Total No. of Printed Pages—12

MBOSE Class 10 Science & Technology (New Course) Question Paper 2019

**X/19/S & T (O)**

**2 (**

# SCIENCE AND TECHNOLOGY

( Old Course )

**( COMPARTMENTAL/IMPROVEMENTAL CANDIDATES WITH PRACTICAL/INTERNAL ASSESSMENT )**

*Full Marks* : 80
*Pass Marks* : 24

**( NON-REGULAR, PRIVATE AND COMPARTMENTAL WITHOUT PRACTICAL/INTERNAL ASSESSMENT )**

*Full Marks* : 100
*Pass Marks* : 30

*Time* : 3 hours

*The figures in the margin indicate full marks for the questions*

*General Instructions* :

(i) The candidates are advised to attempt all questions accordingly.

(ii) Marks allocated to every question are indicated against each.

(iii) Question Nos. **1** to **39** are to be answered by **Compartmental/ Improvemental Candidates with Internal marks**.

(iv) Question Nos. **1** to **40** are to be answered by **Compartmental Candidates without Internal marks/Non-regular/Private Candidates**.

## SECTION—A

## ( PHYSICS )

( *Marks* : 26 )

Choose and write the correct answers from the following : 1×3=3

**1.** Refraction of light takes place due to the change in its

*(a)* speed

*(b)* wavelength

*(c)* nature

*(d)* None of the above 1

**2.** A fuse is always connected with the electrical circuit

*(a)* in parallel

*(b)* in series

*(c)* Both in series and parallel

*(d)* None of the above 1

**3.** The core of an electromagnet is

*(a)* steel

*(b)* magnesium

*(c)* soft iron

*(d)* copper 1

Answer the following questions in *one* word or *one* sentence each : 1×3=3

**4.** What is the speed of light in air? 1

**5.** Which will offer more resistance—a short wire or a long wire? 1

**6.** What is a magnetic field? 1

Answer the following short-answer type questions in *30–40* words each : 2×3=6

**7.** *Either*

*(a)* State the laws of reflection of light. 2

*Or*

*(b)* What are the two possible causes of myopia? 1+1=2

**8.** Write any two advantages of alternating current over direct current. 1+1=2

**9.** Why are two magnetic lines of force never found to intersect each other? 2

Answer the following short-answer type questions in *50–60* words each : 3×3=9

**10.** *(a)* What is the formula for a lens connecting image distance $v$, object distance $u$ and focal length $f$ ? 1

*(b)* Define one dioptre. Name the instrument used for measuring the power of a lens. 1+1=2

**11.** *(a)* Define electric current. 1

*(b)* 30 coulombs of charge flows through any cross-section of a conductor in 20 seconds. What is the current flowing through the conductor? 2

**12.** *Either*

*(a)* Distinguish between real image and virtual image. 3

*Or*

*(b)* Derive the relationship between SI unit of electrical energy and commercial unit of electrical energy. 3

Answer the following long-answer type questions in *70–80* words : 5

**13.** *Either*

*(a)* State Ohm's law. 2

*(b)* State the mathematical expression to verify the law. 1

*(c)* An electric heater draws a current of 11 A, when connected to 220 V main supply. Calculate the resistance of the filament of the heater. 2

*Or*

*(d)* Define power of accommodation. 1

*(e)* Mention any two uses of concave mirror. 2

*(f)* What is the nature of the lens, if the power of the lens is *(i)* positive and *(ii)* negative? 2

SECTION—B

**( CHEMISTRY )**

( *Marks* : 26 )

Choose and write the correct answers from the following : 1×3=3

**14.** The metal which can be cut with a knife is 1

*(a)* sodium

*(b)* iron

*(c)* lithium

*(d)* caesium

**15.** Which of the following is a strong acid? 1

*(a)* $CH_3COOH$

*(b)* $H_3PO_4$

*(c)* $H_2CO_3$

*(d)* HCl

**16.** The number of periods in the periodic table is 1

*(a)* 6

*(b)* 7

*(c)* 10

*(d)* 8

Answer the following questions in *one* word or *one* sentence each : 1×2=2

**17.** Define an acid according to Brönsted-Lowry concept. 1

**18.** What is metallurgy? 1

Answer the following short-answer type questions in *30–40* words each : 2×2=4

**19.** Define corrosion. Name two methods used for the prevention of corrosion. 1+½+½=2

**20.** *Either*

*(a)* What are normal salts? Give two examples. 1+½+½=2

*Or*

*(b)* How is bleaching powder prepared? Give the chemical equation. 1+1=2

Answer the following short-answer type questions in *50–60* words each : 3×4=12

**21.** *(a)* What do you mean by combination reaction? Give an example. 1+1=2

*(b)* Why do gold and silver not corrode in moist air? 1

**22.** *(a)* What happens when iron reacts with steam? Give the equation. 1+1=2

*(b)* State modern periodic law. 1

**23.** Differentiate between the roasting and calcination processes used in metallurgy. Give one example of each. 2+½+½=3

**24.** *Either*

*(a)* What is a functional group in an organic compound? 1

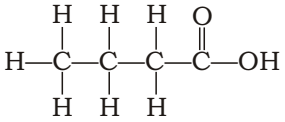
*(b)* What are carboxylic acids? What happens when ethanoic acid reacts with ethyl alcohol? 1+1=2

*Or*

*(c)* Name two crystalline allotropes of carbon. ½+½=1

*(d)* What are isomers? 1

*(e)* Write the IUPAC name of the following compound : 1



Answer the following long-answer type questions in *70–80* words : 5

**25.** *Either*

*(a)* What is flux? What chemical process is used for obtaining a metal from its oxide? 1+1=2

*(b)* Describe the process of froth flotation. 3

*Or*

*(c)* What are soaps? 1

*(d)* Name the raw materials used for making soap. 2

*(e)* How is transparent soap prepared from soft soap? 2

## SECTION—C

## ( BIOLOGY )

( *Marks* : 28 )

Choose and write the correct answers from the following : 1×3=3

**26.** The mode of nutrition in fungi (mushroom) is called

*(a)* autotrophic

*(b)* holozoic

*(c)* heterotrophic

*(d)* saprophytic 1

**27.** The lungs are covered by a membrane called

*(a)* pericardium

*(b)* pleura

*(c)* myelin sheath

*(d)* periosteum 1

**28.** Which of the following is not a plant hormone?

*(a)* Gibberellin

*(b)* Oxytocin

*(c)* Ethylene

*(d)* Cytokinin 1

Answer the following questions in *one* word or *one* sentence each : 1×3=3

**29.** Name the enzyme present in saliva of human beings. 1

**30.** How do insects and fishes respire? ½+½=1

**31.** What is gene? 1

Answer the following short-answer type questions in *20–30* words each : 2×4=8

**32.** What are the factors that affect the rate of photosynthesis? 2

**33.** What is blood pressure? Name the instrument used to measure blood pressure. 1+1=2

**34.** *Either*

*(a)* Name three types of blood corpuscles present in the human blood. 1½

*(b)* Which fluid transports fatty acids and glycerol in the human body? ½

*Or*

*(c)* Name any four sense organs for receptor. ½×4=2

**35.** Mention any two basic features of asexual reproduction. 2

Answer the following short-answer type questions in *50–60* words each : 3×3=9

**36.** What are vestigial organs? Name four vestigial organs. 1+2=3

**37.** *Either*

*(a)* What are the four great blood vessels of the heart? 2

*(b)* What is the respiratory pigment present in erythrocytes? 1

*Or*

*(c)* Give any three important characteristics of hormone. 3

**38.** *(a)* What is tissue culture? 1

*(b)* Distinguish between binary and multiple fission. 2

Answer the following long-answer type questions in *70–80* words : 5

**39.** *Either*

*(a)* Write any five main functions of human blood. 5

*Or*

*(b)* What are the functions of saliva? 5

**[ For Candidates (without Practicals) only ]**

**40.** I. Answer any *three* of the following questions : 2×3=6

*(a)* What do you mean by magnification of spherical mirror? 2

*(b)* What is dispersion of light? Which colour bends the most? 1+1=2

*(c)* What are insulators? Give two examples. 1+1=2

*(d)* *(i)* What is meant by magnetic effect of current? 1

*(ii)* How does a conductor behave when electric current flows through it? 1

*(e)* Name the instruments used to measure current and potential difference. 1+1=2

II. Answer any *three* of the following questions : 2×3=6

*(a)* Define the terms *(i)* oxidation and *(ii)* reduction. 1+1=2

*(b)* *(i)* Name the simplest hydrocarbon. 1

*(ii)* Give the general formula of alkanes. 1

*(c)* *(i)* Name the non-metal which is good conductor of electricity. 1

*(ii)* What is an alloy? 1

*(d)* Mention any two applications of pH. 2

*(e)* What are malleability and ductility? 1+1=2

III. Answer any *four* of the following questions : 2×4=8

*(a)* Name the four chambers of human heart. ½×4=2

*(b)* Name the accessory whorls and the reproductive whorls of a flower. ½×4=2

*(c)* Define transpiration. Name the plant tissue concerned with transport of water and food materials. 1+1=2

*(d)* *(i)* What is ultrafiltration? 1

*(ii)* Name the main excretory organs in human beings. 1

*(e)* Name the different parts of central nervous system of the human body. 2

*(f)* How does vegetative reproduction occur in colocacia, chrysanthemum, onion and strawberry? ½×4=2

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