II PUC PRACTICAL EXAM

BIOLOGY

Viva voce Questions

1 Reproductive parts of a flower

1) What is a flower? Or Define flower.
2) Name the essential whorl of a flower.
3) Name the non-essential whorl of a flower
4) Name the male reproductive part of a flower.
5) Name the female reproductive part of a flower.
6) Name the unit of Androecium –stamens
7) Name the unit of Gynoecium – Pistil / Carpel
8) Name the parts of the stamen.
   Filament, Anther(Antherlobes with connectives).
9) Name the parts of the pistil
   Ovary, style & Stigma
10) What are locules?
11) How many types of ovary occur based on the number of locules.
12) What is unilocular condition. Give an example
    a. (Pea) , Bean
13) What is Bilocular Condition. Give an example
    a. (Datura)
14) What is trilocular condition. Give an example
    a. Coconut, Onion
15) What is tetralocular condition give an example
    a. Mustard
16) What is pentalocular condition give an example
    a. Hibiscus
17) What is placentation?
18) Mention the types of Placentation
19) What is marginal placentation? Give an example pea, Bean
20) What is Axile placentation ? give an example
    Hibiscus, datura
21) What is parietal pacentation? Give an example
    Mustard
22) What is free central placentation? Give an example
    Chilly
23) What is Basal Placentation? Give an example
    Zea mays (Maize) Sunflower(Helianthus)

Exercise – 2

Pollen germination

1) What is a pollen grain?
    a. It is a male gametophyte produced from the anthes which produces 2 male gametes
2) What is the formula to calculate percentage of pollen grain germination?
    a. Formula for percentage of pollengrain germination on is $\frac{n}{N}$ X 100
3) At what celled stage the pollen grains are dehisced in angiosperms.
    a. At two celled stage pollen grains are dehisced
4) Name the two layers / walls of pollen grain ?
    a. The outer Exine and inner intine
5) What are the two cells of pollen grain?
    a. The upper generative cell and lower vegetative cell
6) Name the specimens used in the lab to calculate pollen germination?
    a. Pomegranate, vinca, clunarose.
7) What is solution that nurtures the pollen grain to produce pollen tube
    a. Sucrose solution
8) How many pollen tubes are produced per pollen grain
    a. 1-3 pollen tubes can be produced
9) Name the chemical found in exine of pollen grain
    a. Sporopollenin
10) Name the apertures through which pollen tube emerge out of pollen grain
    a. Germpore
11) In nature, where is the nutrient medium present in flower for pollen germination
    a. Stigma
12) What does the pollen tube carry?
    a. 2 male gametes & 1 tube nucleus

Exercise 3

Pollen tube growth on stigma

1) Name the type of pollen grain dehiscence (release)
    a. Longitudinal & porus mode dehiscence
2) What is the destination of pollen tube ?
    a. Embryosac of the ovule is the destination of pollen tube.
3) Name the process after which pollen grain germinate
    a. Pollination
4) What is pollen grain pistil compatability?
    a. The pollen grain of specific plant can germinate on specific stigma of the same species. This is called pollen-pistil compatibility
5) Name the plants generally used in the lab to observe pollen tube growth on stigma
    a. Hibiscus, Vinca, Datura flower
6) Name the stain used to observe Pollen tube growth
    a. Cotton blue
7) What is the role of glycerine in this expt
    a. It acts as a temporary adhesive between the material & slide

8) Can pollen grains of one plant species germinate on stigma of other species? Give reasons
    a. No, it is species specific & they exhibit pollen- pistil compatibility
9) Are all the pollen tubes of equal length ?if no give reasons
    a. It depends on the absorption of nutrient from the stigmatic surface/ surrounding medium
10) Do all the pollen tubes reach the ovule
    a. No

4 Gametogenesis

1) Name the structural and functional unit of testis
    a. Seminiferous tubules
2) Name the two hypes of cells present in the seminiferous hibules
    a. Germinal cells and sertoli cells
3) What is the function of sertoli/ nurse cells
    a. They nourish the developing spermato cytes & provide support fer the sperms
4) Name the process that occurs in the seminiferous tubules
    a. Spermatogenesis
5) Where are leydig cells present?
    a. In the interstitial spaces between is the seminiferous tubules
6) What is the function of leydig cells?
    a. Secretes male sex hormone testosterone
7) Name the outer covering of the mammalian testis
    a. Tunica albuginea
8) What are leydig cells
    a. Uuinucleate group of cells preset between the sewiniferous hibules
9) Name the cells that undergo spermatogenesis
    a. Germinal cells
10) Name the outer covering of seminiferous tubule
    a. Cuboidal/ germinal epithelium
11) Where does oogenesis occur?
    a. In the ovary
12) What is an ovary?
    a. Ovary is a female gonad that produces female gamete/ ovum by the process of oogenesis
13) Mention the types of follicles in the ovary
    a. Primary secondary, testiary and graafian foelicle
14) What is graafian follicle?
    a. A fully developed mature ovarian follicle of mammals is called graafian follicle
15) Name the cavity of graafian follicle
    a. Antrum
16) Name the structure formed after the rupture of graafian follicle
    a. Corpus luteum
17) What is corpusluteum?
    a. The ruptured graafian foelicle and produces female sex hormone called progesterone
18) What is corpus albicans?

a. The degenerated corpus between is called corpus albicans

19) Name the two regions present in the ovary
    a. Outer cortex & inner medulla
20) Mention the different cell stages in seminiferous tubules
    a. Spermatogonia, primary spermatocytes, secondary spermatocytes, spermatids & spermatozoa
21) Mention the different follicular stages in ovary
    a. Primary follicles, secondary follicles, tertiary follicle & graafian follicle
22) What is gametogenesis?
23) What is spermatogenesis?
24) What is Oogenesis ?
25) Name the male sex hormone
    a. Testosterone
26) Name the female sex hormone
    a. Oestrogen & Progesterone
27) What is ovulation
    a. The process of release of mature ovum by the rupture of graafian follicle
28) Name the elongated pillar like cells in the seminiferous tubules
    a. Sertoli cells
29) Where does spermatogenesis occur ?
    a. In the seminiferous tubules of the testis
30) What is a testis?

5 Mitosis

1) Define mitosis
    a. Mitosis is a mode of cell division in which the daughter cells are genetically similar to the parent cell that occurs in somatic cells of plants & animals
2) What is the other name for mitosis?
    a. Equational cell division / somatic cell division
3) What is the material used to study mitosis?
    a. Onion root tips
4) Name the stain used to observe stages of mitosis
    a. Acetocarmine
5) Mention the 2 major steps of mitosis
    a. Karyokinesis & cytokinesis
6) What is karyokinesis?
    a. Division of the nucleus is called karyokinesis
7) Mention the stages or phases of mitosis
    a. 4 phase- Prophase, Metaphase, Anaphase & Telophase
8) Name the substages of interphase
    a. G1 phase or Gap-1 phase, Synthetic phase or S- Phase & G2 phase / Gap-2-phase
9) What is the preparatory phase of mitosis
    a. Interphase
10) Mention the major event that takes place in interphase
    a. Replication of DNA in S phase

11) In which phase of mitosis chromosomes are clearly visible ?
    a. Netaphase
12) What is the role of spindle fibres?
    a. Chromosomes attach to the spindle fibles & are pulled towards their respective poles
13) What is a chromosome?
    a. Vehicle of heredity that carries genes
14) Which stage of mitosis exhibits different shapes of chromosome
    a. Anaphase
15) Mention the shapes of chromosome during anaphase
    a. V, J, I or L shaped
16) Where does mitosis occur?
    a. Somatic cells of plants &animals
17) How many cells are produced at the end of mitosis?
    a. 2 Daughter cells
18) Mention the significance of mitosis?
    a. Brings about growth in all plants &animals
19) What is the major event of prophase
    a. Condensation of chromosomes, disappearance of nuclear membrane & nucleolus
20) What is the major event of metaphase?
    a. Alignment of chromosomes on the equatiorial plate where centiomeres are attached over the equater & arms lie in various directions
21) What is equatorial or metaphasic plate ?
    a. It is an imaginary line formed at the beginning of metaphase in the centre of the cell
22) What are the major event in anaphase?
    a. The centromeres divide into two/splits & the chromosomes are pulled towards the opposite poles by spindle fibres
23) What are the major events of telophase?
    a. Nuclear membrane & nucleolus reappears, chromosomes undergo decondensation & decoiling to become chromatin of network.
24) In which cells do we find the formation of cell plate
    a. Cell plate is formed in plant cell
25) What is cytokinesis?
    a. Division of cytoplasm
26) What is the method of cytokinesis in plant cell?
    a. By cell plate formation because of the presence of rigid cell wall

6 Nucleic acid Staining

1) Define nucleic acids
    a. Nucleic acids are polynucleotide straud with high atomic weight and inherit the character from parents to off soming having self replicatication capacity
2) How many types of nuclicacids are there ?
    a. 2 types namely DNA & RNA
3) Name the nitrogenous bases found in DNA
    a. AGTC
4) Name the nitrogenous base in RNA
    a. AGLU

5) What is a nucleoside?
    a. It is a complex structure where any one nitrogeuous base combines with pentose sugar with the help of glycosidic bond
6) Name the nucleosides of DNA
    a. Adeuosine, Guanosine, Cytidine, Thynidine
7) Name the Nucleotides of DNA
    a. dAMP, dTMP, dCMP, dGMP
8) What is a nucleotides?
    a. These are complex structure formed from the nitrogeuous bases, pentose sugar is phosphate group
9) Name the bond that joins the two strands of DNA
    a. Hydrogen bond between complementary bases
10) Name the plant material used in lab to observe Nucleic acids
    a. The lower epidermis of onion fleshy leaves
11) Name the stain used in this technique
    a. Aceto-orcein or Acetorcein
12) During division what happens to DNA?
    a. The thin, long, thread like DNA becomes thick, short and condensed chromosomes
13) What are the building blocks of DNA?
    a. Nucleotides are the building blocks of DNA
14) What the difference between DNA & RNA with respect to bases
    a. Thymine is found in DNA & uracil in RNA

7 Development of female gametophyte

1) What is a female gametophyte
    a. It is a sac found in the ovule containing 8 nucleated 7 cells
2) What is the others name of female gametophyte?
    a. Embryosac
3) Where do you find the embryyosac in the flowers
    a. It is found in the ovule of ovary of a flower
4) How many cells are found in embryosac & name them
    a. 7 cells are found in the embryosac 3-Antipodals, 2 synergids, 1 egg & one secondary nucleus
5) What do you mean by monosporic condition
    a. Monosporic condition is referred to the embryosac obtained from one megaspare mothercell
6) How many nuclei are found in female gametophyte
    a. Totally there are 8 nuclei in female gametophyte
7) Name the part of theovule that brings the nutrition for the development
    a. Funicle brings the nutrition from placeuta
8) Differentiate between a gamete and a gametophyte
    a. A gamete is ahaploid fertile structure found in pollen tube and a female gametophyte where as gametophyte is a structure vomich consists of gamete
9) What happens to polar nuclei after fertilization
    a. After fertilization it form primary endoperm nucleus (3n)

10) Distinguish between syneropids and an egg
    a. Synergids are the two supporting cells found in either side of egg in the embryosac egg is a haeloid fertile female gamete found in the embryo sac
11) What is double fertilization?
    a. It is a process of fusion of male & female gamete from '2n' zygote and fusion of 2^{nd} male gamete with secondary nucleus to form'3n' PEN
12) What is the fate of synergids, antipodals after fertilization?
    a. These cells degenerate
13) Name the pore through which pollen hibe enters the ovule
    a. Generally the pollen hibe enters through micropyle
14) Name the region found opposite to micropyle
    a. Chalaza

8 Blashila of mammals

1) Name the cavity of blashila?
    a. Blastocoels
2) Name the outer covering of blastocyst ?
    a. Trophoblast
3) What is the blastula of mammals called ?
    a. Blastocyst
4) Name the structures present in blastocyst
    a. Trophoblast, inner cell mass & fluid filled cavity called blastocoels
5) What is the other name for blastocoel ?
    a. Segmentation cavity
6) What will the trophoblast give rise to ?
    a. Extraembryonic membranes & helps in implantation
7) What will the inner cell mass develop into
    a. Embryo proper
8) What is blastulation?
    a. The process of formation of blastula from morula is called blastulation
9) What is morula?
    a. Solid mass of cells (blastomeres) formed at the end of cleavage is called marula
10) What is blastula ?
    a. Blastula is an embryonic stage with hollow ball of blastomeres characterized by the presence of a well defined cavity called blastocoels
11) What are cells of rauber?
    a. The trophoblast cells which cover over the inner cell mass are called cells of rauber
12) What is blastocoel?
    a. The fluid filled cavity of blastula is called blastocoels

9 Disease causing Organisms

1) Name the phylum & class to which Entamoeba belongs to
    a. Protozoa C-Rhizopoda/ Sarcodina
2) Where is Entamoeba present?
    a. Intestine of human beings

3) Mention symptoms of amoebic dysentery
    a. Frequent loose watery stool filled with mucus, abdominal pain & spasms blood in motion
4) Name the vector of plasmodium vivax
    a. Female snopheles mosquito
5) Name the phylum & class to which plasmodium belongs to
    a. Protozoa & sporozoa
6) Name the 2 hosts of Plasmodium vivax
    a. Female anopheles mosquito & man
7) Name the infective stage of plasmodium
    a. Sporozoite
8) Mention the symptoms of malaria
    a. Intermittent high fever with chills, profuse sweating, headache, muscular pains, loss of appetite & sleeplessness
9) Mention the mode of transmission of amoebiasis
    a. Contaminated water & food
10) Mention the mode of transmission of malaria
    a. Mosquito bite
11) Name the phylum to which Ascaris belongs to
    a. Aschelminthes / Nematode
12) Name the diagnostic stage of plasmodium ?
    a. Signet ring stage in the RBC of himan host
13) Name the region where Ascaris occurs
    a. Intestine of man
14) What is sexual dimorphism?
    a. Sexual dimorphism is a phenomenon where males & females differ in size & incertain morphological features
15) List differences between male & female ascais

Male ascaris	**female ascaris**
Smaller in size	larger in size
Posterior end is curved	posterior end is straight & blunt
Cloaca is present	separate anus & female Gonopore is present
Penial setae is present	absent

16) Mention the symptoms of ascariasis?
    a. Irregular bowl with abdominal pain, indigestion, loss of appetite, Anaemia & fatigue
17) Give an example for ectoparasite?
    a. Trichophyton, rubrum
18) Name the kingdom to which trichophyton belongs to
    a. Mycota
19) Name the plant body of trichophyton
    a. Mycelium
20) Name the vegetative structures of trichophyton
    a. Conidia
21) Name the symptoms of ringworm fungus
    a. Ring shaped fluid filled lesions in the skin, between toes, or hails & on scalp itching , red colouration being darker in the periphery that looks like a ring

10 Ph of Water & Soil

1) Name the different methods used to determine Ph of water & soil
    a. Indicator dye method, Electrometric method using Ph meter & Colorimetric method
2) Name the two places from which soil samples are collected to determine Ph
    a. Road side soil & Garden soil
3) What are the two regions from which water samples are taken to determine PH
    a. Pond water / well water, lake water, tap water
4) How many types of Ph paper are used in the laboratory to determine the Ph
    a. Broad range, Narrow range
5) Based on the Ph value how many types of samples can be categorized
    a. 3 types Acidic, Basic & Neutral
6) What will be the Ph of Chalk (Calcareeis) soil?
    a. 8 to 8.5 basic

11 Ecological adaptations in plants

Living in Xeric & hydric conditions

1) What is the importance of study of ecological adaptations in plants & animals?
    a. To know the effect of pollution, growth, survival of biotic, community, morphological & anatomical changes to suit the particular habitat
2) Give 3 adaptive features of water hyacinth suitable to aquatic life
    a. Petioles are modified into air pockes, root with air pockets (Parenchymatous, Aerenchymatous stem &leaf)
3) What is the importance of succuleat leaves & stem for a xeric plant ?
    a. They conserve & stare water stems are modified for reducing transpiration
4) Why is air stored between tissues in aquatic plants?
    a. To maintain buoyancy, gaseous circulation
5) Give an example for flattened or leaf- life stem
    a. Opuntia
6) Give an example for xerophytes
    a. Opuntia, Bryophyllum
7) Give an example for leaf modified into spines
    a. Opuntia
8) Give an example for petiole modified into leaf like structure
    a. Acacia
9) Give an example for Hydrophyte
    a. Eichhornia, Hydrilla, Nelumbo etc
10) What are the adaplations seen in nelumbo
    a. Petiole long, cylindrical, aerenchyma present in petiole
11) Name a hydrophyte without root
    a. Utricularia
12) Name a plant with root pocket
    a. Eichornia
13) Name a plant with succulent leaf
    a. Bryophyllum

14) Cycas is an example for which adaptation
    a. Xeric
15) What is the adaptations seen in rhizophora
    a. Halophytic adaption
16) Leaves are modified into needle like structures in
    a. Pinus(xeric adaptations)
17) What are Xerophytes?
    a. Plants that live in dry regions with very little water/ scarcity of water
18) What are hydrophytes?
    a. Plants that live in water/ aquatic medium
19) Define Adaptations?
    a. Modifications/ changes undergone by plants &animals morphologically. Physiologically & anatomically to suit the haleotat
20) What are mesophytes?
    a. Plants that live in soil with optimum water content
21) What is a phylloclade?
    a. Green coloured photosynthetic flattered stem. Eg: opuntia

12 Homologous & Analogous organs

1) What are homologous organs?
    a. The organs having common origin but performing different functions
2) What are analogous organs?
    a. The organs having different origin but performing same functions
3) Why are stem & leaf tendrils considered as analogous organs?
    a. All tendrils are structurally and functionally similar irrespective of their orgin
4) Give 2 examples for homologous organs in plants
    a. Scale leaves of onion/ spines of opuntia
       Tendrils of cardiospermum/ bulbil of agave
       Tendrils of passion flower/ thorns of pomegranate
       Tendrils of vitis/ thorns of Carissa
5) Give two examples of analogous organs in plants
    a. Tendrils of pea & vitis
       Thorns of pomegranate/ spines of opuntia
       Rhizome of ginger/ root of carrot
       Cladode/ phylloclade
6) Which type of evolution gives rise to homologous organs
    a. Divergent evolution
7) Which type of evolution gives rise to analogous organs
    a. Convergent evolution
8) Give 2 examples of homologous
    a. Organs in animal