General Instructions:

(i) All questions are compulsory.

(ii) The question paper contains 29 questions divided into four sections A,B, C and D. Section A consists of 4 questions of one mark each, Section B consists of 8 questions of two marks each, Section C consists of 11 questions of four marks each and section D consists of 6 questions of six marks each

(iii) All questions in section A are to be answered in one word, one sentence or as per the exact requirement of question.

(iv) There is no overall choice. However, internal choices have been provided in three questions of four marks each and three questions of six marks each. You have to attempt only one of the alternatives in all such questions.

SECTION-A

1. Let $A = \{x, y, z\}$, find the number of relations on A containing $(x, y), (y, z)$ which are reflexive and transitive but not symmetric.

2. If $cot^{-1}\left(\frac{1}{5}\right) = x$, find the values of $\sin x, \cos x$.

3. Find the $A(adj\ A)$, if matrix $A = \begin{bmatrix} 2 & 3 \\ -4 & -6 \end{bmatrix}$.

4. For what value of k the points $(5,5), (k, 1)$ and $(11,7)$ are collinear.

SECTION-B

5. Let $f(x) = \begin{cases} 1 + x, & 0 \leq x \leq 2 \\ 3 - x, & 2 < x \leq 3 \end{cases}$, find $fof(x)$.

6. Find the value of $sin\left(2\ tan^{-1}\frac{1}{3}\right) + cos\left(tan^{-1}2\sqrt{2}\right)$.

7. If $A = \begin{bmatrix} 2 & 3 \\ -1 & 2 \end{bmatrix}$, find the value of $A^2 - 4A + 7I$, hence find A^5.

8. Verify Rolle's theorem for the function $f(x) = x^3 + 3\ x^2 - 24x - 80$ in $[-4,5]$.

9. Using differentials, find the approximate value of $\frac{1}{\sqrt{100.5}}$.

10. Find the slope of the tangent to the curve $y = x^3 - 3x + 2$ at the point whose x-coordinate is 3.

11. Evaluate : $\int \frac{dx}{sin^2x\ cos^2x}$.

12. Evaluate : $\int cot^3x\ dx$.

SECTION-C

13. If N denotes the set of natural numbers and R be the relation on $N \times N$ defined by $(a, b)R(c, d)$, if $ad(b + c) = bc(a + d)$. Show that R is an equivalence relation.

14. Show that the function $f:R \rightarrow \{x \in R: -1 < x < 1\}$ defined by $f(x) = \frac{x}{1+|x|}, x \in R$, is a bijective function

15. Solve for: $sin^{-1}x - cos^{-1}x = sin^{-1}(3x - 2)$.

16. Using elementary row transformation only, find the inverse of matrix $A = \begin{bmatrix} 2 & -1 & 4 \\ 4 & 0 & 2 \\ 3 & -2 & 7 \end{bmatrix}$.

17. Find the value of a for which the function f defined by as $f(x) = \begin{cases} a\ sin\frac{\pi}{2}(x + 1), & x \leq 0 \\ \frac{tan\ x - sin\ x}{x^3}, & x > 0, \end{cases}$ is continuous at $x = 0$.

18. If $x = a \sin 2t(1 + \cos 2t)$ and $y = b \cos 2t(1 - \cos 2t)$, find the value of $\left(\frac{dy}{dx}\right)_{t=\frac{\pi}{4}}$.

OR

If $x^p y^q = (x + y)^{p+q}$ then find the value $\frac{dy}{dx}$

19. If $(x - a)^2 + (y - b)^2 = c^2$, for some $c > 0$, prove that $\dfrac{\left[1+\left(\frac{dy}{dx}\right)^2\right]^{3/2}}{\frac{d^2y}{dx^2}}$ is a constant and independent of a and b.

OR

If $\cos^{-1}\left(\frac{y}{b}\right) = \log\left(\frac{x}{n}\right)^n$, then prove that $x^2 y_2 + xy_1 + n^2 y = 0$

20. Water is leaking from a conical funnel at the rate of 5 cm^3 /sec. If the radius of the base of the funnel is 10 cm and its height is 20 cm, find the rate at which the water level is dropping when it is 5 cm from the top.

21. Find the equations of the normals to the curve $y = x^3 + 2x + 6$ which are parallel to line $x + 14y + 4 = 0$.

22. Evaluate : $\int \frac{\tan x + \tan^3 x}{1 + \tan^3 x} \, dx$.

OR

Evaluate : $\int \frac{\sec x}{1 + \cosec x} \, dx$

23. Evaluate : $\int \left\{\frac{x^2+1}{(1+x)^2}\right\} e^x \, dx$

SECTION-D

24. If $A = N \times N$ and $*$ on A is defined by $(a, b) * (c, d) = (ad + bc, bd)$ for all $(a, b), (c, d) \in A$, then show that (i) $*$ is a binary operation on A (ii) $*$ is commutative on A (iii) $*$ is associative on A. Also find the identity element for $*$ (if any).

25. If $A = \begin{bmatrix} 1 & 0 & 2 \\ 0 & 2 & 1 \\ 2 & 0 & 3 \end{bmatrix}$, then prove that $A^3 - 6A^2 + 7A + 2I = 0$, hence find A^{-1}.

OR

If $A = \begin{bmatrix} 1 & 2 & 0 \\ -2 & -1 & -2 \\ 0 & -1 & 1 \end{bmatrix}$, then find A^{-1}. Using A^{-1}, solve the system of linear equations :-
$x - 2y = 10, 2x - y - z = 8$ and $-2y + z = 7$

26. Separate the interval $\left[0, \frac{\pi}{2}\right]$ into subintervals in which $f(x) = \sin^4 x + \cos^4 x$ is strictly increasing or decreasing.

27. Using the properties of determinants only, prove that $\begin{vmatrix} (a+1)(a+2) & (a+2) & 1 \\ (a+2)(a+3) & (a+3) & 1 \\ (a+3)(a+4) & (a+4) & 1 \end{vmatrix} = -2$.

28. A given quantity of metal is to be cast into a half circular cylinder (i.e. with rectangular base and semicircular ends). Show that in order that the total surface area may be minimum, the ratio of the length of the cylinder to the diameter of its circular ends is $\pi : (\pi + 2)$.

OR

If the lengths of three sides of a trapezium other than base are equal to 10 cm each, then find the area of the trapezium when it is maximum.

29. Evaluate : $\int \frac{\sin x + \cos x}{\cos^2 x + \sin^4 x} \, dx$.

OR

Evaluate : $\int \frac{\sin^2 x}{\sec x \sqrt{\cos^2 x - 2\sin x}} \, dx$.

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DELHI PUBLIC SCHOOL, BHILAI (C.G.)

DATE : 11-09-2017 **FIRST TERM EXAMINATION, 2017** **Time : 3 Hours**

**CLASS : XII** **PHYSICS** **M.M : 70**

No. of Printed Pages : 3

General Instructions -

i) There are 26 questions in all. All questions are compulsory.

ii) The question paper has five sections.

iii) Section A contains five questions of one mark each. Section B contains five question of two marks each, section C contains twelve questions of three marks each. Section D has a value based question of four marks and section E contains three questions of five marks each.

iv) There is no overall choice. However an internal choice has been provided in one question of two marks, one question of three marks and all three questions of five marks.

v) You may use the following values of physical constants wherever necessary.

$\mu_O = 4\pi \times 10^{-7} TmA^{-1}$, radius of earth R = 6.4×10^6 m.

SECTION A

1) A hollow metal sphere of radius 6 cm is charged such that the potential on its surface is 12 V. What is the potential at the centre of the sphere?   1

2) Graph showing the variation of current

versus voltage for a material GaAs is shown in the figure.

Identify the region of negative resistance.   1
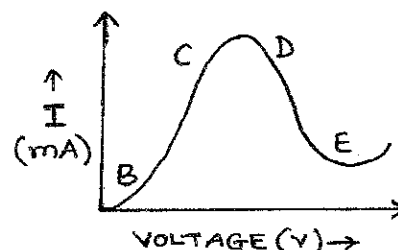
3) State Biot-Savart law. Write its vector form.   1

4) A rectangular loop and a circular loop are moving out of a uniform magnetic field region to a field free region with a constant velocity. In which loop do you expect the induced emf to be a constant during the passage out of the field region? The field is normal to the loop.   1
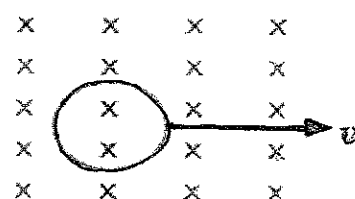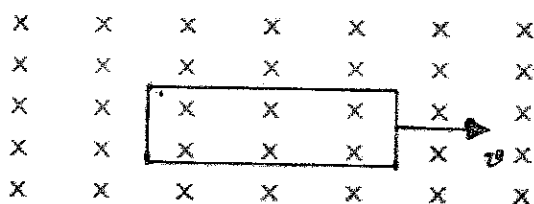
5) Welders wear special goggles or face masks with glass windows to protect their eyes from electromagnetic radiations. Name the radiation and write the range of their frequency.   1

SECTION B

6) Plot a graph showing the variation of Coulomb force (F) versus $(1/r^2)$, where 'r' is the distance between two charges of each pair of charges : $(1\mu c, 2\mu c)$ and $(2\mu c, -3\mu c)$. Interpret the graphs obtained.   2

7) Define the terms (i) drift velocity (ii) relaxation time   2

8) A solenoid of length 0.5 m has a radius of 1 cm and is made up of 500 turns. It carries a current of 5A. What is the magnitude of the magnetic field inside the solenoid?   2

9) A rod of length 'l' is moved horizontally with a uniform velocity'v' in a direction perpendicular to its length through a region in which a uniform magnetic field is acting vertically downwards. Derive the expression for the emf induced across the ends of the rod.   2

10) What is meant by the transverse nature of electromagnetic waves? Draw a diagram showing propagation of electromagnetic wave along X-direction, indicating clearly the direction of oscillating electric and magnetic fields associated with it.   2

(OR)

A capacitor, made of two parallel plates each of plate area A and separation d, is being charged by an external ac source. Show that the displacement current inside the capacitor is the same as the current charging the capacitor.

SECTION C

11) An electric dipole is held in a uniform electric field.

i) Using suitable diagram show that it does not undergo any translatory motion.

ii) Derive an expression for torque acting on it and specify its direction.   3

12) a) What do you mean by equipotential surface?

b) What should be a the workdone if a point charge is taken from a point A to the point B in the given diagram with charge +q at the center?

c) Draw the equipotential surfaces in a uniform electric field?   3
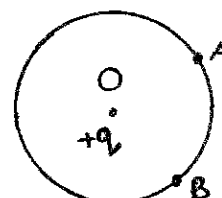
13) What do you mean by polar and non polar dielectrics?
Explain why the polarization of dielectric reduces the electric field inside the dielectric?
Hence define dielectric constant.   3

14) a) Write the principle of potentiometer.

b) For the potentiometer circuit shown in the
given figure, points X and Y represent the two
terminals of an unknown emf 'E'. A student
observed that when jockey is moved from
the end A to the end B of the potentiometer wire,
the deflection in the galvanometer remains in the
same direction. What may be the two possible faults
in the circuit that could result in this observation?   3

15) a) Draw a circuit diagram of a Meter Bridge.   3

b) Write the mathematical relation used to determine the value of an unknown resistance.

c) Why are the connections between resistors in a meter bridge made of thick copper strips?

16) Six lead-acid type of secondary cells each of emf 2.0 V and internal resistance 0.015Ω are joined
in series to provide a supply to a resistance of 8.5Ω. What are the current drawn from the supply
and its terminal voltage?   3

17) Deduce an expression for magnetic dipole moment of an electron revolving around a nucleus in a
circular orbit. Hence define Bohr Magneton. Also write its value.   3

18) Show diagrammatically the behavior of magnetic field lines in the presence of (i) paramagnetic
and (ii) diamagnetic substances. Write any two characteristics, a ferromagnetic substance should
possess if it is to be used to make permanent magnet.   3

19) a) For a given ac, $i = i_m sin\omega t$, show that the average power dissipated in a resistor R over a
complete cycle is $^1/_2 i_m{}^2 R$ 3

b) A bulb is rated at 100W for a 220 V ac supply. Calculate the resistance of the bulb.

20) What do you mean by mutual inductance. Write its SI unit.   3
Derive an expression for mutual inductance of two long co-axial solenoids of same length
wound one over the other.

(**OR**)

What do you mean by self inductance? Write its SI unit. Derive an expression for self inductance of
a long air-cored solenoid of length l, cross sectional area A and having number of turns N.

21) What are eddy currents? Write its uses (any two). How eddy currents can be reduced in
transformer core?   3

22) Name the types of e.m. radiations, which

(a) are used in destroying cancer cells

(b) cause tanning of the skin

(c) Maintain the earth's warmth

Also mention, how these waves can be produced.   3

SECTION D

23) Krishna's uncle was advised by his doctor to have an MRI (Magnetic Resonance Imaging) scan of
his brain. Her uncle felt that it was too expensive and wanted to postpone it. When Krishna learnt
about this, she took the help of her family and when she approached the doctor, he also offered a
substantial discount. She thus convinced her uncle to undergo the test to enable the doctor to know
the condition of his brain. The resulting information greatly helped his doctor to treat him properly.

a) What according to you are the values displayed by Krishna.

b) What in your view could be the reason for MRI test to be expensive?

c) Assuming that the MRI test was performed using a magnetic field of 0.1T, find the maximum and
minimum values of the force that the magnetic field could exert on a proton (charge = 1.6×10^{-19}C)
that was moving with a speed of 10^4 m/s.   (4)

SECTION E

24) i) Draw a neat labelled diagram of a cyclotron.   5

  ii) Show that time period of ions in cyclotron is independent of both the speed of ion and radius of circular path. What is the significance of this property?

  iii) An electron after being accelerated through a potential difference of 100 V enters a uniform magnetic field of 0.004 T perpendicular to its direction of motion. Calculate the radius of the path described by the electron.

(OR)

  i) Depict magnetic field lines due to two straight, long parallel conductors carrying steady currents I_1 & I_2 in the same direction.

  ii) Write the expression for the magnetic field produced by one of the conductor over the other. Deduce an expression for the force per unit length.

  iii) Determine the direction of force.

  iv) In figure given below, wire PQ is fixed while the square loop ABCD is free to move under the influence of currents flowing in them. State with reason, in which direction does the loop begin to move or rotate?
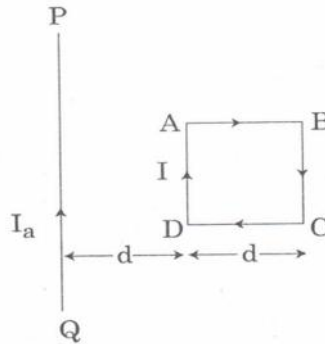
25) a) Draw a labelled diagram of an ac generator. Obtain the expression for the emf induced in the rotating coil of N turns each of cross-sectional area A, in the presence of a magnetic field $\vec{B}$.

  b) A horizontal conducting rod 10 m long extending from east to west is falling with a speed 5.0m/s at right angles to the horizontal component of the Earth's magnetic field, 0.3×10^{-4} Wbm^{-2}. Find the instantaneous value of the emf induced in the rod.   3+2

(OR)

  a) A device 'X' is connected to an ac source $V = V_o \sin\omega t$. The variation of voltage, current and power in one cycle is shown in the following graph.
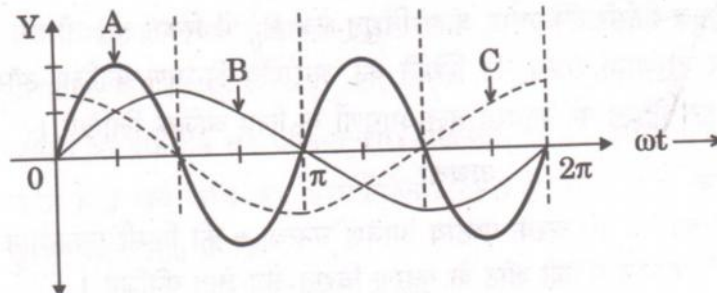
  a) Identify the device 'X'.

  b) Which of the curves A,B and C represent the voltage, current and the power consumed in the circuit? Justify your answer.

  c) How does its impedance vary with frequency of the ac source? Show graphically.

  d) Obtain an expression for the current in the circuit and its phase relation with ac voltagae.

26) a) State Gauss's law. Obtain the expression for the electric field due to a uniformly charged thin spherical shell of radius 'R' at a point outside the shell.   5

  b) Draw a graph showing variation of electric field with r, for r>R and r<R.

  c) A spherical shell of inner radius r_1 and outer radius r_2 has a charge 'Q'. A charge 'q' is placed at the centre of the shell. What is the surface charge density on the (i) inner surface

    (ii) outer surface of the shell?

(OR)

  a) Derive an expression for the capacitance of a parallel plate capacitor, if the whole space between its plates is completely filled with a dielectric medium of dielectric constant 'k'.

  b) The two plates of a parallel plate capacitor are 4 mm apart. A slab of dielectric constant 3 and thickness 3 mm is introduced between the plates with its faces parallel to them. The distance between the plates is so adjusted that the capacitance of capacitor becomes 2/3rd of its original value. What is the new distance between the plates?

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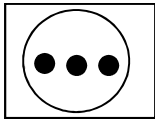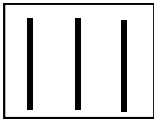
1) Name the standard mark on iodised salt and mention its main objective.   1

2) What do you understand by the 'value' of a colour?   1

3) What is placket in a dress?   1

4) Write the procedure to store silk garments.   1

5) What is common meal?   1

6) What is satiety value?   1

7) What is mediclaim policy. Does it qualify for tax rebate?   2

8) Physical comfort defines which qualities of fabrics?   2

9) Suggest 6 points for dressing short and stout person.   2

10) What do these labels show?   2

   (a)   (b)

11) Write characteristics of nylon under following written heads   2

   (i) Strength   (ii) Conductivity

12) What are soapless detergents?   2

13) Write the procedure to remove ball point pen stain.   2

14) Why there is an increased demand of Protein, Iron and Calcium during pregnancy.   3

15) What do you understand by real income. Support your answer with examples.   3

16) What do you understand by therapeutic meal modification?   4

17) What is the normal blood sugar level? Write down the symptoms of Diabetes.   4

18) Name an adulterant commonly used in mustard oil. Write its hazardous effects.
   (any six points)   4

19) Which agency awards Hall Mark? What are its parts and what do they show?   4

20) What is the chemical composition of soap?   4

21) Explain cleaning action of soaps.   4

22) Explain the importance of various food groups in a day's menu for an adolescent student.   5

23) What are the factors to be considered before any investment made?   5

24) What is the procedure to file a complaint against any deficiency or fault in goods
   or services?   5

25) What do you understand by the principles of design? Explain with the help of
   diagrams.   5

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General Instructions :

i)   **All questions are compulsory and answer serially.**

ii)   **The question paper consists of four sections A,B,C,D and E. Section A contains 5 questions of 1 mark each. Section B is of 5 questions of 2 marks each. Section C is of 12 questions of 3 marks each.**

Section D has a value based question of 4 marks, whereas Section E is of 3 questions of 5 marks each.

iii) **There is no overall choice. However, an internal choice has been provided in one question of 2 marks, one question of 3 marks and two questions of 5 marks weightage. A student has to attempt only one of the alternatives in such questions.**

iv)   **Wherever necessary, the diagrams drawn should be neat and properly labelled.**

SECTION A

1. Name the scientific name of the plant which flower once in 12 years.   (1)

2. Name the cells which secrete androgens.   (1)

3. What is the length of DNA in   (1)

    i)   Ecoli   ii) Human haploid content

4.   An electrostatic precipitator in a thermal power plant is not able to generate high voltage of several thousands. Write the ecological implication because of it.   (1)

5. Name two aminoacids that provide +ve charge to histone proteins.   (1)

SECTION B

6.   Catalytic converters use expensive metals as catalysts.   (2)

    (a)   Name the metals generally used.

    (b)   What precaution should be observed while using catalytic converters?

7. Give any two similarities between the behaviour of genes (Mendel's factor) during inheritance and of chromosome during cell division.   (2)

8. Why do moss plants produce very large numbers of male gametes. Provide one reason. What are these gametes called?   (2)

9. A new breed of sheep was developed in Punjab by crossing two different breeds of sheep. Name the two breeds which were crossed and the new breed developed.   (2)

(**OR**)

Why are proteins synthesized from spirulina called single called proteins? What is the significance of such a protein?

10. Fertilisation is essential for the production of seeds, but some angiospermic seeds develop without fertilization.   (2)

    (a) Give an example of an angiosperm that produce seeds without fertilization. Name the process.

    (b) Explain the two ways by which seeds develop without fertilization.

SECTION C

11. How do oral contraceptives function? What is the advantage of 'Saheli'?   (3)

12. Draw a neat labeled diagram of the sectional view of a human seminiferous tubule.

    (atleast four labellings).   (3)

13. A flower of tomato plant following the process of sexual reproduction produces 200 viable seeds. Answer the following questions giving reasons.   (3)

    (a)   What would have been the minimum number of ovules present in pre-pollinated pistil?

    (b)   How many microspore mother cells would minimally be required to produce requisite number of pollen grains?

    (c) How many pollen grains must have minimally pollinated the carpel?

14. List three salient features of the double helix structure of DNA.   (3)

15. a) Why is human ABO blood group gene considered a good example of multiple alleles?   (3)

    b) Work out a cross upto F1 generation only between a mother with blood group A (Homozygous) and the father with blood group B (Homozygous). Explain the pattern of inheritance exhibited.

16. Enlist the morphological and biochemical characteristics of plants associated with resistance to insect pests with one example each.   (3)

(OR)

    (a) Explain how to overcome inbreeding depression in cattle.   (3)

    (b) List two advantages of inbreeding in cattle.

    (c) Name an improved breed of cattle.

17. Explain co-evolution with reference to parasites and their hosts. Mention any four special adaptive features evolved in parasites for their parasitic mode of life. (3)

18. Mendel published his work on inheritance of characters in 1865, but it remained unrecognized till 1900. Give three reasons for the delay in accepting his work. (3)

19. How does activated sludge get produced during sewage treatment? (3)

20.
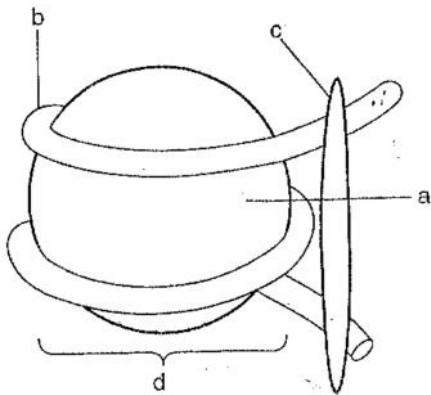
   a.   What is this diagram representing? (3)
   b.   Name the part a, b and c.
   c.   In the eukaryotes the DNA molecules are organized within the nucleus. How is the DNA molecule organized in a bacterial cell in absence of nucleus.

21. Choose any three microbes, from the following which are suited for organic farming, which is in great demand these days for various reasons. Mention one application of each one chosen? (3)

   Mycorrhiza, Monascus, Anabaena, Rhizobium, Methanobacterium, Trichoderma

22. Identify a,b,c,d,e & f in the table given below : (3)

Syndrome	Cause	Characteristics of effected individuals	Sex (Male, female or both)
1. Down's	Trisomy of 21	'a' (i) (ii)	'b'
2. 'c'	XXY	Overall masculine development	'd'
3. Turner's	45 with X O	'e' (i) (ii)	'f'

SECTION D

23. Mohit and Sumit want to buiy a new car for their company. Mohit insisted on buying a CNG car with a better mileage but Sumit insisted on buying a diesel version of a high end car with a better music system and A.C. but relatively low mileage. (4)

   (a) Being a responsible citizen of Delhi, how will Mohit convince Sumit about his decision in the wake of rising pollution levels.
   (b) Suggest two more measures which can help in reducing vehicular pollution.
   (c) What qualities of personality are being exhibited by Mohit in doing so?

SECTION E

24.
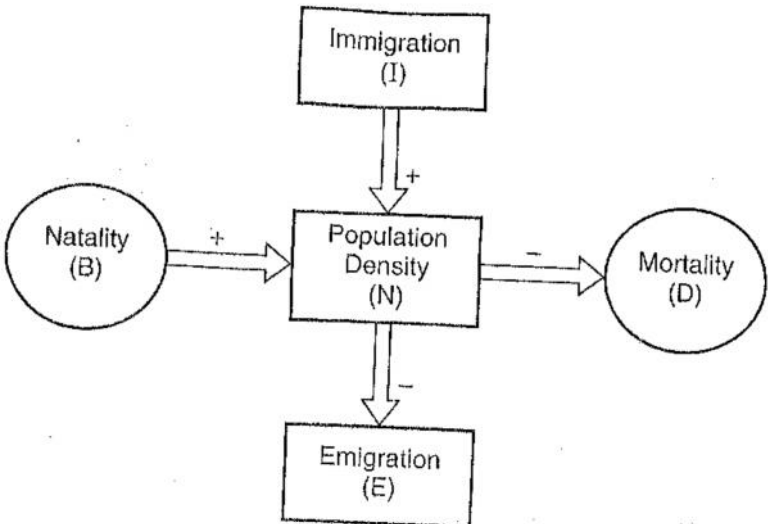
   (a) Which of the above represents the increase or decrease of population? (5)

   (b) If 'N' is the population density at time 't', then what would be its density at time $(t+1)$? Give the formula.

   (c) In a barn there were 30 rats. 5 more rats enter the barn and 6 out of the total rats were eaten by the cats. If 8 rats were born during the time period under consideration and 7 rats left the barn, find out the resultant population at time $(t+1)$

(d)   If a new habitat is just being colonized, out of the four factors affecting the population growth which factor contributes the most?

(OR)

(a) In Arcata the town people have created and integrated waste water treatment process within a natural system. A citizen group called FOAM helps in upkeep of this project. What are the main steps involved in waste water management done in this way?   (5)

b) 'Ecosan' in Kerala and Srilanka is also an initiative for water conservation. How?

25.   Study the flow chart given below. Name the hormones involved in each stage and explain their role.   (5)

Ovulation

↓

Pregnancy

↓

Placenta

↓

Foetal growth

↓

Parturition   Lactation
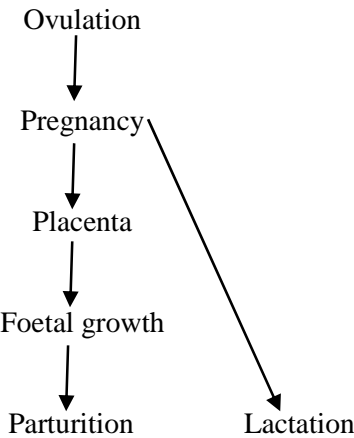
(OR)

(a)   Why does endosperm development precede embryo development in an angiospermic seeds?

State the role of endosperm in mature albuminous seeds.   (5)

(b) Describe with the help of three labeled diagrams the different embryonic stages that include mature embryo of dicot plants.

26.   (a) Why are colour blindness and thalassemia categorized as Mendelian disorders? Write the symptoms of these diseases seen in people suffering from them.   (5)

(b) About 8% of human male population suffers from colour blindness, whereas only 0.4% of human female population suffers from this disease. Write an explanation to show how it is possible.

(OR)

(a)   You are given tall pea plant with yellow seeds whose genotypes are unknown. How would you find the genotype of these plants? Explain with the help of a cross.   (5)

(b)   Identify a,b and c in the given below table.

Pattern of Inheritance	Monohybrid F1 (Phenotypic Expression)
1. Codominance	'a'
2. 'b'	The progeny resembled only one of the parents
3. Incomplete dominance	'c'

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GENERAL INSTRUCTIONS:

   (i)   Answer to questions carrying 1 mark may be from one word to one sentence.

   (ii)   Answer to questions carrying 3 marks may be from 50 – 75 words.

   (iii)   Answer to questions carrying 4 – 5 marks may be about 150 words.

   (iv)   Answer to questions carrying 6 marks may be about 200 words.

   (v)   Attempt all parts of a question together.

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1   "In an organization, employees are happy and satisfied, there is no chaos and the effect of management is noticeable." Which characteristic of management is highlighted here?   1

2   "There should be place for everything and everything should be in its place." Which principle of management has this prescription?   1

3   Rahul, a manager, very often speaks to people at all levels, passing on instructions regarding his department and also other departments. Which principle of management is being overlooked?   1

4   Name the type of plan which is in the form of general statements and channelizes energies towards a particular direction.   1

5   What gives shape to the organizational structure?   1

6   Name the three important aspects of staffing.   1

7   Sanjana Ltd. assured their employees that inspite of recession no worker will be retrenched from the job. Name the type of incentive offered to the employees.   1

8   What should be the 'focus point' for a manager while controlling, as controlling at each and every step is not possible?   1

9   Sagar Ltd. is a highly reputed company. Different functions are performed by different individuals in this company, who are bound together in a hierarchy of relationships. Every individual in the hierarchy is responsible for successful completion of a particular task. Mr. Ayush is responsible for the welfare and survival of the organization. He formulates overall organizational goals and strategies for their achievement. Mr. Rohit ensures that quality of output is maintained. Mr. Mayank assigns necessary duties and responsibilities to the personnel and motivates them to achieve desired objectives.

   At what levels of management are Mr. Ayush, Mr. Rohit and Mr. Mayank working in Sagar Ltd.? Justify your answer.   3

10   What is Functional Foremanship? Explain briefly.   3

11   Differentiate between Rule and Method.   3

12   ABC Ltd. has a plan of increasing profits by 20%. It has devoted a lot of time and money to this plan. The competition starts increasing and it could not change its plan to beat its competitors because huge amount of money had already been devoted to the pre-decided plan. It caused losses to the company.

   Explain any two limitations of planning highlighted in the above case. Also quote lines from it.   1½×2

13   A company is manufacturing washing machines. There is a well defined system of jobs with a clear and definite authority, responsibility and accountability in the company. But people are not allowed to interact beyond their officially defined roles. As a result the company is not able to adapt to the changing business environment. The workforce is also not motivated due to lack of social interaction. The company is facing problems of procedural delays and inadequate recognition to creative talents.

   i) Suggest how the organization can overcome the problems faced by it.

   ii) Give any two benefits it will derive from your suggestion.   1+2

14   Identify the techniques of scientific management, which are described by the statements given below.

   i) When many specialists supervise each worker.

   ii) To determine standard time taken to perform a well-defined job.

   iii) Giving variable wages to workers based on their performance.

   iv) Change in the attitude of workers and management towards one another from competition to cooperation.   1×4

15 Two years ago Pooja completed her degree in food technology. She worked for sometime in a company manufacturing chutneys, pickles and murrabas. She was not happy in the company and decided to have her own organic food processing unit for the same. She set the objectives and targets and formulated action plans to achieve the same.

One of her objectives was to earn 10% profit on the amount invested in the first year. It was decided that raw materials like fruits, vegetables, spices etc will be purchased on three months credit from farmers cultivating organic crops only. She also decided to follow the steps required for marketing of the products through her own outlets. She appointed Mohan as a Production Manager who decides the exact manner in which the production activities are to be carried out. Mohan also prepared a statement showing the number of workers that will be required in the factory throughout the year. Pooja informed Mohan about her sales target for different products, areawise for the forthcoming quarter. While working on the production table a penalty of Rs. 100 per day for not wearing the caps, gloves and apron was announced.

Quoting lines from the above para identify and explain the different types of plans discussed.   4

16 'Steelo Ltd.' decided to set up its steel manufacturing factory in the backward area of Odisha where very less job opportunities were available. People of that area welcomed this effort of 'Steelo Ltd.' To attract people to work in its factory it also decided to provide many other facilities like school, hospital, market etc. in the factory premises. The company started earning huge profits. Another competing company asked its production manager Mehul to investigate the reasons of earning huge profits by Steelo Ltd.

He found that in both the companies there was systematic coordination among the various activities to achieve organizational goals. Every employee knew who was responsible and accountable to whom. The only difference was that in his organization communication took place only through the scalar chain whereas Steelo Ltd. was allowing flow of communication in all the directions as per the requirement which leads to faster spread of information as well as quick feedback.

a) Identify the type of organization which permits Steelo Ltd. the flow of communication in all directions.

b) State a feature of the type of organization identified above.

c) State any two values which Steelo Ltd. wanted to communicate to the society.   1+1+2

17 Anushka, Apurva and Rashi are the owners of a handicraft unit in the urban area of Dibrugarh in Assam, which is involved in the manufacturing and marketing of Sital Pati, traditional mats and Jappi (the traditional headgear). They decided to shift this manufacturing unit to a rural area with an objective of reducing the cost and providing job opportunities to the locals. They followed the functional structure of organization.

They assessed and analysed the type and number of employees required, keeping in mind that they had to encourage the women and the people belonging to that area.

Identify the function of management highlighted above. What are the next three steps that they will have to undertake for obtaining a satisfied workforce.   1+3

18 What is leadership? Explain briefly the different types of leadership.   1+3

19 D&D Ltd. is a large manufacturing unit. Recently, the company has conducted the 'time' and 'motion' studies and concluded that on an average a worker could produce 120 units per day. However, it has been noticed that average, daily production is in the range of 80-90 units.

State the function of management which is needed to ensure the actual performance is in accordance with the performance as per 'time' and 'motion' studies? Explain three features of the same.   1+3

20 'Management of every enterprise can be benefitted from being aware of different dimensions of business environment.' Explain any five such dimensions.   5

21 XYZ Power Ltd. set up a new factory for manufacturing solar lanterns in a remote village as there was no reliable source of electricity in rural areas. The revenue earned by the company was sufficient to cover the costs and the risks. The demand of lanterns was increasing day by day, so the company decided to increase production to generate sales. For this they decided to employ people from the nearby villages as very few jobs were available in that area. The company also decided to open schools and crèches for the children of its employees.

i) Identify and explain the objectives of management discussed above.

ii) State any two values which the company wanted to convey to the society.   3+2

22 Maslow's Need Hierarchy Theory is considered fundamental to the understanding of motivation.

Explain the same with the help of diagram.   5

23 Nutan Tiffin Service was started in Mumbai by Mumbai Dabbawalas. The Dabbawalas who are the soul of entire Mumbai aim to provide prompt and efficient services by providing tasty homemade tiffin to all office goers at right time and place. The service is uninterrupted even on the days of bad weather, political unrest and social disturbances. Recently they have started online booking system through their website 'mydabbawala.com'. Owing to their tremendous popularity amongst the happy and satisfied customers and members, the dabbawalas were invited as guest lecturers by top business schools. The Dabbawalas operate in a group of 25-30 people along with a group leader. Each group teams up with other groups in order to deliver the tiffin on time. They are not transferred on frequent basis as they have to remember the addresses of their customers. They follow certain rules while doing trade- No alcohol during working hours; No leave without permission; Wearing of white cap and carrying ID cards during business hours.

Recently on the suggestion of a few self motivated fellowmen, the dabbawalas thought out and executed a plan of providing food left in tiffins by customers to slum children. They have instructed their customers to place red stickers if food is left in the tiffin, to be fed to poor children later.

a) Explain any four principles of management given by Fayol mentioned in the above case.

b) Give any two values which the Dabbawalas want to communicate to the society.   4+2

24 Aman, Avneesh and Amrish have decided to start a business of manufacturing toys.

They identified the following main activities which they have to perform:

i) Purchase of raw materials   ii) Purchase of machinery

iii) Production of toys   iv) Arrangement of finance

v) Sale of toys   vi) Selection of employees etc

In order to facilitate the work they thought that four managers should be appointed to look after Production, Finance, Marketing and Personnel.

a) Identify the function of management involved in the above para.

b) Write briefly the steps followed in the process of this function.   1+5

25 'Controlling is a systematic process.' Explain the steps of this process.   6

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<u>General Instructions</u> :
  i)   Question paper consists of four sections A,B,C and D.
  ii)   Questions 1 to 6 carry one mark each.
  iii) Questions 7 to 14 carry two marks each.
  iv)   Questions 15 to 25 carry three marks each.
  v)   Questions 26 to 28 carry five marks each.

SECTION A

1. What is sub culturing? Write its application in plants cell culture.   (1)

2. What is the sterilization procedure used for small scale media culturing in laboratory.   (1)

3. CHO animal cell line is used to express r.HuEPO. Why? What is the function of this protein.   (1)

4. In micropropagation apical meristems are used. Why?   (1)

5. Who developed Restriction enzymes in RDT. Name two marker genes present in PBR 322.   (1)

6. Write the function of barnase enzyme in plant cell culture.   (1)

SECTION B

7. Explain an effective therapeutic agent in overcoming renal allograft rejection..   (2)

8. Why is turbidostat and chemostat used in microbial cell cuture?   (2)

9. What type of culture is used to induce callus formation. Why is callus tissues useful?   (2)

10. State the importance of preventing self ligation in RDT. How it can be prevented?   (2)

11. Why is Agro bacterium tumefaceins referred as natural genetic engineer. How does this bacterium achieve this feat?   (2)

12. Foaming is caused in microbial cell culture. State the reason and how it can be prevented?   (2)

13. Why is inverted microscope used in animal cell culture?   (2)

14. Procaryotic cells cannot be used for the production of eukaryotic cells. Why?   (2)

SECTION C

15. Explain the use of baffle flask and shakers in microbial cell culture.   (3)

16. Explain the production and mode of action of t-PA.   (3)

17. State the drawback of using bacterial PHB. How can plants produce PHB in producing biodegradable plastics?   (3)

18. What is insertional inactivation? Explain the method of blue-white screening?   (3)

19. What are the two phages extensively modified for the development of cloning vectors? State the difference between them.   (3)

20. Explain the different types of microbial cultures with the help of graph. Which is the best and why?   (3)

21. How animal cells' preserved? How can it be revived for culturing?   (3)

22. 124 million children world wide are deficient in Vitamin A and many go blind. How can this be prevented by using biotechnological methods?   (3)

23. Expand RFLP. Explain the technique and write one application.   (3)

24. Explain the production of hybrid plants by rescuing embryos.   (3)

25. Explain the importance of maintaining pH, in animal cell culture. What are the major contributors of maintaining osmolality in animal cell culture.   (3)

SECTION D

26. Explain with suitable diagam the principle and steps involved in Sanger's method of DNA sequencing.   (5)

(OR)

Explain the process of amplifying DNA. Write two applications of it.

27. What are monoclonal antibodies? Explain the production of MoAb with suitable diagram.   (5)

28. Explain vector medicated transfer of genes in plants with the help of diagram.   (5)

(OR)

Explain biotic stress tolerance in plants highlighting (a) Herbicide tolerance

(b) Pest and disease resistance.

****

GENERAL INSTRUCTIONS:

(i) All questions are compulsory.

(ii) Answer the questions after carefully reading the text.

1 (a) Which of the following are valid IP addresses? Give reason(s) if invalid.   (1)

    (i) 121. 23. 1.45

    (ii) 192. 168. 0. 254

    (iii) 192 . 168 . 0 .1

    (iv) 198. –1. 1. 1

(b) Expand following terms :   (2)

    (i) HTTP (ii) TCP/IP

(c) Compare Bus topology with STAR topology (any four points).   (2)

(d) List two measures to secure a computer network.   (2)

(e) How static font is different from dynamic font? Explain.   (2)

2 (a) What will be the value of variables 'm' and 'n' after the execution of the following code?   (1)

```
int m, n = 0;

for (m=1;   m<=4;   m++)

  {

  n + = m;

  n – –;

  }
```

(b) Write the value of z after execution of following code :   (1)

```
int j;

int z;

  j = 4;

  z = (5 * ++j) % 3;
```

(c) Write JAVA statement to increase the value assigned to variable Z by 5 and then to display the value using Dialog Box.   (2)

3 (a) Shivani is a junior programmer at 'Bata Shoe Factory'. She has created the following GUI in Netbeans.   (6)

❋ Each pair of shoes costs `1,500, each pair of sandals costs `1,800 and each pair of slippers costs `900.

❋ Item bought will be selected by the user and the quantity.

❋ Amount to be paid for that will be displayed in front of the item and total amount will be displayed at the bottom.

❋ When 'Calculate' button is clicked, the Amount and Total Amount will be displayed.

❋ When 'clear' button is clicked, all the text fields and check boxes should be cleared.

❋ When 'Quit' button is clicked, the application should close.

(b) Rewrite the following program code using switch statement : (2)

```
String month;
int code = Integer.passeInt (TF1.getText());
if (code = = 1)
    month = "Jan";
else if (code = = 2)
    month = "Feb";
else if (code = = 3)
    month = "march"'
else
    month = "No match"
```

(c) What is the difference between setVisible() and setEnabled() methods? Give suitable examples. (2)

4 (a) Explain the use of the following functions with example : (4)

(i) round () (ii) pow() (iii) concat () (iv) substring()

(b) Write JAVA code for given GUI Application. (4)

(c) Identify the problem with the following code : (2)

```
String pwd = pwdTF.get Password();
if   (pwd = = "123")
    {
        System.out.print("Access allowed");
    }
```

5 (a) Explain the attributes of <IMG> tag used in HTML. (2)

(b) Write HTML code to display :

a. New Indian States

• Jharkhand

• Chhattisgarh

    b. Two other States

        € West Bengal

        € Karnataka

(c) Write HTML code to design given form :   (2)

Data Entry Form

Name   [   ]

City   ◯ Bhilai   ◯ Durg

Phone   :   [   ]

    [Submit]   [Reset]

(d) Explain any four attributes of <Body> tag.   (2)

(e) Write HTML code to display the given table :   (2)

Name	Age
Swati	25
Rakesh	29
Anshika	17
Neeraj	18

6 (a) Shubangi is inserting "Sharma" in the "LastName" column of the EMP table but an error is being

    displayed. Write the correct SQL statement.   (1)

    Insert into emp ("Sharma") values (LastName);

(b) Karan has created the following table with the name FRIENDS   (1)

NAME	HOBBIES
Anurima	Dancing
Tanvi	Swimming

    Write SQL statement to delete "HOBBIES" column   (2)

(c) Name any two aggregate (group) functions of SQL.   (2)

(d) Give suitable example of the following SQL functions.   (4)

    (i) NOW() (ii) DAYNAME() (iii) MID() (iv) TRIM ()

(e) Explain the use of UPDATE command with example.   (2)

7 (a) What is the difference between "%" and "_" wild card characters with reference to LIKE clause

    of MYSQL.   (4)

(b) Write the output of the following SQL queries :   (4)

    (i) Select round (87.258, 2);

    (ii) Select instr("Information", "Or");

    (iii) Select dayofyear("2017-01-25");

    (iv) Select ascii("C");

(d) The EMP table is given below :   (7)

No.	NAME	SALARY	AGE	CITY
1	Mukul	30,000	28	BHILAI
2	Rajan	25,000	30	DURG
3	Jaya	32,000	26	BHILAI
4	Nupur	27,000	32	RAIPUR
5	Varsha	31,000	25	DURG
6	Sakshi	24,000	29	BHILAI
7	Sweta	29,000	31	RAIPUR

Write SQL statements to :   (2)

(i) Create EMP table.

(ii) Delete record of "Sweta"

(iii) Add new column MOBILE of char (10)

(iv) Display name and age of all employees whose live in "BHILAI"

(v) Increase the salary of "Sakshi" by 5000.

(vi) To delete table Emp

(vii) To find total salary of all employees.

******

DATE :18-09-2017　　　　**FIRST TERM EXAMINATION, 2017**　　　　**Time : 3 Hours**

CLASS : XII　　　　　　　　　　**ECONOMICS**　　　　　　　　　　**M.M : 80**

No. of Pages Printed : 2

<u>**General Instructions**</u>–

1. All questions in both the sections are compulsory.
2. Marks for questions are indicated against each question.
3. Question nos. 1 to 7 and 18 are very short answer questions carrying 1 mark each.
4. Question nos. 8 to 10 and 19 to 21 are short answer questions carrying 3 marks each. Answer to them should not normally exceed 60 words each.
5. Question nos. 11 to 14 and 22 to 23 are also short answer questions carrying 4 marks each. Answer to them should not normally exceed 70 words each.
6. Question nos. 15 to 17 and 24 to 25 are long answer questions carrying 6 marks each. Answer to them should not normally exceed 100 words each.

<div align="center">

<u>SECTION A</u>   (Micro economics)

</div>

1) Micro economics is not concerned with the behavior of :-

   (a) A firm (b)national income   (c) A consumer   (d) A producer　　　　　　　　　　(1)

2) A consumer consumes only two goods . If the price of one good falls ,the indifference curve :-

   (a) shifts upwards   (b)shifts downwards   (c) can shift both upwards and downwards

   (d) does not shift　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　(1)

3) In the short run, when a firm produces zero output ,its Total Cost is equal to :-

   (a) zero   (b) variable cost (c) fixed cost (d) marginal cost　　　　　　　　　　(1)

4) What do you mean by monotonic preference ?　　　　　　　　　　　　　　　　　(1)

5) What is supply schedule?　　　　　　　　　　　　　　　　　　　　　　　　　(1)

6) When does decrease in demand take place ?　　　　　　　　　　　　　　　　　(1)

7) How will the demand of sugar change if price of tea rises ?　　　　　　　　　　(1)

8) A consumer consumes only two goods X and Y. Marginal utility of X and Y are 5 and 4 respectively. The prices of X and Y are `4 per unit and `5 per unit respectively. Is the consumer in equilibrium. What will be the further reaction of the consumer? Explain.　　(3)

9) Explain the inverse relationship between the price of a commodity and its quantity demanded.　　(3)

10) Draw TFC, TVC and TC in a single diagram. State the relationship between TC and TVC.　　(3)

<div align="center">**OR**</div>

What is the behavior of AFC, AVC and ATC as output increases. Use diagram.

11) Distinguish between

   (a) Short run and long run　　(b) Explicit cost and Implicit cost　　　　　　　　(4)

12) A producer supplies 200 units of a good at a price of `10 per unit. Price elasticity of supply is 2.

   How many units will the producer supply at `11 per unit.　　　　　　　　　　(4)

13) What will be the likely effect on the supply of a good if a unit tax is imposed on it?

   Explain with diagram.　　　　　　　　　　　　　　　　　　　　　　　　　(4)

14) Can a PPC be a straight line? Explain.　　　　　　　　　　　　　　　　　　(4)

<div align="center">**OR**</div>

How is a PPC affected by unemployment in an economy ?

15) State and explain the characteristics of an indifference curve.　　　　　　　　(6)

16) Explain with the help of diagram the effect of the following changes on the demand for a commodity:-

   (a) An unfavourale change in the taste of the consumer　　　　　　　　　　　(6)

   (b) A fall in the income of the buyer if the good is inferior.

<div align="center">**OR**</div>

Define price elasticity of demand. Explain its various degrees using diagram.

17) Giving reasons, state whether the following statements are true or false :-　　　(1.5x4=6)

   (a)　When MP falls, AP will also fall.

   (b)　Increase in TP always indicates that there are increasing returns to a factor.

   (c)　When there are diminishing returns to a factor, TP always decreases.

   (d)　When there are negative returns to a factor, both AP and MP become negative.

SECTION –B [MACROECONOMICS]

18) If reserve ratio is reduced, then what is its affect on money supply ? (1)

19) Explain how non-monetary exchanges are a limitations in taking domestic produce
as an index of welfare ? (3)

OR

How can externalities be a limitation of using GDP as an index of welfare ?

20) How does changes in Bank Rate affect money creation by commercial banks ? (3)

21) Calculate GNP at MP from the following data :- (3)

Contents	` in crore
(i) corporation tax	35
(ii) wages and salaries	200
(iii) rent	40
(iv) dividends	65
(v) net factor income from abroad	(-)10
(vi) consumption of fixed capital	20
(vii) Indirect tax	70
(viii) interest	160
(ix) corporate saving	20
(x) mixed income	180
(xi) subsidies	30
(xii) social security contribution by employers	30

22) Explain the process of money creation by commercial banks with the help of a
numerical example. (4)

23) Explain the currency authority function and lender of last resort function of Central Bank. (4)

OR

How demand deposits are different from time deposits?

24) Calculate NDP at FC by the expenditure method and production method :- (6)

Contents	` in crore
(i) Value of output in economic territory	4100
(ii) Net imports	(-50)
(iii) Intermediate purchase of :-	
Primary sector	600
Secondary sector	700
Tertiary sector	700
(iv) private final consumption expenditure	1450
(v) Net domestic fixed capital formation	200
(vi) Government final consumption expenditure	400
(vii) Change in stock	(-50)
(viii) Consumption of fixed capital	50
(ix) Net indirect taxes	100

25) Giving reasons, explain how should the following be treated in national income? (6)

(i) Fees to a mechanic paid by Firm.

(ii) Interest paid by an individual on a car loan taken from a Bank.

(iii) Expenditure on purchasing a car for use by a Firm.

(iv) Retirement pension.

****

General Instructions:

- All questions are compulsory.
- Question nos. 1-11 carrying 1 mark each.
- Question nos. 12-19 carrying 3 marks each.
- Question nos. 20- 26 carrying 5 marks each.

1) What is tournament? (1)

2) What is knockout cum league tournament? (1)

3) Define Balanced diet. (1)

4) What is food intolerance? (1)

5) What is obesity? (1)

6) Explain the term hearing impairment. (1)

7) What do you mean by Hyperactivity? (1)

8) What is weight training? (1)

9) What is flat foot? (1)

10) What is female athletes triad? (1)

11) What is Osteoporosis? (1)

12) List down various specific sports programmes and explain any two. (3)

13) Being sports captain of the school, prepare five important Committees with their responsibilities to conduct one day Run for Health Race. (3)

14) Explain any one nutritive and one non-nutritive component of diet. (3)

15) Highlight the disadvantages of food supplements. (3)

16) Mention the disorder and write the correct Asana to lead a healthy life. (3)

17) What causes Intellectual Disability? (3)

18) Explain the motor development at infancy period. (3)

19) How can women's participation in sports and games be encouraged in India? Explain. (3)

20) What is a fixture? Make a knockout fixture of 23 teams. (5)

21) What is the "Role of Diet on the performance" of a player? (5)

22) Name the Asana which can be done after having meals. Explain its steps and advantages. (5)

23) What are the benefits of physical activity for children with special need? (5)

24) How can physical activities be corrective measures for the common Postural Deformities? (5)

25) What are the main causes of bad posture? Write in brief. (5)

26) What is Anoxeria Norvosa? Write the symptoms and treatement involved in it. (5)

****

General Instructions:
1. *All questions are compulsory.*
2. *Question number 1 to 5 are Very Short Answer Questions of 1 mark each. Answer them in one word or about a sentence each.*
3. *Question number 6 to 10 are Short Answer Questions of 2 marks each. Answer them in 30 words each.*
4. *Question number 11 to 22 are Short Answer Questions of 3 marks each. Answer them in 40 words each.*
5. *Question number 23 is value based question and carries 4 marks.*
6. *Question number 24 to 26 are Long Answer Questions of 5 marks each. Answer them in 70 words each.*
7. *Use log tables if necessary. Calculators are not permitted.*

1. What is the formula of a compound in which the element Y forms ccp lattice and atoms of X occupy $\frac{2}{3}$ rd of octahedral voids? **(1)**

2. The specific rate of a reaction is 6.2×10^{-3} mol L^{-1} S^{-1}. What is the order of the reaction? **(1)**

3. Which would undergo SN1 reaction faster in the following pair and why? $CH_3 - CH_2 - Br$ and

$$CH_3 - \overset{\overset{\displaystyle CH_3}{|}}{\underset{\underset{\displaystyle Br}{|}}{C}} - CH_3 .$$ **(1)**
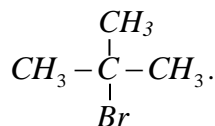
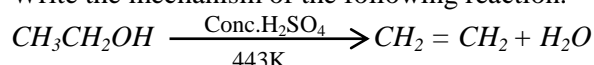4. Write the IUPAC name of the following compound: **(1)**
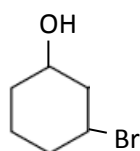
5. Nucleophilic substitution reactions are not very common in phenols. Why? **(1)**

6. Analysis shows that nickel oxide has the formula $Ni_{0.98} O_{1.00}$. What fractions of the nickel exist as Ni^{2+} and Ni^{3+} Ions? **(2)**

7. (a) What is meant by the term coordination number?
   (b) What is the coordination number of atoms
       (i) in a cubic close packed structure?   (ii) in a body centred cubic structure? **(2)**

8. Show that time required for 99% completion is twice the time required for the completion of 90% reaction.
   OR
   Derive integrated rate equation for rate constant of a zero order reaction. **(2)**

9. Define rate constant. Write the unit of rate constant for the following: (i) First order reaction (ii) Second order reaction. **(2)**

10. (a) On mixing liquid X and liquid Y, the volume of the resulting solution increases. What type of deviation from Raoult's law is shown by the resulting solution? What change in temperature would you observe after mixing liquids X and Y?
    (b) State the condition for reverse osmosis. **(2)**

11. Give reasons for the following:
    (a) Schottky defects lower the density of a solid.
    (b) Conductivity of silicon increases on doping it with phosphorus.
    (c) On heating a crystal of KCl in potassium vapours, it starts exhibiting a violet colour. **(3)**

12. Niobium crystallizes in body centered cubic structure. If density is 8.55 g/cm^3, calculate atomic radius of niobium using its atomic mass 93u. **(3)**

13. (a) Out of 0.1 molal solutions of glucose and sodium chloride respectively, which one will have higher boiling point and why?
    (b) Determine the osmotic pressure of a solution prepared by dissolving 25mg of K_2SO_4 in 2 litre of water at 25^0C, assuming that it is completely dissociated. (Atomic mass K = 39, S =32, O = 16) **(3)**

14. Explain as to why there is a rise in boiling point when a non-volatile solid is dissolved in a liquid? Illustrate it with the help of graph. **(3)**

15. (a) Predict the products of electrolysis of an aqueous solution of $AgNO_3$ with platinum electrodes.
    (b) State Faraday's first law of electrolysis. **(3)**

16. Conductivity of 0.00241 M acetic acid is 7.896×10^{-5} S cm^{-1}. Calculate its molar conductivity and if Λ°_m for acetic acid is 390.5 S cm^2 mol^{-1}, what is degree of dissociation? **(3)**

17. For a chemical reaction $R \rightarrow P$, the variation in the concentration, ln [R] vs time (S) plot is given as: **(3)**

    (i)   Predict the order of the reaction.
    (ii) What is the slope of the line?
    (iii) If initial concentration of the reactant is half of the original concentration, how will $t_{1/2}$ change?
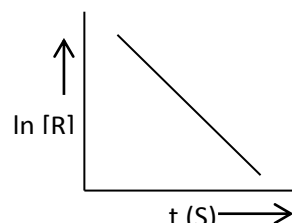
18. The rate of a reaction quadruples when the temperature changes from 293K to 313K. Calculate the energy of activation of the reaction [log 4 = 0.6021]. **(3)**

19. Write the mechanism of the following reaction. **(3)**

    $$CH_3CH_2OH \xrightarrow[\text{443K}]{\text{Conc.H}_2\text{SO}_4} CH_2 = CH_2 + H_2O$$

20. Explain the following with example.
    (a) Reimer – Tiemann reaction.   (b) Williamson's ether synthesis.
    (b) Hydroboration – oxidation of alkenes.   **(3)**
21. Give reasons:
    (a) n-Butyl bromide has higher boiling point than t-butyl bromide.
    (b) Racemic mixture is optically inactive.
    (c) The presence of nitro group at ortho and para positions increases the reactivity of haloarenes towards nucleophilic substitution reactions.   **(3)**
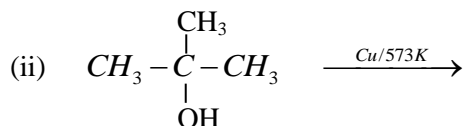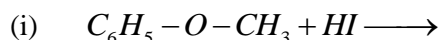
OR

Arrange the following set of compounds in order of property mentioned:
    (a) Bromomethane, Bromoform, Chloromethane, Dibromomethane (Increasing order of boiling point)
    (b) 1-Bromo-3-methylbutane, 2-Bromo-2-methylbutane, 3-Bromo-2-methylbutane (Decreasing order of reactivity towards SN2 displacement)

    (c)
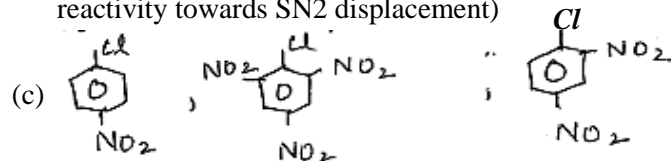
    (Increasing order of reactivity towards nucleophilic substitution)

22. Primary alkyl halide (A) C_4H_9Br reacted with alcoholic KOH to give compound (B). Compound B is treated with HBr to give (C) which is an isomer of (A). When (A) was reacted with Na metal, it gave a compound C_8H_{18} that was different than the compound when n-butyl bromide was reacted with sodium. Identify (A), (B), (C) and (D). Write the equation for reaction of (A) with alcoholic KOH.   **(3)**

23. CCl_4 is produced in large quantities for the use in the manufacture of refrigerants and propellants for aerosol cans. It is also used as fire extinguisher but now it is banned. It is used for the synthesis of CFCs and pharmaceutical manufacturing and as a solvent.
    (i)   Why are CCl_4 fire extinguishers banned?
    (ii)   Inspite of usefulness, should we stop use of CCl_4 as a solvent, cleaning fluid and spot remover? Give reason also.
    (iii) What values do you obtain from above discussion?   **(4)**

24. (a) Write the product (s) is each of the following reactions:
    (i) $C_6H_5 - O - CH_3 + HI \longrightarrow$

    (ii) $CH_3 - \underset{\underset{OH}{|}}{\overset{\overset{CH_3}{|}}{C}} - CH_3 \xrightarrow{Cu/573K}$

    (iii) $C_6H_5OH \xrightarrow{Zn\ dust}$

    (b) Give chemical test to distinguish between the following compounds:
       (i) Ethanol and Phenol   (ii) Propan-1-ol and 2-methyl propan-2-ol.   **(5)**

OR

    (a) Convert the following:
       (i)   But-1-ene to But-2-ene   (ii) Toluene to Benzyl alcohol   (iii) Propene to Propan-1-ol
    (b) Name the reagents used in the following reactions:
       (i)   Nitration of phenol to 2, 4, 6 – trinitrophenol   (ii) Friedal-Crafts acetylation of anisole
       (iii) Oxidation of primary alcohol to aldehyde   (iv) Bromination of phenol to 2, 4, 6 tribromophenol

25. (a) Write the name of the cell which is generally used in inverters. Write the reactions taking place at the anode and the cathode of this cell when the cell is in use.
    (c) Write the Nernst equation and calculate the emf of the following cell at 298K.
       Given that $E^0_{Mg^{2+}/Mg}$ = -2.36V , $E^0_{Cu^{2+}/Cu}$ = 0.34V
       $Mg(s) / Mg^{2+}(0.001) \| Cu^{2+}(0.0001M) / Cu(s)$

OR

    (a) Write the name of the cell which is generally used in hearing aids. Write the reactions taking place at the anode and the cathode of this cell when the cell is in use.
    (b) Using the E^0 values of A and B, predict which is better for coating the surface of iron $(E^0_{Fe^{2+}/Fe}$ = - 0.44V) to prevent corrosion and why?
       Given $E^O_{(A^{2+}/A)} = -2.37V$; $E^0_{(B^{2+}/B)}$ = - 0.14V)
    (c) State Kohlrausch law.   **(5)**

26. (a) Define the following terms:
       (i) Molarity   (ii) Azeotropes
    (b) The vapour pressure of pure liquids A and B are 450 mm and 700 mm of Hg respectively at 350 K. Calculate the composition of the liquid mixture if total vapour pressure is 600 mm of Hg.

OR

    (a) Calculate the mass of ascorbic acid $(C_6H_8O_6)$ to be dissolved in 75g of acetic acid to lower its melting point by 1.5°C. K_f = 3.9K kg mol^{-1}.
    (b) Gas (A) is more soluble in water than gas (B) at the same temperature. Which of the two gases will have the higher value of K_H (Henry's constant) and why?
    (c) In non-ideal solution, what type of deviation shows the formation of maximum boiling azeotropes?   **(5)**

Date : 04.09.2017   Time : 1 ½ Hour
CLASS-XII   Max. Marks : 100

Name of the student: _____   Class/Sec._____   Roll No._____

Invigilator's Signature _____   Marks obtained : _____/100

INSTRUCTIONS:
(i)   All questions are compulsory.
(ii)   Write the correct option in the box provided.
(iii)   Each question carries 1 mark.

....
....

Q.01.   What is heavy water, used as a moderator in nuclear reactors?
        (a) D_2O (b) H_2O (c) Liquid N_2 (d) UO_2

Q.02   Which particular microorganism has been genetically altered to eat up oil spills in water?
        (a) Pseudomonas (b) virus   (c) Bacillus cereus   (d) Bacillus Coagulans

Q.03   In which year was the Project Tiger launched in the country?
        (a) 1982   (b) 1973   (c) 1983   (d) 1985

Q.04   Give the meaning of innocuous.
        (a) Harmless   (b) Innocent   (c) Unspoilt   (d) Virtuous

Q.05   In a mosquito infested place which colour of clothes would attract the insects least?
        (a) Green   (b) Blue   (c) White   (d) Red

Q.06   Which is the smallest state in the world?
        (a) Vetican City   (b) Monaco   (c) Nauru   (d) Maldives

Q.07   Who left a written account of the last days of Socrates.
        (a) Alfred Adler (b) Aristotle   (c) John Locke   (d) Plato

Q.08   What does Amity mean?
        (a) Disunity   (b) Enmity   (c) Competition   (d) Harmony

Q.09   What does Pragmatic mean?
        (a) Unpractical   (b) In experienced (c) Theoretic   (d) Ideal

Q.10   Which mountaineer, when asked why he wanted to climb Mount Everest, said,
        'Because it is there'.
        (a) George Leigh Mallory   (b) Neil Armstrong
        (b) George Bernard Shaw   (d) Edmund Hillary

Q.11   Who said "Superstition is the religion of feeble minds"?
        (a) Abraham Lincoln   (b) Adolf Hitler   (c) FrancisBacon   (d) Edmund Burke

Q.12   Which is the largest sweet water lake?
        (a) Lake Baikal   (b) Badkal Lake   (c) Lake Superior   (d) Baltik Lake

Q.13   Which country produces the cork for every second wine bottle in the world?
        (a) Brussels   (b) Britain   (c) Sweden   (d) Portugal

Q.14   Which is Europe's longest river?
        (a) Volga   (b) Danube   (c) Rhine   (d) Mo Selle

Q.15   Which country of the world produces the most cocoa?
        (a) Kenya   (b) Ivory Coast   (c) Bulgaria   (d) India

Q.16   When did the Jallianwala Bagh Massacre take place?
        (a) 13 April, 1919   (b) 13 April, 1920   (c) 13 April, 1918   (d) 13 April, 1921

Q.17   On which river has the Hirakund Dam been built?
        (a) Yamuna   (b) Ganga   (c) Mahanadi   (d) Jhelum

Q.18.   Which place is famous for its stylized terracotta horse?
        (a) Bankura in West Bengal   (b) Sarnath in Bihar (c) Chhattisgarh   (d) Kerala

Q.19   Which is the largest fish in the world?
        (a) Piranha   (b) The Giant Squid   (c) The Whale Shark   (d) Scolidon

Q.20   Through which film did sound come into Indian films?
        (a) Shri 420   (b) Jaal   (c) Alam Ara   (d) Guide

Q.21   Which animal is the teddy bear?
        (a) Panda   (d) Bear   (c) Koala   (d) Lhasa

Q.22 Which bird's eggs are the largest
(a) Peacock   (d) Ostrich   (c) Penguin   (d) Swan

Q.23 Which gas dominates the earth's atmosphere
(a) Oxygen   (b) Nitrogen   (c) Hydrogen   (d) Argon

Q.24 At what interval does Haley's Comet appear?
(a) 75 years   (b) 76 years   (c) 78 years   (d) 79 years

Q.25 Which letter of the alphabet measures the size of a computer's memory?
(a) K   (b) L   (c) B   (d) M

Q.26 The National Chemical Laboratory is located in
(a) Mumbai   (b) Bengaluru   (c) Hyderabad   (d) Pune

Q.27 The National School of Drama is situated in
(a) Mumbai   (b) New Delhi   (c) Bhopal   (d) Kolkata

Q.28 The first woman to climb Mount Everest was
(a) Marie Jose Perec   (b) Florence Griffith Joyner
(c) Junko Tabei   (d) Jackie Joyner Kersea

Q.29 The Arjuna Awards were instituted in the year
(a) 1965   (b) 1963   (c) 1961   (d) 1975

Q.30 Which one of following countries is not a member of the OPED?
(a) Algeria   (b) Indonesia   (c) Malaysia   (d) Nigeria

Q.31 Who is the Author of the book 'The Right of Man'?
(a) Thomas Hardy (b) Thomas Mann   (c) Thomas Moore (d) Thomas Paine

Q.32 India first took part in the Olympic Games in the year
(a) 1920   (b) 1928   (c) 1972   (d) 1974

Q.33 Toda tribes mainly live in
(a) Madhya Pradesh   (b) Tamil Nadu   (c) Kerala   (d) Odisha

Q.34 Which of the following sanctuary is well known for Elephants?
(a) Kanha   (b) Gir   (c) Kaziranga   (d) Periyar

Q.35 Which of the following is not a Baltic State?
(a) Balarus   (b) Estonia   (c) Latvia   (d) Lithuania

Q.36 Which one of the following is not an official language of United Nations?
(a) Arabic   (c) Chinese   (c) Portugese   (d) Spanish

Q.37 In which of the following State of India is he Pemayangtse Monastery situated?
(a) Nagaland   (b) Himachal Pradesh   (c) Sikkim   (d) Arunachal Pradesh

Q.38 Article 370 of the constitution is applicable to the state of
(a) Nagaland   (b) Mizoram   (c) Manipur   (d) Jammu and Kashmir

Q.39 The Acid in gastric juice is
(a) acetic acid   (b) nitric acid   (c) hydrochloric acid   (d) sulphuric

Q.40 Who among the following is the author of the book 'The Namesake'?
(a) Aundhati Roy   (b) Amitav Ghosh   (c) Jhumpa Lahiri   (d) Kiran Desai

Q.41 Sabin Awards is given for the conservation of
(a) amphibians   (b) reptiles   (c) birds   (d) corals

Q.42 Famous player Kevin Peterson belongs to
(a) Kenya   (b) England   (c) Nigeria   (d) Namibia

Q.43 The duration of a normal one half of a Hockey match is
(a) 45 min.   (b) 40 min.   (c) 35 min.   (d) 30 min.

Q.44 The term 'Duck' is associated with
(a) Soccer   (b) Volleyball   (c) Golf   (d) Cricket

Q.45 With which game is Brookland associated?
(a) Hockey   (b) Golf   (c) Football   (d) Tennis

Q.46 How many squares are there in a Chess Board?
(a) 36   (b) 48   (c) 64   (d) 72

Q.47 Which of the following places is know as the 'Mecca of Indian Football'?
(a) Delhi   (b) Bombay   (c) Kolkata   (d) Ambala

Q.48 Who has written the Book 'Two Lives'?
(a) Salman Rushdie   (b) Arundhati Roy   (c) Vikram Seth   (d) Shiv Khera

Q.49 Among the SAARC countries the most densely populated country is?
(a) Bangladesh   (b) India   (c) Pakistan   (d) Maldives

Q.50 The headquarters of Food and Agriculture Organization is in
(a) Paris   (b) Rome   (c) Madrid   (d) Washington

Q.51 The first Defence Minister of India was
(a) K.M. Cariappa   (b) Gopalaswami Aiyangar   (c) Baldev Singh   (d) Sardar Patel

Q.52. Who was the Mughal Emperor to have lifted the Jaziya on Hindus?
(a) Babur   (b) Akbar   (c) Jahangir   (d) Shahjahan

Q.53 Who was the Sikh Guru to be slaughtered by Aurengzeb?
(a) Ramdas   (b) Teg Bahadur   (c) Arjundev   (d) Gobing Singh

Q.54 The waterfall "Victoria" is associated with the river
(a) Amazon   (b) Missouri   (c) St. Lawrence   (d) Zambenzi

Q.55 Which among the following planets is smaller in size than the Earth.
(a) Neptune   (b) Venus   (c) Saturn   (d) Uranus

Q.56 Which one of the following places is famous for production of Railway Coaches?
(a) Nasik   (b) Kapurthala   (c) Kanpur   (d) Kochi

Q.57 When you travel in a car from Bhubaneshwar to Vishakhapatnam, which
National Highway would you take?
(a) NH-14   (b) NH-15   (c) NH-16   (d) NH-17

Q.58 Among the following states, which one does not have any significant coal resources?
(a) Andhra Pradesh   (b) Bihar   (c) Chhattisgarh   (d) Maharashtra

Q.59 Whose teaching inspired the French Revolution?
(a) Locke   (b) Rousseau   (c) Hegal   (d) Plato

Q.60 The noble gas used in radiotherapy is
(a) Neon   (b) Argon   (c) Radon   (d) Xenon

Q.61 Kisan Divas is celebrated on
(a) December 22   (b) December 23   (c) December 26   (d) December 29

Q.62 Pruning is an essential part in cultivation of
(a) Rubber   (b) Tobacco   (c) Coffee   (d) Tea

Q.63 Doldrums are characterized by
(a) Uniform Low Pressure   (b) Uniform High Pressure
(c) High Wind Velocity   (d) Low Humidity

Q.64 Where did Buddha preach his first sermon?
(a) Kasi   (b) Sarnath   (c) Kushi Nagar   (d) Bodh Gaya

Q.65 To which of the following types of organisms do mushrooms belong?
(a) Algac   (b) Ferns   (c) Fungi   (d) Lichens

Q.66 Biological catalysts in living organisms are known as
(a) Hormones   (b) Vitamins   (c) Steroids   (d)Enzymes

Q.67 Which of the following is generally found in Sedimentary rocks?
(a) Basalt   (b) Silica   (c) Shale   (d) Magnesium

Q.68   The disease that is caused by Virus is
(a) Typhoid   (b) Cholera   (c) Common Cold   (d) Malaria

Q.69 Which gas is used for converting vegetable oils into saturated fats?
(a) H_2 (b) O_2 (c) Cl_2 (d) SO_2

Q.70 The radiant energy of the Sun results from
(a) Nuclear Fusion   (b) Nuclear Fission   (c) Cosmic Radiation   (d) Combusion

Q.71 A country's natural capital includes all of the following except
(a) Forest   (b) Water   (c) Roads   (d) Minerals

Q.72 Curie is unit of
(a) Radioactivity   (b) Temperature   (c) Heat   (d) Energy

Q.73 When aggregate supply exceeds aggregate demand
(a) Unemployment falls   (b)   Prices rise
(c) Inventories accumulate   (d)   Unemployment develops

Q.74 The members of the Rajya Sabha are elected for a term of
(a) Two years   (b) Four years   (c) Five years   (d) Six years

Q.75 What is the animal symbol of World Wildlife Fund (WWF)
(a) Dolphin   (b) Kangaroo   (c) Tiger   (d) Giant Panda

Q.76 Which of the following is the exclusive jurisdiction of the State Government
(a) Corporation tax   (b) Customs Duty   (c) Sales Tax   (d) Income Tax

Q.77 The famous bronze image of Nataraja is a fine example of which art?
(a) Chola Art   (b) Gandhar Art   (c) Mathura Art   (d) Mourya Art

Q.78 Nobel Prize Winning Indian Amartya Sen is known for his work in
(a) Physics   (b) Chemistry   (c) Medicine   (d) Economics

Q.79 Jamini Roy is a famous
(a) Dancer   (b) Magician   (c) Cartoonist   (d) Painter

Q.80 LAN stands for
(a) Local Area Nodes   (b) Large Area Network
(c) Large Area Nodes   (d) Local Area Network

Q.81 HOMO Sapien directly evoked from
(a) Perking man   (b) Java man   (c) Neanderthal man   (d) Austrolopithecus

Q.82 What is the pH value of pure water
(a) 1   (b) 6   (c) 7   (d) 10

Q.83 The terms, Lubb and Dubb relate to which one of the following
(a) Heat   (b) Eyes   (c) Teeth   (d) Lungs

Q.84 "Fire Fighting Clothes" are made from
(a) Mica   (b) asbestos   (c) tale   (d) steatite

Q.85 Who among the following had constructed the Red Fort in Delhi?
(a) Akbar   (b) Jahangir   (c) Shahjahan   (d) Aurengzeb

Q.86 The gas that usually causes explosion in Coal Mines is
(a) Hydrogen   (b) Carbon Monoxide   (c) Air   (d) Methane

Q.87 Restarting of computer that is already on is referred to as
(a) Shut down   (b) Cold Booting   (c) Warm Booting   (d) Logging Off

Q.88 Anup Sridhar is well known for playing
(a) Badminton   (b) Chess   (c) Football   (d) Table Tennis

Q.89 Which state is hosting the 2017 India-Asean Youth Summit?
(a) Uttar Pradesh   (b) Madhya Pradesh   (c) Haryana   (d) Assam

Q.90 The 2017 World Elephant Day (WED) was observed on which date
(a) August 13   (b0 August 14   (c) August 12   (d) August 11

Q.91 Which state government has launched mobile therapy vans for elderly people?
(a) Bihar   (b) Assam   (c) Uttar Pradesh   (d) Kerala

Q.92 Ruth Pfau, popularly known as Pakistan's Mother Teresa passed away on August 10, 2017.
She hailed from which country
(a) Italy   (b) United States   (c) Germany   (d) France

Q.93 Which Indian-origin personality will be honoured with the 2017 Asia-Game changers Award?
(a) Jasleen Laghari   (b) Anuja Ravindra Dhir   (c) Dev Patel   (d) Ishani Duttagupta

Q.94 Who has been appointed as the brand ambassador for Swachh Bharat Mission in Uttar Pradesh?
(a) Sachin Tendulkar   (b) Amitabh Bachchan   (c) Akshay Kumar   (d) Aamir Khan

Q.95 India's first helicopter-taxi service will start in which city?
(a) Bengaluru   (b) New Delhi   (c) Chennai   (d) Kolkata

Q.96 Rinku Hooda, who won silver at the World U-20 Para Athletics Championships (August'17)
Is associated with which sports
(a) Javelin Throw   (b) Wrestling   (c) Sprint   (d) Judo

Q.97 Who has been appointed as the new Chief of the Central Board of Film Certification?
(a) Shyam Benegal   (b) Prasoon Joshi   (c) Naresh Chandra Lal   (d) Vivek Agnihotri

Q.98 Which Union Minister has launched the NCERT web portal for home delivery of books?
(a) Mukhtar Abbas Naqvi   (b) Dharmendra Pradhan
(c) P.P. Choudhary   (d) Upendra Kushwaha

Q.99 Which city will host the 2024 Summer Olympics?
(a) Los Angeles   (b) London   (c) Paris   (d) New York

Q.100 Who is the Vice-President of India?
(a) Venkaiah Naidu   (b) Bhairon Singh Shekhawat
(c) Krishna Kant   (d) Mohammed Hamid Ansari

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DELHI PUBLIC SCHOOL RISALI BHILAI (C.G.)

First Terminal Examination, 2017

Engineering Graphics (Class XII)

Date : 18-09-2017

Time Allowed: 03 Hours   Max. Marks: 70

General Instructions:

   i.   Attempt all questions.
   ii.   Internal choice is given in some questions.
   iii.   Use both side of drawing sheet if necessary.
   iv.   All dimensions are in mm.
   v.   Missing and mismatching dimension if any may be suitably assumed.
   vi.   Follow the SP:46-2003 revised codes with first angle method of projection.
   vii.   Give your answer according to question.

Q1. Attempt the following multiple choice questions: (5x1=5)
   (i)   In isometric projection all the three axes are inclined to each other at an angle of?
          a. 30^0 b. 45^0 c. 120^0 d. 90^0
   (ii)   Which machine Part is called headless bolt?
          a. Nut   b. Screw   c. Stud   d. Rivet
   (iii) Which of the following is used to prevent the relative movement between the shaft and the parts mounted on it?
          a. Cotter   b. Gib   c. Key   d. Pin
   (iv)   A screw thread that is screwed in or on clockwise direction is called-
          a. RH Thread   b. BSW Thread   c. Metric Thread   d. LH Thread
   (v)   In isometric projection the three principal axes are inclined at what angles with the horizontal base line?
          a. $30^0, 90^0, 60^0$ b. $30^0, 120^0, 30^0$
          c. $60^0, 90^0, 60^0$ d. $30^0, 90^0, 30^0$

Q2. (i) Construct an isometric scale which can measures up to 120mm.   (4)

(ii) Draw an isometric projection of frustum of pentagonal pyramid having longer base side 40mm and shorter base side 30mm with axis of 70mm resting on its longer side base keeping one of its base side parallel to the V.P. and nearer to the observer.   (7)

(iii) A cylinder of base diameter 92mm and height 54mm is resting on one of the circular ends on HP. A hexagonal prism of base side 25mm and height 66mm with its axis perpendicular to VP, and having a rectangular face resting centrally on the top circular face of cylinder. Draw the isometric projection of two solids placed together. Indicate direction of viewing. Give all dimensions.   (12)

Q3. (i) Draw to scale 1:1 the standard profile of metric screw thread (External) taking enlarged pitch as 50mm. Give standard dimensions. Show all the unknowns in a separate table.   (8)

<div align="center">OR</div>

Draw to scale 1:1 the front view, top view and side view of a hexagonal nut of size M30, keeping its axis perpendicular to HP. Give standard dimensions.   (8)

(ii) Sketch free hand the front view and side view of a collar stud of size M20, keeping its axis parallel to HP and VP. Give standard dimensions.   (5)

<div align="center">OR</div>

Sketch free hand the front view and top view of a 60^0 counter sunk flat head rivet of diameter 20mm, keeping its axis vertical. Give standard dimensions.   (5)

Q4. (a.) Draw to full size scale the front view and right hand side view of an assembly of a square bolt of diameter 25mm with a square nut and washer, keeping the axis parallel to HP and VP. Take length of the bolt as 100mm. Give standard dimensions.   (16)

(b.) Draw to scale 1:1, the front view in section and plan of a single riveted lap joint, taking the thickness of the plates as 25mm. Give standard dimensions. (13)

DELHI PUBLIC SCHOOL, BHILAI
FIRST TERM EXAMINATION-2017
CLASS: XII (ACCOUNTANCY)

TIME: 3 HOURS   **M.M.: 80**

General Instructions:
1. *This question paper is divided into two parts – A and B.*
2. *Please check that this question paper contains **23** questions.*
3. *All the questions of both the parts are compulsory for all.*
4. *All parts of a question should be attempted at one place.*
5. *Each question carries marks indicated against it.*
6. *Please write down the correct serial number of the question before attempting it.*

Part – A
Accounting for Partnership Firms

1. During the year ended 31st March, 2017, Rupesh, a partner, made the following drawings: June 30, 2016 ₹ 5,000; November 1, 2016 ₹ 7,000; February 1, 2017 ₹ 8,000. Calculate interest on drawings when it is charged @ 10%.   1

2. A and B are partners sharing profits in the ratio of 7:3. C is admitted for 1/5th share which he acquires equally from A and B. find the new profit-sharing ratio.   1

3. Other than admission, retirement or death of a partner;on which two occasions a partnership firm can be reconstituted?   1

4. Why is Goodwill considered an 'intangible asset' but not a 'fictitious asset'?   1

5. A and B were partners. They shared profits as under:
    A – ½; B – ⅓ and carried to reserve ⅙.
    B died. The balance of reserve on that date of death was ₹ 30,000. Compute what should be his share of reserve?   1

6. Distinguish between 'Dissolution of Partnership' and 'Dissolution of Partnership Firm' on the basis of continuation of business.   1

7. A, B and C were partners in a firm sharing profits and losses in the ratio of 2:1:2. Their capitals were fixed at ₹ 3,00,000, ₹ 1,00,000 and ₹ 2,00,000 respectively. For the year ended 31st March, 2017, interest on capital was credited to them @ 9% p.a. instead of 10% p.a. The profits for the year before charging interest was ₹ 2,50,000. Showing your workings clearly, pass the necessary adjustment entry.   3

8. Akash and Ashutosh were partners in a firm sharing profits in the ratio of 3:2. On 31st March, 2017 the firm was dissolved. After transferring assets (other than cash) and outsiders' liabilities to Realisation Account, you are given the following information:
    (a) A creditor for ₹ 2,00,000 accepted building of ₹ 2,80,000 at ₹ 2,20,000 and paid the firm ₹ 20,000.
    (b) Another creditor of ₹ 80,000 accepted ₹ 20,000 in cash and investments of the book value of ₹ 65,000 in full settlement of his claim.
    (c) Expenses of realisation ₹ 9,000 were paid by Akash.
    Pass necessary Journal entries for the above transactions in the books of the firm assuming that all payments were made by cheque.   3

9. X and Y are partners sharing profits and losses in the ratio of 3:2. They admit Z into partnership for 1/5th share, which he takes from X and Y in the ratio of 2:3. Goodwill of the firm is valued at ₹ 50,000. Z brings in only 60% of his share of goodwill and ₹ 2,00,000 as his capital through cheque. It was decided that shortfall in amount shall be debited to Z's Current Account. Pass necessary journal entries for the above arrangements when goodwill appears in the books at ₹ 20,000.   3

10. A firm having the assets of ₹ 5,00,000 and liabilities of ₹ 2,10,000 earns the annual profits of ₹ 45,000. The rate of normal profit is 15%. Calculate the amount of goodwill by capitalisation of super profits method.   3

11. X, Y and Z were partners sharing profits in the ratio of 5:3:2. Y retired on 31st March, 2016. On that date the capitals of X, Y and Z after all adjustments stood at ₹ 43,200; ₹ 36,600 and ₹ 11,200 respectively. The cash and bank balances on 31st March, 2016 amounted to ₹ 4,000. Y was to be paid through cash brought in by X and Z in such a way as to make their capitals proportionate to their new profit-sharing ratio which was to be 3:2. Calculate amount of cash to be paid or to be brought in by the continuing partners assuming that a minimum cash and bank balance of ₹ 3,000 was to be maintained and pass necessary entries for the same.   4

12. Raghav and Raghu were partners in a firm sharing in the ratio of 3:2. On 1.4.2016, they admitted their friend Rajnee, who is specially abled but a very creative and intelligent woman, as a new partner for ⅛th share in the profits with a guaranteed profit of ₹ 1,50,000 without any capital contribution. The

new profit-sharing ratio between Raghav and Raghu will remain the same but they decided to bear any deficiency on account of guarantee to Rajneein the ratio of 2:3. The profit of the firm for the year ended 31.3.2017 was ₹ 9,00,000.

Pass necessary journal entries for the above transactions and identify any two **values** which Raghav and Raghu want to communicate to the society.   4

13. The Balance Sheet of Rahim, Sudha and Tanu who were sharing profits in the ratio of 3:3:4 as on 31st March, 2017 was as follows:

Liabilities		Amount	Assets	Amount
		₹		₹
Bills Payable		5,000	Cash	16,000
Loan		12,000	Stock	44,000
General Reserve		10,000	Investments	47,000
Capital A/cs:			Land and Buildings	60,000
Rahim	60,000		Rahim's Loan	10,000
Sudha	50,000			
Tanu	40,000	1,50,000		
		1,77,000		1,77,000

Rahim died on 30th June, 2017. The partnership deed provided for the following on the death of a partner:

(a) Goodwill of the firm be valued at two years purchase of average profits for the last three years.

(b) Rahim's share of profit or loss till the date of her death was to be calculated on the basis of sales. Sales for the year ended 31st March, 2017 amounted to ₹ 4,00,000 and that from 1st April to 30th June, 2017 to ₹ 1,50,000. The profit for the year ended 31st March, 2017 was ₹ 1,00,000.

(c) Interest on capital was to be provided @ 6% p.a.

(d) The average profits of the last three years were ₹ 42,000.

(e) According to Rahim's will, the executors should donate her share to "ApnaAshiyaana" an old age home.

Prepare Rahim's Capital Account to be rendered to his executors. Also identify any **two values** highlighted in the question.   6

14. A, B and C are partners in a firm sharing profits in the ratio of 2:2:1. Their Balance Sheet as at March 31, 2017 was as follows:

Liabilities		Amount	Assets	Amount
		₹		₹
Creditors		30,000	Cash	5,000
Bills Payable		20,000	Debtors	25,000
Outstanding Expenses		25,000	Stock	40,000
General Reserve		50,000	Plant	1,00,000
Capital:			Buildings	50,000
A	50,000		Land	85,000
B	60,000			
C	70,000	1,80,000		
		3,05,000		3,05,000

From 1st April, 2017, the partners decided to share profits in the ratio of 1:2:3. For this purpose, it was agreed that:

(a) The goodwill of the firm be valued at ₹ 60,000.

(b) Land be revalued at ₹ 1,00,000 and Building be depreciated by 6%.

(c) Creditors amounting to ₹ 3,000 were not to be paid.

(d) General reserve be transferred to capital accounts whereas revised values of assets and liabilities are not to be recorded in the books.

You are required to record the necessary journal entries to record the above agreement and prepare the capital accounts of the partners.   6

15. Parv, Raj and Sam were partners sharing profits and losses in 5:3:2. On 1st April, 2017, Parv retired from the firm. On this date, the accounting records maintained by the continuing partners are given below. You are required to complete the missing figures stated **with ?** mark and redraft the records:

Dr.   **Revaluation A/c**   **Cr.**

Particulars	Amount ₹	Particulars	Amount ₹
To Stock A/c	?	By Unclaimed Liability A/c	800
To Machinery A/c	5,200	By Land and Buildings A/c	?
To Provision for Bad Debts A/c	?		
To Partners' Capital A/cs (Gain):			
Parv 4,000			
Raj 2,400			
Sam 1,600	8,000		
	?		?

Dr.   **Partners' Capital A/cs**   **Cr.**

Particulars	Parv ₹	Raj ₹	Sam ₹	Particulars	Parv ₹	Raj ₹	Sam ₹
To Parv's Capital A/c	-----	?	?	By Balance b/d	30,000	20,000	----
To Advertising Suspense A/c	5,000	3,000	2,000	By Raj's Capital A/c	28,800	----	----
To Bills Payable A/c	26,000	----	----	By Sam's Capital A/c	19,200	----	----
To Goodwill A/c	18,000	10,800	7,200	By General Reserve A/c	11,000	6,600	4,400
To Parv's Loan	?	----	----	By Workmen Comp. Reserve A/c	?	?	?
To Balance c/d	-----	48,000	32,000	By Cash A/c	----	54,000	44,000
	41,400	27,600	20,000		41,400	27,600	20,000

Balance Sheet
as on 1st April, 2017

Liabilities	Amount ₹	Assets		Amount ₹
Creditors (₹ 60,000 - ₹ 800)	59,200	Cash		?
Bills Payable	?	Debtors	32,000	25,000
Employees' Provident Fund	14,000	Less: Provision	?	30,400
Parv's Loan	?	Stock (₹ 29,00 - ₹ 2,000)		27,000
Capital A/cs:		Machinery		12,800
Raj ?		Land & Buildings (32,000 + 16,000)		48,000
Sam ?	?			
	2,19,200			2,19,200

16. Emmanuel, Farhaan and Gautam were partners in a firm sharing profits and losses in the ratio of 5:3:2. They became old and no one was there to look after their business. Therefore, they decided to dissolve the business and donate the amount available to an NGO which is providing service for growing trees in urban areas to control pollution. On 31st March, 2017, their Balance Sheet was as follows:

Balance Sheet as on 1st April, 2017

Liabilities	Amount ₹	Assets	Amount ₹
Creditors	10,000	Furniture	37,000
Investment Fluctuation Fund	4,500	Stock	5,500
Capitals:		Investments	15,000
Emmanuel 40,000		Bank	9,000
Farhaan 30,000	70,000	Gautam's Capital	18,000
	84,500		84,500

Following was agreed upon:
(a) Emmanuel took over investments for ₹ 12,500.
(b) Stock and furniture realised ₹ 41,500.
(c) There was old furniture which has been written off completely from the books. Farhaan agreed to take away the same at the price of ₹ 30,000.
(d) Compensation paid to the employees amounted to ₹ 8,000. This liability was not provided in the above Balance Sheet.

(e) Realisation expenses amounted to ₹ 1,000.

Prepare Realisation Account and Partners' Capital Accounts to close the books of the firm. Also identify any **two values** being conveyed in the question. 8

17. Pawan and Qureshi are partners in a firm sharing profits in the ratio of 3:2. On 1ˢᵗ April, 2017, their Balance Sheet was as follows:

Balance Sheet of P and Qas at 1.4.2017

Liabilities	Amount	Assets	Amount
	₹		₹
Creditors	17,000	Cash	6,000
General Reserve	4,000	Debtors	15,000
Workmen Compensation Reserve	9,000	Investments	20,000
Investment Fluctuation Reserve	11,000	Plant	14,000
Provision for Bad Debts	2,000	Land and Building	38,000
Capitals:			
P 30,000			
Q 20,000	50,000		
	93,000		93,000

On the above date, Ruby, a specially abled highly qualified woman, was admitted for 1/4ᵗʰ share in the profits of the firm on the following terms:

(a) Ruby will bring ₹ 20,000 for her capital and ₹ 4,000 for his share of goodwill premium.

(b) All debtors were considered good.

(c) The market value of investments was ₹ 15,000.

(d) There was a liability of ₹ 6,000 for workmen compensation.

(e) Capital accounts of P and Q are to be adjusted on the basis of R's capital.

Identify any **two values** highlighted here and prepare Revaluation Account and Partners' Capital Accounts. Also show your workings clearly. 8

Part – B
Analysis of Financial Statements

18. One of the objectives of 'Financial Statement Analysis' is to identify the reason for change in the financial position of the enterprise. State two more objectives of this analysis. 1

19. State any two limitations of 'Financial Statement Analysis'. 1

20. Under what heads and sub-heads following items will appear in the Balance Sheet of a Company as per Schedule III of the Companies Act, 2013:

    (a) Premium on Redemption of Debentures   (b) Loose Tools

    (c) Subsidy Reserve   (d) Balance with Banks

    (e) Mining Rights   (f) Calls-in-Advance

    (g) Loans provided repayable on demand   (h) Encashment of Employees Earned Leave payable on retirement? 4

21. From the information given below, calculate any two of the following ratios:

    (a) Gross Profit Ratio   (b) Inventory Turnover Ratio   (c) Operating Ratio

Information:

Revenue from Operations (Net Sales) ₹ 1,50,000; Debtors ₹ 16,000; Cost of Revenue from Operations ₹ 1,20,000; Operating Expenses ₹ 16,000; Opening Inventory ₹ 29,000; Net Fixed Assets ₹ 1,10,000; Closing Inventory ₹ 31,000. 4

22. Prepare Comparative Statement of Profit and Loss from the following:

Particulars	31ˢᵗ March, 2017	31ˢᵗ March, 2016
	₹	₹
Revenue from Operations	12,50,000	10,00,000
Cost of Materials Consumed	6,50,000	5,00,000
Other Expenses	60,000	50,000
Interest on Investments	30,000	30,000
Tax Rate	50%	50%

4

23. From the following information, calculate the following:

    (d) Cost of Revenue   (e) Opening and   (f) Quick Assets   (g) Current Assets
       from Operations   Closing Inventory

Information:

Inventory Turnover Ratio 6 Times; Inventory at the end of year is ₹ 6,000 more than the Inventory at the beginning of the year; Revenue from Operations (all credit) ₹ 2,40,000; Gross Profit 25% on Cost; Current Liabilities ₹ 80,000; Quick Ratio 0.80:1. 6