

# OCET 2010

Code No.: 210101

**Important :** Please consult your Admit Card / Roll No. Slip before filling your Roll Number on the Test Booklet and Answer Sheet.

**Roll No.**

*In Figures*

*In Words*

--	--	--	--	--	--	--

**O.M.R. Answer Sheet Serial No.**

--	--	--	--	--	--	--

Signature of the Candidate : \_\_\_\_\_

**Subject : M.Sc. Environment Science**

**Time : 90 minutes**

**Number of Questions : 75**

**Maximum Marks : 75**

**DO NOT OPEN THE SEAL ON THE BOOKLET UNTIL ASKED TO DO SO**

## INSTRUCTIONS

1. Write your Roll No. on the Question Booklet and also on the OMR Answer Sheet in the space provided and nowhere else.
2. Enter the Subject and Code No. of Question Booklet on the OMR Answer Sheet. Darken the corresponding bubbles with **Black Ball Point / Black Gel pen**.
3. Do not make any identification mark on the Answer Sheet or Question Booklet.
4. To open the Question Booklet remove the paper seal (s) gently when asked to do so.
5. Please check that this Question Booklet contains **75** questions. In case of any discrepancy, inform the Assistant Superintendent within 10 minutes of the start of test.
6. Each question has four alternative answers (A, B, C, D) of which only one is correct. For each question, darken only one bubble (A or B or C or D), whichever you think is the correct answer, on the Answer Sheet with **Black Ball Point / Black Gel pen**.
7. If you do not want to answer a question, leave all the bubbles corresponding to that question blank in the Answer Sheet. No marks will be deducted in such cases.
8. Darken the bubbles in the OMR Answer Sheet according to the Serial No. of the questions given in the Question Booklet.
9. Negative marking will be adopted for evaluation i.e., 1/4th of the marks of the question will be deducted for each wrong answer. A wrong answer means incorrect answer or wrong filling of bubble.
10. For calculations, use of simple log tables is permitted. Borrowing of log tables and any other material is not allowed.
11. For rough work only the sheets marked "Rough Work" at the end of the Question Booklet be used.
12. The Answer Sheet is designed for **computer evaluation**. Therefore, if you do not follow the instructions given on the Answer Sheet, it may make evaluation by the computer difficult. **Any resultant loss to the candidate on the above account, i.e., not following the instructions completely, shall be of the candidate only.**
13. After the test, hand over the Question Booklet and the Answer Sheet to the Assistant Superintendent on duty.
14. In no case the Answer Sheet, the Question Booklet, or its part or any material copied/ noted from this Booklet is to be taken out of the examination hall. Any candidate found doing so, would be expelled from the examination.
15. A candidate who creates disturbance of any kind or changes his/her seat or is found in possession of any paper possibly of any assistance or found giving or receiving assistance or found using any other unfair means during the examination will be expelled from the examination by the Centre Superintendent / Observer whose decision shall be final.
16. **Telecommunication equipment such as pager, cellular phone, wireless, scanner, etc., is not permitted inside the examination hall. Use of calculators is not allowed.**

1. Which of the following terms best define the lichen with thallus of small scale-like structures ?  
(A) Leprose lichen (B) Squamulose lichen  
(C) Crustose lichen (D) Fruticose lichen
2. Which amongst the following plants yield anti-cancerous drug ?  
(A) *Pinus longifolia* (B) *Abies pindrow*  
(C) *Taxus baccata* (D) *Cedrus deodara*
3. In which of the following pteridophytes rhizophores are present ?  
(A) *Selaginella* (B) *Equisetum*  
(C) *Pteris* (D) *Adiantum*
4. A type of speciation that occurs due to geographical barriers is known as :  
(A) Parapatric (B) Hemipatric  
(C) Sympatric (D) Allopatric
5. Which amongst the following is a leafy liverwort ?  
(A) *Riccia* (B) *Porella*  
(C) *Marchantia* (D) *Lunularia*
6. Which amongst the following defines the section of the gene coding for unused pieces of RNA ?  
(A) intron (B) cistron  
(C) exon (D) transposon
7. Sex organs are multicellular and jacketed in :  
(A) *Chara* (B) *Vaucheria*  
(C) *Spirogyra* (D) *Dictyota*
8. Which of the following gymnosperms is also known as *Sago palm* ?  
(A) *Ephedra viridis* (B) *Ginkgo biloba*  
(C) *Cycas revoluta* (D) *Pinus roxburghii*
9. In which of the following plants cortical vascular bundles are present in ?  
(A) *Bougainvillea* (B) *Boerhavia*  
(C) *Nyctanthes* (D) *Helianthus*
10. Caryopsis fruits is a characteristic feature of the family :  
(A) Poaceae (B) Brassicaceae  
(C) Asteraceae (D) Chenopodiaceae

- 11. Which of the following terms is used to explain a mutation changing an amino acid specifying codon to a stop codon ?**
- (A) Leaky mutation (B) Missense mutation  
(C) Nonsense mutation (D) Null mutation
- 12. Cyclic photophosphorylation involves :**
- (A) Either PS I or PS II (B) Both PS I and PS II  
(C) PS II only (D) PS I only
- 13. An enzyme that unwinds DNA double helix is :**
- (A) Polymerase (B) Polynuclease  
(C) Primase (D) Helicase
- 14. Southern blotting is done to detect DNA sequences in :**
- (A) RNA (B) Proteins  
(C) Polyribosomes (D) DNA
- 15. In an ecosystem, the harvestable growth is called as :**
- (A) Biomass (B) Ecological yield  
(C) Standing crop (D) Primary productivity
- 16. Reindeer moss is a :**
- (A) Lichen (B) Hornwort  
(C) Moss (D) Fungus
- 17. Which of the following belongs to the class Insecta ?**
- (A) Cockroach (B) Spider  
(C) Centipede (D) Crab
- 18. Dinosaurs belong to which of the following class ?**
- (A) Insecta (B) Reptilia  
(C) Amphibia (D) Chondrichthyes
- 19. Which amongst the following is regarded as age of the fishes ?**
- (A) Devonian (B) Silurian  
(C) Permian (D) Cambrian
- 20. Most of the dinosaurs became extinct nearly ..... Million years ago.**
- (A) 230 (B) 180  
(C) 125 (D) 65

- 21. Star fish belong to which of the following phyla ?**
- (A) Echinodermata (B) Mollusca  
(C) Arthropoda (D) Chordata
- 22. Which amongst the following does not have urinary bladder ?**
- (A) Rabbit (B) Snake  
(C) Rat (D) Elephant
- 23. Which amongst the following animals have a 13-chambered heart ?**
- (A) Pigeon (B) Monkey  
(C) Cockroach (D) Fish
- 24. Which among the following is not a flightless bird ?**
- (A) Penguin (B) Great Indian Bustard  
(C) Ostrich (D) Dodo
- 25. There are 2 pots. Pot A has 3 white balls and 2 black balls whereas Pot B contains 4 white and 3 black balls. A ball is picked up at random and is drawn out. Find the probability that it is a black ball :**
- (A) 26/70 (B) 27/70  
(C) 28/70 (D) 29/70
- 26. In a class of 9 students 5 are boys and 4 are girls. A team of four students is to be selected for a quiz competition. Find the probability that there will be 2 boys and 2 girls in that team :**
- (A) 10/21 (B) 9/21  
(C) 8/21 (D) 7/21
- 27. If  $y = \sqrt{x} + 1/\sqrt{x}$ , then  $2x \cdot dy/dx + y = ?$**
- (A) 2x (B)  $2\sqrt{x}$   
(C)  $2x\sqrt{x}$  (D)  $\sqrt{2x}$
- 28. What is the order and degree of the following differential equation :**
- $$\left(\frac{dy}{dx}\right)^4 + 3y \frac{d^2y}{dx^2} = 0$$
- (A) Order = 2, Degree = 1 (B) Order = 4, Degree = 2  
(C) Order = 2, Degree = 4 (D) Order = 1, Degree = 2
- 29. The area of the right angled triangle whose hypotenuse is 5 cm is :**
- (A)  $25/4 (\sin 2\theta)$  (B)  $25/4 (2 \sin \theta \cdot \cos \theta)$   
(C)  $25/2 (\sin \theta)$  (D) Both A and B

30. A boy is flying a kite. The string of the kite makes an angle of  $30^\circ$  with the ground. If the kite is at a height of 15 m, find the length (in meters) of the string that the boy has used.
- (A) 60 m (B) 45 m  
(C) 15 m (D) 30 m
31. Evaluate  $\int [(2 \cos x)/(3 \sin 2x)]dx$
- (A)  $-2/3 \operatorname{cosec} x + c$  (B)  $-3/2 \operatorname{cosec} x + c$   
(C)  $-3/2 \tan x + c$  (D)  $-2/3 \tan x + c$
32. The UN declared 2010 as :
- (A) The International Year of Physics  
(B) The International Year of Agriculture  
(C) The International Year of Biodiversity  
(D) The International Year of Water
33. Headquarters of "Greenpace" is located at :
- (A) Washington, DC, USA (B) Paris, France  
(C) Bonn, Germany (D) Montreal, Canada
34. MAB (Man and Biosphere) was pioneered by UNESCO in the year \_\_\_\_\_ .
- (A) 1961 (B) 1971  
(C) 1981 (D) 1991
35. The National Rural Health Mission was launched in the year :
- (A) 2005 (B) 2006  
(C) 2007 (D) 2008
36. The Environment Protection Act of India was enacted in which year ?
- (A) 1986 (B) 1976  
(C) 1996 (D) 1972
37. Demography refers to the study of :
- (A) Human Development (B) Human Population  
(C) Human Psychology (D) Human Relations
38. The tenacious Iceland Volcano called Eyjafjallajokull recently erupted in \_\_\_\_\_ .
- (A) 2010 (B) 2009  
(C) 2008 (D) 2007

- 39. Choose the correct arrangement of different layers of atmosphere :**
- (A) Troposphere, Stratosphere, Mesosphere, Thermosphere
  - (B) Stratosphere, Troposphere, Mesosphere, Thermosphere
  - (C) Mesosphere, Troposphere, Stratosphere, Thermosphere
  - (D) Troposphere, Stratosphere, Thermosphere, Mesosphere
- 40. Accumulation of warm water on the oceanic surface by trade winds causing nutrients to significantly come down leading to destruction of aquatic life beneath is termed as :**
- (A) El-Nino
  - (B) Famine
  - (C) Tsunami
  - (D) Cyclone
- 41. World Earth Day is celebrated on ..... every year.**
- (A) March 22
  - (B) June 5
  - (C) April 22
  - (D) May 22
- 42. Which of the following gases was involved in Bhopal gas tragedy ?**
- (A) Sulphur dioxide
  - (B) Carbon monoxide
  - (C) Methyl isocyanate
  - (D) Ozone
- 43. Which of the following is a non-renewable energy source ?**
- (A) Wind
  - (B) Petroleum
  - (C) Hydrothermal
  - (D) Tidal
- 44. Full form of CNG is :**
- (A) Compressed Natural Gas
  - (B) Compressed Nitrogen Gas
  - (C) Compact Natural Gas
  - (D) Compressed Noble Gas
- 45. Ozone hole in the stratosphere was first observed over ..... .**
- (A) Antarctic region
  - (B) Asia
  - (C) Greenland
  - (D) Arctic region
- 46. Which of the following is the oldest National Park in India ?**
- (A) Jim Corbett National Park
  - (B) Kaziranga National Park
  - (C) Gir National Park
  - (D) Ranthambore National Park
- 47. Which of the following is the National Bird of India ?**
- (A) Peacock
  - (B) Parrot
  - (C) Sparrow
  - (D) Pigeon

- 48. In which of the following Indian States is Periyar Tiger Reserve situated ?**
- (A) Karnataka (B) Assam  
(C) Kerala (D) Andhra Pradesh
- 49. Who among the following discovered DDT ?**
- (A) Paul Müller (B) Rachel Carson  
(C) Alexander Flemming (D) Robert Koch
- 50. Who among the following is related to Narmada Dam ?**
- (A) Vandana Shiva (B) Medha Patekar  
(C) Sunder Lal Bahuguna (D) Baba Amte
- 51. The Project Tiger started in India in ..... .**
- (A) 1971 (B) 1972  
(C) 1973 (D) 1974
- 52. Which of the following is not a water-borne disease ?**
- (A) Cholera (B) Dysentery  
(C) Amoebiasis (D) Influenza
- 53. Fens are specialized :**
- (A) Swamps (B) Bogs  
(C) Marshes (D) Reefs
- 54. Which of the following is world's largest hot desert ?**
- (A) Kalahari (B) Sahara  
(C) Monte (D) Thar
- 55. Assume that men tend to marry women who are slightly younger than themselves. If every man married a woman who was exactly 4 years younger to them, then the :**
- (A) Correlation is 0.5 (B) Correlation is 1  
(C) Correlation is - 1 (D) Correlation is 0.25
- 56. Type I error is also known as ..... .**
- (A) False negative (B) False positive  
(C) Standard error (D) Variance
- 57. Which of the following is a dimensionless number ?**
- (A) Median (B) Weighted mean  
(C) Coefficient of variation (D) Standard deviation

58. Which of the following is a standardized version of covariance ?
- (A) Spearman's coefficient (B) Mann-Whitney  
(C) Pearson's correlation coefficient (D) Pearson's chi-square statistic
59. Patients of a medical study are treated with a particular drug and effects are measured before and after the treatment. The statistical test performed to measure the effectiveness of the drug is :
- (A) Chi-Square test (B) ANOVA  
(C) Paired t-test (D) Wilcoxon test
60. Which of the following is NOT an assumption of the Binomial distribution ?
- (A) All trials must be independent  
(B) Each trial must be classified as a success or a failure  
(C) The number of successes in the trials is counted  
(D) The probability of success is equal to 0.5 in all trials
61. Removal of soil by water running through small streamlets is known as ..... .
- (A) Rill erosion (B) Gully erosion  
(C) Sheet erosion (D) Sedimentation
62. If the temperature of a reaction is increased by 20 °C, the reaction rate will be :
- (A) 2 times as fast  
(B) 4 times as fast  
(C) 20 times as fast  
(D) Unchanged because the reaction rate is not dependent on the temperature
63. Which of the following elements has the greatest electronegativity ?
- (A) Si (B) P  
(C) N (D) O
64. Helium can be singly ionized by losing one electron to become the He<sup>+</sup> cation. Which of the following statements is true concerning this helium cation ?
- (A) The line spectrum of this helium cation will resemble the line spectrum of a hydrogen atom.  
(B) The line spectrum of this helium cation will resemble the line spectrum of a lithium cation  
(C) The line spectrum of this helium cation will remain the same as for unionized helium  
(D) The line spectrum of this helium cation will resemble the line spectrum of a lithium atom
65. What is the major attraction between water molecules in the solid physical state ?
- (A) Dipole-dipole interactions  
(B) Electrostatic interactions between charged atoms  
(C) Hydrogen-bonds  
(D) Physical entanglement of the molecules



66. The molecule  $N_2$  is isoelectronic with :
- (A)  $O_2$  (B)  $F_2$   
(C) NO (D)  $CN^-$
67. Which of the following gases would be most soluble in water ?
- (A)  $N_2$  (B)  $NH_3$   
(C)  $CH_4$  (D)  $CO_2$
68. How many milliliters of 2 M NaCl solution are required to make 1 liter of 0.4 M NaCl solution ?
- (A) 5000 ml (B) 800 ml  
(C) 200 ml (D) 100 ml
69. A net force of 10 newtons accelerates an object at 5.0 meters per second. What net force would be required to accelerate the same object at 1.0 meter per second ?
- (A) 1.0 N (B) 2.0 N  
(C) 5.0 N (D) 50 N
70. If the sum of all the forces acting on a moving object is zero, the object will :
- (A) Slow down and stop  
(B) Change the direction of its motion  
(C) Accelerate uniformly  
(D) Continue moving with constant velocity
71. A 1,200 kilogram car traveling at 10 m/sec hits a tree and is brought to rest in 0.10 second. What is the magnitude of the average force acting on the car to bring it to rest ?
- (A)  $1.2 \times 10^2$  N (B)  $1.2 \times 10^3$  N  
(C)  $1.2 \times 10^4$  N (D)  $1.2 \times 10^5$  N
72. An object weighing 15 newtons, is lifted from the ground to a height of 0.22 meter. The increase in the object's gravitational potential energy is approximately :
- (A) 310 J (B) 32 J  
(C) 3.3 J (D) 0.34 J
73. Biodiversity Act of India was enacted in the year :
- (A) 2003 (B) 2002  
(C) 2000 (D) 2001
74. Grasslands in Argentina are known as :
- (A) Steppes (B) Pampas  
(C) Veldts (D) Savannahs
75. Hearing range of a normal healthy person is :
- (A) 20—200 Hz (B) 20—2000 Hz  
(C) 20 Hz to 20 kHz (D) 2—20 Hz

## **ROUGH WORK**

## **ROUGH WORK**

**Panjab University, Chandigarh**  
**OCET-2010**  
**FINAL ANSWERS / KEY**  
**Subject: MSc(2Yr)(Environ. Sc.)**

1	2	3	4	5	6	7	8	9	10
B	C	A	D	B	A	A	C	C	A
11	12	13	14	15	16	17	18	19	20
C	D	D	D	B	A	A	B	A	D
21	22	23	24	25	26	27	28	29	30
A	B	C	B	D	A	B	A	D	D
31	32	33	34	35	36	37	38	39	40
A	C	A	B	A	A	B	A	A	A
41	42	43	44	45	46	47	48	49	50
C	C	B	A	A	A	A	C	A	B
51	52	53	54	55	56	57	58	59	60
C	D	B	B	B	B	C	C	C	D
61	62	63	64	65	66	67	68	69	70
A	B	D	A	C	D	B	C	B	D
71	72	73	74	75					
D	C	B	B	C					

**Note:** An 'X' in the key indicates that either the question is ambiguous or it has printing mistake. All candidates will be given credit for this question