NEERAJ KUMAR

EARTH'S ATMOSPHERE

1. **Gaseous envelop surrounding the earth, which protects life on Earth by absorbing ultraviolet solar radiation, warming the surface through heat retention (greenhouse effect), and reducing temperature extremes between day and night is known as...**
   a. Atmosphere b. Flare
   c. Maven d. Grid
2. **How many vertical layers are found in the atmosphere? These layers are mainly determined by whether temperature increases or decreases with altitude.**
   a. 7 b. 9
   c. 5 d. 4
3. **Which layer absorbs 97-99% of the sun's high frequency ultraviolet light, which is potentially damaging to life on earth? It is mainly located in the lower portion of the stratosphere from approximately 13 km to 40 km above the Earth's surface.**
   a. Methane b. Ozone
   c. Krypton d. Neon
4. **The force per unit area that is applied perpendicularly to a surface by the surrounding gas known as...**
   a. Entropy b. Atmospheric pressure
   c. Kinetic d. Potentially
5. **At which speed is the kinetic energy plus the gravitational potential energy of an object zero. It is commonly described as the speed needed to "break free" from a gravitational field?**
   a. Escape Velocity
   b. Gravitational slingshot
   c. Gravitational potential energy
   d. Conservative forces
6. **In physics, an idealized object that absorbs all electromagnetic radiation falling on it is known as?**
   a. Black body b. Thermodynamics
   c. Isenthalpic process d. Entropy
7. **Earth's atmosphere has a mass about...**
   a. 5×10^{18} kg b. 89×10^{10} kg
   c. 7.9×10^{16} kg d. 5×10^{98} kg
8. **The circulation of the atmosphere occurs due to...**
   a. Kinetic energy
   b. Inertial frame of reference
   c. Gottfried Leibniz
   d. Thermal differences
9. **Scattering is the process by which small particles suspended in a medium of a different index of refraction diffuse a portion of the incident radiation in all directions. Which one of this colours has the highest scattering capacity in the atmosphere?**
   a. Red b. Yellow
   c. Violet d. Green
10. **What is the height of the troposphere?**
    a. 16-30 km b. 30-40 km
    c. 0-16 km d. 40-90 km
11. **Which phenomenon is responsible for maintaining the earth's temperature for life?**
    a. Detoxification b. Greenhouse effect
    c. Procurement d. Assortment
12. **The lapse rate is defined as the actual change of temperature with altitude for the stationary atmosphere. What is the lapse rate of temperature in troposphere?**
    a. 6.5°C/km b. 10.0°C/km
    c. 15.2°C/km d. 25.0°C/km
13. **In which part of the atmosphere is the ozone layer situated?**
    a. Troposphere b. Mesosphere
    c. Thermosphere d. Stratosphere
14. **In the atmosphere, which of the following gases account for about 99% percent by volume?**
    a. Nitrogen, Oxygen, Carbon dioxide
    b. Hydrogen, Methane, Helium
    c. Argon, Neon, Krypton
    d. Methane, Helium, Xenon
15. **What is name of the lowest portion of the Earth's atmosphere, it contains approximately 75% of the atmosphere's mass and 99% of its water vapor and aerosols?**
    a. Mesosphere
    b. Stratosphere
    c. Troposphere
    d. Exosphere
16. **Plants produce oxygen through...**
    a. Respiration b. Photosynthesis
    c. Transportation d. Excretion
17. **Which type of gas is highly detrimental for the ozone layer?**
    a. Halogenated gas b. Liquefied gas
    c. Incendiary gas d. Ruling
18. **The transition layer between the outermost reach of the atmosphere and interplanetary space with extremely low density of molecules is called...**
    a. Troposphere b. Mesosphere
    c. Stratosphere d. Exosphere
19. **The percentage of water vapour in atmosphere by volume?**
    a. 0-4% b. 0-10 %
    c. 1-30% d. 0-0.5%
20. **The incoming solar radiation in the form of short wave radiation after striking the earth's surface gets converted into long wave radiation due to...**
    a. Surface temperature b. Humidity
    c. Cloud d. Water

ANSWERS:

1. a	2. d	3. b	4. b	5. a	6. a	7. a	8. d
9. a	10. c	11. b	12. a	13. d	14. a	15. c	16. b
17. a	18. d	19. a	20. a				

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JAGDISH VALECHA

POLYMERASE CHAIN REACTION

1. **PCR is used to:**
   a) Make more copies of DNA
   b) Make more copies of proteins
   c) Make more copies of RNA
   d) Recycle DNA using thermocyclers

2. **Taq polymerase starts copying from:**
   a) DNA primers attached to the end of the desired gene
   b) Any open point
   c) The end of free single-stranded RNA
   d) RNA primers attached to the end of the desired gene

3. **A PCR cycle comprises of which of the following series of steps:**
   a) Annealing, cooling, polymerization
   b) Decontamination, excision, amplification
   c) Transcription, Translation, expression
   d) Denaturation, annealing, extension

4. **PCR was discovered by:**
   a) Sir Alec Jeffery b) Kary Mullis
   c) Louis Pasteur d) Robert Koch

5. **PCR can be described as:**
   a) In vitro Replication b) In vivo Replication
   c) In situ Replication d) Translation

6. **PCR amplifies molecular products in which of the following fashion:**
   a) Linear b) Random
   c) Exponential d) Logarithmic

7. **Which of the following is not necessary for the successful completion of the PCR process?**
   a) Taq polymerase
   b) Oligonucleotide primers
   c) DNA sample
   d) DNA ligase

8. **In the PCR process, 'annealing' refers to:**
   a) The stage where oligonucleotide primers bind to target DNA
   b) The stage where Taq polymerase starts synthesis of DNA
   c) The stage after elongation but before denaturation
   d) None of the above

9. **Primers:**
   a) Stabilize double stranded DNA
   b) Are long strings of nucleotides
   c) Are enzymes that catalyze the copying process
   d) Are short single stranded DNA fragments

10. **Why is real time PCR better than regular PCR?**
    a) It has a computer
    b) It is faster
    c) It has reliable quantitation of PCR products
    d) Regular PCR can't get true quantitative results

11. **PCR is carried out in:**
    a) Thermal cycler b) Autoclave
    c) Laminar Air Flow d) All of the above

12. **Taq polymerase enzyme is obtained from:**
    a) *Thermus thermophilus*
    b) *Thermus aquaticus*
    c) *Escherichia coli*
    d) *Thermus oshimai*

13. **PCR is used in:**
    a) Forensic medicine
    b) Diagnosis of cancer
    c) Phylogenetic studies
    d) All of the above

14. **RT-PCR is also known as:**
    a) Real Time PCR
    b) Reverse Transcription PCR
    c) Real Termination PCR
    d) None of the above

15. **Which of the following types of PCR carries out amplification of DNA of the unknown sequences from the known sequences?**
    a) Nested PCR
    b) Inverse PCR
    c) Anchored PCR
    d) Asymmetric PCR

16. **Which of the following PCR types makes the use of fluorescent dye?**
    a) Reverse Transcription PCR
    b) Quantitative Real time PCR
    c) Anchored PCR
    d) Nested PCR

17. **The ' Denaturation' stage in PCR is carried out at:**
    a) 95°C b) 20°C
    c) 0°C d) 17°C

18. **PCR was developed in the year:**
    a) 2000 b) 1920
    c) 1995 d) 1983

19. **Which of the following PCR types is used in the amplification of RNA molecules:**
    a) Arbitrarily primed PCR b) Real Time PCR
    c) Reverse Transcription PCR d) All of the above

20. **In PCR, Bovine serum albumin (BSA) is used to:**
    a) Increase the speed of PCR
    b) Protect the enzyme DNA polymerase
    c) It has no role
    d) Increases the specificity of primers

ANSWERS:

1) a	2) a	3) d	4) b	5) a	6) c	7) d	8) a
9) d	10) c	11) a	12) b	13) d	14) b	15) b	16) b
17) a	18) d	19) c	20) b				

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