Ashwani Gupta

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Class – X
Science (Theory)

Time: 3hrs **MM: 80**

General Instructions:

i) The question paper comprises of two sections, A and B. You are to attempt both the sections.

ii) All questions are compulsory.

iii) There is no over all choice. However, internal choice has been provided in all the three question of five marks category. Only one option in such question in to be attempted.

iv) All questions of section A and all questions of section B are to be attempted separately.

v) Question numbers 1 to 4 in section A are one mark questions. There are to be answered in one word or one sentence.

vi) Question numbers 5 to 13 are two mark questions, to be answered in about 30 words each.

vii) Question numbers 14 to 22 are three mark questions, to be answered in about 50 words each.

viii) Question numbers 23 to 25 are five mark questions, to be answered in about 70 words each.

ix) Question numbers 26 to 41 in section B are multiple choice questions based on practical skills. Each question is a one mark question. You are to select one most appropriate response out of the four provided to you.

Section-A

1. A person is advised to wear spectacles with concave lens. What type of defect of vision is he suffering from?
2. Write the structural formula of chloroethane.
3. Rearrange the following according to their ascending trophic levels in a food chain:
   Eagle, Plants, Insects, Frog
4. What is the main pollutant of Ganga?
5. Is sea water is blue in colour?
6. How do you distinguish a medium to be rarer or denser? Give two reasons.
7. A 4.5cm needle is placed 12cm away from a convex mirror of focal length 15cm. give the location of the image & magnification.
8. What is bio-diversity? What is the significance of biodiversity?
9. State two main properties of elements on which Mendeleev's periodic classification was based. Why could no fixed position be assigned to hydrogen in his periodic table?
10. An element 'X' is in second period & group 16 of the periodic table:
    (i) Is it metal or non-metal?
    (ii) What is its valency?
    (iii) What will be the formula of compound of 'X' with Na?

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(iv) What is the name of the element?

11. What is meant by management & conservation of natural resources? Why must we conserve our forests?
12. (a) What is the signification of sexual mode of reproduction?
    (b) What is the site of fertilization in human beings?
13. (a) Why is cross-pollination considered to be superior than self-pollination?
    (b) State the method used for growing rose plants.
14. (a) Convex mirror & a plane mirror forms virtual image. How will you distinguish between the two by looking at the images of an object?
    (b) When we focus sunlight using a convex lens at the tip of a matchstick, what will happen? Why?
15. (a) State the reason for the following observation recorded from the surface of the moon:
    (i) Sky appears dark.
    (ii) Rainbow is never formed.
    (b) Why does a diamond sparkle?
16. (a) When white light hits a prism surface, why does it split into constituent colour?
    (b) The sun appears circular during evening ours. Why?
17. (a) What is hydrogenation? Write one of its industrial application.
    (b) Why acetic acid is known as glacial acetic acid?
18. (a) Write the names of the compounds:
    (i) $CH_3–CH_2–Br$
    (ii) $CH_3–CH_2–CH_2–CH_2–CH_2=CH_2$
    (b) A mixture of oxygen & ethyne is burnt for welding. Why do you think a mixture of ethyne & air is not used?
19. Define variation in relation to a species. Why is variation beneficial to the species?
20. Explain the importance of fossils in deciding evolutionary relationships.
21. Distinguish between acquired & inherited traits by giving one example of each. Why are traits acquired during the lifetime of an individual not herited?
22. Reproduction is essentially a phenomenon that is not for survival of an individual but for the stability of a species. Justify.
23. (a) Is it possible to form a real image using a real object with a concave lens?
    (b) What is the emergent angle of light after refraction in a glass slab?
    (c) Define angle of prism.

OR

(a) A person wants to see the full length image of tall building in a small mirror. What type of mirror is used by him?
(b) Name a mirror that can give an erect & enlarged image of an object.
(c) Magnification produced by a concave mirror of a body 4cm in size is 0.16. What is the size of the image?

24. (a) How many structural isomers can you draw for pentane?
    (b) What will be the formula & electron dot structure of cyclopentane?
    (c) Draw the electron dot structures for propanone.

OR

(a) Why does micelle formation take place when soap is added to water?
(b) Which alcohol is used in cough syrups & tonics?

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(c) Why is the conversion of ethanol to ethanoic acid an oxidation reaction?

25. (a) Why is regeneration considered a method of reproduction?

(b) Name two organisms in which multiple fission occurs.

(c) Define the term puberty.

OR

(a) How does copper-T prevent pregnancy?

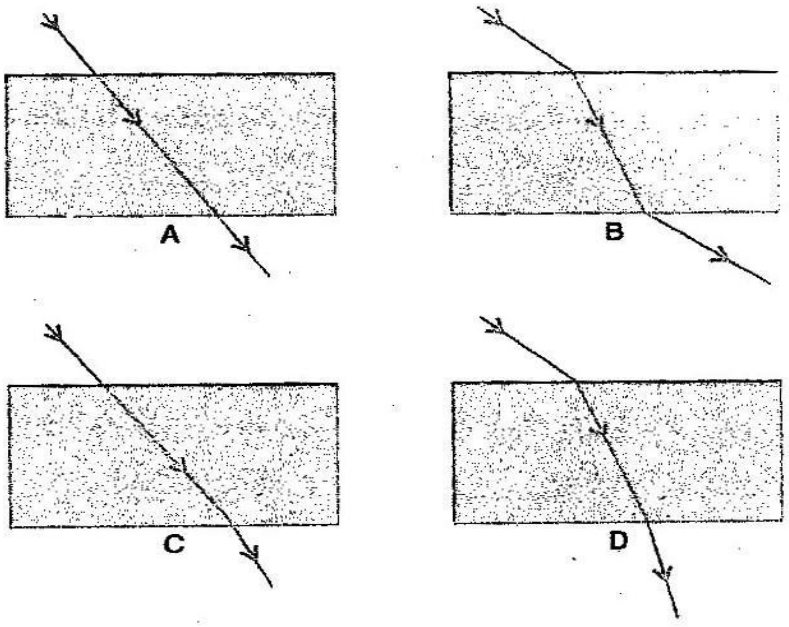
(b) Why is the number of sperms produced always more than the umber of egg produced?

(c) Where is ovary located in human female body? What is its role?

Section-B

26.

The path of a ray of light coming from air passing through a rectangular glass slab traced by four students are shown as A, B, C and D in figure. Which one of them is correct ?



(a) A (b) B
(c) C (d) D

27. Magnification produced by a rear view mirror fitted in vehicles

(a) is less than one (b) is more than one
(c) is equal to one
(d) can be more than or less than one depending upon the position of the object in front of it.

28.

In which of the following, the image of an object placed at infinity will be highly diminished and point sized ?

(*a*) Concave mirror only

(*b*) Convex mirror only

(*c*) Convex lens only

(*d*) Concave mirror, convex mirror, concave lens and convex lens.

29.

The angle of incidence *i* and refraction *r* are equal in a transparent slab when the value of *i* is

(*a*) 0° (*b*) 45°

(*c*) 90°

(*d*) depend on the material of the slab

30.

The difference in the formula and molecular masses of CH_3OH and C_2H_5OH is

(*a*) CH_3 and 16u (*b*) CH_2 and 14u

(*c*) CH_4 and 18u (*d*) CH_3 and 16u

31.

Matching Type (Single Matching) :

Column I	Column II
(*i*) $CH{\equiv}CH + Br_2 \longrightarrow \begin{matrix} CHBr_2 \\ \vert \\ CHBr_2 \end{matrix}$	A. Combustion reaction
(*ii*) $CH_3COOH + NaHCO_3 \longrightarrow CH_3COONa + H_2O + CO_2$	B. Test for carboxylic acid
(*iii*) $CH_2{=}CH_2 + H_2O \xrightarrow{H_2SO_4} CH_3CH_2OH$	C. Bromine water test
(*iv*) $CH_4(g) + 2O_2(g) \longrightarrow CO_2(g) + 2H_2O$	D. Hydration

(*a*) (*i*) A (*ii*) B (*iii*) C (*iv*) D (*b*) (*i*) D (*ii*) C (*iii*) B (*iv*) A

(*c*) (*i*) C (*ii*) B (*iii*) D (*iv*) A (*d*) (*i*) B (*ii*) D (*iii*) C (*iv*) A

32.

The self linkage property (catenation) is maximum in

(*a*) carbon (*b*) silicon

(*c*) sulphur (*d*) phosphorus

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33.

Match column I with column II and select the correct option from the codes given below.

	Column I		Column II
(a)	Reflection of light	(i)	Power of a lens
(b)	Refraction of light	(ii)	Mirrors
(c)	Diopter	(iii)	Lenses
(d)	Snell's law	(iv)	Refractive index

	a	b	c	d
(A)	(ii)	(iii)	(i)	(iv)
(B)	(iv)	(ii)	(iii)	(i)
(C)	(i)	(ii)	(iii)	(iv)
(D)	(ii)	(i)	(iii)	(iv)

34.

Ethene is produced when

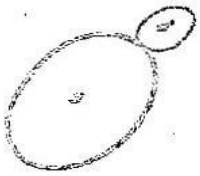
(A) Ethanol reacts with ethanoic acid in presence of a few drops of conc. H_2SO_4
(B) Ethanol is oxidised with acidified potassium dichromate
(C) Ethanol is heated with excess of conc. H_2SO_4 at 443 K
(D) Ethanol reacts with Na metal.

35. The compound which gives brisk effervescence with sodium metal but not with sodium hydrogen carbonate is:

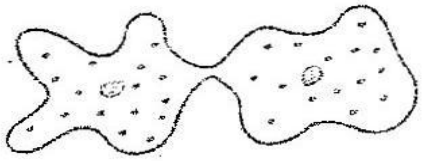
(a) Ethanol (b) Ethanoic acid
(c) Both (A) and (B) (d) None of these

36.

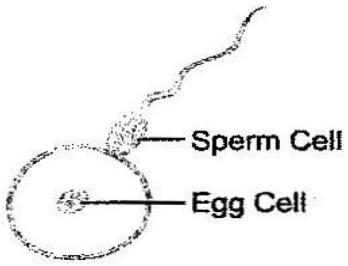
The diagrams given below represent various processes associated with reproduction. Asexual reproduction is represented by



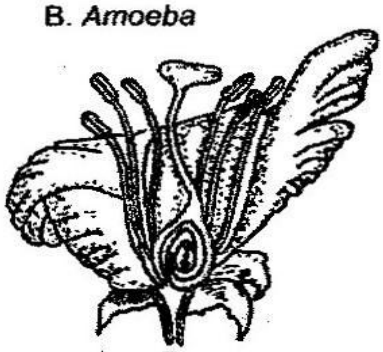
A. Yeast Cells



B. *Amoeba*



C.



D.

(a) A only (b) B only
(c) A and B (d) B and D

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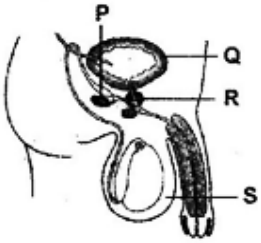
37. If the pollen is transferred to the stigma of the same flower, it is called
(a) allogamy
(b) autogamy
(c) double fertilisation
(d) cross-pollination

38. **What does this diagram show?**

(A) Transfer of pollen grains to stigma
(B) Germination of pollen grains
(C) Fertilization of gametes
(D) Development of zygote.

39. **Which labelled part in the given figure keeps the testes at a temperatue lower than the normal body temperature?**
(A) P
(B) Q
(C) R
(D) S.



40. **Which of the following methods of preventing pregnancy act by changing hormonal balance of the body so that eggs are not released and fertilization cannot occur?**
(A) Creating a mechanical barrier
(B) Taking oral pills
(C) Using IUCDs
(D) Using copper-T.

41. **During the early stages of development, the embryos of reptiles, birds and mammals look very similar. This suggests that reptiles, birds and mammals**
(A) Have evolved from common ancestor
(B) Live in the same types of environment
(C) Have undergone parallel evolution
(D) Are no longer undergoing evolution.

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MCQ's Answers

26. b
27. a
28. d
29. a
30. b
31. c
32. a
33. A
34. C
35. B
36. C
37. b
38. B
39. D
40. B
41. A