

M.Sc Wildlife Biology and Conservation

National Entrance Test – GS 2012

QUESTION BOOK

This book contains Sections A to D all of which should be answered. Questions in Sections A to C carry 1 mark each and all should be answered. There is no negative marking. Section D would be evaluated only if the candidate gets at least 40% in each of the sections A to C.

SECTION A.

1. Match the following Union Ministers with their portfolios:

A. P.C. Chidambaram	I. Environment & Forests
B. Jayanthi Natarajan	II. Rural Development
C. Pranab Mukherjee	III. Finance
D. Jairam Ramesh	IV. Home Affairs

a. A-III, B-II, C-IV, D-I	c. A-IV, B-I, C-III, D-II ✓
b. A-IV, B-II, C-III, D-I	d. A-III, B-IV, C-II, D-I

2. The 2G scam which has recently been in the news is about:
 - a. The issue of licenses for manufacturing 2G computer chips to telecom companies
 - b. The issue of 2G spectrum licenses to telecom companies ✓
 - c. The issue of licenses for mining iron ore in Orissa in 2008.
 - d. The MoU between India and the US on 2G nuclear reactors

3. 'Dope test' in sports and athletics refers to:
 - a. Test done to detect the use of performance enhancing drugs ✓
 - b. Test done to detect the use of narcotics by coach and managers
 - c. Slang term for a chemical test used to detect leaking pipes in sports equipment
 - d. Test done to ensure physical fitness

4. Which countries have recently seen the fall of rulers who have been in power for several years?

a. Syria, Afghanistan, Egypt	c. Libya, Tunisia, Egypt ✓
b. Tunisia, Syria, Egypt	d. Egypt, Tunisia, Yemen

5. The next Conference of the Parties to the Convention on Biological Diversity is to be held in the year 2012 in:

a. Kathmandu	c. Hyderabad ✓
b. Colombo	d. New Delhi

6. From the two sentences below choose the sentence that has the better English style.
 - a. Rajat was there, Mukund was there, Lalitha was there.
 - b. Rajat, Mukund and Lalitha were all there. ✓

7. From the two sentences below choose the sentence that has the better English style.
- Study for two hours every day for the exam, it is the best way to prepare.
 - The best way to prepare for the exam is to study for two hours every day. ✓

8. Only one of the options below is a completely correct sentence, in terms of English grammar or word choice. Pick the correct option.

- Gave two clothes to the man from the drycleaners.
- The speaker emphasised on the importance of proper nutrition.
- He likes using long words for effects.
- The price of apples has doubled in the last decade. ✓

9. Only one of the options below is a completely correct sentence, in terms of English grammar or word choice. Pick the correct option.

- The party was a big fun.
- She is very rich, she is having two cars.
- Rohan could not possibly have seen the movie, because he were already gone.
- The tiger, which is found in many parts of India, is the country's national animal. ✓

10. Only one of the options below is a completely correct sentence, in terms of English grammar or word choice. Pick the correct option.

- The husband removed all the items that reminded him of his wife. ✓
- In Andhra, people prefer hot-hot curries.
- There are only a few hundreds of such words in English.
- These mangoes are inferior than those we had last week.

11. Organize the statements below into the following sequence:

Observation – Hypothesis – Prediction, by labeling O, H and P, respectively.

I. In the fossil record scientists might find evidence of whale-like animals with small hind legs.

II. Whales have small, undeveloped leg-bones located internally at the back of their body.

III. The evolutionary ancestors of whales were land-dwelling animals that had fully-formed legs.

- | | I | II | III |
|----|---|----|-----|
| a. | H | O | P |
| b. | O | P | H |
| c. | P | H | O |
| d. | P | O | H |
- ✓

Study the following statement carefully and answer questions 12 & 13: "Of all the people in the coffee shop when the cell phone was stolen, Ajay was the only one who was rich. Therefore, he could not be the one who stole it."

12. What assumption is made in the argument above?

- Ajay already has a cell phone.
- Coffee shops attract thieves.
- Rich people never steal things. ✓
- Cell phones are the most frequently stolen item.

13. The argument above would be strengthened the most if it could be shown that:

- a. Ajay never watches movies about criminals.
- b. The coffee shop owner is a good friend of Ajay.
- c. No-one saw Ajay go near the table from which the phone was stolen. ✓
- d. Ajay always uses a Nokia cell phone and the stolen phone was a Motorola.

14. "It is healthy to eat dirt because it provides the body with many essential minerals." Which of the statements below would be most suitable as a counter-argument to the opinion expressed above?

- a. One should only eat food.
- b. Disease-causing bacteria are sometimes found in dirt. ✓
- c. Dirt does not contain any vitamins.
- d. The body is the temple of the soul.

15. Which of the sentences below presents a logically valid argument?

- a. Given that the sun is so much farther away than the moon, it must have less influence on the Earth.
- b. If it is true that wearing a turban makes you a little more intelligent each day, then traditional Sikh men must get more intelligent as they age. ✓
- c. If fifty percent of car accidents involve a driver who is drunk, then there is a fifty percent chance of having an accident if you drink and drive.

16. Two men, starting at the same point, walk in opposite directions for 3 metres and stop. One man turns to his left and walks another 4 metres and stops, at which time the second man turns to his right and keeps walking until he is 10 metres away from the first man. What distance did the second man walk?

- a. 22 metres
- b. 12 metres ✓
- c. 10 metres
- d. 15.25 metres

17. Match the following antonyms:

- | | |
|--------------|-------------------|
| A. Abundant | I. Unsure |
| B. Permeable | II. Scarce |
| C. Confident | III. Impenetrable |

- a. A-I, B-III, C-II
- b. A-III, B-I, C-II
- c. A-II, B-I, C-III
- d. A-II, B-III, C-I ✓

18. In a contest, four fruits (an apple, a banana, an orange and a pear) have been placed in four closed boxes (one fruit per box). People may guess which fruit is in which box. 57 people participate in the contest. When the boxes are opened, it turns out that 21 people have guessed none of the fruits correctly, 17 people have guessed one fruit correctly, and 14 people have guessed two fruits correctly.

Of the following combinations, which one is most likely to show (in order): the number of people who guessed three fruits correctly, and the number of people who guessed four fruits correctly?

- a. 11, 7
- b. 4, 1 ✓
- c. 5, 5
- d. 3, 7

19. Identify the two statements necessary to make the statement below true:

Sumita is happy.

- I. Sumita just ate a lemon.
 II. Sumita's father just gave her a car.
 III. Eating sour food always makes Sumita happy.
 IV. Sumita has just passed her exam.
- a. I, IV
 b. I, III ✓
 c. II, IV
 d. III, IV

20. In a new species of rat, it is found that 80% of the rats have red eyes and 50% have white feet. What percentage of the rats has both red eyes and white feet?

- a. All of them
 b. 30%
 c. Between 30% and 50% ✓
 d. Between 50% and 80%

SECTION B.

Selection to a post-graduate course consists of a written test and those who pass this test have to appear for an interview based on which the final selection is made. Given below are the results from four states. Answer questions 1 to 4 using information provided in the table.

State	Number of candidates who appeared for written test	Number of candidates selected for interview	Number of candidates who were finally selected
Uttar Pradesh	4400	1320	462
Kerala	1252	439	132
Goa	550	204	82
Assam	225	90	32

1. Which state had the highest success rate from written test to the interview?

- a. Uttar Pradesh
 b. Kerala
 c. Goa
 d. Assam ✓

2. Which state had the highest success from interview to the final selection?

- a. Uttar Pradesh
 b. Kerala
 c. Goa ✓
 d. Assam

3. Which state had the highest success rate from written test to final selection?

- a. Goa ✓
 b. Uttar Pradesh
 c. Kerala
 d. Assam

4. What was the overall success rate from written test to final selection for all the candidates together?

- a. 0.11%
 b. 1.10%
 c. 11.01% ✓
 d. 110.1%

5. Imagine that you have to find your food from one of two kinds of forests and that you need a net energy return of at least x joules/hour, otherwise you starve. You know that both the forests would give you the same mean net energy return (of say, y joules/ hour), but forest B has a higher variance than forest A. When would you go to forest B to look for food?

- a. Never
 b. Always
 c. When $x > y$ ✓
 d. When $x < y$

The number of accidents in a city for one year involving different types of 2-wheelers with single riders and the number fatalities are given below. Answer questions 6 & 7 based on this data.

Type of 2-wheeler	Number of accidents	No. of fatal accidents
Cycle	150	15
Scooter	130	46
Motor bike	160	48

6. Which of the three types of 2-wheelers is more accident prone?

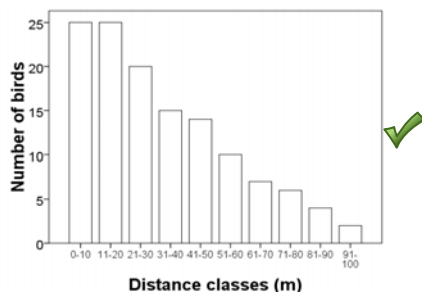
- a. Cycle
 b. Scooter
 c. Motor bike
 d. Cannot say with the information provided ✓

7. Accident on which type of 2-wheeler is more likely to be fatal?

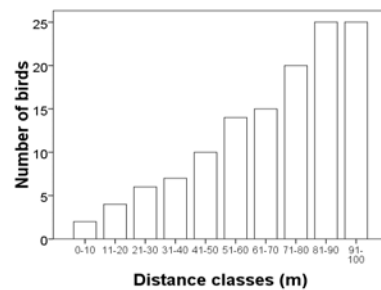
- a. Cycle
 b. Scooter ✓
 c. Motor bike
 d. Cannot say with the information provided

8. Suppose you walk through a straight trail in a forest and record all the birds that you see, and the perpendicular distance of every bird from the trail. If you see a total of 128 birds and make a frequency distribution graph of the number of birds in different class intervals of distance from the trail, which one of the following graphs are you most likely to get?

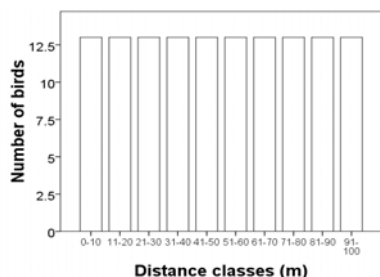
a.



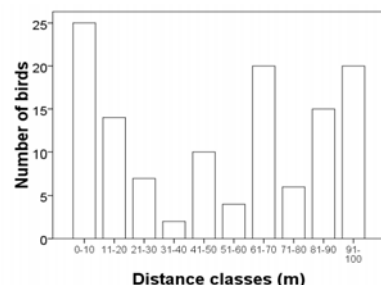
b.



c.



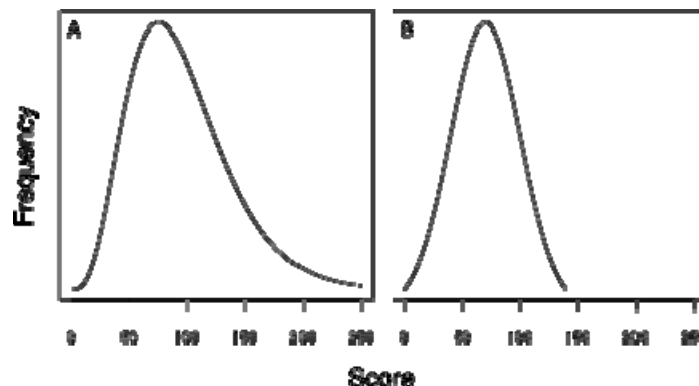
d.



9. What aspect of a population does the Standard Deviation describe?
- Its variability ✓
 - Its average
 - Its central tendency
 - Its skewness

10. To assess whether two populations have different means, what information is required from each population?

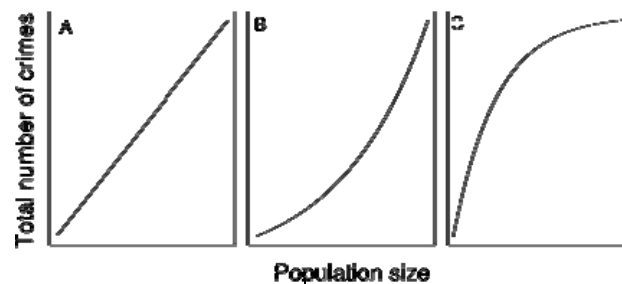
- The sample means, sample sizes and sample times
 - The sample means, sample variation and sample locations
 - The sample means, sample variation and sample size ✓
 - The sample means, sample times and sample locations
11. The 25th percentile is the score below which 25% of all scores lie. Similarly the 75th percentile is the score below which 75% of all scores lie. Look at the frequency distributions A and B below, and judge the difference between their 75th percentiles.



Which of the following statements is true?

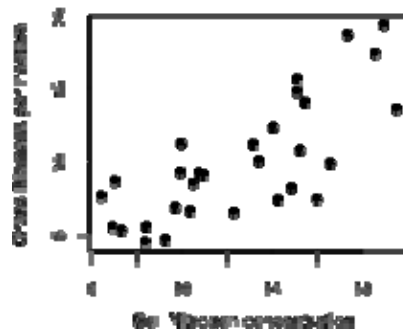
- 75th percentile of A is about the same as that of B
- 75th percentile of A is greater than that of B ✓
- 75th percentile of A is less than that of B
- Not enough information is given to compare the two

12. The graphs below show three possible relationships between the total number of crimes and the population size of cities across India. What inferences can you draw about the slope of this relationship, i.e. the change in number of crimes for a unit increase in population size?



- Slope is constant in A, B and C
- Slope is constant in A, but increases in B and C
- Slope is constant in A, increasing in B and decreasing in C ✓
- Slope is increasing in A, and C

13. A wildlife researcher surveys grasslands in different parts of the country and finds the pattern below. Keeping in mind the distinction between correlation and causation, what is the most reasonable conclusion from these results?

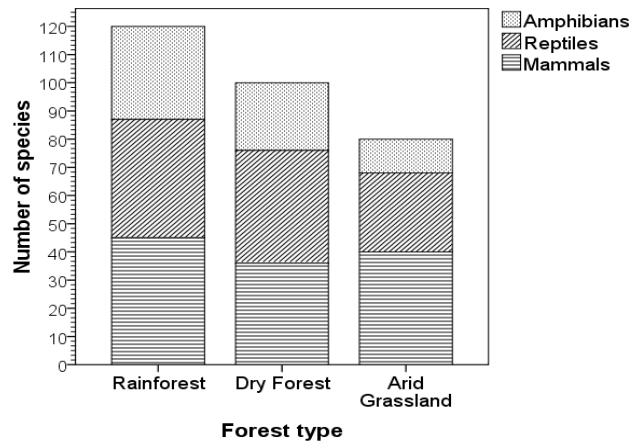


- a. Grass biomass is affected by soil Nitrogen
 b. Soil Nitrogen is affected by grass biomass
 c. This is a spurious relationship, and grass biomass is affected by something else
 d. There is a relationship between the two, but grass biomass may or may not be affected by soil nitrogen ✓
14. *Lantana* is an invasive shrub. I want to look at whether high *Lantana* density results in a reduction in chital numbers in dry deciduous forests. What should I do in order to maximize my ability to draw causal conclusions from my work?
- a. Choose an area in which to measure *Lantana* and chital density over time, and look for a relationship
 b. Compare chital density in two areas: one with low *Lantana* and one with high *Lantana* density
 c. Remove *Lantana* from one of two areas with high *Lantana* density and then compare chital densities ✓
 d. It's not necessary to do a study because it is logical that *Lantana* should reduce chital density
15. I want to colour band Greenish Warblers for a study of winter territoriality. I can put one colour band on each leg, and each band can be of any colour from among those that I have in my banding box. I have to decide whether to carry 3 different colours or 4 different colours in my banding box. How many **more** warblers can I mark with a unique code if I carry 4 versus 3 different colours?
- a. One
 b. Two
 c. Six
 d. Seven ✓
16. Suppose you take two series of samples of chital body mass. In the first series, A, you take samples of 10, 10, 10, 10, and 10 chital, and calculate the means of each of these 5 samples. In the second series, B, you take samples of 20, 20, 20, 20 and 20 chital, and calculate the means of each of those 5 samples. So there are 5 means in A and 5 means in B. In which series do you expect the means to show the most variation?
- a. Variation in means of A > variation in means of B ✓
 b. Variation in means of A < variation in means of B
 c. Variation in means of A = variation in means of B
 d. There is not enough information to answer the question

17. You are interested in the characteristics of hornbill nest sites, and one of the measures you take is the compass direction (bearing) of the nest hole. For a sample of 6 nests, the bearings you record are: 8, 10, 15, 20, 345 and 355 degrees. What, roughly, is the mean bearing of nest holes in your sample?

- a. A little over 20 degrees
 b. Roughly 180 degrees
 c. Between 15 and 20 degrees
 d. Around 0 degrees ✓

One sq.km each of rainforest, dry forest and semiarid grassland was searched thoroughly for amphibians, reptiles and mammals. The number of species obtained in these three taxa are given in the bar chart below. Use this chart to answer questions 18 to 20.



18. Which forest type has the highest overall species richness?

- a. Arid grassland
 b. Rainforest ✓
 c. Dry forest
 d. Cannot tell from the information provided

19. In which forest type are mammals relatively the most species rich? (i.e. they form the largest group among all the species present in the community)

- a. Arid grassland ✓
 b. Rainforest
 c. Dry forest
 d. Cannot tell from the information provided

20. As the forest becomes more dry (from rainforest to arid grassland), which group becomes relatively more species rich?

- a. Mammals
 b. Amphibians
 c. Reptiles ✓
 d. Mammals and reptiles

21. If the volume of a cube is 8, what is the total surface area of the cube?

- a. 64
b. 24 ✓
c. 16
d. 4

22. What are all the values of x for which $|x + 2| < 3$?

- a. $x < 1$
b. $-1 < x < 1$
c. $-5 < x < 1$ ✓
d. $-1 < x < 5$

23. What is the derivative of $f(x) = (\ln x)^5$? (The symbol \ln means \log_e .)

- a. $(1/x)^5$
b. $5(\ln x)^4$
c. $5(\ln x)/x$
d. $5(\ln x)^4/x$ ✓

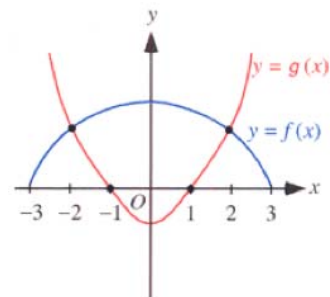
24. A block is hanging on a spring. The length of the spring is a linear function of the mass of the block. The table shown to the right lists the length of the spring resulting from suspending each of three blocks. What is the length of the spring in centimetres when an 11 gram block is suspended from it?

Mass (grams)	Length (centimeters)
5	27
9	35
15	47

- a. 31
b. 36
c. 39 ✓
d. 41

25. The graphs of the functions $y = f(x)$ and $y = g(x)$ are shown in the figure to the right. What are all values of x for which $f(x) \geq g(x)$?

- a. $-1 \leq x \leq 1$
b. $-2 \leq x \leq 2$ ✓
c. $-3 \leq x \leq 3$
d. $-3 \leq x \leq 1$ or $1 \leq x \leq 3$



SECTION C.

- Which of the following Indian birds has been classified as 'Critically Endangered' in the 2011 IUCN Red List of the threatened flora and fauna?
 - Great Pied Hornbill
 - Sarus Crane
 - Great Indian Bustard ✓
 - Western Tragopan
- 'Jhum cultivation' refers to the practice of:
 - slash-and-burn agriculture in forested hill-slopes of north-eastern India ✓
 - terrace farming along the contours of mountain valleys in the Central Himalayas of Nepal
 - raising tobacco and chilli as hedge plants to prevent wild elephants from raiding food crops in Meghalaya
 - raising artificial *phumdis* (floating soil-vegetation biomass) for aquaculture in the Loktak Lake in Manipur
- Who is the Chairperson of the National Board for Wild Life, the highest advisory body for wildlife conservation in the country?
 - The President
 - The Vice-President
 - The Prime Minister ✓
 - The Union Minister of Environment and Forests
- The elongated and exquisitely ornamented train feathers of the peacock are believed to be an outcome of:
 - Natural selection
 - Sexual selection ✓
 - Disruptive selection
 - Environmental mutagenesis
- Carnivory in plants is thought to have evolved in response to:
 - deficiency of nitrogen in soil ✓
 - excess of humic acid in soil
 - hyper-salinity in soil and water
 - reduction in chlorophyll content due to poor sunlight
- The biodiversity hotspots in India include:
 - Western Ghats, Gir forests, Thar desert and Western Himalaya
 - Western Ghats, Himalaya, northeast India and Nicobar Islands ✓
 - Western Ghats, Himalaya and Andaman Islands
 - Eastern Himalaya, Western Himalaya, Sunderbans and Andaman Islands
- Match the following animals with the protected area in which they occur.

A. One-horned rhinoceros	I. Gir Forests
B. Asiatic lion	II. Kaziranga National Park
C. Great Indian Bustard	III. National Chambal Sanctuary
D. Gharial	IV. Rollapadu Wildlife Sanctuary

 - A-III, B-I, C-II, D-IV
 - A-II, B-I, C-III, D-IV
 - A-II, B-IV, C-III, D-I
 - A-II, B-I, C-IV, D-III ✓

8. Which among the following are arranged in increasing order of forest cover, as a percentage of the geographical area?
- Uttar Pradesh, Arunachal Pradesh, Tamil Nadu, Orissa
 - Orissa, Tamil Nadu, Uttar Pradesh, Arunachal Pradesh
 - Uttar Pradesh, Tamil Nadu, Orissa, Arunachal Pradesh ✓
 - Tamil Nadu, Uttar Pradesh, Orissa, Arunachal Pradesh
9. Which protected area in India has granted community rights to local people?
- Namdapha National Park
 - Biligiri Rangaswamy Temple Wildlife Sanctuary ✓
 - Ranthambore Tiger Reserve
 - Periyar Tiger Reserve
10. The Tiger Task Force was set up in 2005 following the disappearance of tigers from -----, and was chaired by -----.
- Ranthambore Tiger Reserve, Prime Minister
 - Panna Tiger Reserve, Prime Minister
 - Sariska Tiger Reserve, Jairam Ramesh
 - Sariska Tiger Reserve, Sunita Narain ✓
11. Match the following books with their authors:
- | | |
|----------------------|-----------------------------|
| A. George Schaller | I. India's Wildlife History |
| B. Ullas Karanth | II. Secret Life of Tigers |
| C. Valmik Thapar | III. The Deer and the Tiger |
| D. Mahesh Rangarajan | IV. The Way of the Tiger |
- A-III, B-I, C-IV, D-II
 - A-IV, B-II, C-I, D-III
 - A-II, B-IV, C-III, D-I
 - A-III, B-IV, C-II, D-I ✓
12. Which of the following is NOT competed for by plants?
- Water
 - Warmth ✓
 - Light
 - Nutrients
13. A major concern in modern times is the levels of pesticides used in food production. Many pesticides get stored in body fat of animals. If a pesticide got into a lake, which of the following would have the highest levels of pesticide?
- Microscopic plants
 - Herbivorous fish
 - Predatory fish
 - Fishing eagle ✓
14. Fertilizers used in agricultural fields often find their way into lakes. This causes a phenomenon called:
- Bioaccumulation
 - Eutrophication ✓
 - Phosphorylation
 - Nitrification
15. Greenhouse gases warm earth by absorbing a fraction of outgoing infrared radiation. Which of the following is not a greenhouse gas?
- CH₄
 - CO₂
 - CO ✓
 - N₂O

16. Which of the following animals are likely to be found along the border between India and Pakistan?

- a. Tiger, Great Indian Hornbill and Indian one-horned rhinoceros
- b. Cheetah, Lesser florican and barking deer
- c. Great Indian bustard, Indian wild ass and markhor ✓
- d. Asiatic lion, Tibetan antelope and Jerdon's courser

17. The Convention on the Conservation of Migratory Species of wild animals (CMS or Bonn Convention) aims to conserve terrestrial, aquatic and avian migratory species throughout their range. Which of the following species are covered by this convention?

- a. Siberian crane, bar-headed goose, sperm whale and olive ridley turtle ✓
- b. Sarus crane, Great Indian hornbill, humpback whale and Indian flap-shell turtle
- c. Median egret, Pink-headed duck, Gangetic dolphin and cane turtle
- d. Cattle egret, Wreathed hornbill, Irrawaddy dolphin and soft-shell turtle

18. Which of the following methods were used in estimating tiger population in India, during 2010 tiger count conducted by National Tiger Conservation Authority and Wildlife Institute of India?

- a. Pug marks and DNA
- b. Pug marks and camera traps ✓
- c. Camera traps and DNA
- d. Camera traps and block counts

19. What are the three largest global sources of human-induced greenhouse gas emissions, in order of size, largest first?

- a. Energy supply, forestry, industry
- b. Forestry, energy supply, industry
- c. Energy supply, industry, forestry ✓
- d. Industry, energy supply, forestry

20. Match the following scientists with the field to which they made major contributions:

- | | |
|-------------------|----------------------|
| A. Charles Darwin | I. Molecular biology |
| B. Konrad Lorenz | II. Genetics |
| C. Gregor Mendel | III. Ethology |
| D. James Watson | IV. Evolution |

- a. A-IV, B-I, C-III, D-II
- b. A-II, B-III, C-IV, D-I
- c. A-IV, B-III, C-II, D-I ✓
- d. A-III, B-IV, C-II, D-I

21. According to IUCN Red List criteria, a species would be classified as Endangered, if it meets one or more of the following criteria: (1) a 50-80% decline in population, inferred or estimated, during the past 10 years; (2) it occurs in an area of less than 20,000 sq. km; or (3) a total adult population of less than 2500 animals. Which among the following species would best qualify as an Endangered species under these criteria?

- a. Red-wattled lapwing
- b. House sparrow
- c. White-backed vulture
- d. Lesser florican ✓

22. Within Indian waters, coral reef occurs:

- a. Only in Lakshadweep Islands
- b. Only in (a) and Andaman and Nicobar Islands
- c. In (b) and Gulf of Mannar
- d. In (c) and Gulf of Kutch ✓

23. Mass extinctions provide conditions that promote:

- a. Gene flow
- b. Genetic drift
- c. Adaptive radiation ✓
- d. Microevolution

24. The number of animals that a given area will support without damage to the habitat or to the animals is called its:

- a. Breeding stock
- b. Biological surplus
- c. Carrying capacity ✓
- d. Harvesting level

25. Plants of which of the following families are well known as nitrogen fixers?

- a. Fabaceae ✓
- b. Ebenaceae
- c. Anacardiaceae
- d. Euphorbiaceae

26. Which of the following mammalian Orders have the largest recorded number of species in India?

- a. Rodentia
- b. Chiroptera ✓
- c. Primates
- d. Carnivora

27. Coral bleaching is due to:

- a. The death of coral polyps from high concentration of chlorides in the sea water
- b. The expulsion of photosynthetic micro-algae by coral polyps caused by high temperature ✓
- c. The death of coral polyps due to sedimentation and wave action
- d. All of the above

28. ----- is the most common mating system in birds, while ----- is the most common mating system in mammals.

- a. Monogamy, polygyny ✓
- b. Polygyny, monogamy
- c. Monogamy, polyandry
- d. Polyandry, polygyny

29. Several new species of ----- were recently described from the -----

- a. Reptiles, northeast India
- b. Reptiles, Western Ghats
- c. Amphibians, Western Ghats ✓
- d. Bats, Central India

30. To the right are given the gastro-intestinal tracts (GIT) of three mammals. One is an herbivore requiring lot of processing of leaves that they eat; another is a carnivore which eats other animals which do not need much processing in the GIT; the third one is an omnivore which eats fruits and insects needing medium processing in the GIT. Identify which GIT belongs to which mammal.

- a. I-Omnivore, II-Herbivore, III-Carnivore
- b. I-Herbivore, II-Carnivore, III-Omnivore
- c. I-Omnivore, II-Carnivore, III-Herbivore
- d. I-Carnivore, II-Omnivore, III-Herbivore ✓



SECTION D.

Write an essay (in English) of not more than 700 words on one of the following. The essay would be evaluated only on the first 700 words. No additional sheets would be given for writing this essay.

1. Based on the Recognition of Forest Rights Act (2006), the Sholiga people in Biligiri Rangaswamy Temple Wildlife Sanctuary in Karnataka have been given the rights to collect and use minor forest produce, graze their livestock and own products from water bodies, such as fish, within the Sanctuary. The above rights exclude traditional rights of hunting, and they have the duty to protect wildlife, forest and biodiversity. Would you argue that this Act would imperil conservation of wildlife within the Sanctuary?

2. A noted wildlife conservation organization has set up rescue centres in many wildlife sanctuaries across the country where the old, injured and sick animals are collected, treated and rehabilitated back into the respective sanctuaries. Do you think such activities contribute significantly to wildlife conservation and should be encouraged widely?