

Time : 3.00 hrs

SCIENCE

Marks: 75

Part - I

Note: Answer all the questions. Choose the correct answer. $12 \times 1 = 12$

- 1) A convex lens forms a real, diminished point sized image at focus. Then the position of the object is at
a) focus b) infinity c) at $2f$ d) between f and $2f$
- 2) Consider the following house hold appliances are powered by the 240V mains supply. Which appliance has the greatest electrical resistance?
a) 3KW heater b) 1KW iron box
c) 100W electric fan d) 60W electric bulb
- 3) _____ isotope is used for the treatment of cancer.
a) Radio Iodine b) Radio Cobalt c) Radio Carbon d) Radio Nickel
- 4) The volume occupied by 1 mole of diatomic gas at S.T.P is _____.
a) 11.2 litre b) 5.6 litre c) 22.4 litre d) 44.8 litre
- 5) When pressure is increased at constant temperature the solubility of gases in liquid _____.
a) no change b) increases c) decreases d) no reaction
- 6) The IUPAC name of an organic compound is 3-methyl butan-1-ol. What type of compound it is?
a) Aldehyde b) Carboxylic Acid c) Ketone d) Alcohol
- 7) The endarch condition is the characteristic feature of _____.
a) root b) stem c) leaves d) flower
- 8) In an healthy adult during normal resting condition systolic and diastolic blood pressure is expressed as _____.
a) 80mm Hg/120mm Hg b) 90mm Hg/140mm Hg
c) 120mm Hg/80mm Hg d) 140mm Hg/90mm Hg
- 9) Which nervous band connects the two cerebral hemispheres of brain?
a) thalamus b) hypothalamus c) corpus callosum d) pons
- 10) Anemophilous flowers have _____.
a) Sessile stigma b) Small smooth stigma
c) Colored flower d) Large feathery stigma
- 11) Okasaki fragments are joined together by _____.
a) Helicase b) DNA Polymerase c) RNA Primer d) DNA ligase
- 12) Pusa Komal is a disease resistant variety of _____.
a) Sugarcane b) rice c) cow pea d) maize

Part - II

II. Answer any 7 of the following. Question 22 is compulsory: $7 \times 2 = 14$

- 13) State Newton's Second law.
- 14) Why are traffic signals red in colour?
- 15) What is rust? Give the equation for formation of rust?
- 16) Give any two uses of Ethanol.
- 17) Define: Triple fusion.

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- 18) Why is Archaeopteryx considered to be a connecting link (இணைப்பு உயிரி)?
- 19) What is metastasis?
- 20) Name two maize hybrids rich in amino acid lysine.
- 21) What is Scratch?
- 22) Light rays travel from vacuum into a glass whose refractive index is 1.5. If the angle of incidence is 30° , Calculate the angle of refraction inside the glass.

Part - III

III. Answer any 7 of the following. Question 32 is compulsory:- $7 \times 4 = 28$

- 23) Differentiate Mass and Weight.
- 24) a) State Boyle's law.
b) Distinguish between ideal gas and real gas
- 25) a) State Ohm's law
b) How does a fuse wire protect electrical appliances?
- 26) What are the factors that affect the speed of sound in gases?
- 27) In what way hygroscopic substances differ from deliquescent substances.
- 28) a) What is neutralization reaction? Give an example.
b) Can a nickel spatula be used to stir copper sulphate solution? Justify your answer.
- 29) a) Write the equation for photosynthesis
b) Differentiate: Aerobic and Anaerobic respiration.
- 30) What are the phases of menstrual cycle? Indicate the changes in the ovary and uterus.
- 31) a) What is the role of Parathormone?
b) What are the advantages of using biogas?
- 32) Calculate the number of moles in
i) 27g of Al
ii) 1.51×10^{23} molecules of NH_4Cl .

Part - IV

IV. Answer all the question. Draw diagrams wherever necessary: $3 \times 7 = 21$

- 33) a) i) List any five properties of light.
ii) Give any two uses of convex lens. [or]
- b) i) State two conditions necessary for hearing an echo
ii) Describe rocket propulsion.
iii) Convert 1 kwh electric power to joule.
- 34) a) i) Give the salient features of "Modern Atomic Theory"?
ii) State the reason for addition of caustic alkali to bauxite ore during purification of bauxite. [or]
- b) i) Calculate the pH of 1.0×10^{-4} molar solution of HNO_3 .
ii) How is ethanol manufactured from sugarcane?
- 35) a) i) Write a short note on mesophyll.
ii) Enumerate the functions of blood. [or]
- b) i) Why did Mendel select pea plant for his experiments?
ii) Suggest measures to overcome the problems of an alcoholic.
