This Question Paper contains 8 Printed Pages.

S.S. March 11

N-10 (E)

(MARCH, 2011)

Set No. Of Question Paper	
0	8

PART - A

Time : 75 minutes] ***[Maximum Marks : 50***

Instructions :

(1) There are **50** objective type questions in this part and **all** are **compulsory**.

(2) The questions are serially numbered from **1** to **50** and each carries **1** mark.

(3) You are supplied with separate OMR sheet with the alternatives (A) ○, (B)○, (C) ○, (D) ○ against each question number. For each question, select the correct alternative and darken the circle ○ as ● completely with the pen against the alphabet corresponding to that alternative in the given OMR sheet.

- From the following **1** to **50** questions, select the correct alternative from the given four answers and darken the circle with pen against the alphabet, against the number in OMR sheet.
- Each question carries **1** mark.

1. In which state are the sacred groves 'Saranas' and 'Jaheras' of community ownership ?

(A) Jharkhand (B) Bihar
(C) Orissa (D) Uttar Pradesh

2. Science means .....

(A) Organised knowledge (B) Special knowledge
(C) Wealthy knowledge (D) Practical knowledge

3. What benefit is obtained by a state through tourism industry ?

(A) Political (B) Cultural
(C) Economical (D) Social

4. Which sculpture from the point of view of art has international significance ?

(A) Brahma (B) Natraj
(C) Ganapati (D) Vishnu

5 Who is considered to be the father of Mathematics ?

(A) Charak (B) Brahmagupt
(C) Aryabhatt (D) Bhaskaracharya

6. In which year did the Indian Government implement "Women Empowerment Policy" ?
   (A) 1990 (B) 2001
   (C) 1992 (D) 2002

7. What is the proportion of a doctor for one lakh people in India ?
   (A) 61 (B) 25
   (C) 51 (D) 15

8. Which of the following states of India does not face the problem of insurgency ?
   (A) Assam (B) Chattisgarh
   (C) Nagaland (D) Gujarat

9. What does Regolith have ?
   (A) Clay particles (B) Minerals
   (C) Gravels (D) Sand

10. Which part has been declared 'National Marine Park' ?
    (A) Gulf of Mannar (B) Gulf of Khambhat
    (C) Gulf of Kachcha (D) Bay of Bengal

11. With what are the trees compared in Vikramacharit ?
    (A) King (B) Saint
    (C) Deity (D) God

12. From which of the tree can baskets, paper and rayon be made ?
    (A) Ebony (B) Deodar
    (C) Bamboo (D) Teak

13. Which of the following is a major fruit of Himachal Pradesh and Jammu Kashmir ?
    (A) Apple (B) Banana
    (C) Grapes (D) Orange

14. What is the major source of water resources on Earth ?
    (A) Canals (B) Rain
    (C) Ponds (D) Wells

15. Which of the following Science is the most ancient ?
(A) Astronomy (B) Medicine and Surgery
(C) Vastu-shastra (D) Mathematics

16. Who composed the volume 'Lilawati Ganit' ?
(A) Vagabhatt (B) Aryabhatta
(C) Boddhayan (D) Bhaskaracharya

17. Between which city of India and Mumbai, was the first Rail route started ?
(A) Bandra (B) Thane
(C) Pune (D) Kalyan

18. What percentage of population in a developing country are poor ?
(A) 20 (B) 40
(C) 30 (D) 50

19. What type of necessity is food, cloth and shelter known as ?
(A) Pleasure (B) Comfort
(C) Primary (D) Efficiency

20. When did the age of economic reforms in India begin ?
(A) 1991 (B) 2001
(C) 1951 (D) 1981

21. What should be used as a fuel to check pollution ?
(A) Diesel (B) Kerosene
(C) Petrol (D) C.N.G.

22. How many are the centres of I.T. I. in India ?
(A) 720 (B) 890
(C) 4300 (D) 4600

23. Which institute undertakes the work of registering the unemployed ?
(A) Mamlatdar office (B) Employment Exchange office
(C) District Panchayat office (D) Collector office

24. Which of the following is the least corrupt country in Asia ?
(A) Singapore (B) England
(C) America (D) India

25. How can it be said that the Indian people are the lovers of nature ? Because of their love for .....
(A) Country (B) Trees
(C) Festival (D) Family

26. Which tribe is the most ancient inhabitants of India ?
(A) Dravidians (B) Armenoid
(C) Negrito (D) Australoid

27. For which country are the words 'Sujalam' and 'Sufalam' used ?
(A) China (B) Greece
(C) Myanmar (D) India

28. Which of the following things are included in natural heritage ?
(A) Stupas and Chaityas (B) Temples, Mosques
(C) Rivers, Trees (D) Palaces, Forts

29. Which of the following is an important centre for Agate trade in Gujarat ?
(A) Khambhat (B) Ahmedabad
(C) Surat (D) Deesa

30. What was the width of the roads in Mohenjo-Daro ?
(A) 12 metres (B) 8.40 metres
(C) 9.75 metres (D) 8 metres

31. In which cave is the grand idol of 'Trimurti' established ?
(A) Ellora (B) Elephanta
(C) Ajanta (D) Mahabalipuram

32. The famous book by the poet Thiruvalluvar is .....
(A) Manimekalai (B) Shilappadikaram
(C) Kural (D) Tolkappiyam

33. Which of the following is a major source of irrigation in eastern and southern states of India ?
(A) Ponds (B) Rain
(C) Tube-wells (D) Canals

34. On which river is the Hirakud multipurpose project situated ?
(A) Chambal (B) Krishna
(C) Maha (D) Godavari

35. By what other name is the modern age known as ?
(A) 'Satyayug' (B) Atomic age
(C) 'Kaliyug' (D) Mineral age

36. In the production of which mineral does India rank first in the World ?
(A) Copper (B) Iron
(C) Mica (D) Aluminium

37. In which city are the vehicles which run on Solar battery used ?
(A) Delhi (B) Chennai
(C) Kolkata (D) Mumbai

38. What is obtained from the slurry of Bio-gas ?
(A) Stone (B) Fertiliser
(C) Plastic (D) Clay

39. At which place is the Thermal Power Station established along with Hydro electricity ?
(A) Dhuvaran (B) Utran
(C) Ukai (D) Sabarmati

40. In which state is the largest cluster (Guchch) of wind-farm of India located ?
(A) Tamil Nadu (B) Gujarat
(C) Karnataka (D) Maharashtra

41. What type of industry is Iron and Steel industry ?
(A) Government (B) Agro-based
(C) Heavy (D) Small-scale

42. Museum exhibiting which of our heritage is at New Delhi ?
(A) Railways (B) Industry
(C) Astronomy (D) Science

43. In which state is the Sun Temple of Konark situated ?
(A) Orissa (B) Andhra Pradesh
(C) Jharkhand (D) Chattisgarh

44. Which department has been entrusted the responsibility of conserving the national monuments ?
(A) Finance (B) Education
(C) Archaeology (D) Land conservation

45. What remains pollution free because of the planning of resources ?
(A) Climate (B) Minerals
(C) Forests (D) Environment

46. What type of resources are the minerals ?
(A) Regolith (B) Non-renewable
(C) Man-made (D) Renewable

47. The main aim of the revolutionaries was .....
(A) To make India independent. (B) Not against the British rule.
(C) Religious fundamentalism. (D) Against the British rule.

48. Which of the following is main characteristics for being a citizen ?
(A) Property (B) Rights
(C) Duties (D) Literacy

49. Which of the following is the cheapest source of labour ?
(A) Elderly people (B) Male
(C) Children (D) Women

50. When did the Government establish "Central Anti-corruption Bureau" ?
(A) 1981 (B) 1964
(C) 1999 (D) 1951

N-10 (E)

(MARCH, 2011)

PART - B

Time : 2 Hours] ***[Maximum Marks : 50***

Instructions :-

(1) There are **four** sections in this part of the question paper and total 1 to 18 questions are there.
(2) **All** the questions are **compulsory**. Internal options are given.
(3) Question No. 18 is Map-filling. Separate questions are given for **Blind Students.**
(4) Start new section from new page.

SECTION - A

*The following questions from **1** to **5** carry equal marks. Each question carries **2** marks. Answer as per instruction.*

1. How can it be said that our country is rich in terms of art ? **2**

2. Give details about Bead-work and Enamel work. **2**

OR

2. Taj Mahal is one among the seven wonders of the World. Why ?

3. It is our fundamental duty to protect the Wildlife. Explain why ? **2**

4. What is meant by environmental degradation ? **2**

5. Black money is a factor responsible for price rise. Why ? **2**

SECTION - B

*The following questions from **6** to **10** carry **2** marks each. Answer as per instruction.*

6. Mention the characteristics of market mechanism system. **2**

7. Mention the objectives of W.T.O. **2**

8. Mention the factors which are important for human development. **2**

9. Unity in diversity is seen in India. Explain why ? **2**

10. What is meant by anti-social activities ? **2**

OR

10. Explain the term 'Corruption'.

SECTION - C

*The following questions from **11** to **15** carry **3** marks each.*
Answer as per instruction.

11. Give introduction of architecture in Gujarat. **3**

12. Explain Hampi. **3**

13. Explain the importance of Electronics industry. **3**

OR

13. What do you know about industrial pollution ?

14. Illiteracy is the root cause for poverty. Explain. **3**

15. What is meant by consumer exploitation ? Mention the rights of the consumer. **3**

SECTION - D

*The following questions from **16** to **18** carry **5** marks each.*
Answer as per instruction.

16. Give introduction of Indian languages. **5**

OR

16. Give introduction of the Ramayana and the Mahabharata as epics.

17. Why has there not enough development in the field of agriculture in India ? Mention the agricultural products of India. **5**

18. In the outline map of India given to you, show the following details with proper signs or symbols, at their correct locations : **5**

(1) One region producing groundnut.
(2) One area with more than 60.01% irrigation facility.
(3) One region producing Lead.
(4) One centre of Woollen industry.
(5) Golden Quadrilateral road.

Only for Blind candidates :

18. *Answer the following questions instead of **Map** filling.*

(1) Give name of one region producing groundnut.
(2) Mention the name of one state with more than 60.01% irrigation facility.
(3) Give name of one region producing Lead.
(4) Give name of one region of Woollen textile industry.
(5) Which cities are connected by the Golden Quadrilateral road ?

This Question Paper contains 8 Printed Pages.

Science & Tech

N-11 (E)

(MARCH, 2011)

Set No. Of Question Paper	
0	9

PART - A

Time : 75 minutes] ***[Maximum Marks : 50***

Instructions :

(1) There are **50** objective type questions in this part and **all** are **compulsory**.
(2) The questions are serially numbered from **1** to **50** and each carries **1** mark.
(3) You are supplied with separate OMR sheet with the alternatives (A) ○, (B)○, (C) ○, (D) ○ against each question number. For each question, select the correct alternative and darken the circle ○ as ● completely with the pen against the alphabet corresponding to that alternative in the given OMR sheet.

- From the following **1** to **50** questions, select the correct alternative from the given four answers and darken the circle with pen against the alphabet, against the number in OMR sheet.
- Each question carries **1** mark.

1. In angiospermic plants, what structures are present for the transport of Water ?
(A) Tracheid (B) Trachea
(C) Sieve tube (D) Companion cell

2. What is the excretion structure in Amoeba ?
(A) Contractile Vacuole (B) Flame Cells
(C) Nephridia (D) Osculum

3. Which of the following tropism is responsible for the germination of pollen grains and the development of pollen tubes ?
(A) Chemotropism (B) Thigmotropism
(C) Phototropism (D) Hydrotropism

4. Which of the following mode of nutrition does a Rat have ?
(A) Herbivorous (B) Carnivorous
(C) Omnivorous (D) Grazing

5. Where are the antigens for the blood group located ?
(A) Lymphocyte (B) W.B.C.
(C) Blood Platelets (D) R.B.C.

6. Which of the following Rockets is not a Space-Shuttle ?
   (A) Columbia (B) Challenger
   (C) Polar Satellite Launch Vehicle (D) Discovery

7. What is the unit of the rate of reaction ?
   (A) Molar (B) Second
   (C) Molar / Second (D) Second / Molar

8. What is the pH of pure water at 25°C temperature ?
   (A) 14 (B) 7
   (C) 10 (D) 1

9. What is the chemical formula of Borax ?
   (A) $Na_2B_4O_7 \cdot 10H_2O$ (B) $Na_2CO_3 \cdot H_2O$
   (C) $Na_2CO_3 \cdot 10H_2O$ (D) $Na_2B_4O_7 \cdot 7H_2O$

10. What kind of current is obtained from a Battery ?
    (A) DC current (B) AC current
    (C) AC and DC both (D) Depends on the type of battery

11. How many small mirrors are used in the Solar furnace installed at Mount Louis in France ?
    (A) 4500 (B) 3500
    (C) 3000 (D) 2500

12. Which of the following is the best quality Coal ?
    (A) Lignite (B) Bitumen
    (C) Anthracite (D) Peat

13. How many satellites does the planet Mercury has ?
    (A) 30 (B) 21
    (C) 8 (D) 0

14. Which planet is totally made up of Hydrogen ?
    (A) Mars (B) Venus
    (C) Saturn (D) Pluto

15. In the dispersion of light through a prism, which coloured ray deviates the most ?
(A) Red (B) Yellow
(C) Blue (D) Violet

16. Which of the following lens is used by the person having Far-sighted defect ?
(A) Convex lens (B) Concave lens
(C) Cylindrical lens (D) Bi-focal lens

17. In an Astronomical Telescope, what is the focal length of objective as compared to the focal length of its eye-piece ?
(A) Large (longer) (B) Shorter
(C) Equal (D) Infinity

18. Which of the following scientists discovered the Phonograph ?
(A) Michael Faraday (B) Thomas Alva Edison
(C) Einstein (D) Humphry Davy

19. State the value of one unit of electricity used for household purpose (domestic use).
(A) 1 Joule (B) 1 Watt second
(C) 3.6×10^6 Joule (D) 3.6×10^6 kWh

20. Which of the following shows Ohm's law ?
(A) $R = \frac{I}{V}$ (B) $I = \frac{R}{V}$
(C) $V = IR$ (D) $R = \frac{P}{I^2}$

21. Which instrument is used to determine the presence of electric current ?
(A) Electric Generator (B) Galvanometer
(C) Fuse (D) Voltmeter

22. What is the colour of the wire used for Earthing ?
(A) Red (B) Black
(C) Green (D) Yellow

23. Which of the following satellite gives information regarding the life in Oceans and the environment around it ?
(A) INSAT - 4A (B) METSAT
(C) RESOURCESAT (D) EDUSAT

24. Which of the following alloys is used in making Currency coins ?
(A) Brass (B) Steel
(C) Solder (D) Magnalium

25. Which chemical is obtained, when Carbon-dioxide is dissolved in Water ?
(A) Carbonic acid (B) Carboxylic acid
(C) Carbon-di-sulphide (D) Acetic acid

26. Which gas has a pungent smell and irritates the eyes and nose ?
(A) Carbon-monoxide (B) Ammonia
(C) Nitrogen (D) Carbon-dioxide

27. What is the shape of monoclinic Sulphur ?
(A) Triangular pyramid (B) Needle shaped
(C) Quadrangular (D) Octahedral

28. Which enzyme converts milk into curd ?
(A) Lactase (B) Invertase
(C) Zymase (D) Cellulose

29. What is used in Endoscope ?
(A) Photochromic Glass (B) Optical Glass
(C) Pyrex Glass (D) Optical Fibres

30. What percentage of Gypsum is added in the preparation of Cement ?
(A) 2% to 5% (B) 0.2% to 1.5%
(C) 6% to 8% (D) 8% to 10%

31. From which kind of Steel is the permanent magnet prepared ?
(A) Silica steel (B) Stainless steel
(C) Cobalt steel (D) Manganese steel

32. Which reaction takes place at positive electrode (anode) during Electrolysis process ?
(A) Oxidation (B) Reduction
(C) Oxidation-Reduction (D) Equilibrium

33. Which of the following metals exists in liquid state ?
(A) Aluminium (B) Gallium
(C) Potassium (D) Radium

34. Which of the following is a growth hormone in plants ?
(A) Auxin (B) Ethylene
(C) Abscisic acid (D) Auxitocin

35. Which pigment is responsible for the Photoperiodic stimulus in plants ?
(A) Phytochrome (B) Chloroplast
(C) Carotene (D) Cytochrome

36. How many pairs of Spinal nerves arise from the human Spinal Cord ?
(A) 11 (B) 21
(C) 23 (D) 31

37. Which disease is caused by the bacteria named *Treponema pallidum* ?
(A) AIDS (B) Gonorrhoea
(C) Syphilis (D) Hepatitis

38. Which of the following protects the embryo during its development ?
(A) Amnion (B) Liver
(C) Umbilical cord (D) Uterus

39. The plant in which grafting is done, is called .....
(A) Scion (B) Root
(C) Stock (D) Root-tip

40. What is the period from the development of foetus till the birth, alled ?
(A) Gestation (B) Embryonic development
(C) Lactation (D) Fertilisation

41. What is the helical length of each DNA molecule ?
(A) 10 A° (B) 20 A°
(C) 3.4 A° (D) 34 A°

42. What is the continuity of features from one generation to another called ?
(A) Variation (B) Evolution
(C) Heredity (D) Migration

43. In which of the following does the embryo become male animal at higher temperature ?
(A) Tortoise (B) Lizard
(C) Grasshopper (D) Rabbit

44. Which gas in the atmosphere is responsible for Acid-rain ?
(A) Nitrous oxide (B) Carbon-monoxide
(C) Sulphur-dioxide (D) Methane

45. By which method is the particulate pollutants controlled ?
(A) Combustion (B) Absorption
(C) Electrostatic precipitator (D) Sedimentation

46. What is the IUPAC name of Acetic acid ?
(A) Methanoic acid (B) Ethanoic acid
(C) Propanoic acid (D) Butanoic acid

47. What is the reaction between Carboxylic acid and Ethanol in the presence of H_2SO_4 known as ?
(A) Saponification (B) Esterification
(C) Polymerisation (D) Dissociation of water

48. Which functional group is connected to Hydrocarbon in Soap ?
(A) $-COONa$ (B) $-CONH_2$
(C) $-COOH$ (D) $-SO_3Na$

49. The magnitude of a Quantum dot is .....
(A) 10 A° (B) 100 A°
(C) 5 nm (D) 50 nm

50. What is the angle of incidence called when the angle of refraction is 90° ?
(A) Angle of Refraction (B) Angle of Deviation
(C) Critical Angle (D) Angle of Incidence

N-11 (E)

(MARCH, 2011)

PART - B

Time : 2.00 Hours] ***[Maximum Marks : 50***

Instructions :-

(i) There are total four sections in this part.

(ii) **All** questions are **compulsory.**

(iii) Draw neat labelled diagram as per instructions.

(iv) There are internal options in some questions. Pay attention to them.

(v) Figures to the right indicate marks.

SECTION - A

Questions from 1 to 5 are Short answer type questions. Write answer to each using maximum 30 words. Each question carries 2 marks.

1. State the benefits of Nano technology to mankind. **2**

2. Write short notes on Bio-gas. **2**

3. What do you understand by Fossil Fuel ? Name some fossil fuels. **2**

OR

3. Name the Atomic energy research centre in India. State the places in India, where the Nuclear Power plants are situated.

4. State the characteristics of Terrestrial Planets. **2**

5. 49 gm of H_2SO_4 is dissolved in 5 litres solvent. Find the Molarity of the solution. (Molecular weight of H_2SO_4 is 98 gm/mole) **2**

OR

5. What do you understand by Forward and Reverse reaction ? Explain.

SECTION - B

Questions from 6 to 10 are Short answer type questions. Use maximum 30 words to answer them. Each question carries 2 marks.

6. State the criteria for Chemical Equilibrium. **2**

7. State the uses of Bleaching Powder.

8. Write the preparation of Methanal. (Formaldehyde - HCHO) **2**

OR

8. Explain the industrial preparation of Propanone.

9. Explain the Reflex Arc. **2**

10. Name the environmental problems. **2**

SECTION - C

*Questions from **11** to **15** are Short answer type questions. Use maximum 50 words to answer them. Each question carries **3** marks.*

11. Describe the construction of Voltaic cell with a neat diagram. **3**

OR

11. Explain Electrolysis. Write Faraday's laws of Electrolysis.

12. Discuss in detail the precautions to be taken while using electricity. What is the work of Fuse ? **3**

13. Describe in short, Frasch method to obtain Sulphur. **3**

OR

13. Write the uses of Non-metals.

14. Explain the phenomenon of Blood-clotting. **3**

15. Explain how vestigeal organs support the theory of Evolution. **3**

SECTION - D

*Questions from **16** to **18** are to be answered in detail using nearly 100 words. Each question carries **5** marks.*

16. Describe the Refraction of light through a rectangular glass slab. Explain the Lateral Shift. **5**

17. Describe Hall-Heroult method to get pure Aluminium from Alumina. (Diagram necessary) **5**

OR

17. State the different stages of Metallurgy and give information about each in short.

18. Describe the "Light Phase" of Photosynthesis process. **5**

OR

18. Describe the human respiratory system in detail.

This Question Paper contains 12 Printed Pages.

Maths

N-12(E)

(MARCH, 2011)

Set No. Of Question Paper	
0	8

PART - A

Time : 75 minutes] ***[Maximum Marks : 50***

Instructions :

(1) There are **50** objective type questions in this part and **all** are **compulsory.**

(2) The questions are serially numbered from **1** to **50** and each carries **1** mark.

(3) You are supplied with separate OMR sheet with the alternatives (A) ○, (B) ○, (C) ○, (D) ○ against each question number. For each question, select the correct alternative and darken the circle ○ as ● completely with the pen against the alphabet corresponding to that alternative in the given OMR sheet.

- From the following **1** to **50** questions, select the correct alternative from the given four answers and darken the circle with pen against the alphabet, against the number in OMR sheet.
- Each question carries **1** mark.

[Space for Rough Work]

1. The centroid of a triangle with vertices A(3, 2), B(7, 5) and C(2, 2) is .....

(A) (3, 4) (B) (4, 3)

(C) $\left(\frac{7}{2}, \frac{5}{2}\right)$ (D) $\left(6, \frac{9}{2}\right)$

2. For A(4, 3) and B(8, 9); the mid point of $\overline{AB}$ = ...

(A) $\left(2, \frac{3}{2}\right)$ (B) $\left(4, \frac{9}{2}\right)$

(C) (6, 6) (D) (2, 3)

3. The distance between origin and point (x, y) is .....

(A) x (B) y

(C) $x + y$ (D) $\sqrt{x^2 + y^2}$

[Space for Rough Work]

4. $\sin^2 60° - \tan 45° + \cos^2 30° - \cot 90° =$ .....

(A) 1 (B) 2

(C) $\frac{1}{2}$ (D) 3

5. Formula to find total surface area of Rs. 5 coin is .....

(A) $\pi r^2 h$ (B) $\pi r (r + h)$

(C) $2\pi r (r + h)$ (D) $\pi r l$

6. The radius of a Sphere is ..... cm, if its curved surface area is 616 sq. cm.

(A) 6 (B) 7

(C) 8 (D) 5

7. If $7 \cos^2 \theta + 3 \sin^2 \theta = 4$, then $\tan \theta =$ .....

(A) 7 (B) $\frac{7}{3}$

(C) 3 (D) $\sqrt{3}$

8. Volume of a Sphere with radius 1.5 cm is ..... cu.cm.

(A) 4.5 π (B) 5 π

(C) 5.5 π (D) 4 π

9. $(1 - \cos \theta)(1 + \cos \theta) =$ .....

(A) $\text{cosec}^2 \theta$ (B) $\cos^2 \theta$

(C) $2 - \cos^2 \theta$ (D) $\frac{1}{\text{cosec}^2 \theta}$

10. Intersection set of all the radii of a Circle is .....

(A) ϕ (B) {Centre of circle}

(C) Circle (D) Interior of circle

[Space for Rough Work]

11. The length of semi-circular arc of $\odot(O, 5)$ is .....

(A) 2π (B) π

(C) 5π (D) 10π

12. If $\odot(P, 5)$ and $\odot(Q, r)$ are congruent circles, then .....

(A) $r = 5$, $P \neq Q$ (B) $r = 5$, $P = Q$

(C) $r \neq 5$, $P = Q$ (D) $r \neq 5$, $P \neq Q$

13. If $\odot(P, 3)$ and $\odot(Q, r)$ are concentric circles, then .....

(A) $P = Q$, $r = 3$ (B) $P \neq Q$, $r = 3$

(C) $P \neq Q$, $r \neq 3$ (D) $P = Q$, $r \neq 3$

14. If cyclic quadrilatic is a parallelogram, then it is .....

(A) Rhombus (B) Rectangle

(C) Square (D) Trapezium

15. Any angle inscribed in a semi-circle is of measure .....

(A) 30° (B) 90°

(C) 120° (D) 60°

16. If $\odot(P, 5)$ and $\odot(Q, 4)$ touch each other externally, then PQ = ...

(A) 5 (B) 9

(C) 1 (D) 7

[Space for Rough Work]

17. Value of discriminant D is ..... for the quadratic equation $5x^2 - 6x + 1 = 0$.

(A) 16 (B) 56

(C) $\sqrt{56}$ (D) 4

18. Sum of first n natural numbers = ...

(A) $\frac{n}{2}$ (B) $\frac{n+1}{2}$

(C) $\frac{n(n+1)}{2}$ (D) $\frac{n-1}{2}$

19. If $\frac{(3x-3)^2}{(1-x)^2} = m$, then m = ...

(A) 3 (B) (– 3)

(C) 9 (D) (– 9)

20. Simple interest on Rs. 500 at 10% is ..... for two years.

(A) Rs. 100 (B) Rs. 110

(C) Rs. 120 (D) Rs. 10

21. If one of the roots of the equation $kx^2 + 3x - 4 = 0$ is $x = 2$, then the value of k = ...

(A) $\frac{1}{2}$ (B) $\left(-\frac{1}{2}\right)$

(C) 2 (D) (– 2)

22. α = ... is a solution of quadratic equation $x^2 + 7x + 12 = 0$.

(A) 7 (B) 4

(C) (– 3) (D) 3

23. While purchasing in instalment scheme, the formula to find simple interest = ...

(A) $I = \frac{PRN}{100}$ (B) $I = \frac{PR^2N}{100}$

(C) $I = \frac{P^2RN}{100}$ (D) $I = \frac{PRN^2}{100}$

24. Sum of the ages of five persons, five years ago, was 50 years. The sum of the ages of the same persons will be ..... years after five years. [Space for Rough Work]

(A) 100 (B) 75

(C) 60 (D) 80

25. In a two digit number, number at unit's place is 'p' and number at ten's place is 'r'. The two digit number is .....

(A) $10x + y$ (B) $10p + r$

(C) $10r + p$ (D) $10y + x$

26. Solution set of $x + y - 1 = 0$ and $2x + 2y = 2$ is .....

(A) $\{(1, 0)\}$ (B) $\{(0, 1)\}$

(C) Null set (D) Infinite set

27. Formula to find the curved surface area of Sphere is .....

(A) $\pi r^2 h$ (B) $4\pi r^2$

(C) $3\pi r^2$ (D) $2\pi r^2$

28. The angle of elevation of the top of the building from a point A on the ground is 45°. If the distance of the building from the point A is x and the height of the building is y, then .....

(A) $x = y$ (B) $x < y$

(C) $x > y$ (D) $x = 2y$

29. On walking 'a' metres on the hilly way, making an angle of 30° with the ground, one can reach the height 'b' metres from the ground. Then .....

(A) $a = b$ (B) $2a = b$

(C) $2a = \sqrt{3}\, b$ (D) $a = 2b$

[Space for Rough Work]

30. H.C.F. of $p(x) = x^2 + 1$ and $q(x) = x^2 - 1$ is .....

(A) $(x^2 - 1)$ (B) x^2

(C) 1 (D) $(x^2 + 1)$

31. $p(x) = -x^2$ and $q(x) = x^3$. Their $h(x)$ = ...

(A) x^3 (B) $(-x^2)$

(C) x^6 (D) $(-x^5)$

32. From the following, ... is rational expression, but not a polynomial.

(A) $\frac{x-5}{x-3}$ (B) $\frac{x^2-9}{x-3}$

(C) $\frac{x^3-8}{x^2+2x+4}$ (D) $\frac{x-3}{3-x}$

33. If $p(x) = 12(x - 1)$ and $q(x) = 17(x + 1)$, then $h(x)$ = ...

(A) 1 (B) $x - 1$

(C) $x + 1$ (D) $x^2 - 1$

34. From the following, ... is not a polynomial in x.

(A) $\sqrt{x} - 5$ (B) $3x^2 - \sqrt{5}$

(C) $\frac{3}{2}x^2 - x - 2$ (D) $5x^2 - x + 1$

35. If $\frac{a-1}{p(a)} = \frac{a^2+a+1}{a^3-1}$, then $p(a)$ = ...

(A) 1 (B) $a^2 - 1$

(C) $a + 1$ (D) $(a - 1)^2$

36. Remainder is ....., when $x^{31} + 1$ is divided by $x - 1$.

(A) 3 (B) 2

(C) 4 (D) 1

37. $\Delta PQR \sim \Delta XYZ$ and $PQ : QR : PR = 3 : 5 : 7$.
If the perimeter of ΔXYZ is 22.5, then $YZ =$ .....
(A) 4.5 (B) 7.5
(C) 10.5 (D) 15

38. In ΔABC and ΔPQR, $m\angle A = m\angle R$ and $\angle B \cong \angle Q$.
The correspondence ..... is similarity between them.
(A) $ABC \leftrightarrow PQR$ (B) $ABC \leftrightarrow QRP$
(C) $ABC \leftrightarrow RQP$ (D) $ABC \leftrightarrow RPQ$

39. Length of a diagonal of a Square is 10. Its area = ...
(A) 100 (B) $5\sqrt{2}$
(C) 50 (D) 25

40. $\Delta ABC \sim \Delta PQR$. Perimetre of ΔABC is 35 and that of ΔPQR is 28. If $PR = 4\sqrt{10}$, then $AC =$ .....
(A) $5\sqrt{2}$ (B) $5\sqrt{10}$
(C) $2\sqrt{5}$ (D) $4\sqrt{10}$

41. In ΔABC, $m\angle B = 90°$. $\overline{BM}$ is an altitude on hypotenuse $\overline{AC}$. $AM = 16$, $AC = 25$, $\therefore BM =$ .....
(A) 12 (B) 20
(C) $\sqrt{41}$ (D) 9

42. In a correspondence $ABC \leftrightarrow RPQ$ between ΔABC and ΔPQR, ... is the angle corresponding to $\angle B$.
(A) $\angle P$ (B) $\angle Q$
(C) $\angle R$ (D) $\angle B$

43. Bisector of $\angle P$ intersects $\overline{RQ}$ in S in ΔPQR.
$QS : RS = 4 : 5$. If $PQ = 4$, then $PR =$ .....
(A) 4 (B) 5
(C) 9 (D) 10

[Space for Rough Work]

[Space for Rough Work]

44. $\bar{x} = \bar{y} + 3, \quad \therefore \quad \bar{y} = \bar{x} + ...$

(A) 0 (B) 3

(C) (– 3) (D) 6

45. Senior citizen has invested Rs. 90,000 annually, under section 80 C. He will get the exemption of Rs. ..... from his income.

(A) 1,00,000 (B) 1,85,000

(C) 1,50,000 (D) 90,000

46. If $n = 100$, $\Sigma f_i d_i = 0$ and $A = 15$,

then the value of mean $\bar{x}$ = ...

(A) 100 (B) 115

(C) 15 (D) 11.5

47. If $n = 50$, $A = 20$ and mean $\bar{x} = 19.7$,

then the value of $\Sigma f_i d_i$ = ...

(A) 35 (B) (– 35)

(C) 15 (D) (– 15)

48. $n = 100$, $A = 12$, $\bar{x} = 12$, $\therefore \Sigma f_i d_i$ = ...

(A) 12 (B) 0

(C) 100 (D) (– 12)

49. Under section 80 C, investment in ..... upto fixed limit is exempted in income tax.

(A) PPF (B) Bank FD

(C) Shares (D) Mediclaim

50. Under section ..... of income tax, mediclaim premium is exempted.

(A) 80 C (B) 88 C

(C) 80 D (D) 88 D

N-12(E)

(MARCH, 2011)

PART - B

Time : 2 Hours] ***[Maximum Marks : 50***

Instructions :-

(1) There are **four** sections in this part of the question paper and total **1** to **17** questions are there.
(2) **All** the questions are **compulsory.** Internal options are given.
(3) Draw figures wherever required. Retain all the lines of construction.
(4) The numbers at right side represent the marks of the question.

SECTION - A

Answer the following questions from 1 to 8 in short.

Each question carries 2 marks.

1. Find the solution set of the following pair of linear equations. **2**

$2x + y = 35$ ..... (1)

$3x + 4y = 65$ ..... (2)

2. Find the discriminant of the quadratic equation $x^2 + 5x + 1 = 0$. **2**

3. Find the sum of first 11 terms of an Arithmetic Progression 2, 9, 16, 23, ... **2**

OR

3. Find the 60th term of an Arithmetic Progression 10, 20, 30, 40, ...

4. The cash price of a bicycle is Rs. 1,000. In instalment scheme, cash down payment is of Rs. 450 and two monthly instalments of Rs. 300 each. Find the rate of interest charged in the instalment scheme. **2**

5. The cost price of a wrist-watch is Rs. 800. It can be purchased by paying Rs. 425 as cash down payment and the remaining amount to be paid after two months, giving interest of Rs. 35. Find the value of the instalment. **2**

6. $\Delta PQR \sim \Delta MNO$. PQ = 8, MN = 6 in ΔPQR and ΔMNO respectively. If the area of ΔPQR is 72 unit, then find the area of ΔMNO. **2**

7. Using trigonometric identities, prove that **2**

$\sec^2\theta + \text{cosec}^2\theta = \sec^2\theta \cdot \text{cosec}^2\theta$

OR

7. Prove that $\tan 5° \cdot \tan 25° \cdot \tan 45° \cdot \tan 65° \cdot \tan 85° = 1$

8. Find the distance betwen the points (7, 5) and (2, 5). **2**

SECTION - B

*Answer the following questions from No. **9** to **12** with calculations.*
*(Each question is of **3** marks)*

9. Find H.C.F. and L.C.M. of the polynomials $p(x) = x^3 - 8$, **3**

$q(x) = x^3 + 8$ and $r(x) = x^4 + 4x^2 + 16$.

10. Simplify : **3**

$$\frac{x+4}{x^2+2x-8} + \frac{x-4}{x^2-2x-8} + \frac{2x}{4-x^2}.$$

OR

10. Simplify :

$$\frac{a^4-(a-2)^2}{\left(a^2+2\right)^2-a^2} + \frac{a^2-\left(a^2-2\right)^2}{a^2(a+1)^2-4} + \frac{a^2(a-1)^2-4}{a^4-(a+2)^2}$$

11. While selling a Calculator for Rs. 56, the profit in percentage is equal to its cost price in rupees. Find the cost price of the Calculator. **3**

12. A flag-staff of height h stands on the top of the tower. If the angles of elevation of the top and bottom of the flag-staff are respectively α and β from a point on the ground, prove that the height of the tower is **3**

$$\frac{h\tan\beta}{\tan\alpha - \tan\beta}, \quad \text{where } \alpha > \beta.$$

SECTION - C

*Solve the following questions from No. **13** to **15**, as per the instruction.*
*(Each carries **4** marks)*

13. Find the missing frequency for the following frequency distribution, if its Mean is 43.75. **4**

Class	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100
Frequency	8	4	20	45	64	32	*f*	8	2	2

14. Prove that square of the length of the hypotenuse of a right-angled triangle is the sum of the squares of the lengths of the other two sides. **4**

15. Find the curved surface area of a Sphere, whose diametre is 10 cm. ($\pi = 3.14$) **4**

OR

15. How many litres of water can be stored in cylindrical tank with radius 1.4 m and height 4 m ?

SECTION -D

*Solve the following questions from No. **16** to **17**. (Each carries **5** marks)*

16. Prove that "Angles in a segment corresponding to minor arc are congruent". **5**

OR

16. Prove that "Angle made by a chord with tangent at one end point of the chord and the angle subtended by the chord in the alternate segment are congruent".

17. Using the centre of a Circle, draw a tangent to the circle through a point in the exterior of circle. How many such tangents are drawn ? Here, radius = 3 cm and the distance of the point, in the exterior of their circle, from the centre is 7 cm. **5**
