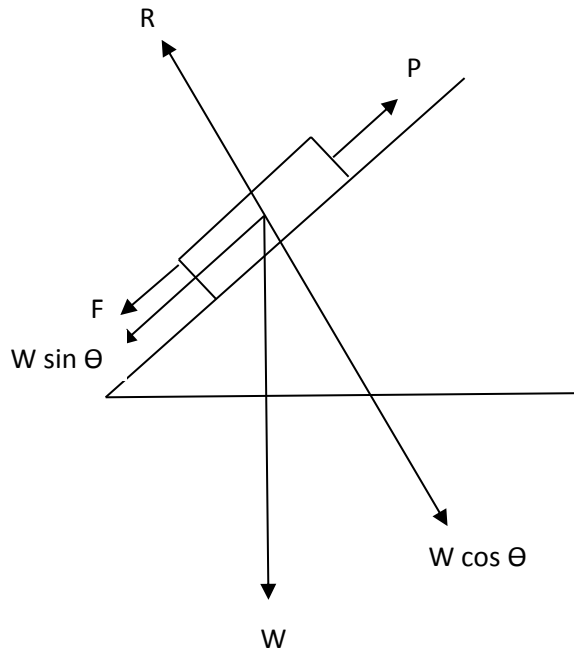
(c). A body of mass 5kg falls from a height of 20m above the ground. **What** is the kinetic energy of the body just before it strikes the ground? (Neglect air losses and take g as 10ms^{-2}) **15marks**

2(a). Define **friction**?

(b)i. State **three** laws of friction

(b)ii. State **three** advantages of friction

2(c). An object of mass 20kg is at the point of **sliding down** a plane inclined at 30° to the horizontal. **Find** the least force parallel to the plane required to make the object to begin to move up the plane.



15marks

3(a). Define the following **terms**:

(i). centripetal force

(ii). centripetal acceleration

(iii). angular speed

(iv). the radian

(b). A stone whirled at the end of a rope 20cm long, makes 20 complete revolutions in 4seconds. **Find**

(i). The angular velocity in radians per seconds

(ii). The linear velocity

(iii). Distance covered in 30seconds

15marks

4(a).What do you ***understand*** by work, energy and power?

(b). State the ***energy conversions*** in the following:

(i). A working generator

(ii). An air conditioner

(iii). A pressing iron

(iv). A torch

(v). The mouth piece of a telephone handset

(c). A boy weighing 350N runs up a flight of stairs consisting of 20steps each 10cm high in 10seconds. what is his power?

15marks

(5a). State the ***law of conservation*** of energy

(b). Explain the ***principle of conservation*** of energy using a swinging pendulum (support your explanations with a well drawn ***diagram***)

(c). Mention ***four*** renewable sources of energy

15marks