General Instructions: The question paper is divided into four sections.

1. Section A: Q.No.1 contains Ten multiple choice type of questions carrying One mark each.
   Q.No.2. contains Eight very short answer type of questions carrying One mark each.
2. Section B: Q.No.3 to Q.No.14 contain Twelve short answer type of Questions carrying two marks each.
3. Section C: Q.No.15 to Q.No.26 contain Twelve short answer type of Questions carrying three marks each.
4. Section D: Q.No.27 to Q.No.31 contain Five long answer type of Questions carrying four marks each.

Figures to the right indicate full marks.

SECTION - A

Q.1. Select and write the correct answer:

(i) .................................. is the following stage is absent in anaerobic respiration.
   (a) Glycolysis (b) Decarboxylation (c) Oxidation (d) Reduction
   Pg. no. 86

(ii) Dryopithecus live about 20-25 million years ago in ............... epoch.
   (a) Miocene (b) Oligocene (c) Paleocene (d) Pleistocene
   Pg. no. 134

(iii) Insertion of a vector into the target cell is usually called ............... for eukaryotic cell.
   (a) transformation (b) transfection (c) transduction (d) all of these
   Pg. no. 37

(iv) ....................... is the point where crossing over takes place.
   (a) synapsis (b) bivalent (c) tetrad (d) chiasmata
   Pg. no. 144

(v) Cellular substance from nuclei of pus cells are called as ......................
   (a) nuclein (b) nucleoid (iii) nucleolus (iv) chromatin
   Pg. no. 21

(vi) ....................... protocol was signed to control emission of ozone depleting substance.
   (a) Beijing (b) Gabriel (c) Montreal (d) Tokyo
   Pg. no. 116

(vii) ....................... is the fusogenic agent for somatic hybridization.
   (a) PEN (b) PEG (c) PES (d)
   Pg. no. 52

(viii) The word “smog” was coined by ....................
   (a) H.A. Des Voeux (b) J.H. Lam (c) L.S. Sen (d) K.G.F. Jorden
   Pg. no. 254

(ix) Chlorophyll a molecule cannot remain in ionized state for more than ........ seconds.
   (a) 10^-6 (b) 10^-7 (c) 10^-9 (d) 10^-10
   Pg. no. 66

(x) Reappearance of recessive trait in F2 proves law of ......................
   (a) dominance (b) segregation (c) independent assortment (d) none of the above
   Pg. no. 7
Q.2. Answer the following:

(i) Name the fluid rich in glycogen for nourishing the dividing embryo. Pg. no. 233
   Uterine milk

(ii) Justify, “photosynthesis is a redox reaction.” Pg. no. 64
    \( H_2O \text{ is Oxidized and } CO_2 \text{ is reduced} \)

(iii) What is another name for genetic drift? Pg. no. 126
    Sewall wright effect

(iv) How flavr savr tomato is produced? Pg. no. 42
    Flavr savr tomato is produced by introducing an additional copy of polygalacturonase

(v) Name the bird from Gujrat and Rajasthan which is rare species. Pg. no. 252
    Great Indian Bustard

(vi) Which property does the \textit{Atropa belladona} and \textit{Datura} has? Pg. no. 169
    Hallucination

(vii) What is polyblend. Pg. no. 115
    Bitumen + Plastic

(viii) Differentiate in between intra and inter genic interaction. Pg. no. 12
     1 difference 1 mark

SECTION -B

Q.3. Attempt any Eight:

   Q.3. Classify Endangered species as per gravity of the situation. Pg. no. 252
       Endangered species, Vulnerable, Rare and Indeterminate species
       Half -half marks each

   Q.4. Enlist the examples of the therapeutic products made by recombinant DNA techniques. Pg. no. 37
       For each product half mark
       4 products 2 marks

   Q.5. “RuBisCO is thermolabile” justify. Pg. no. 71
       4 points 2 marks

   Q.6. Name the fossils discovered in a lime quarry by workers at Taung in South Africa.
       After studying fossils, scientist considered this fossil as a connecting link between two types of men. Justify why? Pg. no. 135
       4 points 2 marks

   Q.7. If you come across a pea plant which is tall in nature but how can you identify it’s genotype? Pg. no. 11
       Test cross
       4 points 2 marks

   Q.8. Draw graphical representation of oogenesis. Pg. no. 234
       Half mark for proportional diagram and one and half mark for 3 correct labels.

   Q.9. End product of glycolysis do not enter in Kreb’s cycle directly. So explain the changes which takes place in that end product to enter Kreb’s cycle. Pg. no. 82
       Link reaction
       1 mark for reaction
       1 mark for explanation

   Q.10. From childhood we are aware that blood passes twice through heart, therefore we call it as double circulation but along with these two circulations one more type of circulation is present in humans. So, explain all types of circulation with the help of graphical representation. Pg. no. 185
       4 points 2 marks
Q.11. Write a short note on kidney stone. Pg. no. 198
4 points 2 marks

Q.12. “Very long chromatin material is accommodated in tiny space of nucleus.” Justify.
Pg. no. 24
4 points 2 marks

Q.13. Rahul belongs to well to do family but during his teen age only he got addicted to certain drugs. Being biology student, will you be able to explain what causes adolescent substance abuse? Pg. no. 169
4 points 2 marks

Q.14. In the absence of greenhouse effect what could be the condition of the earth?
Pg. no. 115-116
4 points 2 marks

SECTION –C
Attempt any Eight:

Q.15. Shivling is going to start apiculture in his home town. So suggest him which equipments he needs to be purchased for successful bee keeping. Pg. no. 175
6 points 3 marks

Q.16. Why do we consider C₄ plants are efficient than C₃ plants? Pg. no. 72
6 points 3 marks

Q.17. Explain how HGP helping our community for betterment of mankind. Pg. no. 152
6 points 3 marks

Q.18. Describe the internal structure genetious part of stamen. Pg. no. 94
6 points 3 marks

Q.19. “SCP is an ideal supplement to conventional food” justify this statement.
Pg. no. 52
6 points 3 marks

Q.20. Due to one of the Mendelian disorder your friend’s sister require massive blood transfusion, can you identify the disease and explain her the reason behind this.
Pg. no. 148
6 points 3 marks

Q.21. Vivek is one of the active social worker in his village and he wants to know the process by which he can use cow dung for betterment of village.
So, being a biology student guide him for the same. Pg. no. 58
6 points 3 marks

Q.22. Patient is suffering with heart problem, so doctor placing electrodes at various location on body of patient. Two electrodes are connected to chest above heart while 3rd electrode is reference connection, connected to upper and lower limbs.
   a) Identify the name of the test doctor is performing.
   b) Explain the test in detail with the help of diagram. Pg. no. 187
6 points 3 marks

Q.23. Illustrate how protein is synthesized form m-RNA. Pg. no. 30
6 points 3 marks

Q.24. A person met with an accident; pituitary gland is injured severely therefore pars distalis is not secreting sufficient amount of hormones. Explain the effects of this with respect to different hormones. Pg. no. 214
6 points 3 marks

Q.25. Suleman knows, in HIV infection count of WBCs decreases. Therefore, person’s immunity becomes weak. So, explain him how different types of WBCs play different role in the body. Pg. no. 181
6 points 3 marks
Q.26. In a plant red flower is dominant over white, starting with the parents work out a monohybrid cross. What is standard monohybrid ratio? Do you think the values would deviate if the two alleles in question are interacting with each other? Explain in detail. Pg. no. 12

SECTION –D

Attempt any Three:

Q.27. Explain the process of urine formation in detail. Pg. no. 195
1 Mark for concept
3 marks 3 steps

Q.28. Why do we consider reproduction in angiosperm as double fertilization? Add a note on its significance. Pg. no. 101-102
1 mark for a diagram
2 marks for explanation
1 mark for 2 significance

Q.29. Mr. Rahul has proper sperm count but these sperms are less viable just because of this viability issue he is childless for last 10 years. What could be the reason behind this with respect to functioning of male reproductive glands. Pg. no. 228
1 mark for acidity in female reproductive tract
3 marks for 3 glands

Q.30. Explain the phase with flow chart which is common in both aerobic and anaerobic respiration. Pg. no. 80
Glycolysis
2 marks for graphical representation
2 marks for explanation

Q.31. Rahul’s mother is suffering with diabetes mellitus so Rahul wants to know more about this disease so being a biology student explain him about … Pg. no. 218
a) Symptoms 1 mark
b) Causes 1 mark
c) Role of pancreas with respect to regulation of glucose level. 2 marks

**********************************************************************************************************All the best**********************************************************************************************************