

CHEMISTRY
CLASS- XI

Time: - 45 minutes

MM: 50

General Instructions: -

- (i) Attempt all questions.
 - (ii) Each question carries two marks.
-

1. In the reaction $\text{Hg}_2\text{Cl}_2 + \text{Cl}_2 \rightarrow 2\text{HgCl}_2$, the reducing agent is
(a) Hg_2Cl_2 (b) Cl_2 (c) HgCl_2 (d) both Hg_2Cl_2 and Cl_2

2. Which of the following gases can be used for storage of fresh sample of an oil for a long time?
(a) CO_2 Or O_2 (b) N_2 or O_2 (c) CO_2 or He (d) He or N_2

3. Electrolysis of water is a decomposition reaction. The molar ratio of hydrogen and oxygen gases liberated during electrolysis of water is
(a) 1:1 (b) 2:1 (c) 4:1 (d) 1:2

4. The chemical formula of rust is
(a) Fe_2O_3 (b) $\text{Fe}_2\text{O}_3 \cdot x\text{H}_2\text{O}$ (c) Fe_3O_4 (d) $\text{FeO} \cdot x\text{H}_2\text{O}$

5. When lead nitrate powder is heated in a boiling tube, it decomposed to form-
(a) PbO , NO_2 and O_2 (b) PbO and NO_2 (c) PbO , N_2 and O_2 (d) $\text{Pb}(\text{NO}_2)_2$ and O_2

6. Some substances whose odour changes in acidic or basic media are called-
(a) Universal indicator (b) Olfactory indicator (c) Neutral indicator (d) Acid-base indicator

7. Tamarind is the natural source of-
(a) Oxalic acid (b) Lactic acid (c) Tartaric acid (d) Citric acid

8. 10 mL of a solution of NaOH is found to be completely neutralized by 8 mL of HCl solution. If we take 20 mL of the same solution NaOH , the amount of same HCl solution required to neutralize it, will be:
(a) 4 mL (b) 8 mL (c) 12 mL (d) 16 mL

9. Which of the following types of medicine is used for treating indigestion?
(a) Antibiotic (b) Analgesic (c) Antacid (d) Antiseptic

10. The formula of dead burnt plaster is
(a) CaSO_4 (b) $\text{CaSO}_4 \cdot \frac{1}{2} \text{H}_2\text{O}$ (c) $\text{CaSO}_4 \cdot 2 \text{H}_2\text{O}$ (d) CaCl_2

11. Although metals form basic oxides, which of the following metal form an amphoteric oxide

- (a) Na (b) Ca (c) Al (d) Cu

12. The composition of aqua Regia is

- (a) 3 part of Dil. HCl + 1 part Conc. HNO₃ (b) 3 part of Conc. HCl + 1 part Dil. HNO₃
(c) 3 part of Conc. HCl + 1 part Conc. HNO₃ (d) 3 part of Dil. HCl + 1 part Dil. HNO₃

13. Generally metals react with acids to give salt and hydrogen gas. Which of the following acids does not give hydrogen gas on reacting with metals (except Mn and Mg)?

- (a) H₂SO₄ (b) HCl (c) HNO₃ (d) All of these

14 Brass is an alloy of

- (a) Cu and Zn (b) Cu and Sn (c) Cu and Ni (d) Cu and Al

15. The ore of mercury is

- (a) Cinnabar (b) Bauxite (c) Calamine (d) Alumina

16. Buckminster fullerene is an allotropic form of

- (a) Phosphorus (b) Sulphur (c) Carbon (d) Tin

17. Glacial acetic acid is

- (a) 5-8% acetic acid (b) 50% acetic acid
(c) acetic acid of any concentration (d) 100% acetic acid

18. A neutral organic compound is warmed with some Ethanoic acid and a little of concentrated H₂SO₄. Vapours having fruity smell are evolved. The type of functional group is present in this compound is

- (a) -OH (b) -COOH (c) -CHO (d) -CO-

19. When a Vegetable oil is treated with hydrogen in the presence of nickel catalyst, it forms a fat. This is an example of:

- (a) anodizing reaction (b) substitution reaction
(c) displacement reaction (d) addition reaction

BIRLA PUBLIC SCHOOL (VIDYA NIKETAN)

**Admission Test:
CHEMISTRY (Set B)
CLASS- XI**

Time: - 45 minutes

MM: 50

General Instructions: -

- (iii) Attempt all questions.
 - (iv) Each question carries two marks.
-

1. The chemical equations are balanced to satisfy one of the following laws in chemical reactions. This law is known as:
(a) law of conservation of momentum
(b) law of conservation of mass
(c) law of conservation of motion
(d) law of constant proportion
2. You are given a solution of lead nitrate. In order to obtain a yellow precipitate, you should mix with it a solution of:
(a) potassium chloride (b) potassium nitride (c) potassium sulphide (d) potassium iodide
3. Which of the following can be decomposed by the action of sunlight?
(a) NaCl (b) KCl (c) AgCl (d) CuCl
4. Green coating on the surface of copper in rainy season is due to the formation of
(a) CuCO_3 (b) $\text{Cu}(\text{OH})_2$ (c) $\text{CuCO}_3 \cdot \text{Cu}(\text{OH})_2$ (d) Cu_2S
5. In the following reaction the oxidizing agent is:
 $\text{MnO}_2 + 4 \text{HCl} \rightarrow \text{MnCl}_2 + \text{H}_2\text{O} + \text{Cl}_2$
(a) MnO_2 (b) HCl (c) MnCl_2 (d) Cl_2
6. Which of the following is not an acidic salt?
(a) CuSO_4 (b) NH_4Cl (c) FeCl_3 (d) CH_3COONa
7. A sample of soil is mixed with water and allowed to settle. The clear supernatant solution turns the pH paper yellowish-orange. Which of the following would change the colour of this pH paper to greenish-blue?
(a) Lemon juice (b) Vinegar (c) Common salt (d) Antacid
8. Tooth enamel is made up of a hardest substance. The chemical formula of this hardest substance is;
(a) $\text{Ca}_3(\text{PO}_4)_2$ (b) CaCO_3 (c) CaSO_4 (d) CaS
9. The pH of an aqueous solution of a salt of strong acid and strong base is-
(a) 2 (b) 7 (c) 14 (d) 9
10. The chemicals used in soda-acid fire extinguishers are-
(a) NaHCO_3 and Dilute H_2SO_4 (b) $\text{Al}_2(\text{SO}_4)_3$ and Dilute H_2SO_4 (c) CaSO_4 and Dilute H_2SO_4 (d) CCl_4 and H_2O
11. The metals which are poor conductors of heat are:
(a) Ag and Cu (b) Pb and Hg (c) Al and Cu (d) Ag and Al
12. The oxide of metal with aluminium is used to join railway tracks or cracked machine parts is
(a) Fe_2O_3 (b) ZnO (c) CuO (d) NiO
13. Solder is an alloy of
(a) Cu and Zn (b) Cu and Sn (c) Pb and Sn (d) Cu and Al
14. Food cans are coated with tin and not with Zn because:
(a) zinc is costlier than tin.
(b) zinc has a higher melting point than tin.
(c) zinc is more reactive than tin.
(d) zinc is less reactive than tin.
15. Which of following oxide(s) of iron would be obtained on prolonged reaction with steam?
(a) FeO (b) Fe_2O_3 (c) Fe_3O_4 (d) Fe_2O_3 and Fe_3O_4

16. The number of covalent bonds in C_4H_{10} is
(a) 10 (b) 8 (c) 13 (d) 12
17. The self linkage property is maximum in
(a) Carbon (b) Silicon (c) Sulphur (d) Phosphorus
18. Ethanol on heating at 443 K with concentrated H_2SO_4 gives
(a) C_2H_4 (b) C_2H_2 (c) CH_4 (d) C_2H_6
19. Saponification is the reaction
(a) an ester and a base (b) an ester and an acid (c) an alcohol and a carboxylic acid in the presence of little Concentrated H_2SO_4 (d) an alcohol and sodium metal
20. Which of the following does not belong to the same homologous series?
(a) CH_4 (b) C_2H_6 (c) C_3H_8 (d) C_4H_8
21. The element which has least tendency to lose electron is
(a) H (b) Li (c) He (d) Ni
22. When zinc metal is heated with caustic soda solution, the gas evolved is
(a) H_2 (b) CO_2 (c) O_2 (d) HCl
23. Which of the following set of elements is written correctly in the order of their metallic character
(a) Mg, Al, Si (b) C, O, N (c) Na, Li, K (d) Be, Mg, Ca
24. Number of groups and periods respectively present in the Modern Periodic Table are
(a) 16, 7 (b) 6, 16 (c) 18, 7 (d) 18, 6
25. Where would you locate the element with electronic configuration 2, 8 in the Modern Periodic Table?
(a) Group 8 and period 2
(b) Group 18 and period 2
(c) Group 8 and period 3
(d) Group 10 and period 2

-----X-----X-----X-----

Class-XI
Physics

Time: 45 min.

M.M.: 50

Note: All question are Compulsory.
Each Question carries two marks.

1. What is the rate of flow of electric charges called?
 - a. Electric potential
 - b. Electric conductance
 - c. Electric current
 - d. None of these

2. Which instrument is used for measuring electric potential?
 - a. Ammeter
 - b. Galvanometer
 - c. Voltmeter
 - d. None of these

3. The resistance of a conductor is directly proportional to:
 - a. Its area of cross-section
 - b. Density
 - c. melting point
 - d. Length

4. The purpose of a rheostat is:
 - a. Increase the magnitude of current only
 - b. Decrease the magnitude of current only
 - c. Increase or decrease the magnitude of current
 - d. None of these

5. When a 40V battery is connected across an unknown resistor there is a current of 100 mA in the circuit. Find the value of the resistance of the resistor:
 - a. 5000 Ω
 - b. 800 Ω
 - c. 0.8 Ω
 - d. None of these

6. A battery of 6V is connected in series with resistors of 0.1 ohm , 0.15 ohm,0.2 ohm,0.25 ohm and 6 ohm. How much current would flow through the 0.3 ohm resistor?
 - a. 0.895A
 - b. 2.22A
 - c.1A
 - d. None of these

7. A concave mirror gives real, inverted and same size image, if the object is placed
 - a. At F
 - b. At infinity
 - c. At C
 - d. Beyond C

8. In optics an object which has higher refractive index is called
 - a. Optically rarer
 - b. Optically denser
 - c. Optical density
 - d. Refractive index

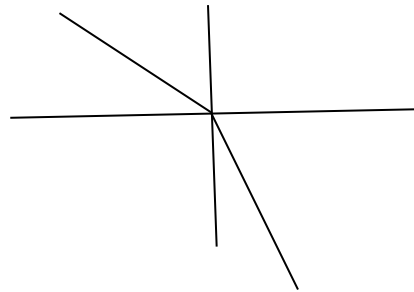
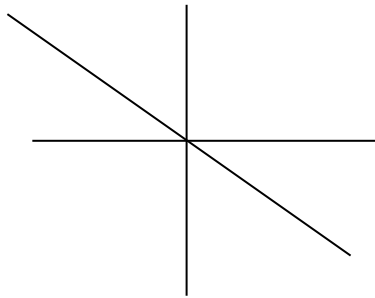
9. The optical phenomena, twinkling of stars, is due to
 - a. Atmospheric reflection
 - b. Total reflection
 - c. Atmospheric refraction
 - d. Total refraction

10. The image formed by retina of human eye is
 - a. Virtual and erect
 - b. Real and inverted
 - c. Virtual and inverted
 - d. Real and erect

11. The light sensitive cell present on retina and is sensitive to the intensity of light is:
 - a. Cones
 - b. Rods
 - c. Both rods and cones
 - d. None of these

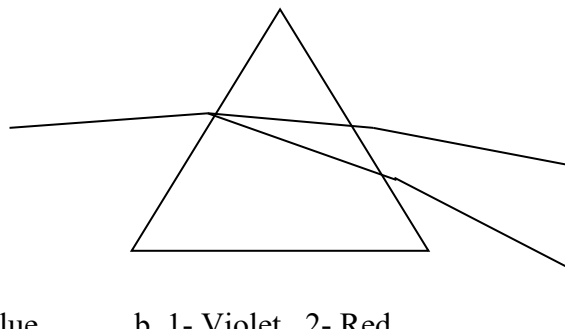
12. The colored light that refracts most while passing through a prism is
a. Yellow b. Violet
c. Blue d. Red
13. The amount of light entering the human eye is controlled by
a. Ciliary muscles b. Pupil
c. Cornea d. Iris
14. The part of the eyes refracts light entering the eye from external objects?
a. Lens b. Cornea
c. Iris d. Pupil
15. What should be the core of an electromagnet?
a. soft iron b. hard iron
c. rusted iron d. none of above
16. What is the condition of an electromagnetic induction?
a. there must be a relative motion between the coil of wire and galvanometer
b. there must be a relative motion between the galvanometer and a magnet
c. there must be a relative motion between galvanometer and generator
d. there must be a relative motion between the coil of wire and a magnet
17. What is that instrument which can detect the presence of electric current in a circuit?
a. galvanometer b. motor
c. generator d. none of above
18. What is electromagnetic induction?
a. The process of charging a body
b. The process of rotating a coil of an electric motor.
c. Producing induced current in a coil due to relative motion between a magnet and the coil
d. The process of generating magnetic field due to a current passing through a coil.
19. What happens to the current in short circuit?
a. reduces substantially b. does not change
c. increases heavily d. vary continuously
20. Which method is used to produce electricity in hydroelectric power plant.
a. By boiling the water to produce steam
b. By ionizing water
c. By running dynamo by kinetic energy
d. Any of the above
21. Which of the following is normally used in solar cookers for trapping solar energy?
a. Solar panels b. Silicon cells
c. Mirrors d. Any of above
22. In which of the following kinetic energy is converted into electrical energy?
a. Tidal energy b. Hydro energy
c. Wind energy d. All of these
23. Which of the following is the ultimate source of energy for us?
a. LPG b. Nuclear
c. Solar d. CNG

24. Select the correct option from the given refraction



- a. $n_1 = n_2$, $n_3 > n_4$ b. $n_1 = n_2$ $n_3 < n_4$
c. $n_1 > n_2$ $n_3 > n_4$ d. $n_1 = n_2$, $n_3 = n_4$

25. Select the correct option from the given refraction through prism.



- a. 1- Red 2- Blue b. 1- Violet 2- Red
c. 1- Red 2- Violet d. 1- Green 2- Violet
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Birla Public School, Pilani
Scholastic Assessment Test
SET B

Subject: Physics

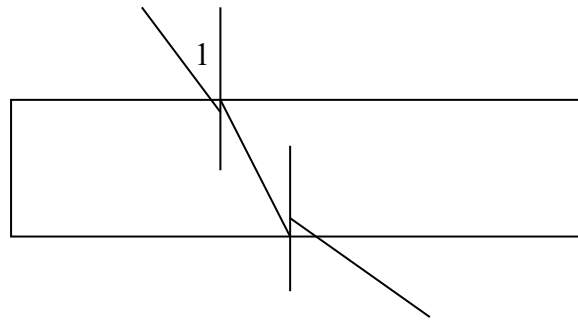
Class: XI

Note: All question are Compulsory.

Each Question carries two marks.

1. Which of the following is the SI Unit of Electric Current?
 - a. ohm
 - b. ampere
 - c. volt
 - d. faraday
2. The hindrance presented by material of conductor to the smooth passing of electric current is known as:
 - a. Resistance
 - b. Conductance
 - c. Inductance
 - d. None of these
3. When one unit electric charge moves from one point to another point in an electric circuit, then the amount of work done in joules is known as?
 - a. Electric current
 - b. electric resistance
 - c. electric conductance
 - d. potential difference
4. Point to be kept in mind for verification of Ohm's Law is:
 - a. Ammeter and voltmeter should be connected in series
 - b. Ammeter should be connected in series and voltmeter in parallel
 - c. Ammeter should be connected in parallel and voltmeter in series
 - d. Ammeter and voltmeter should be connected in parallel
5. A fuse wire is inserted in a?
 - a. . Live wire
 - b. . In the neutral wire
 - c. . In the earth wire
 - d. . May be connected in any line.
6. Image formed by plane mirror is
 - a. Real and erect
 - b. Real and inverted
 - c. Virtual and erect
 - d. Virtual and inverted
7. Power of the lens is -40 D , its focal length is
 - a. 4m
 - b. -40m
 - c. -0.025m
 - d. -25m
8. A concave mirror gives virtual, erect and enlarged image of the object but image of smaller size than the size of the object is
 - a. At infinity
 - b. Between F and C
 - c. Between P and F
 - d. At E
9. The unit of power of lens is
 - a. Metre
 - b. Centimeter
 - c. Dioptre
 - d. None of these
10. The change in the focal length of human eye is caused due to
 - a. Ciliary muscles
 - b. Pupil
 - c. Cornea
 - d. Iris
11. The persistence of vision for human eye is
 - a. $1/10\text{th}$ of a second
 - b. $1/16\text{th}$ of a second
 - c. $1/6\text{th}$ of the second
 - d. $1/18\text{th}$ of a second
12. The phenomena of light responsible for the working of the human eye is
 - a. Persistence of vision
 - b. Refraction
 - c. Power of accommodation
 - d. All of the above
13. Which of the following colors is least scattered by fog, dust of smoke?

25. Refraction through glass slab is shown below. Which option(s) are correct.



- a. $\angle 1 = \angle 2$
- c. $\angle 1 = \angle 4$

- b. $\angle 2 = \angle 3$
- d. $\angle 3 = \angle 4$

GENERAL APTITUDE TEST
CLASS-XI

Note: Each question carries 2 marks

MM: 50

Q.1 Which of the following personalities gave ‘The Laws of Heredity’?

- (A) Robert Hook
- (B) G.J. Mendel
- (C) Charles Darwin
- (D) William Harvey

Q.2 Name the person who was also known as Deshbandhu.

- (A) S. Radhakrishnan
- (B) G.K. Gokhale
- (C) Chittaranjan Das
- (D) Madan Mohan Malviya

Q.3 Which of the following is NOT the language enshrined in the eighth schedule of the Indian Constitution, as the language of the state?

- (A) Nepali
- (B) Kashmiri
- (C) English
- (D) Konkani

Q.4 The capital of Uttarakhand is....

- (A) Masoorie
- (B) Dehra Dun
- (C) Nainital
- (D) None of these

Q.5 Geet Govind is a famous creation of

- (A) Bana Bhatt
- (B) Kalidas
- (C) Jayadev
- (D) Bharat Muni

Q.6 Which Indian state has its maximum area under the forest cover?

- (A) Maharashtra
- (B) Madhya Pradesh
- (C) Arunachal Pradesh
- (D) Kerala

Q.7 World Trade Organization came into existence in.....

- (A) 1992
- (B) 1993
- (C) 1994
- (D) 1995

Q.8 According to the Constitution of India, which of the following is NOT one of the main organs of the Government?

- (A) Legislature
- (B) Bureaucracy
- (C) Executive
- (D) Judiciary

Q.9 In which year did the Cabinet Mission arrived in India?

- (A) 1942
- (B) 1943
- (C) 1945
- (D) 1946

Q.10 Panchayati Raj comes under....

- (A) Residual list
- (B) Concurrent list
- (C) State list
- (D) Union list

Q.11 Which of the amendments of the following constitution was responsible for deleting the right to property from the list of fundamentals rights?

- (A) 43rd amendment
- (B) 44th amendment
- (C) 48th amendment
- (D) 52nd amendment

Q.12 Harshcharita and KadamBari are the works of.....

- (A) Kalhan
- (B) Panini
- (C) Bana Bhatta
- (D) Patanjali

Q.13 When did the war of Americans Independence take place?

- (A) 1770
- (B) 1772
- (C) 1774
- (D) 1776

Q.14 Panini was.....

- (A) a Greek philosopher
- (B) an Indian astronomer and famous mathematician
- (C) a Sanskrit grammarian of Vedic times
- (D) great poet of ancient times.

Q.15 Mein Kampf is authored by...

- (A) Napoleon Bonaparte
- (B) Karl Marx
- (C) Adolf Hitler
- (D) Benito Mussolini

Q.16 Which of the following is the largest and the deepest ocean of the world?

- (A) Arctic
- (B) Atlantic
- (C) Pacific
- (D) Indian

Q.17 The literacy rate of India is....

- (A) 57.86%
- (B) 61.34%
- (C) 63.98%
- (D) 65.38%

Q.18 Which Indian state has the least literacy rate?

- (A) Bihar
- (B) Rajasthan
- (C) Arunachal Pradesh
- (D) Orissa

Q.19 SAARC was formed in

- (A) 1982
- (B) 1984
- (C) 1985
- (D) 1986

Q.20 Which of the following is not a member of the European Union?

- (A) Greece
- (B) Finland
- (C) Norway
- (D) United Kingdom

Q.21 ASEAN is headquartered at....

- (A) Male
- (B) Kathmandu
- (C) Jakarta
- (D) Kuala Lumpur

Q.22 This river was also called as the Ganges of the South, Name the river from the given options.

- (A) Godavari
- (B) Krishna
- (C) Cauvery
- (D) None of these

Q.23 Which Indian state is inhabited by 'Jaintiya tribes'?

- (A) Arunachal Pradesh
- (B) Mizoram
- (C) Manipur
- (D) Meghalaya

Q. 24 Currently, who is the Chief Minister of Goa (State of India)?

- (A) Manohar Parrikar
- (B) Prashant Sawant
- (C) Rajiv Gandhi
- (D) Ashok Gahalot

Q.25 Where is 'Dudhsagar Waterfall' in India?

- (A) At the border of the Indian state of Goa and Karnataka
- (B) in Karnataka
- (C) in Gujarat
- (D) in Rajasthan

Q.26 In the World Boxing Championships 2017, who won India its first medal?

- (A) Gaurav Bidhuri
- (B) Alexzander
- (C) Tarzan
- (D) Mitsuda

Q.27 Currently, who is the Chief Minister of Assam?

- (A) Sarbananda Sonowal
- (B) Prashant Yadav
- (C) Rajiv Gandhi
- (D) Ashok Gahalot

Q.28 Who is the current President of Bharatiya Janata Party?

- (A) Amit Shah
- (B) Nitin Gadkari
- (C) Yashwant Sinha
- (D) Narendra Modi

Q.29 What is the height of Siachen Glacier at eastern Karakoram range in the Himalaya Mountains?

- (A) 5400 Metre
- (B) 6400 Metre
- (C) 5600 Metre
- (D) 8500 Metre

Q.30 Who has been appointed as the new Secretary-General of Lok Sabha?

- (A) Snehlata Shrivastava
- (B) Janaki Devi
- (C) Yashwant Sinha
- (D) Jail Singh

Q.31 Recently US drop its most powerful non-nuclear bomb (MOAB – ‘Mother Of All Bombs’) at which place?

- (A) An ISIS positions in Afghanistan
- (B) In Pakistan
- (C) In Kazakhstan
- (D) In South Korea

Q.32 Which schemes launched for Bhim app user by PM Narendra Modi on Apr 14, 2015, Ambedkar Jayanti?

- (A) BHIM Referral Bonus Scheme and BHIM Merchant Cashback Scheme
- (B) Jio Money
- (C) M-Paisa
- (D) Real Money

Q.33 In 2017, which Space Agency sends 104 satellites in a single mission?

- (A) ISRO
- (B) NASA
- (C) Russian Agency
- (D) China space Agency

Q.34 What is India’s GDP growth rate in 2017-18?

- (A) 7.4%
- (B) 8.4%
- (C) 9.4%
- (D) 6.4%

Q.35 When was cycling federation of India established?

- (A) 1946
- (B) 1846
- (C) 1947

(D) 1952

Q.36 When did the movie 'Raees' Release in India?

(A) 25 January 2017

(B) 26 January 2017

(C) 16 January 2017

(D) 20 January 2017

Q.37 When was India's first cricket club established?

(A) 1792 In Calcutta

(B) 1793 in Delhi

(C) 1892 in Calcutta

(D) 1992 in Delhi

Q.38 When was India national football team established?

(A) 1937

(B) 1938

(C) 1940

(D) 1952

Q.39 Who is the Chief Minister of Arunachal Pradesh (India State)?

(A) Pema Khandu (Since July 2016)

(B) Prashant Yadav

(C) Rajiv Gandhi

(D) Ashok Gahalot

Q.40 Which bank changed its names and IFSC code for its many branches?

(A) SBI

(B) Canara Bank

(C) Axis Bank

(D) Punjab National Bank

Q.41 What is the use of 'India Quake' App which is launched by the Indian Government in 2017?

- (A) For the dissemination of earthquake parameters to the user community in a timely manner for their safety
- (B) For Flood
- (C) For Tsunami
- (D) For Natural disaster

Q.42 The first speaker of Lok Sabha was.....

- (A) K.M. Munshi
- (B) C.D. Deshmukh
- (C) G.V. Mavalankar
- (D) H.J. Kania

Q.43 Which of the following represents the number of nations of the Non-Aligned Movement?

- (A) 54
- (B) 75
- (C) 93
- (D) 118

Q.44 This personality is known as the Father of Economics. Can you identify him from the given options?

- (A) J.M. Keynes
- (B) Adam Smith
- (C) Abraham Maslow
- (D) J.K. Galbraith

Q.45 Mount Etna is a famous volcano located in

- (A) Argentina
- (B) Italy
- (C) Mexico

(D) Philipines

Q.46 Where is the Tungabhadra sanctuary located?

(A) Madhya Pradesh

(B) Uttar Pradesh

(C) Karnataka

(D) West Bengal

Q.47 The agency of the United Nations that was set up to strengthen international cooperation in the field of education and improve the standards of education is.....

(A) UNEP

(B) UNCTAD

(C) UNESCO

(D) UNDP

Q.48 Reserve Bank of India is headquartered at.....

(A) Kolkata

(B) New Delhi

(C) Mumbai

(D) Chennai

Q.49 Jana Gana Mana, was accepted as the National Anthem of India by the Constituent Assembly of India in which of the following years?

(A) 1950

(B) 1949

(C) 1948

(D) 1947

Q.50 The person who has climbed Mount Everest the most ----- 17 times ----- is.....

(A) Babu Cheri

(B) Appa Sherpa

(C) Peter Hillary

(D) T.W. Tenzing

Q. 1. Read the following passage and answer the questions which follow.

Philosophy of Education is a label applied to the study of the purpose, process, nature and ideals of education. It can be considered a branch of both philosophy and education. Education can be defined as the teaching and learning of specific skills, and the imparting of knowledge, judgment and wisdom, and is something broader than the societal institution of education we often speak of.

Many educationalists consider it a weak and woolly field, too far removed from the practical applications of the real world to be useful. But philosophers dating back to Plato and the Ancient Greeks have given the area much thought and emphasis, and there is little doubt that their work has helped shape the practice of education over the millennia.

Plato is the earliest important educational thinker, and education is an essential element in "The Republic" (his most important work on philosophy and political theory, written around 360 B.C.). In it, he advocates some rather extreme methods: removing children from their mothers' care and raising them as wards of the state, and differentiating children suitable to the various castes, the highest receiving the most education, so that they could act as guardians of the city and care for the less able. He believed that education should be holistic, including facts, skills, physical discipline, music and art. Plato believed that talent and intelligence is not distributed genetically and thus is to be found in children born to all classes, although his proposed system of selective public education for an educated minority of the population does not really follow a democratic model.

Aristotle considered human nature, habit and reason to be equally important forces to be cultivated in education, the ultimate aim of which should be to produce good and virtuous citizens. He proposed that teachers lead their students systematically, and that repetition be used as a key tool to develop good habits, unlike Socrates' emphasis on questioning his listeners to bring out their own ideas. He emphasized the balancing of the theoretical and practical aspects of subjects taught, among which he explicitly mentions reading, writing, mathematics, music, physical education, literature, history, and a wide range of sciences, as well as play, which he also considered important.

During the Medieval period, the idea of Perennialism was first formulated by St. Thomas Aquinas in his work "De Magistro". Perennialism holds that one should teach those things deemed to be of everlasting importance to all people everywhere, namely principles and reasoning, not just facts (which are apt to change over time), and that one should teach first about people, not machines or techniques. It was originally religious in nature, and it was only much later that a theory of secular perennialism developed.

During the Renaissance, the French skeptic Michel de Montaigne (1533 - 1592) was one of the first to critically look at education. Unusually for his time, Montaigne was willing to question the conventional wisdom of the period, calling into question the whole edifice of the educational system, and the implicit assumption that university-educated philosophers were necessarily wiser than uneducated farm workers, for example.

I. What is the difference between the approaches of Socrates and Aristotle?

1

- a) Aristotle felt the need for repetition to develop good habits in students; Socrates felt that students need to be constantly questioned
- b) Aristotle felt the need for rote-learning; Socrates emphasized on dialogic learning
- c) There was no difference
- d) Aristotle emphasized on the importance of paying attention to human nature; Socrates emphasized upon science

II. Why do educationists consider philosophy a 'weak and woolly' field?

1

- a) It is not practically applicable

- b) Its theoretical concepts are easily understood
- c) It is irrelevant for education
- d) None of the above

III. What do you understand by the term ‘Perennialism’, in the context of the given comprehension passage?

1

- a) It refers to something which is of ceaseless importance
- b) It refers to something which is quite unnecessary
- c) It refers to something which is abstract and theoretical
- d) It refers to something which existed in the past and no longer exists now

IV. Were Plato’s beliefs about education democratic?

1

- a) He believed that only the rich have the right to acquire education
- b) No.
- c) He believed that only a selected few are meant to attend schools
- d) He believed that all pupils are not talented

V. Why did Aquinas propose a model of education which did not lay much emphasis on facts? 1

- a) Facts are not important
- b) Facts do not lead to holistic education
- c) Facts change with the changing times
- d) Facts are frozen in time

VI. Write the synonym of the word “integrated” from the above passage. (Para 3)

2

VII. Write the antonym of the word “reluctant” from the above passage. (Para 6)

2

VIII. Answer the following questions.

1.5X2=3

- a. What were Montaigne’s thoughts on Education?
- b. What does Philosophy of Education imply?

SECTION B (WRITING AND GRAMMAR)

Q.2. You recently visited an old-age home in Dwarka, New Delhi. You are shocked to see the shabby condition in which the people have been kept. Write a letter to the Editor of a National Daily describing the poor condition of this charitable trust and attracting the attention of the concerned authorities.

8

Q. 3. Mobile phones have become an addiction among the young generation. Prepare a speech for the morning assembly alerting the students of your school on the same.

8

Q.4. Write a story in 150-200 words beginning with the following line.

10

‘The patient died in the ambulance. Rahul screamed out of the shock.’

Q.5. Edit the following passage. One word is omitted in each line. Write the omitted word along with the words which are before and after it.

1X4=4

Man does not live food alone.

Water is vital human health and fitness.

Unfortunately, it is not considered to be nutrient.

In reality, it is vital nutrient.

- a. _____
- b. _____
- c. _____
- d. _____

Q.6. Complete the following passage by choosing the most appropriate option from the ones given below.

1X8=8

There **(i)** _____ a survey **(ii)** _____ the popular forms of music and how the taste **(iii)** _____ music differs **(iv)** _____ age. About one hundred persons **(v)** _____ in three age groups **(vi)** _____ interviewed on their musical preferences. The survey found that **(vii)** _____ first great musical age is adolescence. **(viii)** _____ comes the early adulthood.

- | | | | | |
|---------------|--------------------|---------------------|--------------------|----------------------|
| (i) | a. has been | b. have been | c. had been | d. was |
| (ii) | a. for | b. about | c. on | d. in |
| (iii) | a. in | b. on | c. at | d. about |
| (iv) | a. in | b. on | c. at | d. with |
| (v) | a. each | b. every | c. all | d. some |
| (vi) | a. was | b. is | c. were | d. are |
| (vii) | a. this | b. the | c. for | d. that |
| (viii) | a. Next | b. After | c. Before | d. Thereafter |

Class-XI

Subject-English (Set-B)

Time-45 minutes

M.M.50

Section-A (Reading Comprehension)

Q.1. Read the following passage and answer the questions which follow. 12

Philosophy of Education is a label applied to the study of the purpose, process, nature and ideals of education. It can be considered a branch of both philosophy and education. Education can be defined as the teaching and learning of specific skills, and the imparting of knowledge, judgment and wisdom, and is something broader than the societal institution of education we often speak of.

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VIII. Answer the following questions. 1.5X2=3

- a. What were Montaigne's thoughts on Education?
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SECTION B (WRITING AND GRAMMAR)

Ques 2. You recently visited an orphanage home in Dwarka, New Delhi. You are shocked to see the shabby condition in which the children have been kept. Write a letter to the Editor of a National Daily describing the poor condition of this charitable trust and attracting the attention of the concerned authorities. 8

Ques 3. Internet and social networking have become addiction among the young generation. Prepare a speech for the morning assembly alerting the students of your school on the same. 8

Ques 4. Write a story in 150-200 words beginning with the following line.10
'I was rushing to catch the train. The porter was carrying my luggage.....'

Q.5. Edit the following passage. One word is omitted in each line. Write the omitted word along with the words which are before and after it. 1X4=4

- Man does not live food alone. a. _____
- Water is vital human health and fitness. b. _____
- Unfortunately, it is not considered to be nutrient. c. _____
- In reality, it is vital nutrient. d. _____

Q.6. Complete the following passage by choosing the most appropriate option from the ones given below.

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- | | | | | |
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BIRLA PUBLIC SCHOOL, PILANI
ENTRANCE EXAM
CLASS – 11th
SUBJECT – BIOLOGY
Set-2

Time – 45 Min. MM – 50

Note.- **Question no. 1 to 20 carry one mark each.**

Question no. 21 to 27 carry two marks each.

Question no. 28 to 29 carry three marks each.

Question no.30 carry ten marks.

Q1. The kidneys in human beings are a part of the system for-
(a)Excretion (b) Reproduction (c) Nutrition (d)Respiration

Q2. Which is the first enzyme to mix with food in the digestive system.
a Salivary amylase b. lipase c. pepsin d. trypsin

Q3. Which among the following has specialized tissue for conduction of water ?
[i] Thallophyta [ii]Bryophyta [iii] Pteridophyta [iv] Gymnosperm
a. [i]and[ii] b. [ii] and [iii] c. [iii] and [iv] d. [i]and[iv]

Q4- Which is the largest gland in human beings-
a-Thyroid b-Adrenal c-Liver d-Salivary.

Q5. Which part of central nervous system control reflexes?
a. spinal cord b brain hormone c none of these

Q6. Name the organism having the ability regeneration
a. Planeria b. Pinworm c. Earth worm d. Liver Flukes

Q.7.-Which of the following is not a animal hormone-
a- Cytokinin b- Insulin c- Thyroxine d- Lipase

Q-8.The Ovary contains-
a-Sepals (b)Petals (c)Pollen grains (d)Ovules

Q- 9-Covering of lungs is-
a-Pleura b- Pericardium c- Epiglottis d- Capsule

Q-10The opening and closing of stomatal pore depends upon
a-oxygen b-temperature c-water in guard cells d-mesophyll

Q-11- Iodine is necessary for the synthesis of which hormone?
a-Adrenaline b-Thyroxine c-Auxin d-Insulin

Q- 12-The rooted portion of a plant is called
a-stalk b-scion c-layer d-stock

Q-13-On germination each pollen grain produces-
a-one male gamete b-two male gamete c- three male gamete d- four male gamete

Q-14-Fertilization in flowering plants produces
a-Embryo b-Endosperm c-Nucellus d-both A and B

Q-15-Gametes are-
a-always haploid b-Always diploid c-always triploid d-none of the above

Q-16-Flow of energy in an ecosystem is always-
a-no specific direction b-multidirectional c-bidirectional d- unidirectional

Q-17-An IUCD device is
a-Copper T b-Condom c-Cervical cap d-Vasectomy

Q-18-Measurment of water pollution is made by –
a-Coliformcount b-BOD C-pH d-All the above

Q-19-Which part of alimentary canal receives pancreatic juice juice from the Pancreas-
a-Stomach b-Small intestine c-Large intestine d-Oesophagus

Q-20-Which of the following is a non biodegradable waste –
a-Cow dung b-Kitchen waste c-Plastic d-Mannure

Q-21-Name the main modes of reproduction

Q-22-What is the main product of an aerobic respiration?

Q-23-What is the role of villi of small intestine.

Q-24-Name any two part of female reproductive system ?

Q-25-Name any two endocrine glands.

Q-26-How many types of sex chromosomes in women?

Q-27-Write two surgical method for contraception?

Q-28-What are Analogus organs? How do they provide evidence in support of evolution?

Q-29-Give any four reasons for water pollution and Air pollution.

Q-30-What changes can you make in your habits to become more Environment friendly?

BIRLA PUBLIC SCHOOL, PILANI
ENTRANCE EXAM
CLASS – 11th
SUBJECT – BIOLOGY
Set 2

Time – 45 Min. MM – 50

Note.- **Question no. 1 to 20 carry one mark each.**

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Question no.30 carry ten marks.

1.Which among the following diseases is not sexually transmitted?

a-syphillis b-hepatitis c-HIV-AIDS d-gonorrhoea.

2 When water enters the guard cells the stomata

a) Opens

b) Closes

c) Open or closes

d) No effect

19. The UV radiation from the sun is likely to cause in human

- a) Skin cancer
- b) Lung cancer
- c) Liver Cancer
- d) Brain Cancer

20. Chipko Andolan is associated with

- a) Protesting against pasting of posters on walls
- b) Saving money
- c) Using more postal stamps
- d) Saving forest

21. What is parturition?

22. How many chromosome are present in sperm?

23. Name the hormones secreted by the ovary.

24. Mention the function of cerebellum.

25. Why tissue culture is also called micro-propagation?

26. Which tissue is responsible for transportation of water in plants?

27. Name any two biodegradable pollutants.

28. What are the products formed in anaerobic respiration in yeast?

29. How is sexual reproduction different from asexual.

30. What is meant by global warming? what are the harmful effects of it? how can be reduce global warming.

Q- 12-The grafted portion of a plant is called

- a-stalk b-stock c-layer d-scion

Q-13-On germination each pollen grain produces-

- a-one male gamete b-two male gamete c- three male gamete d- four male gamete

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Q-24-Name any two plant hormones?

Q-25-Name any two endocrine glands.

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Q-27-Write two surgical method for contraception?

Q-28-What are Homologous organs? How do they provide evidence in support of evolution?

Q-29-Give any four reasons for STDs.

Q-30-What changes can you make in your habits to become more eco friendly?

BIRLA PUBLIC SCHOOL, PILANI
ENTRANCE EXAM
CLASS – 11th
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Set 2

MM – 50

Time – 45 Min.

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a-syphillis b-hepatitis c-HIV-AIDS d-gonorrhoea.

2 When water enters the guard cells the stomata

- a) Opens
b) Closes
c) Open or closes
d) No effect

3 On seeing good food our mouth waters. This fluid is actually

- a) Water
b) Hormone
c) Enzyme
d) None of the above

4. Gustatory receptors will detect

- a) light
b) Taste
c) Smell
d) Touch

5. Man is

a-Unisexual b-Bisexual c-Hermaphrodite d-None of these.

6. Involuntary actions including blood pressure, salivation and vomiting are controlled by.

- a) Medals
b) Cerebellum
c) Medulla
d) Cerebrum

7. An animal which can reproduce by budding is

- a) Bryophyllym
b) Yeast
c) Hydra
d) All of the above

8. Male reproductive organ in flowering plant is

- a) Carpel
b) Stamen
c) Corolla
d) Ovary

9. A fertilized ovule develops into a _____ in an angiosperm plant

- a) seed
b) fruit
c) flower
d) cotyledon

10. Where are sperms formed in the human body?

- a) Vas deferens
b) Prostate gland
c) Ovary
d) Testis

11 The place where fertilization take place in the human body is

- a) Uterus
b) Oviduct
c) Ovary
d) vagina

12. The F₂ phenotype ratio of a monohybrid cross studied by Mendel is

- a) 1:1
b) 2:1
c) 3:1
d) 4:1

13. If T is for tallness and t for dwarfness, what shall be the genotype of a tall pea plant according to Mendelism?

- a) TT
b) Tt
c) Either TT or Tt
d) tt

14. A Yellow and Round seeded pea plant has genotype YyRr. The gametes produced shall be

- a) Yy, Rr
b) YR, yR, Yr, yr
c) YR, yr
d) Y, y, R, r

15. If in human a sperm (22+Y) fertilizes an egg (22+X), the sex of the foetus shall be

- a) Male
b) Female
c) Either male or Female
d) None

MANAGEMENT APTITUDE TEST
CLASS-XI

Time: 45 Minutes

MM: 50

1 MARK QUESTIONS

1. Per capita income refers to :-
 - A. Whole income
 - B. Average income
 - C. National Income
 - D. None of these

2. In HDI the letter “D” stands for:-
 - A. Development
 - B. Decision
 - C. Delimitation
 - D. Develop

3. Sustainable development takes care of the present and -----
 - A. Society
 - B. Past
 - C. Future
 - D. Community

4. National Income refers to :-
 - A. Sum of all the factor incomes
 - B. Wages
 - C. Interest
 - D. Rent

5. Who is the commerce minister of India?
A) Nirmala Sitaraman B) Piyush Goel C) Nitin Gadkari D) Rajnath Singh

6. Economic Growth plus Change means:-
 - A. Economic Development
 - B. Sustainable Development
 - C. National Income
 - D. None of these

7. Biscuits for the consumer in the market is a-----
 - A. Intermediate good
 - B. Final good
 - C. Good
 - D. Services

8. Which sector provides Insurance services?
 - A. Primary
 - B. Secondary
 - C. Tertiary
 - D. All of them

9. RBI stands for -----?
- A. Rajasthan Bank Of India
 - B. Rural Bank Of India
 - C. Royal Bank Of India
 - D. Reserve Bank Of India
10. ICICI is which kind of bank.
- A. Public sector bank
 - B. Private sector bank
 - C. Joint sector bank
 - D. None of them
11. India is considered to be
- A. Capitalist economy
 - B. Socialist economy
 - C. Mixed economy
 - D. None of them
12. Collateral is an asset that the borrower owns such as land,building,vehicle, live stocks and
- A. Deposits with banks
 - B. Money
 - C. Gold
 - D. Bank
13. Who is the CEO of Amazon.
- A. Jack ma
 - B. Kim long
 - C. Jeff Bezos
 - D. Bill Gates
14. Who is the present governer of RBI.
- A. Urjit Patel
 - B. Raghuram Rajan
 - C. Shaktikant Das
 - D. Arvind Sbhramaniam
15. GST Stand for
- A. Goods and Supply Tax
 - B. Government Sales Tax
 - C. Goods and Service Tax
 - D. General Sales Tax
16. The planning commission has been replaced by
- A. Niti Aayog.
 - B. Infrastructure commission.
 - C. Law Commission.
 - D. Finance Commission

17. Who is the richest person in the world as per Forbes list 2019?
- A. Warren Buffett.
 - B. Bill Gates.
 - C. Mukesh Ambani
 - D. Jeff Bezos
18. Removing barriers or restrictions set by the government is known as.....
- A. Liberalisation
 - B. Privatisation
 - C. Globalisation
 - D. None
19. In a self help group, most of the decisions regarding saving & loan activities are taken by:-
- A. Banks
 - B. Group members
 - C. Ngo's
 - D. Government
20. Banks normally use major portions of their deposits for:-
- A. Setting up new branches
 - B. Paying interest on loans
 - C. Paying taxes
 - D. Extending loans
21. A company that owns or controls production in more than one nation is called:-
- A. MNC
 - B. Joint stock Co.
 - C. Global Co.
 - D. None of these.
22. Right to choose, Right to seek redressal, ,Right to represent and Right to be informed are
- A. Consumer rights
 - B. Fundamental rights
 - C. Fundamental duties
 - D. None of these
23. WTO stands for:-
- A. world trade organization
 - B. world trade outsourcing
 - C. world terminal organization
 - D. world tourist organization
24. . SEZs stand for.....
- A. Special Electricity Zones
 - B. Southern Electricity Zones
 - C. Special Economic Zones
 - D. None of them

25. By selling an article for Rs. 7.50 a retailer gain $12\frac{1}{2}\%$. What is the cost price of the article?
 A. Rs. 8
 B. Rs. 10
 C. Rs. 3.33
 D. Rs. 6.67

2 MARKS QUESTIONS

26. A mobile dealer sells two mobiles for Rs. 15000 each, one at a gain of 20% and another at a loss of 20%. Find out the percentage of profit or Loss of his total sales.
 (a) 10% Profit (b) 4% Loss (c) 4% Profit (d) No loss no Profit
27. If the cost price of a product is Rs. 50 and selling price is Rs. 60. Find out the percentage of profit.
 (a) 35% (b) 30% (c) 25% (d) 20%
28. Buying an article for Rs. 80, a man sells it at 30% profit. Find out selling price.
 (a) Rs. 90 (b) Rs.104 (c) Rs. 96 (d) Rs. 106
29. A Book seller purchased a Accountancy book for Rs. 500 and sold at a Loss of 5%. Find Out the selling price.
 (a) Rs. 280 (b) Rs. 475 (c) Rs. 270 (d) Rs. 170
30. By selling 150 mangoes a fruit seller gains the selling price of 30 mangoes. Find his gain Percentage.
 (a) 35% (b) 30% (c) 25% (d) 15%
31. A retailer makes a profit of 10%, if his selling price is 550, Find the cost price.
 (a) Rs. 500 (b) Rs. 500 (c) Rs. 300 (d) Rs. 400
32. For $\frac{3}{4}$ share of profit, a businessman is required to invest Rs. 30,000. For $\frac{1}{4}$ share of profit how much a businessman will invest?
 (a) Rs. 20000 (b) Rs. 30000 (c) Rs. 10000 (d) Rs. 21000
33. A, B and C are partners, sharing profit in the ratio of $\frac{1}{2} : \frac{1}{3} : \frac{1}{6}$. The profit of the firm was Rs18000. Find out the exact ratio between them for sharing profit.
 (a) 3:2:2 (b) 3:2:1 (c) 2:3:1 (d) 1:3:2

3 MARKS QUESTIONS

34. What is the cost of 1 Kilogram of each of the following vegetables?
 (I) 500 Grams of Tomato Rs. 25 -----
 (ii) 350 Grams of peas Rs. 14 -----
 (iii) 250 Grams of Onion Rs. 8 -----
35. The cost of 1 kg of each of the fruits is given.
 (a) Orange Rs. 75 (b) Apples Rs. 120 (c) Mango Rs. 80
- (i) If you will purchase 200 gm of Orange, what amount you will pay for it? -----

(ii) What will 250 gm cost of Apples? -----

--

(iii) What will 300 gm cost of Mangoes? -----

--

36. Find out

25% of 1200 = -----

04% of 150000 = -----

65% of 9000 = -----

CLASS : XI
SUBJECT: MATHEMATICS

Time: 45 Minutes

M.M

50

GENERAL INSTRUCTIONS:

1. Attempt all the questions
 2. The question paper consists of 17 questions divided into 3 sections A,B and C
 3. Questions 1-5 in Section A carry 1 mark each.
 4. Questions 6-10 in Section B carry 2 marks each.
 5. Questions 11-17 in Section C carry 5 marks each
-

SECTION A

Q.1 to Q 5 are multiple choice questions. Select the most appropriate answers from the given option.

1. The least number that is divisible by all-natural numbers from 1 to 10(both inclusive) is:
(a) 10 (b) 100 (c) 504 (d) 2520
2. The zeros of the quadratic polynomial $x^2 + kx + k$, $k \neq 0$:
(a) cannot both be positive (b) cannot both be negative (c) are always unequal
(d) are always equal
3. The pair of the equations $y = 0$ and $y = 7$ has :
(a) one solution (b) two solutions
(c) infinitely many solutions (d) no solution
4. If $\frac{1}{2}$ is a root of the equation $x^2 + kx - \frac{5}{4} = 0$, then the value of k is :
(a) 2 (b) -2
(c) $\frac{1}{4}$ (d) $\frac{1}{2}$
5. $\sin (45^\circ + \Theta) - \cos(45^\circ - \Theta)$ is equal to :
(a) $2 \cos \Theta$ (b) 0
(c) $2 \sin \Theta$ (d) 1

SECTION-B

6. For what value of p, are the points (-3, 9) , (2, p) and (4, -5) collinear?
7. Find the 15th term from the end in the AP : 8, 13, 18,, 153
8. If $\tan(A - B) = \sqrt{3}$ and $\sin A = 1$, then find A and B.
9. Which term of an AP 5, 2, -1, will be - 52 ?
10. A ladder 15m long just reaches the top of vertical wall. If the ladder makes an angle 60° with the wall, find the height of the wall.

SECTION-C

11. If sum of squares of zeros of the polynomial $f(x) = x^2 - 8x + k$ is 40, find the value of k .
12. Solve the equations: $\frac{1}{2x} - \frac{1}{y} = -1$
 $\frac{1}{x} + \frac{1}{2y} = 8$ where $x \neq 0, y \neq 0$
13. Find the value of k for which the equation $x^2 - 2(k+1)x + k^2 = 0$ has real and equal roots.
14. M is the mid-point of the side CD of a $\parallel\text{gm}$ $ABCD$. The line BM is drawn intersecting AC at L and AD produced at E . Prove that $EL=2BL$.
15. Find the point on y -axis which is equidistant from the points $(5, -2)$ and $(-3, 2)$
16. Two poles of equal heights are standing opposite to each other on either side of the road, which is 80 m wide. From a point between them on the road, the angle of elevation of the top of the poles are 60° and 30° respectively. Find the height of the poles and the distances of the point from the poles.
17. Students of a class are made to stand in rows. If one student is extra in a row, there would be 2 rows less. If one student is less in a row there would be 3 rows more. Find the number of the students in the class.

MATHEMATICS

CLASS- XI

TIME: 45 MIN.

M.M. 50

NOTE: All questions are compulsory. In section A each question contains 1 mark. In section B each question contains 2 marks. In section C each question contains 5 marks.

SECTION – A

- The largest number of four digits divided by 85 is
(a) 9935 (b) 9965 (c) 9954 (d) 9945
- The pair of equations $2x + 7y = 14$ and $5x + \frac{35}{2}y = 25$ have
(a) One solution (b) two solution (c) infinite many solution (d) no solution
- If $\sin x = \cos x$, then the value of $\sin^2x + \tan^2x$ is
(a) $\frac{1}{2}$ (b) 1 (c) $\frac{3}{2}$ (d) 2
- The sum of first 10 whole numbers is -----.
- A point of the form (a,0) lies on -----.

SECTION – B

- Prove that $\sqrt{5}$ is an irrational number by contradiction method.
- Find the point on y -axis which is equidistant from the points (5,-2) and (-3,2) .
- If ratio of area of triangle ABC and triangle PQR is 22: 36 then find AB: PQ.
- If one root of the equation $(k-1)x^2 -10x +3 = 0$ is the reciprocal of other, then the value of k is -----.
- Fill the two blanks in the sequence 2, -----, 26, ----- so that the sequence forms an A.P.

SECTION- C

- Obtain all the zeroes of the polynomial $x^4 + 4x^3 - 2x^2 -20x -15$, if two of its zeroes are $\sqrt{5}$ and $-\sqrt{5}$.
- A train covers a distance of 360 Km. at a uniform speed. Had the speed been 5 Km. / hr more, it would have taken 48 minutes less for the journey. Find the speed of the train.
- State and prove Basic Proportionality theorem.
- If $\sin x + \cos x = \sqrt{3}$, then prove that $\tan x + \cot x = 1$.
- Solve the following system of equation:
 $\frac{21}{x} + \frac{47}{y} = 110$, $\frac{47}{x} + \frac{21}{y} = 162$, $x, y \neq 0$
- The shadow of a tower standing on the level ground is found to be 60 m longer when the sun's altitude is 30° than when it was 45° . Find the length of the tower.
- Check whether A(1,2) , B(5,4) C(3,8) and D(-1,6) are the vertices of square or not.

OR

If sum of p terms of an A.P. is equal to sum of q terms. Find the sum of its p + q terms.