CLASS : XI
DATE:18.08.2015

MARKS: 80
TIME: 3HRS
No. of Sides: 04

General Instructions:

This paper is divided into three sections A, B and C. All the sections are compulsory.

Separate instructions are given with each section and question, wherever necessary.

Read these instructions very carefully and follow them faithfully.

Do not exceed the prescribed word limit while answering the questions.

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SECTION – A (READING AND COMPREHENSION)   (20)

I. **Read the following poem carefully:**   12 marks

A PSALM OF LIFE

Tell me not, in mournful numbers,

Life is but an empty dream !

For the soul is dead that slumbers,

And things are not what they seem.

Life is real ! Life is earnest !

And the grave is not its goal ;

"Dust thou art, to dust returnest,"

Was not spoken of the soul.

Not enjoyment, and not sorrow,

Is our destined end or way ;

But to act, that each to-morrow

Finds us farther than to-day.

Art is long, and Time is fleeting,

And our hearts, though stout and brave,

Still, like muffled drums, are beating

Funeral marches to the grave.

In the world's broad field of battle,

In the bivouac of Life,

Be not like dumb, driven cattle !

Be a hero in the strife !

Trust, no future, howe'er pleasant !

Let the dead Past bury its dead !

Act — act in the living Present !

Heart within, and God, o'erhead !

Lives of great men all remind us

We can make our lives sublime,

And, departing, leave behind us

Footprints on the sands of time —

Footprints, that perhaps another,

Sailing o'er life's solemn main,

A forlorn and shipwrecked brother,

Seeing, shall take heart again.

Let us, then, be up and doing,

With a heart for any fate ;

Still achieving, still pursuing,

Learn to labour and to wait.

— H.W. Longfellow

On the basis of your reading of the poem, answer the following questions by choosing the best of the given choices. **6**

(a) **This poem is about** ....

   (i) living life with action
   (ii) enjoying life
   (iii) mourning life
   (iv) postponing action

(b) **The first two stanzas** ....

   (i) speak of some negative views of life
   (ii) try to dispel pessimistic views about life
   (iii) say that death is not the end of life
   (iv) All the above

(c) **The poet says that we are always moving towards death and** ....

   (i) enjoyment should be our goal
   (ii) we should act for continuous growth
   (iii) we are bound to meet sorrow
   (iv) our funeral is near

(d) **The failures of the Past** ....

   (i) should point towards the future
   (ii) should shape our Present
   (iii) should remind us of God
   (iv) should be forgotten

(e) **The Antonym of the term "driven cattle" (line 19) is**....................... .

   (i) sincere and active
   (ii) meek and submissive
   (iii) traditional and conservative
   (iv) conscientious and determined

(f) **The synonym of "sublime" (line 26) is** ..... .

   (i) cruel
   (ii) ideal
   (iii) tolerant
   (iv) enligthened

Answer the following questions: **6**

(a) Why does the poet not accept life as an empty dream ?

(b) Why should an individual involve him in enjoyment and sorrow ?

(c) Why does the poet compare heart with muffled drums ?

(d) Do you think the poet is right in saying that one should not tangle one's conscience in worry of past and future ? Why is it so ?

(e) What qualities are indicated by the word 'sublime' (line 26) ?

(f) What is the synonym of the word 'shipwrecked' (line 31) ?

2. Read the passage. (8)

1 Do you know what cerebral palsy is ? 'Cerebral' is to do with the cerebellum, the main part of the brain. 'Palsy' means paralysis, when a part of the body cannot be moved at will. So cerebral palsy is a condition in which a person is paralysed in certain part of the body because of a fault in the brain. 'Spasticity'[1] is sometimes used to describe such a condition. Sometimes only the legs are affected, a condition called paraplegia. If one side of the body is paralysed including the arm and leg on that side, it is known as hemiplegia. If all the body is affected, this is called quadriplegia.

2 Some people with cerebral palsy are able to make weak, jerky movements with the affected parts, while others cannot move them at all. In certain cases the affected part is floppy[2] but usually it becomes stiff and rigid in an unnatural position. For example, a paralysed arm is tucked into the side with the hand under the armpit.

3 Cerebral palsy is usually present from birth. Throughout the world it affects about one baby in 300. Exactly what is wrong is not known, but it is thought that the brain does not develop properly while the baby is growing in the womb. Sometimes the brain is damaged during a difficult birth, perhaps due to lack of oxygen in the baby's blood.

4   Sometimes the palsy is not noticed for several months, since all newborn babies make floppy and jerky movements to start with. However, an affected baby does not progress normally and cannot do things such as reach for toys, sit up, crawl, or talk at the usual ages.

5   Cerebral palsy is unlikely to get worse as the child grows, but it is also unlikely to get better. In adult life the person may need a wheelchair, crutches, or other aids for the handicapped. Occasionally an older person develops cerebral palsy, perhaps as a result of a stroke or severe fits.

6   Some people with cerebral palsy are less intelligent than normal, and some have other conditions such as hearing or seeing difficulties. But this is by no means always true. The problem is that, if affected, children cannot move and talk properly, and they may not be able to show how intelligent they really are. So parents, doctors, teachers and friends must take each child as an individual and always be watchful, helping him or her to achieve as much development as possible despite the handicaps.

Word-meanings : 1. spasticity—physical disability because of cerebral palsy; 2. floppy—falling loosely.

Questions

(a) On the basis of your reading of the passage make notes on it, using recognizable abbreviations wherever necessary. Use a format you consider suitable.

(b) Supply a suitable title.

(c) Write a summary of the passage in about 80 words.

SECTION B (WRITING SKILLS AND GRAMMAR)   (30)

Q3. An interactive session on Organ Donation is being conducted in your school by the famous surgeon Devi Shetty. You are Devi/Deva Rajan, the secretary of the Interact Club of your school. **Write a notice inviting student volunteers to conduct and be a part of the questionnaire session. (word Limit 50)**   **(4)**

Q4. 'The Narcotics Control Bureau' on Thursday arrested a former techie who supplied drugs to students at several Bengaluru colleges.'
You are Riya/Riyaz Khan, an educationist. Recently you read this news and decide to write a letter to the Editor of 'The Indian Express' expressing your views and suggesting ways to check this racket.
(word Limit 120 to 150)   **(6)**

Q5. You are Shriya/Sharan, the college prefect of Oxford College of Arts, Bengaluru. You witnessed some college students indulging in the race of thrills in the roads of the city. Despite a spate of accidents and arrests, the wheelie culture continues and the public is left speechless. **Write a speech on this to be presented during the department meeting. (word limit 200)**   **(10)**

Q6. The following passage has not been edited. There is one error in each line. Find the error in the line. Write the error and the correct word in the space provided.   **(5)**

The lost child seems to be totally lost	eg.. seems- seemed
His constant crying was getting after my nerves.	(a)……….. …………..
To each question that I put him his	(b)……….. ……………
simple answer is a long horrendous wail	(c)……….. …………..
and a over-stretched 'mummy'. I didn't	(d) …………. …………..
know what to do with himself and myself.	(e) …………. …………..
I cursed me on having brought him	(f) …………. …………..
home. Just then Avnish dropped over. He is	(g) …………… ………….

a smart young officer of the Indian Police. (h) ....

When he heard the entire story he offered X

to take the child about with (i) ....

him. I heaped a sign of relief. (j) ....

Q7. Re-arrange the following phrases to make meaningful sentences:

(½x2=1)

1. switched on/ letter/ torch/the /the/ read/he/and
2. bullet/the/the/him/struck/in/foot.

Q. 8. Here is a recipe for making an omelette :
1. Beat the egg in a basin.
2. Add a pinch of salt and pepper.
3. Add a knob of butter into a small pan, and heat it.
4. Pour the egg into the pan.
5. Leave the pan for about a minute over high heat.
6. Remove the omelette from the pan when it is as set as you like it to be.

Now complete the following paragraph using the instructions given above :

First of all, the egg should be beaten in a basin, and a pinch of salt and pepper should be added to it. A knob of butter(a)................... and heated. Then the egg (b)............ . The pan(c)............ over high heat. The omelette(d)......... from the pan when it is as set as you like it to be. (4)

SECTION C TEXT BOOKS AND LONG READING TEXT (30 MARKS)

Q.9. Read the extract and answer the following questions: (3)

'Eternal I rise, impalpable out of the land and from the bottomless sea,

Upward to heaven,whence vaguely formed

Altogether changed and Yet the same'

I descend....'

  (a) Who is referred to as 'I' and why does he descend?

  (b) Name the poetic device used in the line, 'Altogether changed and yet the same'.

  (c) What does the word 'impalpable' suggest?

Q.10. Answer the questions briefly: (3x3=9)

(a). 'In the evening a change came over her' Which incident is Khushwant Singh citing?

(b) What does Shirley Toulson convey through the line, 'Its silence silences.'

(c) 'The Address' is a story of human predicament that follows war. Comment.

Q11. The relentless, resilient and optimistic approach of the crew members of 'The Wave Walker' helped them to reach to safety. How do you think these qualities help us in our lives? **Write an article of about 120 words expressing your views.** (6)

Q.12. 'Freedom' which meant emancipation brought several changes for the black slaves. Elucidate. (6)

Q13. Bring out a pen portrait of Booker's mother. (6)

CLASS: XI   MARKS: 70
DATE : 20.08.2015   TIME: 3 hrs
**General Instructions**:   No of
sides:03
1. All Questions are compulsory.
2.Question numbers 1 to 8 carries 1mark each .
3.Question numbers 9 to 16 carries 2marks each.
4.Question numbers 17 to 25 carries 3marks each.
5.Question numbers 26 carries 4 marks.
6. Question numbers 27 to 29 carries 5 marks each.
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1. How many Parsec are there in one light year?

2. 5.74g of a substance occupies 1.2 cm³. Express its density keeping
   significant figures in view.

3. Can a body have zero velocity and still be accelerating. Why?

4. If $\vec{A} = 2$ unit and $\vec{B} = 1$ unit is shown in figure. Find $\overrightarrow{3A} = \vec{B}$ and represent
   of as a vector
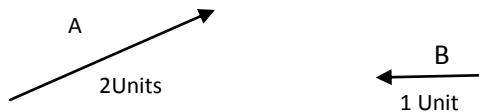
5. The motion of a particle of mass 'm' is described by Y = ut + ½ gt².
    Find the force acting on the particle.

6. Draw a stress Vs strain graph for an elastomer

7. Give two salient features of streamlines

8. In which container will the pressure exerted at the base will be more
   and why?
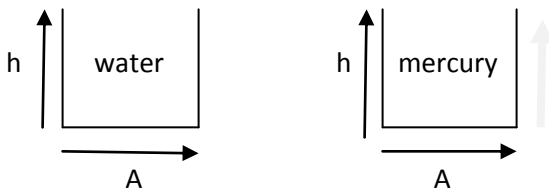
9. A physical quality P is related to four observations a, b, c and d as P
   $= \frac{a^3 b^2}{\sqrt{c}\, d}$. The percentage errors of measurement in a, b, c and d are 1%,
   3%, 4% and 2% respectively. What is the percentage error in the
   quantity 'P'.

10. An object travel at a steady speed for a time t_1 then decelerates uniformly
for
     time t_2 until it comes to rest. Sketch the following graphs for the motion
       (a) Velocity Vs Time   (b) Acceleration Vs Time

11. An aircraft executes a horizontal loop of radius 1.00km with a steady
speed of
    900 km/h. Compare its centripetal acceleration with the acceleration due
to

gravity.

12. Find the magnitude of the centripetal acceleration of a particle on the tip of a
    fan blade, 0.30 m in diameter, rotating at 1200 rev/minute.

13. A force of 49N is just sufficient to pull a block of wood weighing 10 kg on a
    rough horizontal surface. Calculate the coefficient of friction and angle of
    friction.

14. Why are 'I' sections preferred over solid rectangular blocks for
    constructing bridges?

15. Why does liquid stand at the same height in connecting vessels of
    different shapes and sizes?

16. A square slab of lead of side 50cm and thickness 10cm subjected to a
    shearing force of 9×10^4 N on the narrow face . The lower edge of the
    slab is riveted to the floor . By how much is upper edge displaced.
    (G_{lead} = 5.6 x 10^9 N/m²)

17. The Vander wall's equation for a gas is $(P + \frac{a}{V^2})(V-b)$ = RT. Determine the
    dimensions of 'a' and 'b'. Hence write the SI units of 'a' and 'b'.

18. What is meant by parallax and parallactic angle? How can we find the
    distance of the moon (or any planet) by parallax method?

19. Two trains A and B of length 400m each are moving on two parallel tracks
    with a uniform speed of 72Km/h in the same direction with A ahead of
B. The
    driver of B decides to overtake A and accelerates by 1m/s². If after 50s,
the
    guard of B just brushes past the driver of A, what was the original
distance
    between them?

20. Two balls are thrown simultaneously, 'A' vertically upwards with a speed
of
    20m/s from the ground and B vertically downwards from a height of 40m
with
    the same speed and along the same line of motion. At what points do the
two
    balls collide? Take g = 9.8m/s².

21. A Boy stands at 39.2m from a building and throws a ball which just
passed
    through a window 19.6m above the ground. Calculate the velocity of
projection
    of the ball.

22. Two billiard balls are rolling on a flat table. One has the velocity
components
    V_x = 1m/s, V_y = $\sqrt{3}$m/s and the other has components V^1_x = 2m/s and
    V^1_y = 2m/s. If both the balls start moving from the same points, what is
the
    angle between their paths?

23. Explain why
    (i) When a vehicle moves, the mud sticking to its wheels flies off
tangentially.
    (ii) While firing a bullet, the gun should be held tight to the shoulder.

(iii) A cricketer moves his hand backwards while holding a catch.

24. State and prove Pascal's Law.

25. (i)State the factors on which 'Young Modulus' of a material depends.
    (ii)Draw and explain the graph of restoring force(F) Vs distance of
      separation (r)between atoms / molecules of a substance.

26. A monkey is sitting on a tree. Ram seeing the monkey brought some fruits and
    gave them to monkey, and ran into the house immediately. On hearing the
    sound produced when Ram was running the monkey was scared and climbed
    the nearby tree.
    (a) What values of Ram inspired you?
  (b) A monkey of mass 40kg climbs on a rope which can stand a maximum
      tension of 600N. In which of the following cases will the rope break. The
      monkey
    i) Climbs up with an acceleration of 6m/s^2
    ii) Climbs down with an acceleration of 4m/s^2
    iii) Falls down the rope nearly freely under gravity? (ignore the mass of the
rope)

27. i)State and prove Equation of Continuity for an incompressible fluid.
    ii) In a car lift ,fluid exerts a force F_1 on a small piston having a radius
5cm. If
      the mass of the car lifted is 1500Kg and radius of second piston is
15cm ,
      calculate---
            a. Mechanical advantage of the machine
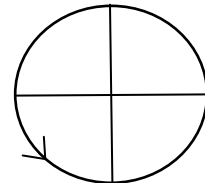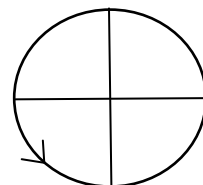   b. Pressure necessary to accomplish this task

28. (i) Determine the kinematic equation of motion using Velocity – Time
      graph.
    (ii) In the figure given, a particle moves
      along a circular path of radius r.
      It starts from point A and moves
      anticlockwise. Find the distance and the
      displacement by the particle from A to D.

29. A projectile is fired with a velocity is making an angle θ with the
horizontal.
    Show that its trajectory is a parabola. Derive expression for
    (i) Time of flight.   (ii) Maximum height. (iii) Horizontal range.

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    (i) Time of flight.   (ii) Maximum height. (iii) Horizontal range.
                        ****

27. i)State and prove Equation of Continuity for an incompressible fluid.
    ii) In a car lift ,fluid exerts a force F_1 on a small piston having a radius 5cm. If
        the mass of the car lifted is 1500Kg and radius of second piston is 15cm ,
        calculate---
                a. Mechanical advantage of the machine
                b. Pressure necessary to accomplish this task

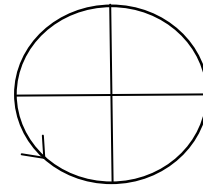28. (i) Determine the kinematic equation of motion using Velocity – Time
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    (ii) In the figure given, a particle moves
        along a circular path of radius r.
        It starts from point A and moves
        anticlockwise. Find the distance and the
        displacement by the particle from A to D.

29. A projectile is fired with a velocity is making an angle θ with the horizontal.
    Show that its trajectory is a parabola. Derive expression for
    (i) Time of flight.   (ii) Maximum height. (iii) Horizontal range.

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CLASS: XI   MARKS: 70
DATE :17.08.2015   TIME: 3hrs
General Instructions:-   No. Of sides : 02
1. All Questions are compulsory.
2.Question numbers 1 to 5   carries 1mark each .
3.Question numbers 6 to 10 carries 2marks each.
4.Question numbers 11 to 22 -carries 3marks each.
5.Question numbers 23 carry 4 marks.
6. Question numbers 24 – 26 carries 5 marks each.
7. Use log tables if necessary .Use of calculators is not permitted
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1. BH_4^- and NH_4^+ are isolobal. Explain

2. Would you expect the second electron gain enthalpy of O as positive, more negative or less negative than the first? Justify your answer

3. A molecule of O_2 and that of SO_2 travel with same velocity. Out of O_2 or SO_2 which has more wavelength?

4. Why molality is preferred over molarity in expressing the concentration of a solution?

5. Out of o-nitrophenol or p-nitrophenol, which has higher Boiling point and why?

6. Plot a concentration vs.time graph to represent the attainment of chemical equilibrium. Give any two examples of chemical equilibrium.

7.(a) Calculate the energy associates with the First orbit of He^+
   (b) What is the radius of this orbit?

8. Calculate the molarity of a solution of Ethanol in water in which the mole fraction of Ethanol is   0.040.

9.(a) Why are electron gain enthalpies of Be and Mg positive?
   (b) Out of O or N, which has more e-gain enthalpy and why ?

10. $CaCO_3 + 2HCl$ (aq)$\rightarrow$ $CaCl_2$(aq) $+CO_2$(g) $+H_2O$ (l)
    What mass of $CaCO_3$ is required to react completely with 25ml of 0.75 M HCl.

11.(a) Which is more polar – CO_2 or N_2O ? Give reason.
   (b) Out of NH_3 or NF_3, which has more dipole moment? Give reason.
   (c) Out of NaCl and MgO, which has higher lattice energy and why ?

12.(a). Draw and explain the structure of Ethyne
   (b) How many σ & π bonds are present in Ethyne molecule.

13. Arrange the following:
       (a) N^{3-}, O^{2-}, F^-, Na^+, Mg^{2+}, Al^{3+} (increasing ionic radii)
       (b) F,Cl, Br, I (increasing order of reactivity)
       (c) B,C,N,F,Si (increasing order of non-metallic character)

14.(a) Which group in the periodic table has the most negative electron gain enthalpy and why ?
   (b) Out of K^+, Sr^{2+} & Ar which has the smallest radius and why ?
   (c) Out of O or N, which has more atomic radii and why ?

15.(a) What will be the order if energy levels 3s,3p and 3d in case of H atom.
   (b) What is the maximum number of emission lines obtained when the excited e^- of an H atom in n=6 drops to the ground state.
   (c) Calculate the magnetic moment for Chromium.

16.(a) Calculate the total number of electrons present in 1.4 g of Nitrogen gas.

(b) What is the mass of Carbon present in 0.5 mole of K_4 [Fe $(CN)_6$]

(c) Calculate the volume of STP occupied by 1.5 moles of CO_2.

17. Please give reason for following:

(a) Ethyne is more electronegative than Ethene & Ethane.

(b) $[BF_6]^{3-}$ is not formed but $[AlF_6]^{3-}$ formed.

(c) Out of $\Delta_i H_1$ or $\Delta_i H_2$, which has more magnitude &why?

18. Taking an example of ClF_3.

(a) Name the type of hybridization.

(b) Predict the shapes of this molecule by using VSEPR theory.

(c) Calculate formal charge on each atoms of ClF_3 molecule.

19(a) What transition in the hydrogen spectrum would havethe same wavelength as the Balmer transition n=4 to n=2 of He^+ spectrum.

(b) Find the region of the spectrum of hydrogen.

20.(a) Define SI definition of mole.

(b) If the density if methanol is 0.793 Kg/l, what is its volume needed for making 2.5 L of its 0.25 M Solution.

21.(a)Construct a Daniel cell using the E^θ values given Fe^{2+}/Fe=-0.44V ;Ag^+/Ag=0.80V

(b)Write the cell representation.   (c) Give the cell reaction.   **(1+1+1)**

22. Derive the relationship between Kc and Kp.

For a reaction ; $A \leftrightarrow B$,the K_c =5.4 x10 $^{-18.}$Calculate K'$_c$ for the reaction. Comment on the feasibility of the reaction   **(1+1+1)**

23. (a) Explain why?   **(1+1+2)**

(i) The concentration of pure solids and liquids are taken as unity in the equilibrium constant expression.

(ii) The soda water bottle when left open for some time turns "flat".

(b)The value of K_c for the reaction given reaction $2P \leftrightarrow Q+R$ is 1.9 at room temperature.The composition of reaction mixture at a certain time is $[P]=[Q]=[R]=2x10^{-4}M$.In which direction the reaction will proceed.

24. (a) Ne_2 do not exist. Give reason.

(b) Compare the relative stability, Bond length, Bond Dissociation Energy and Magnetic behavior of dioxygen, Superoxide and Peroxide.

25(a) Balance the given equation using ion-electron method.   **(3+2)**

(i) Mn^{2+} + BiO_3^- ===> MnO_4^- + Bi^{3+} + H_2O (acidic)

(ii) $2MnO_4^-$ + $C_2O_4^{2-}$ ===> MnO_2 + CO_2 (basic)

(iii) Cl_2 ===> Cl^- +ClO^- (basic)

(b) Given are the standard electrode potentials; K^+/K=-2.93 V ;Hg^{2+}/Hg=0.79V ; Cr^{3+}/Cr = -0.74V. Identify the

(i) Strongest reducing agent. Justify your answer.

(ii) Arrange the metals in their increasing order of oxidizing power.

26.(a) How many elements are present in sixth period? Please justify.

(b) Explain why Chlorine can be converted in to Chloride ion more easily as compared to fluoride ion from Fluorine.

(c) Can we apply Heisenberg Uncertainty principle to a stationary electron? Why or Why not?

(d) Which postulate of Dalton's atomic theory explain law of multiple proportion?

(e) Why Pauli Exclusion Principle is called exclusion principle?

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Class: XI   Marks: 100
Date: 19.08.2015   Time: 3 hours

Instructions:
1. Questions 1 – 6, i.e. Section A, carry 1 mark each.
2. Questions 7 – 19, i.e. Section B, carry 4 marks each.
3. Questions 21 – 26, i.e. Section C, carry 6 marks each

SECTION A

1. The following figure represents the solution to which linear inequality ? $\longleftrightarrow$

2. In how many ways can three prizes be given to 10 boys when a boy may receive any number of prizes?

3. What is slope of a line perpendicular to $2x + 4y - 1 = 0$?

4. In which octant does $(-1, -2, -3)$ lie ?

5. Find the distance from the origin to the point $(2, -3, 5)$.

6. If $\lim\limits_{x \to 2} \dfrac{x^n - 2^n}{x - 2} = 32,$ then find n .

SECTION B

7. There are 30 students in Physics class and 20 in French class. Find the number of students who are in either of the two classes in the following cases : (i) the two classes meet at the same time, (ii) the two classes meet at different times and 10 students are enrolled in both classes.

8. Prove that (i) $\sin 75° = \dfrac{\sqrt{6} + \sqrt{2}}{4}$,
(ii) Evaluate : $\sin(-690°) \cos(-300°)$.

9. Prove that $\dfrac{\sqrt{1 + \cos x} - \sqrt{1 - \cos x}}{\sqrt{1 + \cos x} + \sqrt{1 - \cos x}} = \tan\left(\dfrac{\pi}{4} - \dfrac{x}{2}\right).$

10. Find the general solution of the equation:
$2 (\cos x + \cos 2x) + \sin 2x (1 + 2 \cos x) = 2 \sin x.$

11. Graphically solve the following inequalities: $1.5\, x + 3y \le 42,\ \ 3x + y \le 24,\ \ x \ge 0,\ \ y \ge 0$.

12. Six placards have each of the digits $1, 2, 1, 2, 0, 2$ written on them. In how many ways can they be arranged to form different $6 -$ digit numbers ?

13. (i) How many diagonals are there in a hexagon? (ii) Name the polygon which has 20 diagonals.

14. Find the equation of the perpendicular bisector of the line joining the points A $(2, 3)$ and B $(6, -5)$.

15. If A $(-2, 1)$, B $(2, 3)$ and C $(-2, -4)$ are three points, find the angle between the lines AB and BC .

16. Three vertices of a parallelogram ABCD are A $(3, -1, 2)$, B $(1, 2, -4)$ and C $(-1, 1, 2)$. Find the coordinates of the fourth vertex D.

17. Evaluate $\lim\limits_{x \to 0} f(x)$, where $f(x) = \begin{cases} \dfrac{1 - \cos 4x}{x^2} & , x < 0 \\ 0 & , x = 0 \\ |x + 8| & ,\ \ x > 0 \end{cases}$

18. If $y = \sqrt{x} + \dfrac{1}{\sqrt{x}}$, then show that $2x\,\dfrac{dy}{dx} + y = 2\sqrt{x}$.

19. Find $\dfrac{dy}{dx}$ for (i) $y = \cos(x^2)$ (ii) $y = \log(\sec x^3)$..

SECTION C

20. (i) If $\sin x = \dfrac{2}{3}$, then find the value of $\cos 2x$.

(ii) Express $3\sin\dfrac{9}{2}x \cdot \sin\dfrac{3}{2}x$ as difference of two trigonometric functions. Hence evaluate $3\sin\dfrac{9}{2}x \cdot \sin\dfrac{3}{2}x$, when $x = 10°$.

21. Find the maximum value of $z = 5x + 3y$, subject to the constraints :
$x \geq 0$, $\quad y \geq 0$, $\quad 10x + 6y \leq 1400$ $\quad$ and $\quad 5x + 10y \leq 1400$.

22. In how many ways can the letters of the word ASSASSINATION be arranged so that:
(i) All the S's are not together? (ii) T and O are separated by 6 letters ?

23. There are 5 white and 7 black balls in a bag. Six balls are drawn without replacement. In how many ways can (i) at least 4 white balls be drawn, (ii) at most 5 black balls be drawn ?

24. The vertices of a triangle are $(2,-1), (-3,1)$ and $(1,4)$. Find he equations of the sides of this triangle.

25. Equation of a line is $\sqrt{3}x - y + 4 = 0$. Let OP be the normal from the origin to this line. Find the (i) length of OP, (ii) inclination of OP, and (iii) distance from the point $(\sqrt{3}, 1)$ to this line.

26. Evaluate (i) $\lim\limits_{x \to 0} \dfrac{\sqrt{1+3x} - \sqrt{1-3x}}{x}$, (ii) Evaluate $\lim\limits_{x \to 0} \dfrac{x\,\tan x}{1 - \cos 4x}$.

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CLASS: XI   MARKS: 70
DATE :21.08.2014   TIME: 3 hrs
   No of sides: 03

General Instructions:
1. All Questions are compulsory.
2. Question numbers 1 to 5 are to be answered in one word or one sentence each carries 1 mark .
3. Question numbers 6 to 10 are to be answered in approximately 20 to 30 words each- carries 2 marks.
4. Question numbers 11 to 22 are to be answered in approximately 30 to 50 words each – carries 3 marks.
5. Question number 23 is to be answered in approximately 60 to70 words each – carries 4 marks.
6. Question numbers 24 - 26 are to be answered in approximately 80-120 words each-carries 5 marks.
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1. Show exarch vascular bundle.

2. Name the excretory organs in prawn and fish.

3. Identify the given picture and write any two functions of it.
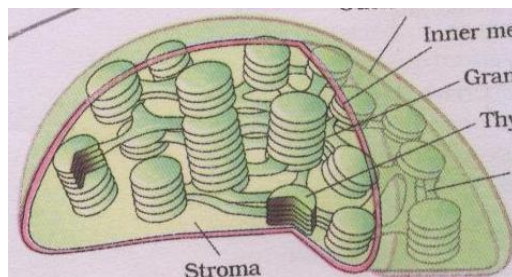
4. Give examples of the given conditions:
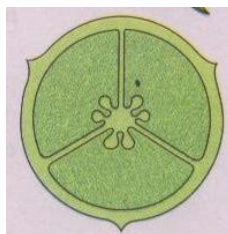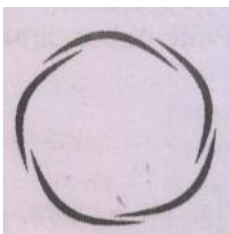
5. (i) Which organism is used extensively in biochemical and genetic works?
   (ii) Colletotrichum belongs to which group of fungi?

6. Identify the given organism and comment on its sporophytic and gametophytic structure.
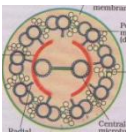

7. Represent cell cycle and mention who modified cell theory.

8. Draw a neat labeled diagram of a prokaryotic cell and comment on the

organelle which makes it a successful pathogen.

9. Who proved that plants produce glucose, plants use light energy to make glucose? Explain in detail.

10. Draw a neat labeled diagram of digestive system in cockroach.

11. Differentiate between cyclic and non-cyclic photophosphorylation.

12. What are lenticels? During which process they are formed ? Ellucidate the steps involved in it

13. Give a detailed note on fluid connective tissue.

14. With the help of the given floral formula explain the identification features.

% O $K_{(5)}$ C_{2+2+1} $A_{(9)+1}$ G_1

15. With the help of neat labeled diagrams explain the composition of master of the cell and its contents in detail.

16. (i) Reproduction in Fungi is unique". Comment.
    (ii) Draw a neat labeled diagram of bacteriophage.

17. Differentiate between Pteridophytes and Gymnosperms.

18. In some plants root, stem and leaf are adapted differently to perform different functions. Explain with suitable examples.

19. Complete the given table:-

Organelle	Diagram	Function
?		?
(Ribosome)	?	?
?		?

20. Draw a neat labeled diagram and mention other identification characteristic features for each of the following based on the given characters:-
    a. Bears pneumatic bones

b. They do not possess excretory system

c. They possess flame cells.

21. Explain fluid mosaic model in detail.

22. With the help of neat labeled diagrams classify protozoa and mention their economic importance.

23. Vijay was discussing about stagnation of water in his neighborhood with his parents. He commented on the foul smell emanating from the water logged area and decided to complain about this to the concerned authority before it leads to serious problems.
    (a) Identify the reason for the foul smell
    (b) Comment on the biological aspects related to this problem
    (c) What values are displayed by Vijay?

24. Write any three exclusive features of the following:-
    (a) Myxine   (b) Aurelia   (c) Lancelet   (d) Unio (e) Panthera

25. How are C_4 plants more advantageous than C_3 plants. Explain in detail.

26. (i) Draw neat labeled diagrams of the stages which exhibit the following features:-
    (a) Terminalisation
    (b) Centromere facing the poles,
    (c) Bivalent formation.
    (d) Centriole dividing into two after crossing over.
    (e) Formation of haploid cells
    (f) Seperation of chromosomes by spindle fibres.
   (ii) Differentiate between Meiosis and mitosis based on
    (a) Evolution,   (b) site of occurance,
    (c) Variation,   (d) Ploidy

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