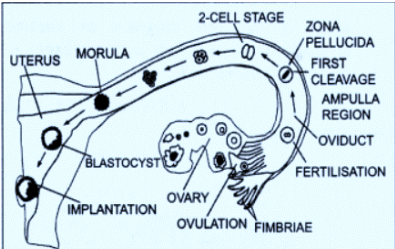


SET- 2
MARKING SCHEME

QN	ANSWER	MARKS									
1	A	1									
2	B	1									
3	D	1									
4	C	1									
5	D	1									
6	C	1									
7	B	1									
8	C	1									
9	C	1									
10	B	1									
11	A	1									
12	C	1									
13	A	1									
14	D	1									
15	A	1									
16	B	1									
17	<p>a- Self-incompatibility This is a genetic mechanism in which the germination of pollen grains or the pollen tube growth in the pistil is inhibited which prevents the pollen from fertilizing the ovules. Such plants pollinate by the process of cross-pollination.</p> <p>b- These are cellular thickenings present in synergids of embryo sacs. It helps in guiding the entry of pollen tubes up to the synergids.</p>	<p>1</p> <p>1</p>									
18	<p>Colour blindness is an X-linked recessive trait. Father of Sheela – colourblind (XcY). Sheela – Carrier (XcX) Husband- Normal (XY)</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>MALE/ FEMALE</th> <th>Xc</th> <th>X</th> </tr> </thead> <tbody> <tr> <td>X</td> <td>Xc X...Carrier</td> <td>X X... Normal</td> </tr> <tr> <td>Y</td> <td>Xc Y.... Colourblind</td> <td>X Y.... Normal</td> </tr> </tbody> </table>	MALE/ FEMALE	Xc	X	X	Xc X...Carrier	X X... Normal	Y	Xc Y.... Colourblind	X Y.... Normal	2
MALE/ FEMALE	Xc	X									
X	Xc X...Carrier	X X... Normal									
Y	Xc Y.... Colourblind	X Y.... Normal									
19	<p>a- Active immunity- active immunity is developed due to the production of antibodies in one’s own body Passive immunity- developed by antibodies that are produced outside and then introduced into the body.</p> <p>b- Contact inhibition- process of arresting cell growth when cells come in contact with cancerous cell Metastasis- spread of cancerous cells from one part of the body to the other</p>	¼ x 4									

20	<p>a- At high temperature denaturation of DNA occur that is necessary to initiate replication.</p> <p>b- Primers provide 3' OH free end on which new nucleotide are added during polymerization.</p>	1 1
21	<p>Fig 15.2, Page 262, NCERT</p> <p style="text-align: center;">OR</p> <p>More species shows less year-to-year variation in total biomass. Increased diversity contributes in higher productivity.</p>	2
22	<p>a- Sertoli cells</p> <p>b- Lubrication of the penis</p> <p>c- Lactiferous duct</p>	1 1 1
23	<p>a- 5</p> <p>b- Tapetum is nutritious tissue and provides nutrition to the developing pollen grains.</p> <p>c- Emasculation is removal of anther from a bisexual flower before attaining maturity. This is a mechanism to prevent inbreeding/ self-pollination.</p>	1 1 1
24	<p>Rho factor is involved in termination of transcription. After synthesis of nascent mRNA, the rho factor removes RNA Polymerase from DNA. When stop codons (UAA, UGA, UAG) send signal the release factor binds to ribosome- mRNA complex and dissociate it, this result in release of polypeptide chain and dissociation of ribosomal subunits.</p>	3
25	<p>a- Convergent evolution.</p> <p>b- Dryopithecus – ape like Ramapithecus – more man like</p> <p>c- Louis Pasteur</p>	1 1 1
26	<p>Withdrawal syndrome occurs in individuals who have developed physiological dependence on a substance and who discontinue or reduce their use of it. Symptoms: anxiety, sweating</p> <p style="text-align: center;">OR</p> <p>(a) Plasmodium vivax (b) 'A' – Female Anopheles mosquito (c) Intestine of mosquito (d) Salivary gland</p>	1 1 +1 $\frac{1}{2} \times 4$
27	<p>a- Biolistic method is also known as gene gun method. In this method cells are bobared with high velocity micro-particles of gold or tungsten coated with DNA.</p> <p>b- Heat shock method creates small holes in plasma membrane and this enable the bacteria to take up the r- DNA.</p> <p>c- Disarmed pathogens do not contain virulent gene. Such genes are replaced with desired gene. Such pathogens are used as vector as they do not cause disease but transfers the desired gene containing r- DNA.</p>	1 1 1
28	<p>a- Agriculture/ crop field</p> <p>b- Khasi and Jaintia Hills in Meghalaya.</p>	1 1

	c- Glaciation, the eruption of large volcanoes	½ + ½
29	a- Trichoderma polysporum b- Flocs are aerobic microorganism. They decompose organic matter of water body and decreases BOD significantly. c- Ernest Chain and Howard Florey d- Streptococcus are used in production of streptokinase which is used as clot buster.	1 1 1 1
30	a- There is more linkage if the distance between gene is less b- When distance between two closely situated genes are more then there are more chances of crossing over. c- Linkage occurs on homologous chromosomes because the genes which come in two alleles each sit much closer together. d- T. H. Morgan	1 1 1 1
31	a- Ori is required for replication of plasmid/ cloning vector b- E- first letter of genus Escherichia co- species coli R- strain i-order of discovery c- They help in identifying transformants and allowing their growth whereas eliminating non-transformants. Example: Ampicillin resistant (ampR) OR Gene Therapy is method of replacing normal and functional gene with abnormal and defective gene in the cell. Methods: <ul style="list-style-type: none"> i- Periodic infusion of normal enzyme ii- Normal ADA is inserted into lymphocyte of patient outside the body. The cultured lymphocyte contain ADA gene is injected back to the patient by using retrovirus vector. iii- If the gene isolated from bone marrow cells producing ADA is introduced into embryonic cells at early stages, it could provide a permanent cure. iv- Gene therapy at embryonic stage 	1 2 2 1 4 2
32	a- x – estrogen, y- progesterone b- corpus luteum secretes progesterone which maintain the endometrium lining essential for implantation. c- If fertilisation not occur the corpus luteum degenerates and form corpus albicans. This result in non-secretion of progesterone. This causes rupturing of endometrium lining of uterus and menstrual cycle starts.	2 1 2
	a- OR 	

	<p>b- it carries the baby's blood back and forth, between the baby and the placenta. It delivers nutrients and oxygen to the baby and removes the baby's waste products.</p>	
33	<p>The lactose (lac operon) of E. coli is a cluster of three structural genes z, y and a and regulator genes (i- regulator, p- promotor and o- operator) z- beta galactosidase, y- permease, a- transacetylase In absence of inducer (lactose) the regulator (i) codes for the repressor which binds on operator and block the pathway of RNA Polymerase. Thus, structural genes can't be involved in transcription. In presence of inducer (lactose) the inducer molecule binds on the repressor. Such repressor cannot bind on operator. The structural genes are involved in transcription.</p> <p style="text-align: center;">OR</p> <p>a- The t RNA has amino acid attachment site. At this site, according to the anticodon loop the t RNA bind with specific amino acid. This is known as initiator t RNA. Such RNA moves to the ribosome for translation process.</p> <p>b- A translation unit in m RNA is flanked with initiation codon (AUG) and stop codon (UAG, UGA, UAA). An m RNA also has some additional sequences that are not translated and are known as UTR (untranslated region). These are present at both 5' end (before start codon) and 3' end (after the codon).</p> <p>c- Capping: addition of methyl guanosine triphosphate at 5' end of hn mRNA. Tailing: addition of 200- 300 adenylates residues at 3' end</p>	<p>5</p> <p>1</p> <p>2</p> <p>2</p>