

Geography:

General Instructions

1. Section A is compulsory. All questions from Section A are to be attempted.
2. Answer any two questions from Section B and answer any three questions from Section C. The intended marks for questions or parts of questions are given in brackets.

SECTION - A

Attempt all questions from this Section.

Question 1

Study the extract of the Survey of India Map Sheet No. 45 D/ 7 and answer the following questions. [Click here for Survey of India Map Sheet No. 45 D/ 7.](#)

(a) Give the meaning of the following conventional signs:

- i. The blue spot in village Kheda in the South-west corner of the map.
- ii. The irregular black lines along the Sarod Nala in the square whose four-figure grid reference is 8284. [2]

(b) State three advantages that Dantiwada (South of River Banas) has over other settlements in the region. [2]

(c) How are (i) Cultivated land and (ii) Wooded land represented on the map? [1]

(d) Assuming that you can see upto half a kilometre on either side of the cart track, describe the journey by motor-car from Dantiwada in grid square 8480 to Sikariya in grid square 8081 with reference to:

- i. Direction
- ii. Physical Features; and
- iii. Vegetation. [3]

(e) What is the area in square kilometres of the cultivated region enclosed by vertical grid lines 82 and 84 and the horizontal grid lines 78 and 80? [1]

(f) Give the six figure grid reference of the well approximately half a kilometre west of village Ramsida in the south-east section of the map. What is the total depth, in metres, from the top to the bottom of the well? [1]

(g) What is the main occupation of the people of the villages indicated on the map extract? [1]

(h) Give two points of contrast between the region on the right bank and the region on the left bank of the Arado Nadi. [1]

(i) What is the difference in height, in metres, between the highest point in the map and the contour height in grid square 8984? [1]

(j) In the south east part of the map, why do some of the streams not join the main. [1]

(k) What is the general habitation of human habitation (settlement) in the map extract? [1]

(l) Measure the length of the canal (under construction) in metres from the point whose six figure grid references is 804797 to the point whose six-figure grid reference is 821804. [1]

(m) What does 6r written against the unmetalled road (gravelled) in grid square 8478 mean? [1]

(n) How does the drainage pattern in grid square 8186 differ from the pattern of streams in grid square 8585? [1]

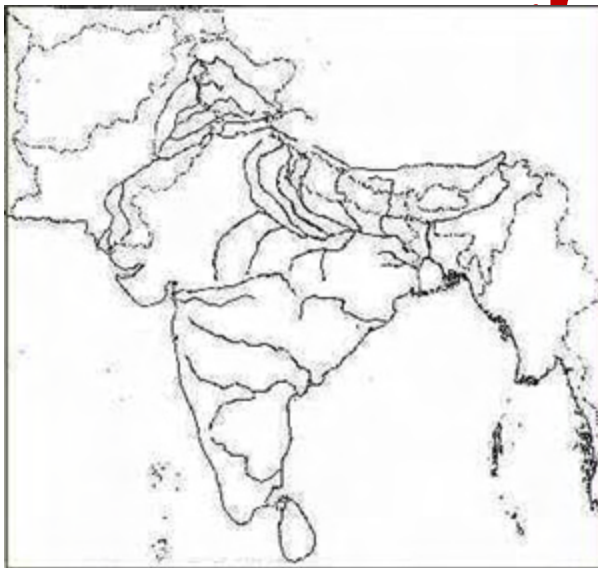
(o) Can you send a telegram from any of the villages appearing on the map? If so, write the name of one such village and the reference square in which that village is situated. [2]

SECTION - B

Attempt any two questions from this Section.

Question 2

On the outline map of the Indian sub-continent provided:



(a) Label the River Ravi. [1]

(b) Mark with a thick line and name the Satpura Hills. [1]

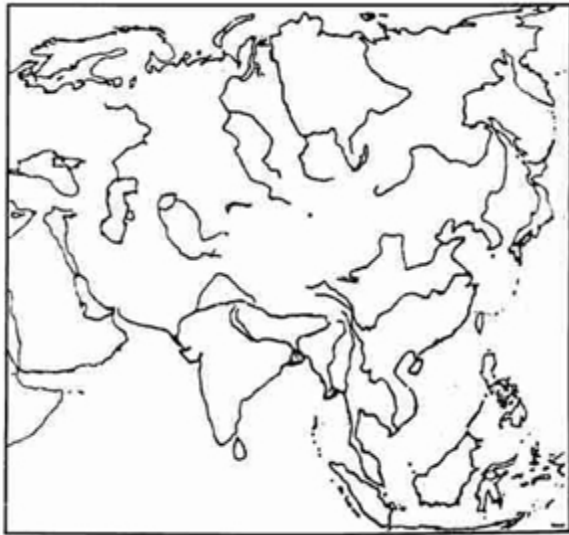
(c) Name the River Godavari. [1]

(d) Mark with a dot and name, in the appropriate place, the capital city of Madhya Pradesh. [1]

- (e) Shade and name the area where mangrove forests occur. [1]
- (f) Print Uttar Pradesh in its proper location. [1]
- (g) Mark with a thick line and name the Sulaiman Range. [1]
- (h) Shade an area having winter rainfall in South India. [1]
- (i) Print the word GOLD over one area where it is mined. [1]
- (j) Draw the line of latitude 10°N which passes near Kochi (Cochin). [1]
- (k) Print in bold letters 'W' in the region in Pakistan where wheat is grown and 'T' for tobacco in one region in western India where it is widely grown. [1]
- (l) Shade and name the Rann of Kutchh. [1]

Question 3

On the outline map of Asia provided:



- (a) Shade and name the Plateau of Iran. [1]
- (b) Mark with a thick line and name the Khingan Range. [1]
- (c) Shade and label the Sumatra Island. [1]
- (d) Draw an arrow to show the Persian Gulf. [1]
- (e) Label the River Lena. [1]
- (f) Shade a suitable area and print 'TUNDRAS'. [1]
- (g) Draw and name the zero degree latitude. [1]

- (h) Shade and name the Great North China Plain. [1]
- (i) Circle in pencil and label the Philippines. [1]
- (j) Mark with a thick line and show the Himalayas. [1]
- (k) Shade and name the Sea of Okhotsk. [1]
- (l) Shade and label the Plateau of Arabia. [1]

Question 4

(a)

- i. Name any two states that receive rain in January-February. [1]
- ii. What causes this winter rain? [1]
- iii. Name the vegetation type found in saline environment under tidal influence? [1]
- iv. Name the most important tree associated with the type of vegetation you have named in (a) (iii) above. [1]

(b) Name the economically most important vegetation belt of India. [1]

(c) With reference to the red soils in India.

1. Name two states where it is found. [1]
2. State two disadvantages of the above named soil. [2]
3. How does the soil of the Ganga-Yamuna plain differ from that of Central Maharashtra? [1]
4. Which soil is found suitable for coffee cultivation in Karnataka? [1]
5. Name the type of soil found on the summit of the Eastern Ghats. [1]
6. Name the soil known for its self-ploughing quality and capacity to hold moisture. Name one cash crop for which it is most suited. [1]

SECTION - C

Attempt any three questions from this Section.

Question 5

- (a) Name one crop each with which the following processes are associated: (i) Retting (ii) Ginning. [1]
- (b) Name any two plants which ensure a supply of raw material for pharmaceutical industry. [1]
- (c) After oil extraction, what other uses can the oilseed be put to? [1]

- (d) Why is millet called a 'dry crop'? [1]
- (e) Which state is the largest producer of tobacco in India? [1]
- (f) What is 'crop rotation'? [1]
- (g) Name one important plantation crop grown in India. Mention one important characteristic feature of the plantation crop named by you. [1]
- (h) Give one reason for small-sized land holding in India. [1]
- (i) Name two states which are leading producers of wheat in India. [1]
- (j) Name one state which is an important producer of groundnut. [1]
- (k) Outline two remedial steps being taken by the government to boost agricultural production. [2]

Question 6

- (a) Give two reasons to explain why there is a need for rapid industrialisation in India. [1]
- (b) Outline two major problems of the jute industry in India. [1]
- (c) (i) Give one reason to explain why cottage industries play an important role in India's development.
(ii) State two ways by which the government has encouraged cottage industries. [2]
- (d) Name the oldest coal held in India. [1]
- (e) From where does the iron and steel plant of Bhadravati get its iron-ore? [1]
- (f) Why is there an increasing demand for Handloom materials? [1]
- (g) Mention one major problem of small-scale industry. [1]
- (h) Copy the names of the following two places and, alongside, write the name of the most important product associated with each:
- i. Raniganj
 - ii. Digboi. [2]
- (i) Copy the names of the following two industries and, alongside, write the name of the important state associated with each:
- i. Cement
 - ii. Chemical fertilizers. [2]

Question 7

- (a) Irrigation is indispensable for an agricultural country like India. Give two reasons to explain why artificial irrigation is essential. [2]
- (b) Irrigation in India faces many problems. Name any two. [3]
- (c) On which river is the Farakka Project located? Give one important aim of this project. [1]
- (d) Name one thermal power station associated with each of the following multipurpose projects:
(i) Damodar Valley Corporation (ii) Hirakund Project. [2]
- (e) Name one state where tank irrigation is very important. [1]
- (f) Which multipurpose project is located on the River Mahanadi? Name one important dam associated with the project named by you. [1]
- (g) Irrigation through ground water is still popular despite of big river projects. Why? [1]
- (h) Distinguish between:
- Inundation canal and Perennial canal
 - A barrage and a dam. [2]

Question 8

- (a) Give two advantages of non-conventional sources of energy. [1]
- (b) Name two states where wind farm projects have been undertaken. [1]
- (c) Mention two advantages of producing electricity from water. [1]
- (d) State the two important aims of the National Thermal Power Corporation (NTPC). [1]
- (e) Give the location of the gas-based and one coal-based thermal power project. [1]
- (f) Name two raw materials used for the generation of atomic energy. [1]
- (g) Mention one advantage bio-gas energy has over solar power. [1]
- (h) Name the four important places where India's nuclear power plants are located. [2]
- (i) Give two disadvantages of constructing large-scale hydroelectric projects. [2]
- (j) Mention two examples of the direct use of solar energy. [1]

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General Instructions

1. Attempt all questions from Section I and any four questions from Section II.
2. The intended marks for questions or parts of questions are given in brackets.

SECTION I (40 Marks)

Compulsory: Answer all parts from this Section.

Questions 1

(a) Name the following: [8]

- i. The organ which produces urea.
- ii. The iron containing pigment in Erythrocytes.
- iii. The junction between two nerve cells.
- iv. The phase of the cardiac cycle in which the auricles contract.
- v. An apparatus to compare the rate of transpiration in cut shoots.
- vi. The pressure exerted by cell contents on a plant cell wall.
- vii. The fluid surrounding the developing embryo.
- viii. The outer part of the kidney containing the Bowman's capsules.

(b) Select the correct answer out of the four available choices given under each question. [8]

1. The space between the cell wall and plasma membrane in plasmolysed cell is filled with:
 - (i) isotonic solution
 - (ii) hypotonic solution
 - (iii) hypertonic solution
 - (iv) water
2. In the process of respiration: (i) ADP is converted to ATP. (ii) glucose is converted to carbon dioxide. (iii) glucose is converted to carbon dioxide and water, releasing energy. (iv) pyruvic acid is converted to ATP.
3. Which of the following gland has both endocrine and exocrine functions?
 - (i) pituitary gland
 - (ii) thyroid gland
 - (iii) pancreas gland
 - (iv) adrenal gland
4. During inspiration, the diaphragm:
 - (i) relaxes
 - (ii) contracts
 - (iii) expands
 - (iv) does not change
5. The specific function of light energy in the process of photosynthesis to: (i) reduce carbon dioxide (ii) synthesise glucose

- (iii) activate chlorophyll
- (iv) split water
- 6. The chief function of lymph nodes in mammals is to:
 - (i) produce WBC's
 - (ii) produce hormones
 - (iii) destroy old RBC's (
 - iv) destroy pathogen.
- 7. Agranulocytes are
 - (i) lymphocytes, monocytes
 - (ii) lymphocytes, basophils.
 - (iii) eosinophils, basophils
 - (iv) eosinophils, monocytes.
- 8. Sterilization in the females involves cutting and tying the
 - (i) ureter
 - (ii) uterus
 - (iii) urethra
 - (iv) oviduct

(c) Given below is an example of a certain structure and its special functional activity, e.g. kidney and excretion. On a similar pattern fill in the blanks. [8]

- i. Mitochondria and
- ii. Erythrocyte and
- iii. Glomerulus and
- iv. Cerebellum and
- v. Larynx and
- vi. Corpus luteum and
- vii. Myelin sheath and
- viii. Organ of corti and

(d) Choose the odd one in each of the following series: Example : Calyx; Corolla; Style; Androecium. Answer: Style. [8]

- i. Ovary; Fallopian tube; Ureter; Uterus.
- ii. Myopia; Hypermetropia; Xerophthalmia; Astigmatism.
- iii. Cholera; Whooping cough; Diphtheria; Measles.
- iv. Glomerulus; Alveolus; Bronchus; Trachea.
- v. Thyroid gland; Adrenal gland; Pituitary gland; Prostrate gland.
- vi. Cretinism; Myxoedema; Goitre; Scurvy.
- vii. Insulin; Glucagon; Diabetes insipidus; Diabetes mellitus.
- viii. Pons; Cerebellum; Medulla Oblongata; Cerebrum.

(e) Match the terms of column I with those of column II and write down the matching pairs: [6]

COLUMN I	COLUMN II
(i) Bowman's capsule	(a) Spermatozoa
(ii) Dendrons	(b) Kidney tubules
(iii) Acrosome	(c) S.A. Node
(iv) Iris	(d) A.V Node
(v) Ovulation	(e) Glomerularfiltration
(vi) Pacemaker	(f) Lungs
(vii) Pleura	(g) Nerve impulse
(viii) Nephrons	(h) Testis
	(i) Colour of eye (j) Oxytocin (k) Luteinizing hormone (l) Progesterone

SECTION II (40 Marks)

Answer any four questions from this section.

Question 2

(a) Given below is a simple diagram of the circulation of blood in a mammal showing the main blood vessels, the heart, lungs and body tissues. The blood vessel labelled 6 contains deoxygenated blood and the valve leading to it has three semi-lunar pockets. [5]



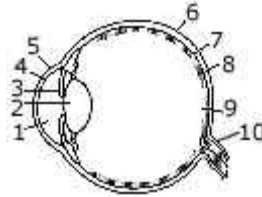
- Name the blood vessels or organs marked by numbers 1 to 8.
- What do you mean by 'double circulation' of blood in mammals?
- What is diastole?

(b) Note the relationship between the first two words and suggest the suitable word/words for the fourth place. [5]

- Thylakoid : Chloroplast : : Cristae :
- Cones : Iodopsin : Rods :
- Stomata : Transpiration : Hydathodes :
- Lubb : Atrioventricular valves : Dup :
- Coronary artery : Heart Hepatic artery :

Question 3 [5]

(a) The diagram given below refers to the vertical section of the eye of a mammal. Label the parts 1 to 10 to which the guideline points.

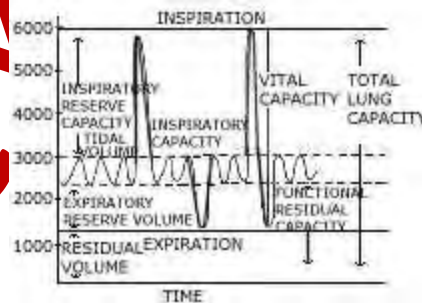


(b) The following diagram refers to an apparatus which is used to demonstrate a physiological process. [5]

- i. What is the purpose of keeping potassium hydroxide solution in test tubes X and Y?
- ii. What is the purpose of keeping boiled peas soaked in a disinfectant in test tube Y?
- iii. Why has coloured water risen in tubing 1?
- iv. Name the biological process which causes the above rise.
- v. Define the biological process shown in the experiment.

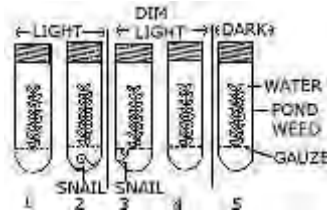
Question 4

(a) The volume of air in the lungs and the rate at which it is exchanged during inspiration and expiration is measured with a spirometer. The following diagrams shows the spirogram of lung volumes and capacities. Study the graph carefully and explain briefly the following: [5]



- i. Tidal volume (TV)
- ii. Inspiratory reserve volume (IRV).
- iii. Expiratory reserve volume (ERV).
- iv. Vital capacity (VC).
- v. Residual volume (RV)

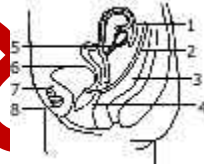
(b) The following diagram is a set up to demonstrate an experiment. Pondweed was placed in five water filled tubes. The experiment was set up as shown in the diagram. The tubes were then left for 24 hours. Write the correct answer out of the available choices given under each question.



- In which tube would you expect the greatest increase in dry weight of the pondweed?
(i) 1 (ii) 2 (iii) 3 (iv) 4 (v) 5
- In which tube would you expect to find the plant with the least amount of starch?
(i) 1 (ii) 2 (iii) 3 (iv) 4 (v) 5
- The tube in which most oxygen would be found is:
(i) 1 (ii) 2 (iii) 3 (iv) 4 (v) 5
- The tube in which least carbon dioxide would be found is:
(i) 1 (ii) 2 (iii) 3 (iv) 4 (v) 5
- The tube in which the plant would survive for the shortest length of time is:
(i) 1 (ii) 2 (iii) 3 (iv) 4 (v) 5

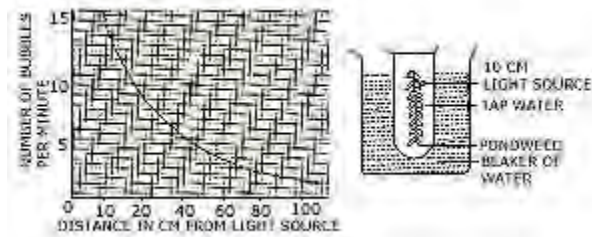
Question 5

(a) The following diagram represents the vertical view of 5 gm the female reproductive system. [5]



- Label the part indicated by the guidelines 1 to 8.
- How does the uterus prepare for the reception of zygote?
- What happens to the uterus if fertilization takes place?
- What happens to the uterus if fertilization has failed to take place?

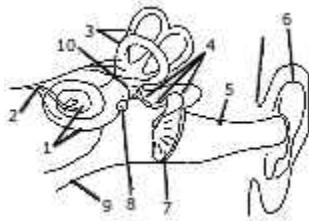
(b) The given diagram refers to an experiment in which the apparatus was set up with light source 10 cm away from the plant. After 15 minutes the number of bubbles evolved per minute from the cut stem was recorded. The light source was moved to 20 cm away from the plant for 15 minutes and the number of bubbles evolved per minute was again recorded. The experiment was repeated with the source of light at distances of 40, 60, 80 and 100 cm away from the plant. The result obtained were recorded on the graph. Select the correct answer out of the available choices given under each question. [5]



- i. From the graph it seems likely that the rate of bubbling per minute at 50 cm would have been:
 - (i) 2.0 (ii) 2.5 (iii) 3.0 (iv) 3.5 (v) 4.0
- ii. The gas produced by the plant during the experiment was
 - (i) air (ii) oxygen
 - (iii) carbon dioxide (iv) nitrogen
 - (v) hydrogen
- iii. The gas collected comes due to the breakdown of
 - (i) glucose (ii) starch
 - (iii) water (iv) air
 - (v) ATP
- iv. If ice cubes were added to the water the rate of bubble formation would:
 - (i) stay the same.
 - (ii) increase because more water is added.
 - (iii) decrease because the temperature drops.
 - (iv) decrease because water freezes.
 - (v) cannot tell from the information given.
- v. If some sodium bicarbonate is added to the water the rate of bubble formation:
 - (i) increases because more respiration occurs.
 - (ii) increases because more photosynthesis occurs.
 - (iii) increases because the gas becomes less soluble.
 - (iv) decreases because carbon dioxide acts as a limiting factor.
 - (v) decreases because respiration occurs

Question 6

(a) The given diagram refers to the ear of a mammal. [5]



- i. Label the parts 1 to 10 to which the guidelines point.
- ii. Which structure.
 - (1) Converts sound waves into mechanical vibrations?
 - (2) Converts vibrations into nerve impulses?

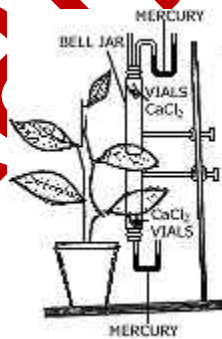
(3) Responds to change in position? (4) Transmits impulses to the brain? (5) Equalizes atmospheric pressure and pressure in the ear?

(b) Complete the following statements by choosing the correct alternative from the choices given in brackets. [5]

- i. (Myxoedema/simple goitre/exophthalmic goitre) is a disorder caused by excess thyroid hormone.
- ii. The (epididymis/vas deferens/seminal vesicle) stores sperms.
- iii. The dorsal root ganglion of the spinal cord contains cell bodies of (motor/sensory/intermediate) neurons.
- iv. The (alveoli/bronchioles/tracheoles) are the ultimate end parts of the respiratory system in man.
- v. Write the blood cells engulf bacteria in a process called (diapedesis/phagocytosis/active transport)

Question 7

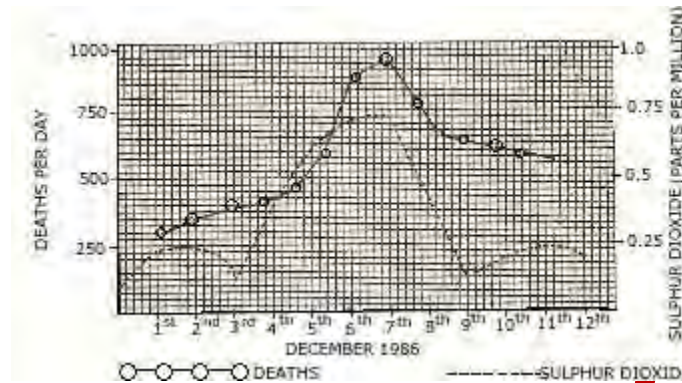
(a) The apparatus shown here is Garreau's potometer designed to demonstrate unequal transpiration from the two surfaces of a dorsiventral leaf. Before keeping the leaf in between the cups, anhydrous calcium chloride (CaCl_2) contained in two small vials were weighed and placed in both the cups. The ends of the cups were closed with corks through which two mercury manometers were connected. After few hours, CaCl_2 vials were taken out and weighed again. [4]



- i. What is the purpose of keeping CaCl_2 vials inside the cup?
- ii. After a few hours, CaCl_2 vials were taken out and weighed again. Will you expect any difference in weight? If so give reason.
- iii. What was the purpose of using a manometer?
- iv. What do you mean by transpiration?

(b) The diagram given below refers to the following account of an investigation and a graph of the results obtained. In 1986 a large city experienced a dense fog from 4th to 9th December. During this time there was an increase in the number of deaths. In answering the following questions use the graph which show how deaths per day

were related to the amount of sulphur dioxide in the air. Select the best answer out of the five available choices given under each question. [6]



- i. On which day was the increase in sulphur dioxide greatest?
 - (i) 4th December
 - (ii) 5th December
 - (iii) 6th December
 - (iv) 7th December
 - (v) 8th December
- ii. How many deaths occurred on the day following the highest sulphur dioxide concentration?
 - (i) 350
 - (ii) 575
 - (iii) 700
 - (iv) 875
 - (v) 925
- iii. The graph shows the deaths per day were not:
 - (i) lower before the fog than during the fog.
 - (ii) higher after the fog than before fog.
 - (iii) highest at the time of fog.
 - (iv) decreasing after fog.
 - (v) increasing throughout the fog.
- iv. Clean air prevents the occurrence of fog. Which of the following will help to ensure a clean environment.
 - (i) air pollution
 - (ii) education
 - (iii) legislation
 - (iv) population control
 - (v) ventilation