Please answer the following questions:

1) Define and enumerate venereal diseases. Recognize the clinical symptoms, diagnosis, and line of treatment of one of them? (10 marks)

2) Impotentia generandi is largely influence the male fertility without apparent effect on the mating ability or sexual desire. Describe and Judge the changes in semen picture in different conditions that lower fertilizing capacity of the male. (10 marks)

3) Interpret on:
   a. Species-specific patterns of courtship in the male (3 marks)
   b. Contribution of the reproductive organs to seminal plasma. (3 marks)
   c. Factors influence the thermo-regulatory mechanism of the testes. (2 marks)
   d. Unilateral acute orchitis in a bull. (2 marks)

4) Write on the mechanism responsible for:
   a. Hormonal control of testes function. (5 marks)
   b. Erection, Emission and Ejaculation in a bull. (5 marks)
   c. Vibriosis in inducing abortion (5 marks)
   d. Leptospirosis in inducing abortion (5 marks)
1) Define and enumerate venereal diseases. Recognize the clinical symptoms, diagnosis, and line of treatment of one of them? (10 marks)

Answer

Venereal diseases are those diseases transmitted only through coitus such as Tichomoniasis, Vibriosis, Epi-Vag, IBR-IPV and IBP.

The clinical symptoms, diagnosis, and line of treatment of trichomoniasis:

- Clinical symptoms:

  In females
  1- 4-9 days after infection a moderate vulvo-vaginitis and cervicitis.
  2- Increase the number of services per conception which may reach about 10 services during the high time of infection.
  3- Prolonged period between estrous periods after breeding.
  4- Mild inflammation of the endometrium with mucopurulant exudate.
  5- If the parasite enter the uterus early........unobserved abortion
     If the parasite multiplies in the vagina and not enter the uterus....... the pregnancy continue normal (incidence 25%).
     If the parasite enter the uterus after formation of the fetus....... it attack the placenta... abortion between 2-7 months of gestation (av. 4th month) with liquefaction of the fetus ..... Converted with the fetal fluid into pus and the cervix remain closed (closed pyometra).
  6- In case of sub-acute form; repeat breeding of cows.
7- Closed Pyometra (10%): the pyometra exudate is characterized by thin yellow grey, watery fluctuant consistency often containing yellowish flakes of pus and shreds of fetal tissues resemble a potato soup in color and consistency.

8- In chronic stage: sporadic abortion and irregular estrous

In bull

No clinical signs are not seen in bulls but mild balanoposthitis may be present for a short period from the first infection.

- **Diagnosis:**

1- History: a problem of infertility characterized by failure of conception, prolonged period between the estrous, occurrence of early abortion and pyometra.

2. Demonstration of the organism in infected animal or immunological reactions due to local immunity developed in the genital tract of the female cow.

3. In bulls: examination of the preputial smegma or wash which must be repeated for sure diagnosis 14 successive examinations, weekly interval.

- **Treatment**

In the cows

1- Trichomoniasis is self-limiting in cows; a cow that passed through 3 unbred estrous periods and breeding under carefully supervised program usually is sufficient.

2- Cows with pyometra by PGF$_{2a}$ with local and systemic antibiotic administration.

In the bulls

1- Bovoflavin oint 80 gm should be rubbed into all exposed mucosa of extended penis after washing for 20 minutes. The urethra is flushed with 15-50 ml of 0.01% trypoflavin solution repeated in 10-14 days

2- Aci-iflavin ointment: 0.5% ointment applied to the exposed penis and 0.5% solution injected into the urethra as in Bovoflavin.

3- Iodine ointment Intravenous administration of 0.5 gm sodium iodide per 100 lbs. body weight in 500 ml sterile distilled water every 48 hours 5 doses.

4- Oral administration of 25-50 mgl kg body weight of dimetridazol daily for 5 days proved effective.
2) Impotentia generandi is largely influence the male fertility without apparent effect on the mating ability or sexual desire. Describe and Judge the changes in semen picture in different conditions that lower fertilizing capacity of the male. (10 marks)

**Answer**

<table>
<thead>
<tr>
<th>Clinical condition</th>
<th>Semen picture</th>
<th>Judgment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A- Cytogenetic defects:</strong></td>
<td>normal semen</td>
<td>Bull should be discarded from breeding.</td>
</tr>
<tr>
<td><strong>B- Congenital abnormalities:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anorchidy:</td>
<td>In unilateral anorchidy: oligospermia</td>
<td>Bull should be discarded from breeding.</td>
</tr>
<tr>
<td></td>
<td>In bilateral anorchidy: aspermia</td>
<td></td>
</tr>
<tr>
<td>Cryptorchidism</td>
<td>Unilaterally cryptorchid animals are usually fertile but have reduced sperm concentration, alkaline pH and giant cells and cellular debris are found in semen.</td>
<td>Bull should be discarded from breeding.</td>
</tr>
<tr>
<td></td>
<td>Bilaterally cryptorchid animals are sterile and has azoospermia.</td>
<td></td>
</tr>
<tr>
<td>Testicular hypoplasia</td>
<td>In unilateral case:</td>
<td>Bull should be discarded from breeding.</td>
</tr>
<tr>
<td></td>
<td><strong>Sever form:</strong> watery semen and contains few or no spermatozoa.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Moderate form:</strong> Reduction in the sperm output and concen. to about 1/2- 2/3.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Mild form:</strong> Oligospermia</td>
<td></td>
</tr>
<tr>
<td></td>
<td>In bilateral sever form: azoospermi.</td>
<td></td>
</tr>
</tbody>
</table>
| Segmental aplasia of the Wolffian ducts | - In bilateral: azoospermia.  
- In unilateral case: Oligospermia. | Bull should be discarded from breeding. |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>C- Pathological affections:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Testicular degeneration                | - Oligospermia.  
- Decrease semen and sperm motion.  
- Lowered live sperm %.  
- Increased abnormal sperm.  
  *Mild form*: proximal droplets.  
  *Moderate form*: proximal drops, and nuclear craters.  
  *Sever form*: Large number of Giant cell with rich chromatin | Variable, in early condition good prognosis |
| Orchitis                                | - In acute form: no semen due to Impotencia Coeundi.  
- In chronic form: nearly normal semen volume, alkaline pH, decreased motility, oligospermia, high sperm abnormalities; Giant cells, blood and pus cells. | Variable, in early condition good prognosis |
| Epididymitis                            | - increased tailless heads and neutrophils leucocytes.  
- In Closed epidydimis; semen pic. Depend on the function of the other testis and epididymis. | Variable, in early condition good prognosis |
| Seminal vesiculitis                     | - Semen contains pus floccules and reduced motility.  
- High catalase activity, lowered fructose content | Variable, in early condition good prognosis |
D. Immunologic infertility

- complete absence of the sperm motility under the microscope

Bull should be discarded from breeding.

3) Interpret on:

a. Species-specific patterns of courtship in the male (3 marks)

**Answer**

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Cattle</th>
<th>Sheep</th>
<th>Goat</th>
<th>Swine</th>
<th>Horse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sniffing</td>
<td>Sniffing to female genitalia and urine</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
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<tr>
<td>Ritualized reaction to females urine</td>
<td>“Flehmen” male stands rigidly and holds his head in horizontal position which he may move slowly from side to side with his neck extended and upper lip raised “Flehmen” lasts 10-30 seconds.</td>
<td>Absent</td>
<td>Same as in cattle, Sheep and goat</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urination</td>
<td>No</td>
<td>No</td>
<td>Frequent micturition on foreleg during excitement</td>
<td>Rhythmic emission of urine during sexual excitement</td>
<td>Marks with urine the place where a mare has urinated</td>
</tr>
<tr>
<td>Vocalization</td>
<td>No</td>
<td>Courting grunts during sexual approach</td>
<td>Courting grunts</td>
<td>Neighing during sexual excitement</td>
<td></td>
</tr>
<tr>
<td>Tactile stimulation of female</td>
<td>Licks females genitalia</td>
<td>Noses females flanks</td>
<td>Licks female’s body bites back and neck</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Postures during copulation</td>
<td>Presses head on female’s back “leap” at ejaculation</td>
<td>Rapid backwards movement of head at ejaculation</td>
<td>Motionless during ejaculation, scrotal contraction</td>
<td>Bites female’s neck</td>
<td></td>
</tr>
<tr>
<td>Post-coital reactions</td>
<td>No</td>
<td>Stretches head and neck</td>
<td>Licks penis</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>
b. Contribution of the reproductive organs to seminal plasma. (3 marks)

**Answer**

(1) **Testis:**

1- The viable and normal male gametes, spermatozoa.
2- The cellular fragments that have been cast off by spermatozoa in their maturation.
3- The rete fluid containing higher levels of isolates, potassium and chloride than the blood plasma.

(2) **Epididymis:**

1- Secretion of GPG, carnitine and sialic acid.
2- High level of lactate as an oxidizable substrate.

(3) **Ampulla ductus deferens:**

1- Partial secretion of fructose and citric acid.
2- Secretion of ergothioneine.
3- Lipochrome pigments.

(4) **Prostate gland:**

1- The main source of sperm cell anti-agglutinin.
2- Secretion of sodium, chloride, magnesium.

(5) **Seminal vesicles:**

1- The main contributor of fructose, citric acid and ascorbic acid.
2- Addition of the riboflavin pigments.

c. **Factors influence the thermo-regulatory mechanism of the testes. (2 marks)**

**Answer**

1- The skin of the scrotum has both sweat and sebaceous glands which are more active during the hot weathers. Evaporation of the secretion of these glands cools the scrotum and thus the testes.
2- The tunica dartos and cremasteric muscles are very sensitive to temperature as follows:
a. During cold weather, contraction of these muscles causes the scrotum to wrinkle and the spermatic cord to shorten, drawing the testes closer to the body.

b. During hot weather, these muscles relax, permitting the scrotum to stretch and the spermatic cord to lengthen, dropping the testes away from the body. It has been found that the thermostatic effect of tunica dartos and cremasteric muscles does not appear before reaching the male puberty. It must be sensitized by testosterone to the change in ambient temperature.

3. The position of the testicular artery. In all farm animals the testicular artery is a convoluted structure in the form of a cone, the base of which rests on the cranial or dorsal apex of the testis. The so-called pampiniform plexus of testicular veins surrounds these arterial coils. In this countercurrent mechanism, arterial blood entering the testes is cooled by the venous blood leaving the testes. The greater the abdominal-testicular temperature gradient, the greater is the length of the convoluted testicular artery and its surrounding venous plexus, or the smaller is the caliber of the testicular artery.

d. Unilateral acute orchitis in a bull.  

**Answer**

It is generally considered wisest to slaughter bulls affected with brucellosis. If slaughter is not compulsory, in the case of some valuable bulls, pressure is brought to bear on the veterinarian to attempt treatment.

If the ampulla or seminal vesicles are not involved a “closed” castration may remove the source of the infertility and the brucella organisms in one operation.

To improve the chance of eliminating the organisms heavy doses of streptomycin plus tetracycline should be given.

Some months will elapse before regeneration of the remaining testis occurs.
4) WRITE ON THE MECHANISM RESPONSIBLE FOR:

a. Hormonal control of testes function.  (5 marks)

**Answer**

1- The hypothalamus secretes a hormone-releasing factor (GnRH), which stimulates the secretion of LH and FSH from the anterior pituitary gland.

2- The LH (ICSH) stimulates the interstitial cells of leydig to produce androgens mainly testosterone.

3- The androgens suppress GnRH, LH and FSH secretion by negative feedback on the pituitary and hypothalamus.

4- The FSH interacts with receptors on the sertoli cells to cause production of ABP, conversion of testosterone to dihydrotestosterone and estrogen, stimulation of spermatocytogenesis, completion of sperm release (spermeation) and secretion of inhibin.

5- Inhibin secreted into the blood stream has a negative feedback effect on FSH, but not on LH secretion.

b. Erection, Emission and Ejaculation in a bull.  (5 marks)

**Answer**

1- **Erection** of the penis is essentially an extension and increase in the turgidity of the organ caused by a greater inflow than outflow of blood, with the resultant increase in the pressure within the penis.

Vasodilatation of arteries caused by stimulation of the nervi ergentis from the pelvic plexus and a decrease in the venous drainage from the veins are the main factors in producing erection.

The penis of ruminants and swine erects chiefly by straightening of the sigmoid flexures and the length and diameter of the penis remain nearly the same as in the relaxed condition.

When the penis of the horse and dog erects, an increase in diameter as well as in length occurs because these species have a relatively large amount of erectile tissue or cavernous tissue.

When the erected penis of the bull is protruded, the spinal arrangement of the fibrous architecture of the penile integument causes the penis to spiral, and the urethral orifice turns in a counter-clockwise direction through 300 degrees as ejaculation occurs. The terminal part of the boar penis is spiraled like a corkscrew and during erection the whole protruded length of the free...
end of the penis becomes spiraled around its long axis like a twisted rope. The spiral deviation of the protruded penis during erection does not occur in the ram and male goats.

2- **Emission**: is a physiological event takes place immediately before ejaculation. It consists of movement of the spermatic fluid along the ductus deferens from the tail of the epididymis to the pelvic urethra where it is mixed with secretions of the accessory glands. It is caused by activation of the smooth muscles lining the duct system under the control of the autonomic nervous system. It has been observed that the sexual excitement and ejaculation are accompanied by activation of the peristaltic contractions of the cauda epididymis and ductus deferens.

3- **Ejaculation** is the passage of the semen along the penile urethra. It is brought about by striated muscles under the control of somatic efferent compartments in the sacral nerves (deep perineal nerve). During ejaculation, the bulbospongiosum muscle compresses the penile bulb and so pumps blood from the penile bulb into the remainder of the corpus spongiosum penis. The waves of pressure passing down the penile urethra may help to transport ejaculate.

c. Vibriosis in inducing abortion

**Answer**

Pathogenesis

<table>
<thead>
<tr>
<th>Infected bull</th>
<th>Breeding</th>
<th>Semen + Vibrio</th>
<th>Deposition into the cervix</th>
</tr>
</thead>
</table>
| Grow in the crypts of the penis and prepuce | | | Return to estrus
| | | | Ovum fertilization
| | | | Multiply in the cervix|
| | | | Ascending infection
| | | | Reach oviduct by 7-14 day
| | | | Affect on the cilia of the oviduct
| | | | Difficult or delayed conception, repeat breeding
| | | | During natural breeding |
d. Leptospirosis in inducing abortion (5 mark)