Name of the Candidate :

. . . .

Reg. Number [ ][ ][ ][ ][ ]

Time : 2:00 hours

Examination Centre:.

Signature of the
Candidate: ………………………………………….

Maximum : 100 marks

1. Do not open the Question Booklet until the Hall Superintendent gives the signal for the commencement of the examination.

2. Write your Name, your Registration Number and the Name of your Examination Centre (as found in the **ADMIT CARD**) and sign in the space provided above. Other than these, do not write or mark anything anywhere on the Question Booklet.

3. After the commencement of the examination, open the Question Booklet and take out the **ANSWER SHEET.** If the Question Book or the Answer Sheet is not in good condition then ask for immediate replacement. No replacement will be made 5 minutes after the commencement of the examination.

4. Write and shade your Registration Number and Question Book Number and write the Name of the Examination Centre and sign in the Answer Sheet in the spaces provided.

5. The Question Booklet contains 100 questions. Answer all the questions. They carry equal marks.

6. The last few pages of the Question Booklet are blank except for the words. '**FOR ROUGH WORK**'. You can make any relevant rough calculations on these pages.

7. **Each correct answer carries equal mark.**

8. Shade with HB pencil one of the four options against each question number in the Answer Sheet which according to your corresponds to the correct answer.

9. If you want to change any answer, erase the pencil shading thoroughly and then shade the new choice clearly. Only one choice for each question should be finally shaded. Answers with multiple shading will be considered as wrong answer.

10. Use the Answer Sheet carefully. No spare answer Sheet will be given.

11. At the end of the examination when the Hall Superintendent announces 'Stop Writing', you must stop writing immediately and place the Answer Sheet inside the Question Booklet and be ready to handover the materials.

12. When you have completed answering, stand up and remain in your place. The Hall Superintendent will come to you and collect your Question Booklet and Answer Sheet. Under no circumstances should any of these be taken out of the Examination Hall. No candidate shall leave the Hall until the Question Booklet and answer Sheet are collected.

13. No candidate can leave the Hall during the first 30 minutes and the last 15 minutes of the examination.

14. No candidate can re-enter the Hall after leaving.

    Calculators, tables or any other calculating devices and mobile phones are strictlyprohibited.

SAMPLE QUESTIONS IN MATHEMATICS.

1. If (A) r then which of the following is correct?

   (a) All the minors of order r which do not vanish

   (b) A has atleast one minor of r which does not vanish

   (c) A has atleast one (r+1) order minor which vanishes

   (d) All (r+1) and higher order minors should not vanish

2. In echelon form, which of the following is incorrect?

   (a) Every row of A which has all its entries O occurs below every row which has a non-zero entry

   (b) The first non-zero entry in each non-zero row is 1

   (c) The number of zeros before the first non-zero element in a row is less than the number of such zeros in the next row

   (d) Two rows can have same number of zeros before the first non-zero entry.

3. In the homogeneous system If (A) the number of unknowns then the system has

   (a) Only trivial solution

   (b) Trivial solution and infinitely many non-trivial solutions

   (c) Only non-trivial solutions

   (d) No solution

4. Which of the following statements is correct regarding homogeneous system

   (a) Always inconsistent

   (b) Has only trivial solution

   (c) Has only non-trivial solutions

   (d) Has only trivial solution if rank of the coefficient matrix is equal to the number of unknowns

5. The centre and radius of the sphere $|\bar{r}-(2\bar{i}-\bar{j}+4\bar{k})|=5$ are

    (a) (2,-1,4) and 5   (b) (2,1,4) and 5

    (c) (-2,1,4) and 6   (d) (2,1,-4) and 5

6. Chord AB is a diameter of the sphere $|\bar{r}-(2\bar{i}+\bar{j}-6\bar{k})|=\sqrt{18}$ with coordinates of A as (3,2,-2) the coordinates of B is

    (a) (1,0,10)   (b) (-1,0,-10)

    (c) (-1,0,10)   (d) (1,0,-10)

7. The non- parametric vector equation of a plane passing through three points whose P. Vs are $\bar{a},\bar{b},\bar{c}$ is

    (a) $\left[\bar{r}-\bar{a}\ \bar{b}-\bar{a}\ \bar{c}-\bar{a}\right]=0$ (b) $\left[\bar{r},\bar{a},\bar{b}\right]=0$

    (c) $\left[\bar{r},\bar{b},\bar{c}\right]=0$ (d) $\left[\bar{a},\bar{b},\bar{c}\right]=0$

8. The vector equation of a sphere whose centre is origin and radius 'a' is

    (a) $|\bar{r}|=|\bar{a}|$ (b) $\bar{r}-\bar{c}=\bar{a}$ (c) $\bar{r}=\bar{a}$ (d) $\bar{r}=a$

9. The fourth roots of unity are

    (a) $1\pm i,-1\pm i$ (b) $\pm i,1\pm i$ (c) $\pm 1,\pm i$ (d) 1, -1

10. Polynomial equation P(x) = 0 admits conjugate pairs of roots only if the coefficients are

    (a) Imaginary   (b) Complex

    (c) Real   (d) Either real or complex

SAMPLE QUESTIONS IN PHYSICS.

11. A dipole is placed in a uniform electric field with its axis parallel to the field. It experiences

    (a) only a   net force   (b)   only a torque

    (c) both a   net force and torque   (d)   neither a net force nor a torque

12. The unit of permittivity is

    (a) $C^2 N^{-1} m^{-2}$ (b) $N m^2 C^{-2}$ (c) $H m^{-1}$ (d) $N C^{-2} m^{-2}$

13. A toaster operating at 240V has a resistance of 120 . The power is

    (a)   400 W   (b)   2 W   (c)   480 W   (d)   240 W

14. In the case of insulators, as the temperature decreases, resistivity

    (a)   Decreases   (b)   increases

    (c) remains constant   (d)   becomes zero

15. A charge of 60 C passes through an electric lamp in 2 minutes. Then the current in the lamp is

    (a) 30 A   (b)   1 A   (c)   0.5 A   (d)   5 A

16. In a thermocouple, the temperature of the cold junction is $20^{O}C$, the neutral temperature is $270^{O}C$. The temperature of inversion is

    (a) $520^{O}C$ (b) $540^{O}C$ (c) $500^{O}C$ (d) $510^{O}C$

17. The torque on a rectangular coil placed in a uniform magnetic field is large, when

    (a)   The number of turns is large

    (b)   The number of turns is less

    (c)   The plane of the coil is perpendicular to the field

    (d)   The area of the coil is small

18. An ideal voltmeter has

    (e)   Zero resistance

    (f)   Finite resistance less than G but greater than Zero

    (g)   Resistance greater than G but less than infinity

    (h)   Infinite resistance

19. The unit henry can also be written as

    (a) Vs A^{-1} (b) Wb A^{-1} (c)   s   (d) All

20. A DC of 5A produces the same heating effect as an AC of

    (a)   50 A rms current   (b)   5 A peak current

    (c)   5A rms current   (d)   None of these

SAMPLE QUESTIONS IN CHEMISTRY.

21. NH_4OH is a weak base because

    (a)   It has low vapour pressure   (b)   It is only partially ionized

    (c)   It is completely ionized   (d)   It has low density

22. The feasibility of a redox reaction can be predicted with the help of

    (a)   Electronegativity   (b)   Electrochemical series

    (c)   Electron affinity   (d)   Equivalent conductance.

23. When ethyl iodide is treated with dry silver oxide it forms.

    (a)   Ethyl alcohol   (b)   Diethyl ether

    (c)   Silver ethoxide   (d)   Ethyl methyl ether

24. Tollens reagent is

    (a)   Ammoniacal cuprous chloride   (b)   Ammoniacal cuprous oxide.

    (c)   Ammoniacal silver nitrate   (d)   Ammoniacal silver chloride.

25. The acid that cannot be prepared by Grignard reagent

    (a) Acetic acid   (b) Formic acid   (b) Butyric acid   (d) Benzoic acid.

26. Nitration of nitrobenzene results in

    (a)   o-dinitro benzene   (b)   1, 3, 5–trinitro benzene

    (c)   m-dinitrobenzene   (d)   p-dinitrobenzene

27. Which is not true about amino acid?

    (a)   Amino acid forms Zwitter ion   (b)   Has isoelectric point

    (c)   Dual behaviours   (d)   Aminoacid is insoluble in NaOH solution.

28. Lanthanides are extracted from

    (a) Limonite   (b) Monazite   (c) Magnetite   (d) Cassiterite

29. Which of the ions will give colourless aqueous solution?

    (a) Ni^{2+} (b) Fe^{2+} (c) Cu^{2+} (d) Cu^{+}

30. Faraday's laws of electrolysis are related to

    (a) Atomic number of the cation   (b) Atomic number of the anion

    (c) Equivalent weight of the electrolyte   (d) Speed of the cation

The below section is only for candidates appearing entrance exam for B.Tech – Biotechnology and B.Tech – Cancer Biotechnology.

(B.Tech – Biotechnology and B.Tech- Cancer Biotechnology candidates are exempted from MATHEMETICS QUESTIONS)

SAMPLE QUESTIONS IN BIOLOGY.

1. One gram of carbohydrate is capable of yielding energy equivalent of

    (a) 5.1 calories   (b) 4.1 calories

    (c) 4.9 calories   (d) 6.5 calories

2. Rickets and osteomalacia are caused by deficiency of

    (a) Vitamin A   (b) Vitamin A and C

    (c) Vitamin C   (d) Vitamin D

3. The enzymes of the stomach are

    (a) Pepsin and rennin   (b) Pepsinogen

    (c) Trypsin   (d) Chymotrypsin

4. Dental caries starts from

    (a) Dentine   (b) Pulp cavity

(c) Enamel	(d) Teeth root

5. Rheumatic arthritis affecting the

(a) Connective tissues	(b) Abdominal tissue
(c) Brain tissue	(d) Cardiovascular tissue

6. Bacteriophages are

(a) Bacteria	(b) Virus
(c) Fungi	(d) None of the above

7. Thick filaments formed of the contractile protein is

(a) Myosin	(b) Actin
(c) Tropomyosin	(d) Troponin

8. Respiratory center in the brain is

(a) Cerebrum	(b) Cerebellum
(c) Medulla oblongata	(d) Phrenic nerves

9. Heart muscles cause rhythmic contraction and relaxation maintained by

(a) Sino-atrial node

(b) Atrio-ventricular node

(c)Bundle of His and Purkinje fibres

(d) All the above

10. Zoonotic infections are

(a) Parasitic infections which man acquires from mammals

(b) Parasitic infections which man acquires from man

(c) Parasitic infections which man acquires from animals

(d)Parasitic infections which man acquires from parasitizes