**SENIOR PHYSICS QUIZ**

**1.** What is the potential difference across two cells connected in parallel if their voltages are 3v and 9v?

 **ANS** : 9V

**2**. A wire of length 50cm has a resistance of 20 ohms. If the cross section area of this wire is doubled and its length tripled, what can be its resistance?

 **ANS:** 18 Ohms

**3**. What is a light year?

 **ANS**: The distance covered by light in a Year

**4.** What name is given to the path taken by a projectile?

 **ANS**: Trajectory

5. A snail covering half the remaining distance every minute. How long can it take to reach its destination?

**ANS**: It will never reach its destination or it will take infinite time

**6**. A 10 litre container of negligible mass is half filled with mercury and the other half with Water. Given that the densities of mercury and water are 13600kg/m3 and 1000kg/m3 respectively. What is the mass of the mixture IN kg?

 **ANS**: 73 kg

**7**. The half-life of radioactive isotope is half a minute. If 80g of this radioisotope is originally present How much of it will have Decayed after a minute?

  **ANS**: 60g

**8.** The Mercury thread of a liquid in a glass thermometer is 12cm at 500 C and 21 cm at 1000 c. What is its height at 00C ?

 **ANS**: 3 cm

**9**. A water jug of capacity 2/3 L is used t drain water from a drum containing 180L of water. Every minute a pupil takes out 48 jags of water from the drum . How long will it take to drain the Drum completely?

  **ANS**: 5.625 minutes

44. The quantity of Heat required to change 1kg of ice at 0oc to water at the same temperature is called\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 **ANS:** specific latent Heat

**10**. Which mode of heat transfer does not require a medium? (One attempt)

 **ANS**: RADATION

**11**. Calculate the frequency of a radio wave of Wavelength 300m if the speed of all electromagnetic waves in free space is 3 × 108 m/s?

 **ANS**: 1 MHz or 10,000 KHz or 10,000,000Hz

**12**. Who devised a law that states that: “The direction of induced current is always such as to oppose the change producing it”

 **ANS**: Lenz

**13**. A block system of five pulley s that has efficiency of 70% Calculate the effort that will be required to raise a load of 84 N?

 **Ans**: 24N

**14**. When is the Mechanical Advantage equal to Velocity Ratio in machine?

  **ANS**: When the friction in the machine is Zero

**15**. What is the unit of Stress?

  **ANS:** N/m2

**16**. A hydraulic press works on the principle of the transmission of what?

  **ANS**: Pressure

**17**. A block of material has a volume 20cm3 and a density of 2.5g/cm3. It is suspended from a spring balance with half the volume of the block immersed in water. What is the reading of the spring Balance in Grams?

 **ANS**: 20 g

**18**. State the unit of linear expansivity?

  **ANS**: meter per Square Kelvin m/k2

**19.**. The Volume of a gas is 76cm3 at 27oC and 800mm mercury pressure. What is the Volume at standard temperature and pressure (s.t.p) ?

  **ANS**: 72.8 cm3

**20**. What term is used for quantity of heat required to raise the temperature of a body by one degree Celsius?

 **ANS**: Specific Heat Capacity

**21**. Heat loss or transfer by radiation is through the emission of electromagnetic radiation.name the radiation involved?

 **ANS**: Infra-Red Radiation

**22**. Given that the speed of light in air is 300 000m/s. calculate the time in minutes for light to reach earth from the sun 150,000,000 away.

 **Ans**: 8.33 minutes

**23**. What term is used to describe a phenomenon where same spherical mirrors do not focus parallel rays of light to a sharp point, but instead, the point is blurred?

**Ans:** spherical aberration

**24**. What is the ratio of the focal length of any spherical mirror to the radius of its curvature?

 **Ans**: 2:1

**25**. Calculate the focal length of a lens with lens power +17 D

 **Ans.** 0.06m or 6.0 cm

**26**. What are the units of the lens power?

**Ans:** Diopter

**27**. What is used to describe a region of minimum particle density in a longitudinal wave?

Ans rarefaction

**28**. What are the units used for measuring radiation in radioisotopes?

 **Ans**: Becquerel

**29**. What kind of waves has a characteristic feature of propagating in such a way that they are parallel to each other?

Ans electromagnetic waves

**30**. A football fan throws a particle with a force of 50N onto a prayer. If the particle acts for 0.1 seconds on the prayer. Find the impulse of the force?

 **Ans**: 5 N

**31**. The power of the engine of a car is 7KW. What would be the maximum speed of the car on the level against resistance of 250N?

**Ans**: 28m/s

**32**. In what type of collision do particles separate after a perfect collision?

 **Ans**: inelastic collision

**33**. What name is given to the type of flow where a fluid does not flow smoothly?

 **Ans:** turbulent flow

**34**. Name the physical property which varies with temperature and which is made use of in mercury in glass.

 **Ans**: expansion

**35**. What formula can be used to calculate the energy of a single photon?

 **Ans**: E = h v

**36.** The measure of the average kinetic energy of the particles of a substance is called?

 **Ans**: temperature

**37**. The oldest possible temperature called absolute zero occurs at what temperature?

**Ans:** 0 K or – 273 C

**38**. The equation P V = n R T is called the ideal gas equation. What is the value of R in J/mole/K

**Ans**: 8.31J/mol/K

**39**. Current of 60 uA is equivalent to a temperature difference of 100 C . Therefore a current of 42 u A indicates a temperature difference of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 **Ans:** 70 C or 343K

**40**. In 10 seconds, 20 waves of wavelength 0.02 are produced in a slinky spring. What is the speed of these waves?

 **Ans:** 0.04m/s

**41**. A rifle of mass 3 Kg fires a bullet of mass 0.025Kg at 100m/s. what is the kinetic energies of the rifle and bullet

 **Ans: 1.04** seconds

**42**. Find the gravitational intensity at a point 1000m above mean sea level. Take R = 6400km and g 9.81m/s

 **Ans:** 9.807 m/s

**43**. What is the smallest total resistance which can be obtained using only a 6 ohm and a 12 ohm resistor?

**Ans:** 4 ohm

**44**. A lift is accelerating upwards at 2.0 m/s if the mass of the lift is 400kg, what is the tension in the cable pulling it up?

**Ans:** 48,000N

**45**. Find the wavelength of a cricket ball of mass 0.15 Kg moving at 30 m/s

**Ans:** 1.49 x 10-34m

**46.** What is the real depth of a swimming pool if the apparent depth is 1.2m?(refractive index if water 1.33)

**Ans: 1.6** m

**45**. What electronic component which may be used to store electrical energy in a time – delay circuit

 **Ans:** capacitor

**46.Increased loudness produced when two bodies vibrate sympathetically is called?**

**Ans: Resonance**

**47.** What name is given to the rule that states that at each junction the total current flowing into junction equal the total current leaving the junction?

 **Ans:** Kirchhoff’s Junction Rule

**48.** The law which governs the rate of loss of heat from a body to its surrounding is known as?

Ans: Newton’s Law of Cooling

**49.** What name is given to the wave in which the amplitude varies from place to place along a wave?

Ans: stationery or standing wave

**50.** A bat does not see, however it is able to detect some obstacles. State the wave produced by a bat which enables it to detect obstacles.

Ans: Ultra – sonic wave

**51**. A dental technician uses a small mirror that gives a magnification of 4.0 when held 0.60 cm from a tooth. What is the radius of curvature of the mirror?

Ans: 1.6 cm

**52**. Two plane mirrors make an angle of 90o with each other. A point – like luminous object is placed between them. How many images are formed?

 **Ans**: 3

**BIOLGY QUIZ QUESTIONS**

**1.** What name is given to plants possessing xylem and phloem, which includes all the land plants except the mosses and their relatives?

**ANS**: Vascular plants

**2.** What name is given to the inactive precursor of an enzyme?

**ANS**: Zymogene

**3.** Name the nitrogenous waste product of mammals and some other vertebrate formed in the liver by combination of ammonia and carbon dioxide.

**ANS**: Urea

**4.** What name is given to the production of ova in animal ovaries?

**ANS**: Oogenesis

**5.** State the process in arthropods during which the exoskeleton is periodically shed and a new one forms to allow for growth?

**ANS**: Molting

**6.** What do you call the condition of producing gametes of only one type

**ANS**: Isogamy

**7.** What do you call a protein pigment of plants sensitive to red and far-red light

**ANS**: Phytochrome

**8.** What name is given to a complex polysaccharide that cross-links the cellulose fibrils in a plant cell and is a major constituent of the middle lamella

**ANS**: Pectin

**9.** State the response by an organism to the duration and timing of light and dark conditions

ANS: Photoperiodism

**10.** What name is given to a connector between adjacent plant cells through tiny openings in the cell walls?

ANS: Plasmodesma

**11.** What are the two systems which form the Nervous system?

**ANS**: Central Nervous System and peripheral Nervous system

**12.** Name two ways in which a species of fungus can dissimilate glucose and produce ATP.

**ANS**: Aerobic respiration and Anaerobic respiration.

**13.**What do you call a pair of genes which have the same features and found on the same locus?

ANS: Alleles

**14.**The study of cells is called……..

ANS: Cytology.

**15.**What do you call the microscopic space that are found between two neurons?

ANS: Synapse.

**16.**Why is light needed during photosynthesis?

ANS: To break the hydrogen – oxygen bonds.

**17.**What is the use of copper in the animal’s body?

ANS: Blood formation

**18.**Why is it not possible to cure viral diseases in plants?

ANS: It is because viruses stay within plant cells. So killing them would mean killing the cell, and ultimately the entire plant.

**19.**In hypogeal type of germination, the cotyledon does not come out the soil, but remains underground, why?

ANS: It is because the epicotyl grows faster than the hypocotyl.

**20.** Why are oranges budded or grafted on to lemon instead of being sown plantd on their own?

**ANS**: It is because lemons have a strong root system which is not prone to disease attack as compared to the orange root system.

OR: The lemon root system is very vigorous / vibrant in growth.

What is totipotency?

ANS: This is the ability of any part of the plant to grow / develop into a full plant.

1. What is a viable seed?

ANS: This is a seed that is living or of good quality and able to germinate easily.

**21.** Why is maize not considered to be a self pollinating plant / crop despite having both the male and the female organs?

ANS: It is because the stigma and the anther mature at different times.

**22.**What is chlorosis?

ANS: Yellowing of the leaves which results in into death of a plant.

**23.**What type of chemical bond is formed between the molecule of glycerol and the three fatty acids?

ANS: Ester bond

**24.**Which property of water makes it suitable for use as a hydrostatic skeleton?

ANS: Water is difficult to compress

**25.**What organelle in animal cells contain chromatin

ANS: Nucleus

**26.**Which hormone controls growth of plant stems in particular?

ANS: Gibberellin

**27.**Whatidentifies the cell as a prokaryote?

ANS: The DNA is in a circular form.

**28.**What describes resolution in microscopy?

ANS: The Ability to distinguish between two objects that are very close together.

**29.**For which process is the large surface area of the cristae in the mitochondrion important?

ANS: electron transport chain

**30.**What happens to chromosomes in the prophase of mitosis?

ANS: They shorten and become visible.

**31.**What name is given to a group of genetically identical cells or individuals derived by asexual division from a common ancestor

ANS: Clone

1. What term is used to refer to an entire chromosome complement of an individual or cell as seen in a photomicrograph in which a cell’s chromosomes are arranged according to size and classification?

ANS: KARYOTYPE.

**32.**The unequal distribution of electric changes on each side of a neurone is called \_\_\_\_\_

ANS: Resting potential

**33.**What is the collective term for all hormones responsible for contraction of muscles especially during birth period\_\_\_\_\_\_\_\_\_\_

ANS: Prostaglandin

**34.**The form of vitamin D which contributes to the homeostasis of the body fluids is called \_\_\_\_\_\_\_\_\_?

ANS: Calcitriol

**35.**What is the function of a flagellum on a prokaryotic cell?

ANS: To aid movement as it propels

**36.**Name a bacterium that can use the copper ions that are found in chalcopyrite to form the compound CuSO4

ANS: ThiobacillusFerroxidans

**37.**Name one of the important biogeochemical cycles

ANS: Nitrogen Cycle or Carbon cycle

**38.**Some animals, including aphids, brine shrimp and some species of fish, frogs and lizards reproduce asexually through a process called\_\_\_\_\_\_\_

ANS: Parthenogenesis

**39.**Calculate the amount of energy in kJ lost at the fourth (4th ) trophic level if the energy reaching the second trophic level was 17000kJ.

ANS: 1530kJ

**40.** What is the scientific name of a human being?

 Answer: Homo sapiens

**41.** A plant without roots, stem and leaves is called-------

 **Answer**: Algae

1. The total number of species, genes, of organisms and the ecosystem in which they live is collectively called-------

 Answer: Biodiversity

**42.** An organism is unicellular, autotrophic and eukaryotic nature, to which kingdom does such organisms belong?

 **Answer**: Kingdom plantae

**43.**A substance that tends to keep the PH of the biological environment constant is called -----------

 Answer: Buffer

**44.**Smaller molecules of the same type and kind that join together to form larger molecules are called---------

 Answer: Monomer units

**45.**Name the bimolecular found in cell membrane whose function is to give the membranes its rigid and permeability----------

 Answer: Cholesterol

**46.** Structures found in the cell that are membranous in nature are called-------

 **Answer**: Organelle

**47.**Plant that do not grow in soil instead do so on top of larger plants are called ------

**Answer**: Epiphytes

**48.**A degenerative bone disease resulting from insufficient calcium is called ---------:

**Answer**: Osteoporosis

**49**.Name the kingdom to which the malaria parasite Plasmodium falciparum belong to ------------

**Answer**: Protoctista

**50.**The kingdom Animalia is divided into two main divisions, Nmane the divisions --------------------

**Answer**: Vertebrata and Invertebrates

**51**.At very high temperatures enzymes fail to catalyses their substrates this is because they lose their activity , this loss of activity is called -------------

**Answer**: Deamination

**MATHEMATICS QUIZ QUESTIONS**

1. Find the value of

ANS: 27

2. What name is given to a line or curve that approaches but never touches the (axes) an axis?

ANS: Asymptote

3. Convert radians into degrees.

ANS: 3100

4. Express with a single index and no root sign

ANS: or

5. Find in surd form; cos 450

ANS:

6. Given that - = 2.Find the value of (a – b) if (a + b) =100 expressing your answer in decimal form:

ANS: 0.02

7. If sin A = ,where A is an acute, find cos A in surd form:

ANS: or or

8. What is the coefficient of the fifth term in the expansion of

ANS: 15

9. Find the value of0

ANS: 1

10. Find the value of half of half divided by half

ANS:

11. Differentiate

ANS: -

12. Set A has 14 proper subsets, find its elements

ANS: 4

13. Mulenga is 3 years younger than Bwalya.Bweupe is 2 times older than Bwalya.How old is Bweupe if Mulenga is 20 years old

ANS: 46 years

14. If f(X) = ,x, find the values of x to which f(x) is undefined.

ANS: X =

15. The interior angle of a regular polygon is 360 ,what is the name of this polygon.

ANS: Decagon

16. Find the equation of a straight line which cuts the y-axis at (0,4) and is perpendicular to the line

ANS:

17. Given that. Find

ANS:

18. Find for.

ANS:.

19. Set A has 4 elements, how many subsets does A have?

ANS: 16.

20. Simplify.

ANS: .

21. The mass of a plastic disc is proportional to its area. A disc of area has mass of . If a similar disc has mass of , what is its area?

ANS:

22.If the temperature in Norway at a particular day was -21 and in Sudan was 390.Find the difference in their temperature.

ANS: 500

23. What name is given to a straight line joining two points on the circumference?

ANS: Chord

24. What is the gradient of a line parallel to the y-axis?

ANS: undefined

25. What is the other name given to the numbers in base three?

ANS: Ternary

26. What is the name given to the figure which has exactly same size and same shape?

ANS: Congruent figures

27.What name is given to the set with one element only?

ANS: Singleton

28. Three coins are tossed at the same time. Find the probability of obtaining atleast one head.

ANS:

29. The sets *P* and *Q* are joint sets such that , and how many elements are both in *P* and *Q*?

ANS:

30. Set A has 512 subsets, how many elements does set A have?

ANS: 9

31. Two discs are randomly taken from a bag containing 10 red discs and 6 blue discs in succession without replacement. What is the probability that the discs picked will be blue?

ANS:

32. How many prime numbers are there between 50 and 60?

ANS: 4

33. In how many ways can the word PARALLEL be arranged?

ANS: 3360

34. Given that, , and . Find

ANS:

35. The probability of snow falling on Christmas day is. What is the probability that snow will fall on the next three Christmas days?

ANS: or

36. Given that,,. List members of .

ANS:

37. When all three sides of a triangle are trebled in length, the area is increased by a factor of….

ANS: 9

38. What are the coordinates of the point after reflection in the line

ANS:

39. The mean of four numbers is 12. The mean of three numbers is 13. What is the fourth number?

ANS: 9

40. The larger angle between South-West and East is….

ANS:

41. A rectangle 8cm by 6cm is inscribed inside a circle. What is the area of the circle in terms of ?

ANS:

42. The perimeter of a square is 36cm, what is its area?

ANS:

43. A man is paid per week after a pay rise of . What was he paid before?

ANS:

44. How many cubes of edge 3cm are needed to fill a box with internal dimensions 12cm by 6cm?

ANS: 16

45. Simplify – i

ANS: or or or -2.5i or -2i

46. What is the coefficient of x in

ANS:

47. Find the fraction between and

ANS: or 1

48. Solve for **a** given that = 5 – 6a

ANS: or 0.8 or

49. The equation of a straight line is given by 3x – 5y + 8 = 0.What is its gradient?

ANS: or 0.6

50. Express - as a single fraction

ANS:

51. Given that = 8, find the value of x.

ANS: 4

52. Set p has 64 subsets, find the number of its elements.

ANS: 6

53. Set X has 5 elements, How many proper subsets does it have?

ANS: 30

54. A bag contains five red marbles. A red marble is picked and not replaced. What is the probability of picking an orange marble on the second pick?

ANS: or or 0.6

55. What is the integral of?

ANS: 3Inx or In

56. What is the second derivative of

ANS: 4x

57. Write down the square root of .

ANS:

58. The highest air temperature recorded is . The lowest air temperature recorded is . What is the difference between these two temperatures?

ANS:

59. When peter went to Hong Kong, he changed to . Calculate what one British pound was worth in dollars ($) in Hong Kong.

ANS: $12.32

60. The rate pay is $14.50 per hour. How much did Mwansa earn on day 6?

ANS: $2088

61. Calculate the value of

ANS: 4

62. The reciprocal of is. What is the value of

ANS: 3

63. The distance of Saturn from the Sun is 1507million kilometers. Express 1507million in standard form.

ANS:

64. A car decelerates uniformly from 20m/s to 5m/s in 25seconds. Calculate the retardation.

ANS:

65. Find the fraction which is exactly halfway between and

ANS:

66. In a school JETS election, John received 220 votes. This was 55% of the total number of votes. Find the total number of votes.

ANS: 400 votes.

67. Solve the equation

ANS: x=2