CLASS : XII-SCIENCE

Duration : 90 min

Max. Marks: 100

GENERAL INSTRUCTIONS FOR XI & XII SCIENCE

Read the instructions carefully before answering the questions

1. Please fill up your Roll No. and class in the box provided on the answer sheet.

2. This question booklet has 2 sections: Section A and Section B.

3. Section A has 34 questions and is mandatory for the candidates.

   Section B is divided in to 4 parts : Part I –Maths, Part II- Biology,

   part III- computer science, Part IV-Informatics practices.

4. Candidates should answer any two parts from Section B.

5. Total number of Questions to be answered is 50 (34+ 8+ 8) and 5 Tie Breaker

   questions. Tie Breaker questions would be evaluated only in case of a Tie.

6. The choice of subjects must be indicated in the boxes provided under Section

   B in the Answer sheet.

7. Each question has 4 options a,b,c,d.

8. For each question, select the best/correct option and darken the bubble

   completely against the corresponding question in the answer sheet provided.

9. Each question carries 2 marks.

10. Use blue/black ball point pen to darken the bubble.

11. Darken only one bubble against each question.

12. There will be no negative marking.

BVM ELAMAKKARA

ENGLISH

Select the word which is synonymous to the given word.

1. IMMINENT

   a) unsteady
   b) precious
   c) upcoming
   d) proud

2. INDELIBLE

   a) permanent
   b) enforce
   c) revolt
   c) track

Select the most appropriate preposition.

3. My voice reverberated _____ the walls of the castle.

   a) on
   b) from
   c) in
   d) for

4. Shyam was advised to abstain _____ drugs.

   a) at
   b) by
   c) from
   d) to

Choose the alternative which best expresses the meaning of the idiom or phrase underlined.

5. He <u>passed himself off</u> as a noble man.

   a) was regarded as
   b) was thought to be
   c) was looked upon
   d) pretended to be

6. I cannot get along with a man who <u>plays fast and loose.</u>

   a) has a loose tongue
   b) behaves in an unreliable and insincere way
   c) does not know how to behave himself
   d) lives a life of ease and luxury

7. We find the character Frank in the lesson _____

   a) Should Wizard Hit Mommy?
   b) Last Lesson
   c) Evan's Tries An O' Level
   d) Going Places

8. _____ wrote the poem 'Keeping Quiet'.

   a) Addrienne Rich

   b) John Keats

   c) Pablo Neruda

   d) Stephen Spender

PHYSICS

9. Two identical metal plates are given positive charges $Q1$ and $Q2$ ($Q2<Q1$) respectively. If they are now brought close together to form a parallel plate capacitor with capacitance C, then the potential difference between them is

   a) $(Q1+Q2)/2C$

   b) $(Q1+Q2)/C$

   c) $(Q1-Q2)/C$

   d) $(Q1-Q2)/2C$

10. An electric current is passed through a circuit containing 2 wires of the same material, connected in parallel. If the lengths and radii of the wires are in the ratio of 4/3 and 2/3, then the ratio of the currents passing through the wire will be

    a) 3

    b) 1/3

    c) 8/9

    d) 2

11. A thin circular ring of area A is held perpendicular to a uniform magnetic field of induction B. A small cut is made in the ring and galvanometer is connected across the ends such that the total resistance of the circuit is R. When the ring is suddenly squeezed to 0 area, the charge flowing through the galvanometer is

    a) BR/A

    b) AB/R

    c) ABR

    d) B^2A/R

12. A charge particle with charge Q enters a region of constant uniform and mutually orthogonal fields E and B with a velocity V perpendicular to both E and B and comes out without any change in magnitude or direction of V. Then

    a) $\vec{V}=\vec{B} \times \vec{E} /E$

    b) $\vec{E} \times \vec{B} /B$

    c) $\vec{B} \times \vec{E} /B$

    d) $\vec{E} \times \vec{B} /E$

13. In an ac circuit an alternating voltage, $e=200\sqrt{2}\ \sin 100t$ volt is connected to a capacitor of capacity 1μf. The rms value of the current in the circuit is

    a) 10mA

    b) 100mA

    c) 200mA

    d) 20mA

14. Infrared radiations was discovered in 1800 by

   a)William Wollaston   b)William Hersehel

   c)Wilhelm Roentgen   d)Thomas Young

15. A point object is placed at the centre of a glass sphere of radius 6cm and refractive index 1.5.The distance of the virtual image from the surface of sphere is

   a)2cm   b)4cm

   c)6cm   d)12cm

16. A beam of unpolarised light of intensity Io is passed through a polaroid A and then through another polaroid B which is oriented so that its principal plane makes an angle of 45 relative to that of A. The intensity of the emergent light is

   a) Io   b) Io/2

   c) Io/4   d) Io/8

Chemistry

17. The most stable carbonium ion amongst the following is

   (a) $(CH3)_2 CH^+$ (b) $Ph_3 C^+$ (c) $CH_3CH_2^+$ (d) $CH_2=CH-CH_2^+$

18. Which of the following does not have an S-S bond

   (a) $S_2O_4^{2-}$ (b) $S_2O_3^{2-}$ (c) $S_2O_5^{2-}$ (d) $S_2O_7^{2-}$

19. The formula of potassium dicyanobis(oxalato) nickelate(II) is

   (a) $K_4 [Ni(CN)(ox)_2]$ (b) $K_3 [Ni_2(CN)_2(ox)_2]$

   (c) $K_4 [Ni(CN)_2(ox)_2]$ (d) $K_2 [Ni(CN)_2(ox)_2]$

20. Veronal , a barbituric drug is used as

   (a) anaesthetic (b) sedative (c) antiseptic (d) none of these

21. The rate constant , activation energy and Arrhenius parameter of a chemical reaction at 25^0C are $3.0x 10^{-4} s^{-1}$, $104.4KJ/$ mol and $6.0x 10^{14} s^{-1}$. the value of the rate constant as $T \rightarrow \infty$

   (a) $2x10^{18}s^{-1}$ (b) $6.0x10^{30}s^{-1}$ (c) infinity (d) $6.0x10^{14}s^{-1}$

22. In a solid , oxide ions are arranged in ccp . The cations A occupy one sixth of the tetrahedral voids and cations B occupy one third of the octahedral voids. The formula of the compound is

   (a) ABO_3 (b) AB_2O_3 (c) A_2BO_3 (4) $A_2B_2O_3$

23. E0cell of $Zn / Zn^{2+} // Cu^{2+}/Cu$ is 1.10 V at 25^0C. The equilibrium constant for the reaction $Zn + Cu^{2+} \rightarrow Cu + Zn^{2+}$ is approximately of the order of

(a) 10^{-28} (b) 10^{37} (c) 10^{-18} (d) 10^{17}

24. Chlorination of toluene in the presence of light and heat followed by treatment With aqueous NaOH gives

(a) o-cresol   (b) p-cresol   (c) 2,4 dihydroxytoluene   (d) benzylalcohol

GENERAL KNOWLEDGE

25. Who has been appointed as UPSC Chairman by President Pranabh Mukherjee from September 2016

a)Atul Silvaya   b)Alka Sirohi

c)Deepak Gupta   d)Mukesh Sharma

26. Name the messaging application launched by google similar to whatsapp and facebook messenger for both android and ios platforms

a)Alli   b)Alle

c)Allo   d)Ally

27. Which city to hold the 2016 kabaddi world cup to be held from October 7-22nd 2016

a)New Delhi   b)Kochi

c)Bengaluru   d)Ahmedabad

28. Khurkot Bridge will provide the shortest land route between

a)India and Sri Lanka   b)India and Pakistan

c)India and China   d)India and Bangladesh

29. Which among these is William Shakespeare's longest play

a)Hamlet   b)Macbeth

c)Romeo and Juliet   d)King Lear

IQ

30. If INDIA is written as 10,16,7,13,6 how can we write CANADA

a)3,1,12,1,4,1   b)3,2,15,4,8,6

c)3,1,15,1,4,1   d)4,3,17,5,9,7

31. Harsha pointing to a photograph says ,"This man's son's sister is my mother-in-law".How is Harsha husband related to the man in the photograph?

a) Grandson

b) Son

c) Son-in-law

d) Nephew

32. Insert the missing number?

836   316   112

213   420

a) 211

b)217

c) 317

d) 117

33. It's Christmas time and 8 children are playing in the snow. If each child throws 1 snowball at every other child ,how many snowballs would be thrown in total

a) 58

b) 64

c) 56

d) 36

34. Which instrument was formally on the coins of Ireland?

a) Harp

b) Piano

c) Organ

d) Keyboard

SECTION-B

Section B comprises 4 parts- Part1, Part2, Part3 and Part4.
Answer any 2 parts only of section B

PART 1-Mathematics

1. The area of the region bounded by the curve $y = \sqrt{16 - x^2}$ and x axis is
   a) 8π sq.units b) 4π sq. units c) 16π sq. units d) 256π sq. units

2. The angle of intersection of the curves $y^2=x$ and $x^2=y$ at (1 , 1) is
   a) $Tan^{-1}4/3$ b) $tan^{-1}3/4$ c) 90^0 d) 45^0

3. A fair coin is tossed a fixed number of times. If the probability of getting seven heads is equal to that of getting nine heads , then the probability of getting two heads is
   a) 15/28   b) 2/15   c) $15/2^{13}$ d) none of these

4. Let R be the set of real numbers and the functions $f : R \rightarrow R$ and $g : R \rightarrow R$ be defined by :
   $f(x) = x^2+ 2x -3$ and $g (x) = x+1$ .Then the value of x for which $f(g(x)) = g(f(x))$ is
   a) -1   b) 0   c) 1   d) 2

5. If $f(x) = f(\pi + e - x)$ and $\int_e^\pi f(x)dx = \frac{2}{e+\pi}$, then $\int_e^\pi xf(x)dx$ is equal to

   a) $\pi - e$ b) $\frac{\pi+e}{2}$ c) 1   d) $\frac{\pi-e}{2}$

6. Let $f(x) = \log(\sin x + \cos x)$, $x \in (-\pi/4, 3\pi/4)$. Then f is strictly increasing in the interval

   a) $(-\pi/4, \pi/4)$ b) $(0, 3\pi/8)$ c) $(\pi/4, \pi/2)$ d) $(\pi/2, 3\pi/4)$

7. The function $f(x) = \begin{cases} 2x^2 - 1, & if\ 1 \le x \le 4 \\ 151 - 30x, & if\ 4 < x \le 5 \end{cases}$ is not suitable to apply Rolle's theorem

   since a) f(x) is not continuous on $[1,5]$ b) $f(1) \ne f(5)$

   c) f(x) is continuous only at x= 4   d) f(x) is not differentiable at x = 4

8. The order and degree of the differential equation $\frac{d^2y}{d^2x} + \left(\frac{dy}{dx}\right)^{3/2} = y$ are respectively

   a) 2 , 3   b) 1 , 2   c) 2 , 1   d) 2 , 2

Part 2-BIOLOGY

1. PCR and Restriction fragment length are the mehods for

   (a) Study of enzymes   (b) Genetic transformation

   (c) DNA sequencing   (d) Genetic fingerprinting

2. Plasmids are

   (a) Cdna   (b) Mitochondrial DNA

   (c) Circular extra chromosomal DNA in bacteria   (d) Viral RNA

3. Which chemical is used for induction of polyploidy

                                       (b) Colchicine
   (a) Cytokinin
                                       (d) IAA
   (c)Nitrous acid

4. Golden rice is

   (a) A variety of rice grown along yellow river in China (b) Long stored rice having yellow colour tint

   (c) A transgenic rice having gene for beta carotene   (d) None of these

5. The function of mammalian corpus luteum is to produce

                                       (b) Progesterone
   (a) Estrogen only
                                       (d)Relaxin
   (c)Human chorionic gonadotropin

6. Industrial melanism is an example of

                                       (b)Neo Darwinism
   (a) Neo Lamarckism

(d) Mutation

(c)NATURAL SELECTION

7.The cell mediated immunity inside the human body is carried out by

(b)Thrombocytes

(a)B-Lymphocytes

(d)T-Lymphocytes

(c)Erythrocytes

8. During Sewage treatment biogases are produced which include

(a)Methane ,Oxygen,Hydrogen Sulphide   (b) Hydrogen Sulphide ,Methane,Sulpher dioxide

(c) Hydrogen Sulphide,Nitrogen,Methane   (d) Methane, Hydrogen Sulphide,Carbondioxide

Part 3 Computer Science

1.A class having no name
i) is not allowed   ii) cannot have a user defined constructor iii) cannot be passed as an argument

a) ii & iii   b) i & iii   c) i   d) ii

2. class $Z : X , Y$ indicates

a) Hybrid Inheritance   b) Multilevel Inheritance

c) Multiple Inheritance   d) Hierarchical Inheritance

3. What is the output of the following program.

```
#include<iostream.h>
void main()
{   char a[20];
  for(int i=0;i<10;i++)
 *(a+i)=65+i;
 *(a+i)='\0';
 cout<<a;}
```

a) ABCDEFGHIJ

b) abcdefghij

c) AAAAAAAAA

d) JJJJJJJJJJ

4. How would you write the string output to an opened text file named a_file?

a) a_file.out("output");

b) a_file="output";

c) a_file<<"output";

d) a_file>>"output";

5. The initial configuration of a Circular Queue is a,b,c,d('a' is in the front end). To get the configuration d,c,b,a one needs a minimum of

a)2 deletions and 3 additions

b)3 deletions and 2 additions

c)3 deletions and 3 additions

6. Simplify the expression ((ab)'+c)'
   a) abc'

   d)3 deletions and 4 additions

   c) (ab)'+c

   b) ab+c'

7. Which of the SQL statement is wrong?
   a) select * from example order by name;

   d) (a+b)c(a+b)c

   b) select * from example having name='sunitha';

   c) select count(subject) from example group by subject having subject like 'c%';

   d) select * from example where rollno=1;

8. Which of the following is not a client side script?

   i) vbscript   ii) javascript   iii) ASP   iv) PHP

   a) i and ii
   c) i

   b) i and iii
   d) iii and iv

Part 4-INFORMATICS PRACTICES

1. What is the correct syntax in HTML for creating a link on a webpage HOME?

   a. <LINK SRC= "HOME.html">
   c. <A SRC = "HOME.htm!" >

   b. <BODY LINK = "HOME.html">
   d. < A HREF = "HOME.html">

2. In Java_____can only test for equality, where as _____ can evaluate any type of the Boolean expression.

   a) switch , if
   c) if, break

   b) if , switch
   d)break, if

3. Choose the output of the following code.

   String s1="Informatics Practices", s2;
   s2=s1.substring(3,7);

   a) s2 will contain the string form
   c) s2 will contain the string forma

   b) s2 will contain the string orma
   d) s2 will contain the string ormat

4. Choose the correct statement.

   a) an alternate key is a candidate key that is not a primary key.
   b) an alternate key is a primary key that is not a candidate key.
   c) an alternate key is a candidate key, that is also a primary key.
   d) none of the above

5. By default auto commit is _____
   a) disabled
   c)inactive

   b) enabled
   d) none of the above

6. Bluetooth technology uses _____.

    a) Microwaves   b) Radiowaves
    c) Infrared   d) Both a & c

7. In _____ the characters are redefined at each occurrence every time they displayed or printed.

    a) True type   b) Open type
    c) Static font   d) Dynamic font

8. Which of the following is a DDL command?

    a) select * from sample;   b) delete from sample;

    c) insert into sample values(1,'kkk');   d) alter table sample add age integer;

TIE-BRAKER

1. Find the charge in coulombs on 1 g-ion of N^{3-}

    a) 4.5×10^5 b) 2.89×10^5

    c) 6×10^5 d) 8×10^5

2. In common emmiter amplifier the ratio Ic/Ie is 0.98. The current gain will be

    a) 4.9   b) 7.8

    c) 49   d) 78

3. OLD ELASTIC is an anagram of which 10 letter word?

    a) Squeezable   b) Liquidized

    c) Puzzlement   d) Oscillated

4. If $y^x - x^y = 1$ then the value of dy/dx at x=1 is

    a) $2(1-\log 2)$ b) $2(1+\log 2)$

    c) $2-\log 2$ d) $2+\log 2$

5. Select one word substitute for

A style in which a writer makes a display of his knowledge

    a) Verbose
    c) Ornate   b) Pompous
                           d) Pedantic

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